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FINTECH'S DOUBLE EDGES

CHRISTOPHER G. BRADLEY*

I. INTRODUCTION

The pace of change in financial technologies has quickened due to the rapid advances in technology from the late 1990s through today, exemplified by the advance of handheld devices and applications and the pervasiveness of the Internet in every facet of commerce. New financial technologies—commonly identified by the portmanteau “FinTech” or “fintech”—have already reshaped many commercial practices that affect businesses and consumers, and they are likely to change many more.¹

The increasing availability and sophistication of FinTech offers both promises and perils. Artificial intelligence-driven algorithms purport to improve access to credit on “objective” criteria but may sometimes reinforce longstanding discriminatory race and class barriers²; online financial services may ease immediate access to banking and credit and to information about price and quality of products, but may also make it easier to saddle oneself with a lemon in an impulse buy; credit reports requested instantaneously online may make it easier to monitor or correct such records, but may lead to reports being used in more contexts to bar individuals with spotty or non-existent credit histories from holding jobs or from participating fully in important aspects of mainstream financial, political, or social life. In other words, a FinTech tool may benefit some set of business or consumer interests and then, applied later or in a different context, threaten those same interests; a tool that harms some group may then lead to development of a tool that favors them.

The point of this essay is not the well-worn one that technology can be misused, or that it can have a “dark side.” Rather the point is that, as this

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1. For a recent survey of FinTech, see generally George Walker, *Financial Technology Law—A New Beginning and a New Future*, 50 INT'L LAW. 137 (2017).

2. See, e.g., Matthew A. Bruckner, *The Promise and Perils of Algorithmic Lenders' Use of Big Data*, 93 CHI.-KENT. L. REV. 3 (2017).

essay terms it, FinTech tools have “double edges”: the same technological tool may be used in different ways and have different effects, particularly on consumers—and each tool may lead to the development of a new tool that yields yet more sets of ultimate uses and effects. In other words, the development of financial technological tools is unpredictable and path-dependent, contingent both on technological developments as well as the social contexts in which tools are developed and used.

The double edges of FinTech tools—the dynamic, unstable, and path-dependent nature of their development and use—present a keen legal problem, a problem of regulatory balance and responsiveness. The double-edged nature of FinTech is an important but unappreciated structural feature of it. This essay examines the “double-edged” nature of financial technologies with a focus on consumer transactions, and explores some implications of it.

The essay unfolds as follows. Part II provides several examples of financial technologies and their double edges—how they present hidden or undiscovered benefits and risks, and develop based on emerging social contexts as well as advancing technological capabilities, in a manner that is unpredictable *ex ante*.³

Part III argues that from the perspective of public policy generally or consumer protection in particular, FinTech can neither be fully embraced as friend nor restricted as foe. Rather, it must be regulated carefully and in light of various competing goals, including fostering innovation, policing abuse, and protecting access to markets, to financial services, and to justice. This essay cautiously endorses regulatory “sandboxes” and other tools of experimentalist and participatory governance; purposive, standards-based, and compliance-driven regulation; and the promotion of the development of consumer-protective FinTech.

Part IV calls attention the issues of distributive justice and equity that arise when the financial or cognitive barriers to effective use of FinTech may be prohibitive. In other words, it argues that differential access to FinTech may implicate important issues of access to justice.

3. Examples of the unpredictability of commercially successful technological developments are easy to come by. *See, e.g.*, David Pogue, *Use It Better: The Worst Tech Predictions of All Time*, SCI. AM. (Jan. 18, 2012), <https://www.scientificamerican.com/article/pogue-all-time-worst-tech-predictions/> [<https://perma.cc/S67M-B76M>] (collecting poor predictions by prominent and knowledgeable figures dating back more than a century, and including his own poor prediction, from 2006, the year before the introduction of the iPhone: “Everyone’s always asking me when Apple will come out with a cell phone. My answer is, ‘Probably never.’”).

II. FINTECH'S DOUBLE EDGES

Many FinTech tools undoubtedly have lowered transaction costs and yielded societal benefit—in other words, have borne benefits for all, without “favoring” any particular set of interests or having a distributive effect benefiting one or the other of the typical “players” in a transaction. Imagine, for instance, technical standard improvements or chip design advancements, or simply the communications and information technology advancements that permitted the widespread installation of Automated Teller Machines (ATMs), which cut transactions costs and provide benefits to both merchants and consumers.⁴

Other FinTech tools may have other effects that are less neutral: for instance, FinTech tools might help merchants and hurt consumers, or vice versa. It is this latter set of tools that this essay largely focuses on.

This Part argues that a major structural feature of FinTech is its double-edged nature—in other words, that it presents an *ex ante* unpredictable set of benefits and risks to those using it in their commercial interactions, and that any given FinTech development may be followed by future developments that are equally double-edged and unpredictable. The first section below provides the extended example of the FinTech company LendingTree, and then the second section generalizes the observation to numerous other aspects of FinTech. The third section below explains and defends the breadth of the definition of “FinTech” adopted in this essay.

A. The Example of LendingTree

LendingTree provides a prime example of a FinTech double edge. LendingTree is an online platform that connects consumers with providers of loans.⁵ The bulk of its business is in mortgage loans.⁶ Would-be borrow-

4. See, e.g., M. Mitchell Waldrop, *The Chips are Down for Moore's Law*, 530 NATURE 144 (2016), https://www.nature.com/polopoly_fs/1.19338!/menu/main/topColumns/topLeftColumn/pdf/530144a.pdf [<https://perma.cc/S46B-JNJ6>] (charting rise in transistors per computer chip and clock speeds and explaining importance of this rise for computing); *Open Internet Standards*, INTERNET SOC'Y, <https://www.internetsociety.org/what-we-do/internet-technology-matters/open-internet-standards> [<https://perma.cc/MRG7-D3PF>] (explaining in general terms the purpose of Internet standards and the organizations that develop open Internet standards); Bernardo Batiz-Lazo, *How the ATM Revolutionized the Banking Business*, BLOOMBERG VIEW (Mar. 27, 2013, 11:23 AM), <https://www.bloomberg.com/view/articles/2013-03-27/how-the-atm-revolutionized-the-banking-business> [<https://perma.cc/5YRG-LATD>] (surveying history); MASSIMO PROVERBIO ET AL., ACCENTURE, *ATM BENCHMARKING STUDY 2016 AND INDUSTRY REPORT* (2016), https://www.accenture.com/_acnmedia/PDF-10/Accenture-Banking-ATM-Benchmarking-2016.pdf [<https://perma.cc/TKV2-HKGS>].

5. It offers other financial services too, such as credit score access and financial education, but both its advertising and its financials make clear that its primary purpose of facilitating lending. See

ers fill out a form regarding relevant characteristics such as credit and employment history and the sort of loan they are seeking. Within minutes after receiving this information, LendingTree's comparison shopping tool provides quotes from lenders, with key terms presented in charts for easy evaluation. It also provides borrowers with information, such as customer reviews, about the lenders. In other words, LendingTree provides a self-described "marketplace," where loans come to resemble, at least at the initial stage,⁷ other products for which a consumer might shop or research on the Internet.

Borrowers are not charged a fee for the service.⁸ Instead, more than 450 lenders "partner" with LendingTree, paying for their quotes to be provided to customers, for potential customer information to be provided to them, and for click- or telephone-traffic ultimately to be routed to them from LendingTree's web or phone interface.⁹

LendingTree is "just" a platform and does not provide loans itself. But the platform business is very big business. LendingTree is a public company with a market capitalization just under \$2.7 billion as of August 2017.¹⁰ In 2016, LendingTree's mortgage loan-related revenue was almost \$220 million, and it employed almost 400 individuals.¹¹ Following a common playbook in the current technology field, it has acquired related start-ups in order to expand and diversify its business. For example, it recently acquired

LendingTree, Inc., Annual Report (Form 10-K), (Feb. 28, 2017), http://files.shareholder.com/downloads/TREE/5031337209x0x933532/0E7283E5-FF24-4A31-A19C-0D489F641C3B/SEC-TREE-10-K_-_1434621-17-17.pdf [<https://perma.cc/VE2E-VW8E>].

6. *Id.* at 4.

7. The instant quotes received are conditional only. *Terms of Use Agreement*, LENDINGTREE, <https://www.lendingtree.com/legal/terms-of-use> [<https://perma.cc/5PEG-YDDY>] (repeatedly referring to loan offers as "conditional"); LendingTree, Inc., *supra* note 5, at 5. Mortgage loans, to take the most common example, are subject to numerous layers of state and federal regulation, and thus the initial ease of the loan process may be followed by a more traditional process of underwriting and agreement.

8. The lack of upfront costs for the borrowers, while important to understanding LendingTree's business model, is of course no guarantee that the service is truly costless, either financially or from a privacy perspective, but the question is one that will be considered further below. LendingTree's terms of use imply that some lenders pass the marketing fee through directly to consumers: "Depending on the Lender, the marketing match fee is paid by the Lender and may be included in your rate, points or loan terms. LendingTree strongly encourages and requests such fees not be passed onto you; however, it is without the authority to enforce the same." *Terms of Use Agreement*, *supra* note 7.

9. LendingTree, Inc., *supra* note 5, at 3–4 (explaining revenue model). *See, e.g., Terms of Use Agreement*, *supra* note 7 (repeatedly making clear that request for quotes includes consent to email and phone contact by lenders).

10. *LendingTree Inc.*, GOOGLE FIN., <https://www.google.com/finance?q=NASDAQ:TREE> [<https://perma.cc/PEX4-V975>].

11. LendingTree, Inc., *supra* note 5, at 4, 8.

a provider of comparable “marketplace” services for comparing credit card terms, CompareCards, for over \$100 million.¹²

In addition, LendingTree has sought to transform casual, one-off users into long-term customers by offering an ongoing monitoring and advice service, “My LendingTree,” which regularly checks and analyzes information such as personal credit history and property valuation data, and updates customers with new offers when terms better than their initial ones become available—for instance, when LendingTree’s algorithms think it might be a “good time” for a customer to “tap the equity” in a home.¹³ The service also comes in “app” form for smart phones and tablets, and advertises the availability of quick personal loans: “Money 24/7—Access to Virtually Any Loan You Need Is Just a Few Taps Away.”¹⁴ This pivot from “mere” platform into comprehensive service provider mirrors similar moves by other major technology companies, for instance, Amazon.com with its club-like, ever-expanding “Prime” program. It also mirrors efforts at cross-selling by financial institutions such as Wells Fargo, which provoked legal trouble by pressuring its employees to foist unneeded, additional accounts and services on existing customers.¹⁵

12. *Id.* at 55–57. CompareCards is a d/b/a for Iron Horse Holdings LLC, which was the actual acquisition target. The transaction was \$80.7 million in cash and earnouts ranging up to \$45 million, estimated for valuation purposes at \$23.1 million. *Id.*

13. *Id.* at 5.

14. *My LendingTree*, APPLE iTUNES, <https://itunes.apple.com/us/app/my-lendingtree-credit-score-report-alerts/id957868548?mt=8> [<https://perma.cc/E5RE-JKBZ>].

15. Jesse Hamilton, *Wells Fargo Is Fined \$185 Million over Unapproved Accounts*, BLOOMBERG (Sept. 8, 2016, 12:00 PM), <https://www.bloomberg.com/news/articles/2016-09-08/wells-fargo-fined-185-million-over-unwanted-customer-accounts> [<https://perma.cc/N5TR-JYG8>] (noting that according to the Consumer Finance Protection Bureau’s allegations, Wells Fargo “opened more than 2 million accounts that consumers may not have known about”); Stacy Cowley, *Wells Fargo Review Finds 1.4 Million More Suspect Accounts*, N.Y. TIMES: DEALBOOK (Aug. 31, 2017), https://www.nytimes.com/2017/08/31/business/dealbook/wells-fargo-accounts.html?_r=0 [<https://perma.cc/4BWF-KSXC>]; Chris Arnold, *Who Snatched My Car? Wells Fargo Did*, NPR (Aug. 2, 2017), <http://www.npr.org/2017/08/02/541182948/who-snatched-my-car-wells-fargo-did> [<https://perma.cc/B58X-ND8H>] (noting that Wells Fargo enrolled approximately 490,000 auto loan customers for unneeded and duplicative auto insurance, leading to many defaults and repossessions of cars); Matt Levine, *Wells Fargo Opened a Couple Million Fake Accounts*, BLOOMBERG VIEW (Sept. 9, 2016, 5:30 AM), <https://www.bloomberg.com/view/articles/2016-09-09/wells-fargo-opened-a-couple-million-fake-accounts> [<https://perma.cc/AZJ5-GBHC>] (explaining and examining why Wells Fargo’s would be so aggressive about “emphasiz[ing] cross-selling of multiple ‘solutions’ [i.e., products] to customers.”); Hendrik Laubscher, *Building Loyalty: What We Can Learn from Amazon Prime*, SKUBANA (May 29, 2017), <https://www.skubana.com/amazon-prime-building-loyalty-selling-strategies/> [<https://perma.cc/G7YM-ZVV2>] (noting numerous advantages of Amazon’s Prime program for building customer loyalty and undermining competitors); Tom Popomaronis, *The Inexorable Rise of Amazon: Nine Reasons Why It’ll Only Get Bigger*, FORBES (Aug. 4, 2017, 10:05 AM), <https://www.forbes.com/sites/tompomaronis/2017/08/04/jeff-bezos-amazon/#4e7ffc165c16> [<https://perma.cc/758Z-EC9X>] (noting that “[c]onsumers turn to Amazon for . . . everything,” and that events such as “Prime Day” have built a loyal customer base); Emma Hinchliffe, *Why Amazon Keeps Adding More Benefits to Prime*, MASHABLE (Oct. 14, 2016), <http://mashable.com/2016/10/14/amazon->

Although the functions that are now commonly performed on LendingTree's web page or app would have been unthinkable for consumers twenty years ago (which is roughly when LendingTree was founded, in 1998), the core technologies are no longer cutting edge as a technological matter. But now they have been embraced by a broad public.¹⁶ The breadth and sensitivity of the information transmitted and the highly regulated nature of the industry present technological challenges distinct from many other online marketplaces outside of the FinTech arena (such as those for normal household goods). Data security, regulatory, and privacy issues are major risks (and subjects of regulation by the FTC¹⁷) that require technologically influenced responses. In addition, the rise of "Big Data" brings the promise of more accurate and informed underwriting but requires significant technological investment; the technological demands for those competing in this and other data-driven business sectors seem likely to increase dramatically in complexity in coming years.¹⁸

Platforms like LendingTree are an important form of FinTech, for which there was obviously significant pent-up demand, judging by their success. No wonder that consumers find an appeal in the relative transparency of LendingTree, in light of the opacity with which the traditional lending market has generally operated.¹⁹ The convenience of receiving

prime-benefits/#snXSIW8MFEqI [https://perma.cc/LLY6-W84Q] (reporting on research that "Prime members buy more on Amazon. More specifically, they spend two-and-a-half times as much on Amazon as customers who don't have Prime."); Laura Stevens & Heather Haddon, *Big Prize in Amazon-Whole Foods Deal: Data*, WALL ST. J. (June 20, 2017, 5:30 AM), <https://www.wsj.com/articles/big-prize-in-amazon-whole-foods-deal-data-1497951004> [https://perma.cc/6EUF-UXAJ] (explaining that one rationale for a recent merger is that "[a] Morgan Stanley survey shows about 62% of Whole Foods shoppers are members of Amazon's Prime service, opening the door for cross-sell promotions to entice customers who shop at both to spend more").

16. Seeking to protect its (apparently only) two patents, LendingTree engaged in litigation against several competitors including Zillow, but was largely unsuccessful. *LendingTree, LLC v. Zillow, Inc.*, 54 F. Supp. 3d 444 (W.D.N.C. 2014). Its business of course relies on numerous other licenses, trade secrets, and so on, many of which are technologically sophisticated.

17. See 15 U.S.C. § 45 (2015).

18. See JAMES MANYIKA ET AL., MCKINSEY GLOB. INST., *BIG DATA: THE NEXT FRONTIER FOR INNOVATION, COMPETITION, AND PRODUCTIVITY* 1, 16 (2011), <http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/big-data-the-next-frontier-for-innovation> [https://perma.cc/TR74-TAZN]; Christopher K. Odinet, *Consumer Bitcredit and Marketplace Lending*, ALA. L. REV. (forthcoming 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2949456 [https://perma.cc/GD5J-9YRL]; Bruckner, *supra* note 2.

19. Zach Carter, *Elizabeth Warren Launches Mortgage Forms Regulatory Overhaul*, HUFFINGTON POST (May 18, 2011, 5:56 PM), http://www.huffingtonpost.com/2011/05/18/elizabeth-warren-launches_n_863773.html [https://perma.cc/X6X4-KL4D] ("The Consumer Financial Protection Bureau advanced its overhaul of annoying, incomprehensible mortgage forms on Wednesday . . ."); BETHANY MCLEAN & JOE NOCERA, *ALL THE DEVILS ARE HERE: THE HIDDEN HISTORY OF THE FINANCIAL CRISIS* 82 (2010) ("[A]s everyone in the mortgage business knew, increased disclosure had done virtually nothing to stamp out lender abuses. Over the years, there had been numerous disclosure requirements added to the law. Yet to the average home buyer, mortgage documents remained largely

numerous quotes without having to visit any “brick-and-mortar” establishments is significant. The model also fosters competition, such that even if potential lenders might not have name recognition (much less any physical presence) in a given region, customers can now find them.²⁰ In addition, the experience of online comparison and selection of a loan may compare favorably to the experience, for instance, of trying to assess loans and offers while in a car dealership. Such tools may remove some of the leverage from merchants who are thought to commonly use their control over the sales environment to pressure consumers to make poor decisions.²¹ In sum, this technology lowers transactions costs, allows for convenient comparison shopping among at least some number of options,²² and provides consumers with powerful tools to use in their commercial transactions.²³ These

incomprehensible.”). Even official resources produced by government officials trying to help consumers understand and navigate the process reflect the completely overwhelming nature of the task. *See, e.g., Consumer Information: Shopping for a Mortgage*, FED. TRADE COMM’N, <https://www.consumer.ftc.gov/articles/0189-shopping-mortgage> [<https://perma.cc/7LV3-WK75>] [hereinafter *Consumer Information*] (providing an overview of the numerous components of a mortgage broker quotation); FED. TRADE COMM’N, MORTGAGE SHOPPING WORKSHEET, <https://www.consumer.ftc.gov/articles/pdf-0104-mortgage-shopping-worksheet.pdf> [<https://perma.cc/TQB8-QQUY>] (providing a worksheet with spaces to fill in forty-seven separate possible terms from each mortgage quote, to supposedly allow comparison shopping); CONSUMER FIN. PROT. BUREAU, YOUR HOME LOAN TOOLKIT (2015) http://files.consumerfinance.gov/f/201503_cfpb_your-home-loan-toolkit-web.pdf [<https://perma.cc/W6V3-MB5K>] (providing 28-page booklet on understanding mortgage loan terms and process).

20. Several of the highest rated firms on a recent list of LendingTree’s “top rated” lenders are far from household names. *See* Press Release, Megan Greuling, LendingTree, LendingTree Announces Top Customer-Rated Lenders by Loan Product for Q1 2017 (May 5, 2017), <https://www.lendingtree.com/press-release/top-customer-rated-lenders-q1-2017> [<https://perma.cc/8DMW-L43L>] (listing “Insight Loans” as top in the mortgage category, Refijet in the auto loans category, and Seek Capital in the business loans category).

21. Neal E. Boudette, *A Smartphone App to Relieve Your Car-Buying Agony*, N.Y. TIMES (Aug. 10, 2017), https://www.nytimes.com/2017/08/10/automobiles/wheels/a-smartphone-app-to-relieve-your-car-buying-agony.html?mcubz=3&_r=0 [<https://perma.cc/356Y-QPWK>]; Mary M. Chapman, *Online Upstarts Seek to Disrupt Used-Car Buying*, N.Y. TIMES (Apr. 13, 2017), <https://www.nytimes.com/2017/04/13/automobiles/wheels/online-used-car-sales.html?mcubz=3> [<https://perma.cc/JJ8B-ESUV>] (“Speaking of conventional car dealerships, [a user of the online competitor] said: ‘I always think they’re going to swindle you. . . . It’s a very overwhelming situation, and you feel like you have to be on top of things and on guard.’”).

22. Rory Van Loo has noted, concerning online shopping for consumer goods, that “[t]here is little doubt that technologies have enabled consumers to acquire information about products more easily and to purchase more conveniently, and online retailers have increased price pressure on brick-and-mortar retailers and thus in some instances moved markets closer to competitive pricing.” Rory Van Loo, *Helping Buyers Beware: The Need for Supervision of Big Retail*, 163 U. PA. L. REV. 1311, 1328 (2015). He goes on to note several ways in which online comparison shopping remains difficult or impossible. *See, e.g., id.* at 1329–31; *id.* at 1334 (“Consumers . . . have gained helpful search technologies, but they have major limitations and the empirical literature consistently finds that sellers control these interfaces to exploit consumer decisionmaking limits.”).

23. *See* Wulf A. Kaal & Erik P.M. Vermeulen, *How to Regulate Disruptive Innovation—From Facts to Data*, 57 JURIMETRICS J. 169, 177 (2017) (“Big data benefits not only industry and researchers,

are likely the reasons that in addition to for-profit market participants like LendingTree, the Consumer Financial Protection Bureau has developed some basic tools of its own to accomplish some of these goals outside of the for-profit realm.²⁴

However, the implications of the widespread use of LendingTree's technology are mixed from a consumer perspective. Consumer advocates reacted negatively to a 2016 Super Bowl commercial for mortgage giant Quicken's "Rocket Mortgage" app, which raised the prospect of applying for a home mortgage from a smart phone, and depicted a theater full of eager consumers each apparently embarking upon a highly complicated and important financial course of action more or less on a whim.²⁵ Loan terms (particularly for high-dollar items like homes) often remain highly complicated,²⁶ and even if all required disclosures are made, near-instantaneous loan agreements are not an unalloyed good if they lead to ill-considered "impulse buys." Even aside from the merits of the loan decision itself, the information conveyed in the course of a loan application is highly sensitive and may be difficult to preserve on such an interface.²⁷ And again, even assuming LendingTree's disclosures and terms are completely accurate, it is an open question if consumers understand what they are signing up for (or if they can afford the products they might be sold).

On LendingTree's platform, consumer information is likely to be conveyed to a number of different lenders, who may pull credit reports, contact consumers, keep or analyze (and potentially lose or abuse) their personal data, and so on.²⁸ Consumers may not understand how LendingTree itself

but it also increases consumer choice through publicly available websites providing big data analyses intended to support consumers' decision-making processes.").

24. See *Know Before You Owe: Mortgages*, CONSUMER FIN. PROT. BUREAU, <https://www.consumerfinance.gov/know-before-you-owe/> [https://perma.cc/8RG8-EMQT].

25. See, e.g., Emily Badger, *Everything That's Wrong with the Super Bowl's Worst Ad*, WASH. POST: WONKBLOG (Feb. 8, 2016), https://www.washingtonpost.com/news/wonk/wp/2016/02/08/everything-thats-wrong-with-the-super-bowls-worst-ad/?utm_term=.8a9faefd6287 [https://perma.cc/DEY9-H8QK]. The one-minute commercial may be viewed on YouTube. Ad Bowl 2016, *Rocket Mortgage Super Bowl Ad 2016 Quicken Loans*, YOUTUBE (Feb. 8, 2016), <https://www.youtube.com/watch?v=nXW2BJixXfw> [https://perma.cc/W5Y6-W8QD]. The Consumer Financial Protection Bureau apparently "sub-tweeted" (i.e., responded critically but indirectly to) the ad shortly after it aired: "When it comes to #mortgages, take your time, ask questions and #knowbeforeyouowe." CONSUMER FIN. PROT. BUREAU (@CFPB), TWITTER (Feb. 7, 2016, 4:30 PM), <https://twitter.com/CFPB/status/696491147708002308> [https://perma.cc/JZ4Y-M8VX].

26. See *Consumer Information*, supra note 19.

27. See, e.g., *What Documents Are Part of the Mortgage Process?*, U.S. BANK, <https://www.usbank.com/home-loans/mortgage/mortgage-process.aspx> [https://perma.cc/3LPS-MJZL] (listing, among other things, extensive tax, bank, and employment documents that will be required).

28. See, e.g., *Terms of Use Agreement*, supra note 7 ("When you complete an inquiry form online, by clicking on any button indicating an acceptance, acknowledgement or agreement to terms, a

is compensated; for instance, customers may be unaware that the “universe” of lenders is limited to “partners” of LendingTree and that LendingTree is being paid to generate leads and to have borrowers “click through” to potential lenders.²⁹ In addition, consumers may not understand the degree to which LendingTree—similarly to other “platforms”—will try to limit its liability if something goes wrong in the transaction and the consumer becomes aggrieved.³⁰ The various terms of the initial (“conditional”) loan quotes may be subject to manipulation without consumers understanding the salience of important details.³¹ Even the arrangement of the quotes on the page could conceivably be subject to manipulation by LendingTree without consumers being aware of it; for instance, could a “partner” pay LendingTree to list it first whenever possible, by initially sorting loan results by whatever loan characteristic on which that lender might offer a

continuance of processing or submission (‘submission’) you understand that you are consenting, acknowledging and agreeing to the stated terms and conditions of that submission and that you are submitting an inquiry as to a lending product through LendingTree which will match you to up to six (6) Lenders to whom your loan request and personal information is transmitted.”).

29. *Id.* (“LendingTree does not guarantee that the loan terms or rates offered and made available by Lenders are the best terms or lowest rates available in the market. LendingTree’s Network of Lenders is vast, but does not represent all potential Lenders in your area.”).

30. *Id.* (listing extensive disclaimers of reliability and waivers including for software attacks or other errors; requiring customer to broadly indemnify LendingTree; noting limitation of damages; and disclaiming any liability for links to third-party websites). Furthermore, as is common with such terms of use, LendingTree reserves the right to change them at any time, “effective immediately upon posting” on its web page, after which any use of the website “shall be deemed to constitute acceptance of such changes”; which of course makes it all but impossible to actually know what is being consented to if one has to use the LendingTree website regularly.

31. *See* LendingTree, Inc., *supra* note 5, at 5 (describing offers as “conditional”); *Terms of Use Agreement*, *supra* note 7 (“The rates and fees actually provided by Lenders may be higher or lower depending on your complete credit profile, collateral/property considerations . . . and value and income/asset consideration . . . Unless expressly stated in writing, nothing contained herein shall constitute an offer or promise for a loan commitment or interest rate lock-in agreement.”). Even moving from a conditional to a firm quote may require a payment by the lender. *See id.* (“A Lender you select may require you to pay an application or other fee to cover the costs of an appraisal, credit report or other items.”). The strategy described here would comport with behavioral economic explanations of disadvantageous subprime mortgages becoming commonplace leading up to the financial crisis. *See* Oren Bar-Gill, *The Law, Economics and Psychology of Subprime Mortgage Contracts*, 94 CORNELL L. REV. 1073, 1079 (2009) (“A similar argument [based on behavioral economics] explains the complexity of subprime mortgage contracts. Imperfectly rational borrowers will not be able to effectively aggregate multiple price and nonprice dimensions and discern from them the true total cost of the mortgage product. Inevitably, these borrowers will focus on a few salient dimensions. If borrowers cannot process complex, multidimensional contracts and thus ignore less salient price dimensions, then lenders will offer complex, multidimensional contracts, shifting much of the loan’s cost to the less salient dimensions.”).

preferable term?³² Finally, LendingTree's prominence and influence over the lending market could have anticompetitive effects.³³

Evaluating LendingTree's overall effect for consumers is obviously a complex task, and would require adjustment based on the company's changing business practices as well as consumer expectations and behaviors (How many consumers shop around, versus taking the first quote they receive, for mortgage financing? Are consumers becoming more careful about Internet security concerns and/or savvy about the need to compare among multiple Internet "marketplaces"?). As became widely known in the aftermath of the economic collapse of 2007–2008, the residential lending market outside of LendingTree is hardly exemplary.³⁴ But it should be clear, at a minimum, that there is a double edge at work—both significant benefits and significant risks for consumers using LendingTree's platform. Further, it would have been difficult or impossible to predict—even ten years ago—that people would feel comfortable seeking a loan through, and submit a huge amount of sensitive financial information to, such an interface, and that the personal information and leads generated from such a platform could lead it to be valued in the billions of dollars. Technologically, perhaps, the challenge would not have seemed insurmountable—but to combine the technological capacity with the requisite degree of acceptance among both businesses (lenders) and consumers (borrowers) would surely have been hard to predict, implausible at best. LendingTree's success builds on numerous prior technologies (such as eBay's) that were each, in turn, successful at garnering acceptance and that then became components of this new, lucrative platform.

B. Other Double Edges

Other examples of FinTech's double edges are easy to come by. The double edges are everywhere, and represent in fact a structural feature of

32. See Rory Van Loo, *Rise of the Digital Regulator*, 66 DUKE L.J. 1267, 1293 n.142 (2017) (noting the vagueness of LendingTree's statements about its practices); *id.* at 1291 (discussing similar "choice architecture" concerns).

33. Rory Van Loo has provided a trenchant critique of the anticompetitiveness of the practices of major technology firms. See Rory Van Loo, *Making Innovation More Competitive: The Case of FinTech*, 65 UCLA L. REV. (forthcoming 2017); Van Loo, *supra* note 32, at 1293–96 (discussing anticompetitive outcomes resulting from "excessive intermediation" by technological tools).

34. See Kathleen C. Engel & Patricia A. McCoy, *A Tale of Three Markets: The Law and Economics of Predatory Lending*, 80 TEX. L. REV. 1255, 1337–57 (2002); Lauren E. Willis, *Decisionmaking and the Limits of Disclosure: The Problem of Predatory Lending: Price*, 65 MD. L. REV. 707 (2006); William N. Eskridge, Jr., *One Hundred Years of Ineptitude: The Need for Mortgage Rules Consonant with the Economic and Psychological Dynamics of the Home Sale and Loan Transaction*, 70 VA. L. REV. 1083 (1984).

FinTech that should be expected to persist. The double edges can be illustrated by reference to several emerging technological and social aspects of FinTech tools:

- *Information is easier to promulgate, share, connect, and update using technological means.*

Technological changes and the widespread embrace of financial technologies have facilitated the promulgation, sharing, connecting, and updating of information. Financial transaction information readily available electronically could include, for instance, “terms of service” from merchants, or credit card or bank records from financial intermediaries and institutions (for instance, images of cancelled checks). The cost savings of being able to provide documents electronically could be significant; and, in theory, electronic disclosures will give consumers ready (not to mention searchable and easily-stored) access to important, binding terms of their transactions, all more securely than through U.S. mail.³⁵ Also, communications technology and the ready availability and relative transparency of data may permit consumers to put a stop on credit cards, to track banking and credit transactions, and even to monitor their credit reports and correct them.³⁶ These tools again save transaction costs and provide powerful tools to consumers.

On the other hand, these tools raise some new concerns as well. Pure disclosure-based regimes are widely viewed as being unsuccessful at actually informing consumers and correcting for their bounded rationality.³⁷ Thus, allowing for a greater and cheaper *volume* of disclosure without any concern for quality may actually impair consumer decisionmaking. It might

35. See CHI CHI WU & LAUREN SANDERS, NAT'L CONSUMER LAW CTR., PAPER STATEMENTS: AN IMPORTANT CONSUMER PROTECTION 1, 10 (2016), http://www.nclc.org/images/pdf/banking_and_payment_systems/paper-statements-banking-protections.pdf [<http://perma.cc/A2WC-MDWJ>] (“Unfortunately, some financial institutions are aggressively pushing consumers into electronic statements, using tactics that are questionable and arguably illegal. Financial institutions have an incentive to convert consumers into electronic statements to save on the costs of printing and postage.”); DELOITTE, IS IT TIME TO GO PAPERLESS? RECORDS MANAGEMENT: THE COST OF WAREHOUSING BAD HABITS 1, 3 (2012), https://www2.deloitte.com/content/dam/Deloitte/za/Documents/financial-services/ZA_ItsTimeToGoPaperless_24042014.pdf [<http://perma.cc/89JC-LNC3>] (emphasizing expense of records management). Among other laws, the “E-Sign Act” permits the use of electronic records. Electronic Signatures in Global and National Commerce Act, 15 U.S.C. §§ 7001–7006, 7021, 7031 (2015); 21 C.F.R. pt. 11 (2017) (implementing regulations).

36. See KATHERINE M. PORTER, MODERN CONSUMER LAW 124 (2016) (collecting evidence and sources); Richard M. Hynes, “Maximum Possible Accuracy” in *Credit Reports*, 80 LAW & CONTEMP. PROBS. 87, 92–97 (2017) (analyzing economic effects of mistakes on credit reports).

37. See, e.g., OMRI BEN-SHAHAR & CARL E. SCHNEIDER, MORE THAN YOU WANTED TO KNOW: THE FAILURE OF MANDATED DISCLOSURE 176 (2014); Van Loo, *supra* note 32, at 1276–77, 1288–89. It is reported that the average set of disclosures for a checking account stretch to more than 100 pages. See PORTER, *supra* note 36, at 395.

also facilitate merchants adjusting terms at their convenience and at practically no expense, resting comfortably in the knowledge that consumer backlash to such changes (or even awareness of such changes) is highly unlikely. In addition, there is evidence that consumers who receive electronic records may review them less than paper records.³⁸ And there remains a significant “digital divide” separating those with easy access to technology and those without—including vulnerable populations such as the poor or elderly.³⁹

Another type of potentially consumer-favoring information could be the technologically aided collection, organization, and publicization of feedback and evaluation concerning counterparties in commercial transactions. The social media platforms have come to form in many ways a realm where consumers have aggregated significant power to themselves—complaints “going viral on social media” and making significant impact is a new and important tool that functions to protect consumers. Along similar lines, technology may also enable regulators, researchers, and consumer advocates to gather and analyze data on abuses in areas where poor or non-existent data has prevented enforcement of consumer-protective laws.⁴⁰

On the other hand, “free” email, social media, and related services such as Google’s or Facebook’s have curtailed consumer privacy and security interests by feeding immense amounts of personal information into the machine of “Big Data,” which can integrate information across platforms and across different aspects of consumers’ lives and promulgate it. This opens consumers to new vulnerabilities ranging from to identity theft, to closely targeted advertising and fine-grained price discrimination.⁴¹ Thus,

38. CONSUMER FIN. PROT. BUREAU, THE CONSUMER CREDIT CARD MARKET 133–36 (2015), http://files.consumerfinance.gov/f/201512_cfpb_report-the-consumer-credit-card-market.pdf [<https://perma.cc/3E8E-MTZ7>] (noting that those who opt out of paper disclosures “are for the most part opting out of reviewing their statements entirely,” thus making them “less likely to identify any erroneous or fraudulent transactions,” or to “encounter standard mandatory statement disclosures, such as the minimum payment warning” required by 12 C.F.R. § 1026.7(b)(12) (2017)).

39. This is a protection on which consumer advocates have maintained an emphasis. See WU & SANDERS, *supra* note 35, at 2–6 (describing effect of “digital divide” and statistics concerning the communities commonly lacking dependable digital access).

40. This is the case with respect to misleading advertisements, see PORTER, *supra* note 36, at 83; see also Pamela Foohey, *Calling on the CFPB for Help: Telling Stories and Consumer Protection*, 80 LAW & CONTEMP. PROBS. 177, 177 (2017) (discussing CFPB’s tracking of consumer financial complaints).

41. See *supra* note 18; Antonio Garcia Martinez, *Facebook’s Not Listening Through Your Phone. It Doesn’t Have To*, WIRED (Nov. 10, 2017, 10:45 AM), <https://www.wired.com/story/facebook-listening-smartphone-microphone/> [<http://perma.cc/WCJ4-R3RQ>] (“Remember, Facebook can find you on whatever device you’ve ever checked Facebook on. It can exploit everything that retailers know about you, and even sometimes track your in-store, cash-only purchases; that loyalty discount card is tied to a phone number or email for a reason. . . . Facebook copied the concept of ‘data onboarding’ from the greater ad tech world, which in turn drafted off of decades of direct-mail consumer marketing.

these innovations may provide efficiencies but may also be poorly understood by affected consumers—shifting the dynamics of commercial relationships in ways that they may be poorly positioned to adjust to—or have undesirable distributive effects.

- *Technologically sophisticated means of identification such as biometrics are now available and can be implemented inexpensively.*

Biometrics technologies—such as the fingerprint readers and facial recognition tools used as identity verification on numerous “smart” devices—have become widespread and relatively inexpensive.⁴² They are promising technologies for protection of financial transactions and relationships. Such tools are being integrated into the financial system to help make financial transactions more secure and address the major problem of identity theft.⁴³

On the other hand, these same tools present major privacy and security challenges.⁴⁴ Unlike user names or passwords, biometric identifiers, if sto-

It’s hard to escape the modern Advertising Industrial Complex.”); FED. TRADE COMM’N, *BIG DATA: A TOOL FOR INCLUSION OR EXCLUSION? UNDERSTANDING THE ISSUES* (2016), <https://www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion-understanding-issues/160106big-data-rpt.pdf> [<https://perma.cc/3WWL-97BJ>]; Mitch Lipka, *Rise in Identity Fraud Tied to Smartphone Use*, REUTERS (Feb. 22, 2012, 9:50 AM), <https://www.reuters.com/article/us-idtheft-javelin/rise-in-identity-fraud-tied-to-smartphone-use-idUSTRE81L16520120222> [<https://perma.cc/5PN2-KP7V>]. Rory Van Loo has offered a detailed compendium and analysis of data analysis and other strategies used by sophisticated online sellers of goods. Van Loo, *supra* note 22. Big Data also makes “skip-tracing,” that is, the locating of debtors who have defaulted on some debt, much easier. Experian claims, with respect to its skip-tracing records, “[m]ore than 1.3 billion updates are made per month.” Experian, of course, also produces credit reports for consumers. *What Makes Experian’s Skip Tracing Tools Better?*, EXPERIAN, <http://www.experian.com/small-business/skip-tracing-tools-software.jsp> [<https://perma.cc/72TF-B3PC>].

42. “Touch ID” and “Face ID” are Apple, Inc., terms for this increasingly widespread technology. See, e.g., Andy Greenberg, *We Tried Really Hard to Beat Face ID—and Failed (So Far)*, WIRED (Nov. 3, 2017, 7:00 AM), <https://www.wired.com/story/tried-to-beat-face-id-and-failed-so-far/> [<http://perma.cc/68GL-9F6P>] (discussing these technologies and their limitations). On the expense of the systems, see Press Release, Parv Sharma, Counterpoint Tech. Mkt. Research, *More Than One Billion Smartphones with Fingerprint Sensors Will Be Shipped in 2018*, (Sept. 29, 2017), <https://www.counterpointresearch.com/more-than-one-billion-smartphones-with-fingerprint-sensors-will-be-shipped-in-2018/> [<https://perma.cc/4E7R-YCZY>] (predicting extensive use of fingerprint biometric security in “low-mid end smartphones” due in part to declining costs).

43. See, e.g., Rachel Chang et al., *Macau’s ATMs Are Using Facial Recognition to Help Follow the Money*, BLOOMBERG (June 28, 2017, 11:00 AM), <https://www.bloomberg.com/news/articles/2017-06-28/macau-atms-need-face-time-before-payout-to-help-follow-the-money> [<https://perma.cc/HH7N-DF5J>]; Daniel R. Stoller, *Banks Bet Big on Biometrics as N.Y. Cybersecurity Rules Loom*, BLOOMBERG BNA (Feb. 9, 2017), <https://www.bna.com/banks-bet-big-b57982083603/> [<https://perma.cc/GU5K-2CUG>]; PORTER, *supra* note 36, at 104.

44. See, e.g., Yana Welinder, *Biometrics in Banking Is Not Secure*, N.Y. TIMES: ROOM FOR DEBATE (July 13, 2016, 1:14 PM), <https://www.nytimes.com/roomfordebate/2016/07/05/biometrics-and-banking/biometrics-in-banking-is-not-secure?mcubz=1> [<https://perma.cc/4HNL-ZMUE>]; Claire Gartland, *Biometrics Are a Grave Threat to Privacy*, N.Y. TIMES: ROOM FOR DEBATE (July 5, 2016,

len or accidentally made publicly available, might be useless for the rest of a person's life for security purposes. Furthermore, biometric information might convey more information than just that needed for security—for instance, information about health and well-being that could then threaten privacy or security outside of the context of mere identity verification.⁴⁵

- *Big data, artificial intelligence, and machine-learning tools such as IBM's Watson are available and can be implemented in common financial transactions.*

Much has been made of the promise of artificial intelligence, including through use of sophisticated “deep learning” approaches such as those developed by IBM's Watson project, to lower transaction costs of everyday financial transactions, and to do much more than that: to evaluate credit risks more accurately,⁴⁶ and even to provide tailored financial advice (via “robo-advisors”).⁴⁷ The idea is that with many new types and massively greater amounts of information fed into machines capable of analyzing the data, patterns will emerge and complex problems will be more readily solvable at prices accessible to everyday investors, borrowers, and financial institutions. These tools promise, among other things, to lower the cost of credit and increase access to credit for the “unbanked” and for others currently lacking access to the mainstream financial system.⁴⁸ The claim is that superior range of data and superior data-processing tools allow for much finer-grained analysis of actual creditworthiness. Purportedly, companies deploying these high-tech tools can underwrite much more cheaply and efficiently,⁴⁹ or provide more objectively sound, well-supported, and cheap investment advice.

On the other hand, as repeated, massive breaches have shown,⁵⁰ data is hardly safe when it is in the hand of merchants, and putting massive

3:21 AM), <https://www.nytimes.com/roomfordebate/2016/07/05/biometrics-and-banking/biometrics-are-a-grave-threat-to-privacy?mcubz=1> [<https://perma.cc/99H7-VRYE>].

45. See, e.g., Editorial, *Biometric Security Poses Huge Privacy Risks: Without Explicit Safeguards, Your Personal Biometric Data are Destined for a Government Database*, SCI. AM. (Jan. 1, 2014), <https://www.scientificamerican.com/article/biometric-security-poses-huge-privacy-risks/> [<https://perma.cc/4MBD-5VGY>].

46. See Odinet, *supra* note 18; Bruckner, *supra* note 2.

47. See Benjamin P. Edwards, *The Rise of Automated Investment Advice: Can Robo-Advisers Rescue the Retail Market?*, 93 CHI.-KENT L. REV. 97 (2017).

48. See Bruckner, *supra* note 2.

49. See Odinet, *supra* note 18, for a balanced treatment of lenders relying on these tools.

50. See, e.g., Michael Hiltzik, *Anthem is Warning Consumers About its Huge Data Breach. Here's a Translation*, L.A. TIMES (Mar. 6, 2015, 10:34 AM), <http://www.latimes.com/business/la-fi-mh-anthem-is-warning-consumers-20150306-column.html> [<http://perma.cc/8485-PBWQ>] (describing Anthem's security breach affecting “as many as 80 million Americans”); Michael Adams, *Why the OPM Hack Is Far Worse Than You Imagine*, LAWFARE (Mar. 11, 2016, 10:00 AM), <https://www.lawfareblog.com/why-opm-hack-far-worse-you-imagine> [<https://perma.cc/4SMG-N9U2>].

amounts of new data into the financial system makes that system even more of a target than it already is. Breaches are of particular concern when the data is highly sensitive, as with health data—or financial data—both of which would be involved in developing and using the A.I. and machine-learning systems under discussion. Cheap credit and better investment advice might be bought at the price of loss of privacy and increased risk of identity theft.

Reliance on artificial intelligence, machine learning, and algorithms rather than human judgment can introduce new forms of dysfunction within the financial system as well. Individuals may mistakenly believe these tools can be followed uncritically, and therefore pay little attention to their limitations. Whereas investment advice or credit decisions from a human can be questioned, a “deep learning algorithm” may not make its decisions in any way that can be usefully conveyed to a user. This lack of transparency isn’t, of course, always a problem, when the decisions are good and the system is functioning as it is supposed to. But once users are lulled into complacency they may fail to monitor the system’s decisions and may lose the capacity to catch mistakes.

Finally, these “A.I.” or algorithmically driven tools may in part be more profitable because they provide a way of evading important regulatory regimes that drive up compliance costs in conventional lending—including important regimes prohibiting discrimination on unlawful bases.⁵¹ In other words, the appeal of these tools may derive in part from regulatory arbitrage.⁵²

This analysis is necessarily at a high degree of generality. As with other tools, these tools may of course be a net benefit to users and to society, or they may not; the answer will depend on the ways that specific tools are used, and the ways that they develop over time. The point of this analysis is that from the outset, and indeed at every point along the way, it will

(discussing breach of U.S. Office of Personnel Management database and describing it as “the greatest theft of sensitive personnel data in history”).

51. Odinet, *supra* note 18; Bruckner, *supra* note 2.

52. Regulatory arbitrage is a convenient concept, but it bears noting that scholars have wrestled with whether to characterize this type of activity as truly “regulatory arbitrage” or some related but distinct phenomenon. *See, e.g.*, Elizabeth Pollman & Jordan M. Barry, *Regulatory Entrepreneurship*, 90 S. CAL. L. REV. 383, 397 n.61 (2017) (distinguishing between regulatory arbitrage and the term “regulatory entrepreneurship,” coined by the authors); Benjamin G. Edelman & Damien Geradin, *Efficiencies and Regulatory Shortcuts: How Should We Regulate Companies Like Airbnb and Uber?*, 19 STAN. TECH. L. REV. 293, 327 (2016) (“Notably, when these services take regulatory shortcuts, it is difficult to know whether the services gain traction through genuine excellence and efficiency, or through regulatory arbitrage.”).

not be possible to determine whether the *next* round of tools and uses will provide more benefits or harms.

- *Due to the broad availability of credit-related data and the development “back-end” tools that simplify transaction technicalities, transactions can be completed much more quickly and easily than before.*

Most delays in financial transactions serve no helpful purpose. They simply drive up costs and force delays. All parties benefit if transactions are settled speedily and reliably, so that participants don't have to rely on alternative sources of finance that may be less advantageous, or face other consequences of a preferred transaction not taking place due to needless delay. As technologically sophisticated tools to analyze credit and process transactions have become commonplace, transactions that used to take days can be completed in moments.⁵³

On the other hand, ready credit is not an unalloyed good when behavioral or psychological factors are taken into account.⁵⁴ Technologically enabled speed can hurt consumers, if the speed encourages bad decisions or provides inadequate time to make decisions. Regulatory arbitrage may again play a role in spurring the use of certain technologies if part of the allure of these technological tools is to evade regulations such as required “cooling-off periods.”⁵⁵

While numerous other examples could be given,⁵⁶ the examples given in the preceding pages should illustrate how double-edged FinTech tools are. They can promote efficiency but can also enable manipulation and rent-seeking. And importantly, FinTech's double edges, as explored in the preceding two sections, develop based on technological changes as well as those involving social and political context; note the effect of popular behavior in giving social media such a powerful effect, as well as the effect of regulation in determining how tools are developed. This is not simply a technological story—it is a social, cultural, and political one as well.

Also, the development of FinTech is path dependent but highly complex; each later step builds on what came before but not in any predictable

53. See, e.g., RONALD J. MANN, CHARGING AHEAD: THE GROWTH AND REGULATION OF PAYMENT CARD MARKETS 9–44 (2006).

54. See, e.g., Oren Bar-Gill, *Seduction by Plastic*, 98 NW. U.L. REV. 1373 (2004).

55. See, e.g., PORTER, *supra* note 36, at 402 (noting that certain mobile payments lack the consumer protections for unauthorized transactions and the cooling-off period provisions of most other transactions).

56. For instance, crowd-funding and “peer-to-peer lending,” which open up the sources of financing but also present risks to the “peers” on both sides of the transactions, see, e.g., PORTER, *supra* note 36, at 573, or insurance companies, which could refine rates based on more detailed customer information, but may also compromise privacy.

way. From any given time to the next, an assessment of the effect of a given technological tool on consumers, merchants, or their transactions might shift significantly. This fluidity is part of what distinguishes policymaking in areas where technological transformation is particularly prominent, and FinTech is no exception.

C. What Exactly Is FinTech? Does It Have a Limit?

The sections above demonstrate the broad applicability of the concept of “FinTech’s double edges,” but also may raise the question: What is the limit of “FinTech”? Are there any financial transactions that are not, at this point, “FinTech-enabled” transactions?

This essay defines FinTech broadly: FinTech includes any tool or application that relies in any significant part on advanced technology to perform a role significantly related to financial transactions.

FinTech can be divided into several types. First is FinTech that allows for more *efficient information gathering and monitoring*. This would include, for instance, tools that provide communications, credit reports, bank records, prices, or rates; online banking applications provided by major banks,⁵⁷ online credit reports,⁵⁸ and services such as LendingTree’s (as discussed above).⁵⁹ Another type of FinTech is *tools of contracting and commerce*. These support the depositing of check on a smartphone, or the use of PayPal to make an online payment. Hundreds of millions of consumers have clicked such agreements and have contracted for transactions with Apple or Amazon.⁶⁰ Finally, there are *enforcement and dispute resolution tools*. Online dispute resolution tools are increasingly common and fall

57. Graham Rapier, *These Are the Banks with the Best Apps, According to Consumers*, BUS. INSIDER (June 13, 2017, 2:17 PM), <http://www.businessinsider.com/consumers-say-these-banks-have-the-best-apps-2017-6> [<https://perma.cc/8H59-7NBE>] (citing data that 31% of customers use mobile banking applications).

58. See ANNUALCREDITREPORT.COM, <https://www.annualcreditreport.com/index.action> [<https://perma.cc/2FLT-UN63>] (“The only source for your free credit reports. Authorized by Federal law.”); *Credit Reports and Scores*, CONSUMER FIN. PROT. BUREAU, <https://www.consumerfinance.gov/ask-cfpb/category-credit-reporting/> [<https://perma.cc/6XV5-F4LS>]; Fair Credit Reporting Act, 15 U.S.C. § 1681j(a) (2015) (guaranteeing right to free credit report every year); 12 C.F.R. pt. 1022 (2017).

59. See *supra* Section I.A.

60. Amazon is estimated to have at least sixty-three million members of its “Prime” service worldwide. See Eugene Kim, *Amazon Just Shared New Numbers That Give a Clue About How Many Prime Members It Has*, BUS. INSIDER (Feb. 13, 2017, 5:11 PM), <http://www.businessinsider.com/amazon-gives-clue-number-of-prime-users-2017-2> [<https://perma.cc/JXR7-A8WH>]. Apple is estimated to have more than 500 million users of its services. See Kif Leswing, *Investors are Overlooking Apple’s Next \$50 Billion Business*, BUS. INSIDER (Apr. 4, 2016, 2:10 PM), <http://www.businessinsider.com/credit-suisse-estimates-588-million-apple-users-2016-4> [<https://perma.cc/X7XB-JUCL>].

into this category; eBay has a prominent program of that type.⁶¹ Another example is starter interrupter devices, which permit lenders to remotely freeze a car in the driveway if a buyer defaults on her car payments.⁶² The devices also have a beacon that allows the creditor to locate and repossess the immobilized vehicle. Such a device might not intuitively be included as FinTech, but it arguably is, because it involves very sophisticated technology allowing much easier enforcement of security interests in collateral than the old-school repo man.⁶³

A broad definition seems important because of the pervasiveness of technology in the underlying foundations of all of these examples. Even “traditional loan underwriting” now involves the consideration a vast array of data beyond what would have been traditional in the sense of Bailey Building & Loan in *It’s a Wonderful Life*.⁶⁴ And the money that will ultimately be loaned flows from far more complex sources and through far more complex vehicles than either George Bailey or Mr. Potter would have thought possible. All of this was enabled by technology.

On some level, adopting such a broad definition means that it includes virtually all finance tools, and that virtually all financial activity can be characterized as involving Fintech. Dramatic changes in technology seem unlikely to have left any corner of finance untouched in significant ways. Some aspects of finance are more “FinTechy” than others; it’s a matter of degree not kind.⁶⁵

This essay advocates adopting a broad conception of FinTech, particularly in the consumer arena, for reasons that have little to do with technological development per se and more to do with society and with policy.

61. See *eBay-Style Online Courts Could Resolve Smaller Claims*, BBC NEWS (Feb. 16, 2015), <http://www.bbc.com/news/uk-31483099> [<https://perma.cc/S9CF-XR5F>]; Anjanette H. Raymond & Abbey Stemler, *Trusting Strangers: Dispute Resolution in the Crowd*, 16 CARDOZO J. CONFLICT RESOL. 357, 374 (2015).

62. See Juliet M. Moringiello, *Electronic Issues in Secured Financing*, in RESEARCH HANDBOOK ON ELECTRONIC COMMERCE LAW 285, 297–303 (John A. Rothchild ed., 2016) (surveying and critiquing current commercial law implications of this type of device); Erica N. Sweeting, Comment, *Disabling Disabling Devices: Adopting Parameters for Addressing a Predatory Auto Lending Technique on Subprime Borrowers*, 59 HOWARD L.J. 817 (2016) (arguing for stricter regulations of such devices).

63. Michael Corkery & Jessica Silver-Greenberg, *Miss a Payment? Good Luck Moving That Car*, N.Y. TIMES: DEALBOOK (Sept. 24, 2014, 9:33 PM), <https://dealbook.nytimes.com/2014/09/24/miss-a-payment-good-luck-moving-that-car/> [<https://perma.cc/69Q5-NPPW>] (“The devices are reshaping how people like Mr. Veard [head of collections at a lender institution] collect on debts. He can quickly locate the collateral without relying on a repo man to hunt down delinquent borrowers. Gone are the days when Mr. Veard, a debt collector for nearly 20 years, had to hire someone to scour neighborhoods for cars belonging to delinquent borrowers.”).

64. IT’S A WONDERFUL LIFE (Liberty Films 1946).

65. Big Data may be similar in this respect. Bruckner, *supra* note 2, at 7 (“Big Data is like any other source of data plus the 3V’s (volume, variety, and velocity).”).

Consumer protection involves the interaction of law, social norms, financial and market structures, as well as (of course) evolving technological possibilities. Generally speaking, “technological revolutions do not get interesting socially until they are boring technologically.”⁶⁶ A technological change may take years or decades to affect these other elements in a sufficiently significant way for its effect to be observable. What is now known as “Big Data” is actually only a further step in a decades-long process of increasing availability to merchants of ever more fine-grained information about consumers, assets, and transactions; it has played a part in the rise of numerous tools that can be reasonably classified as FinTech, including credit cards, electronic payment, derivatives, and securitization.⁶⁷

In addition, a change in technology that does not directly affect the financial world may have a large impact on it. For instance, social media is an important FinTech tool, as it has permitted consumers to work together to exchange information and exert influence collectively in situations

66. Joshua A.T. Fairfield, *Smart Contracts, Bitcoin Bots, and Consumer Protection*, 71 WASH. & LEE L. REV. ONLINE 35, 47 (2014) (quoting Clay Shirky, Talk at June 2009 TED@State Conference: How Social Media Can Make History, http://www.ted.com/talks/clay_shirky_how_cellphones_twitter_facebook_can_make_history/transcript [<https://perma.cc/YM9V-KVAC>]), <http://scholarlycommons.law.wlu.edu/cgi/viewcontent.cgi?article=1003&context=wlulr-online> [<https://perma.cc/P6ZL-N7ZX>]).

67. Robert Shiller has provided several lengthy and historically contextualized explanations of the modern financial landscape. See generally ROBERT J. SHILLER, *IRRATIONAL EXUBERANCE* 39–69 (3d ed. 2016); ROBERT J. SHILLER, *THE NEW FINANCIAL ORDER: RISK IN THE 21ST CENTURY* (2004). See also DONALD MACKENZIE, *AN ENGINE, NOT A CAMERA: HOW FINANCIAL MODELS SHAPE MARKETS* (2008) (providing history of theoretical innovations of modern financial markets, most of which rely in application upon computing power only available in the last decades of the twentieth century); Andrea Ryan et al., *A Brief Postwar History of U.S. Consumer Finance*, 85 BUS. HIST. REV. 461, 465 (2011).

where individual action would have been impracticable at best,⁶⁸ and has also become a potential tool for lenders to evaluate creditworthiness.⁶⁹

The argument of this Part has been that while these FinTech tools have collectively—without a doubt—lowered commercial transaction costs and brought social benefit, some of them also have complex distributive effects—they make life easier in particular for lenders, or for merchants, or for consumers, in ways that are unpredictable *ex ante* and that are dependent on prior technological or socio-cultural developments. What to do about these facts is the subject of the remainder of the essay.

III. FOSTERING FINTECH WHILE PROMOTING CONSUMER PROTECTION

From the perspective of consumer protection, FinTech can neither be fully embraced as friend nor restricted as foe. Rather, it must be regulated carefully and in light of various competing goals, including fostering innovation, policing abuse, and protecting access to markets, access to financial services, and access to justice.

There is a real danger of over-regulation of FinTech. While as noted in the preceding Part, FinTech yields benefits for society and for consumers, those benefits may be slow to emerge or difficult to discern at any given state of time and technology; FinTech's progress is unpredictable and path-dependent.⁷⁰ If this is true, then over-regulation risks unknowingly quelling future benefits.

68. Financial institutions have invested in providing customer service over social media, and seeking to monitor reputational risks. *See, e.g.*, Mary Wisniewski, *Wells Fargo Sets Up War Room to Monitor Social Media Sites*, AM. BANKER (Mar. 27, 2014, 3:52 PM), <https://www.americanbanker.com/news/wells-fargo-sets-up-war-room-to-monitor-social-media-sites> [<https://perma.cc/X74T-L4P6>].

Social media firestorms against perceived corporate misdeeds have become commonplace. United Airlines changed its policies and took other actions after a recording, made on a smart phone, of a passenger being torn off a plane was widely viewed on social media. *See* Julie Creswell & Sapna Maheshwari, *United Grapples with PR Crisis over Videos of Man Being Dragged Off Airplane*, N.Y. TIMES (Apr. 11, 2017), <https://www.nytimes.com/2017/04/11/business/united-airline-passenger-overbooked-flights.html?mcubz=1> [<https://perma.cc/TM8W-W9KJ>]. Although he undertook numerous other activities that damaged his reputation, Martin Shkreli initially became infamous for dramatically raising the prices of certain important medicines and then defending the action in ways that quickly drew public scorn. Eric Owles, *The Making of Martin Shkreli as 'Pharma Bro.'* N.Y. TIMES: DEALBOOK (June 22, 2017), <https://www.nytimes.com/2017/06/22/business/dealbook/martin-shkreli-pharma-bro-drug-prices.html?mcubz=1> [<https://perma.cc/895W-FQEW>] (“His sneering defenses of the price increase led to a social media firestorm (and federal and state investigations) . . .”).

69. The startup Lenddo uses “non-traditional data derived from a customer’s social data and online behavior,” to produce a “Lenddo score” to be used in credit evaluation. *Our Products*, LENDDO, <https://www.lenddo.com/products.html#creditscore> [<https://perma.cc/A7TK-JNAC>].

70. This is a particular risk if benefits to consumers are reasonably well distributed, in other words if the problems of inequitable access to FinTech discussed in Part IV below are successfully

One could object that even in light of the beneficial aspects of FinTech's double edges, its risks to consumers outweigh the benefits to them, and therefore regulation should be pursued regardless of its effect upon future innovation or the consumer benefits yielded. But while innovations may generally tend to be developed by merchants (who are repeat-players and are well-funded), it is far from clear that such innovations will be a net loss to consumers. As noted, major transaction cost savings have already been harnessed and more can be expected.⁷¹ Also, in light of technology's capacity to make aggregate consumer activity cheaper for instance by virtue of coordination on social networking/social media (overcoming one of the major historical barriers to consumer protection), the pro-consumer benefits to FinTech are far from illusory.⁷² For these reasons, the extreme version of this objection is unlikely to be true.⁷³ In addition, because FinTech's advance seems unlikely to be stopped, it seems necessary in any case to consider how to regulate in a way most likely to yield consumer benefits and protect against harms.

addressed. In that case, the costs of over-regulation (in the form of benefits denied to consumers) will be borne by a very broad swath of consumers.

71. See Warren, *supra* note 4.

72. For an influential and optimistic articulation of these ideas in the popular press, see CLAY SHIRKY, *HERE COMES EVERYBODY: THE POWER OF ORGANIZING WITHOUT ORGANIZATIONS* (2008).

Class action lawsuits, although they continue to be subjected to fierce critiques, are the traditional and most formal mechanism for overcoming the coordination difficulties that prevent effective vindication of small-scale rights. See, e.g., Howard M. Erichson, *Aggregation as Disempowerment: Red Flags in Class Action Settlements*, 92 NOTRE DAME L. REV. 859, 912 (2016) ("Class actions empower plaintiffs; that is what we used to think. Aggregation levels the field, the theory goes, by creating economies of scale, by permitting investment based on aggregate stakes, and by offering leverage in settlement negotiations."); Jessica Silver-Greenberg & Michael Corkery, *U.S. Agency Moves to Allow Class-Action Lawsuits Against Financial Firms*, N.Y. TIMES: DEALBOOK (July 10, 2017), <https://www.nytimes.com/2017/07/10/business/dealbook/class-action-lawsuits-finance-banks.html?mcubz=1> [<https://perma.cc/DD77-E7ET>] ("[O]ne federal judge remarked in an opinion that 'only a lunatic or a fanatic sues for \$30.' By banning class actions, companies essentially squashed challenges to practices such as predatory lending, wage theft, sexual discrimination and medical malpractice.").

Commentators have recognized that coordinated efforts on social media may serve a parallel or complementary function to class actions, empowering consumers who may not have claims worth pursuing on their own. See Jeremy R. McClane, *Class Action in the Age of Twitter: A Dispute Systems Approach*, 19 HARV. NEGOT. L. REV. 213, 242 (2014) ("Technology also facilitates coordination by allowing for easier multidirectional communication and information flow, potentially enabling collective action even where the cost is high."); Casie Collignon & Paul Karlsgodt, *Class Actions 101: A New "Viral" Class Action?*, AM. BAR ASS'N (Nov. 20, 2012), <http://apps.americanbar.org/litigation/committees/classactions/articles/fall2012-1112-class-actions-101-new-viral-class-action.html> [<https://perma.cc/PU7V-777H>].

73. In any case, whether it is true is beyond the scope of this paper; in a related project, I am working on ways in which the interaction of technological change and consumer protection can be modeled, which may yield some insight into the question. Christopher G. Bradley, *Technological Change and the Consumer Protection Arms Race* (Working Paper No. [], 2017) (on file with author).

This essay cautiously endorses several strategies for approaching FinTech as a matter of consumer protection policy: purposive and compliance-driven regulation; regulatory “sandboxes” and other experimentalist approaches to FinTech governance; and the development of consumer-protective FinTech.

FinTech in this context is currently regulated by a patchwork of state and federal laws and regulation. This includes, for instance, the Fair Debt Collection Practices Act, the Fair Credit Reporting Act, the Truth in Lending Act, state deceptive trade practices acts, and even Article 9 of the UCC, which has consumer protective provisions.⁷⁴ Legal institutions are also part of the landscape, since they give teeth to the existing laws. Federally, the main regulators are the FTC and the CFPB among others, and of course state attorneys general play important parts, and public interest organizations.⁷⁵

But traditional regulations and regulatory institutions may be too slow and inflexible to successfully regulate FinTech, at least on their own.⁷⁶

74. See, e.g., Fair Debt Collection Practices Act, 15 U.S.C. §§ 1692, 1692a-1692p (2015); Fair Credit Reporting Act, 15 U.S.C. §§ 1681, 1681a to 1681c, 1861c-1–1681c-3, 1681d–1681s, 1681s-1, 1681s-2, 1681t–1681x (2015); Fair and Accurate Credit Transactions Act of 2003, 16 C.F.R. pt. 602 (2016); Truth in Lending Act, Pub. L. No. 90-321, 82 Stat. 146 (1968) (codified as amended in scattered sections of 15 U.S.C. (2015)); Truth in Lending (Regulation Z), 12 C.F.R. pt. 226 (2017); Consumer Fraud and Deceptive Business Practices Act, 815 ILL. COMP. STAT. 505/1–505/1(2007); Consumer Protection Act, 1972 Ky. Acts ch. 4 (codified as amended in scattered sections of KY REV. STAT. 367.110–367.360 (2017)); PORTER, *supra* note 36, at 32–45 (outlining consumer protective laws). On the Uniform Commercial Code, see U.C.C. § 9-320(b) (AM. LAW. INST. & UNIF. LAW COMM’N 2010) (protecting buyers of consumer goods); § 9-102(a)(20)(C) (carving out consumer goods from definition of consignment); § 9-620(a)(3) (prohibiting strict foreclosure of consumer goods if they are in possession of the consumer); § 9-620(e) (providing conditions for mandatory disposition of consumer goods); § 9-620(g) (prohibiting partial strict foreclosure with respect to consumer transactions); § 9-625 (providing for statutory damages in consumer cases); § 9-626(b) (leaving in place common-law rules with respect to deficiencies in non-complying sales in consumer transactions); Marion W. Benfield Jr., *Consumer Provisions in Revised Article 9*, 74 CHI.-KENT. L. REV. 1255 (1999) (discussing consumer-related revisions to U.C.C., most of which survive in current Code); Edward L. Rubin, *The Code, the Consumer, and the Institutional Structure of the Common Law*, 75 WASH. U. L.Q. 11 (1997) (same). In addition, numerous provisions of the U.C.C. are also overridden by federal consumer law. See, e.g., Amelia H. Boss, *The Future of the Uniform Commercial Code Process in an Increasingly International World*, 68 OHIO ST. L.J. 349, 354 (2007) (collecting examples).

75. Peppet notes the broad definition of consumer report within the statute, and that: “The FTC has warned mobile-application developers that if they provide information to employers about an individual’s criminal history, for example, they may be providing consumer reports and thus regulated by the FCRA.” Scott R. Peppet, *Regulating the Internet of Things: First Steps Toward Managing Discrimination, Privacy, Security, and Consent*, 93 TEX. L. REV. 85, 126–27 (2014).

76. There is a burgeoning literature on regulation of technology. For some important recent literature, see Kaal & Vermeulen, *supra* note 23, at 168–74, 180–90; Elizabeth Pollman, *Rise of Regulatory Affairs in Innovative Startups*, in HANDBOOK OF LAW AND ENTREPRENEURSHIP IN THE UNITED STATES (D. Gordon Smith & Christine Hurt eds.) (forthcoming 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2880818 [<http://perma.cc/P8G8-SSEY>]; Chris Brummer, *Disruptive Technology and Securities Regulation*, 84 FORDHAM L. REV. 977 (2015) (noting that disruptive financial technologies will require new regulatory approaches); Douglas W. Arner et al.,

Command and control-type regulations may often be inappropriate when the goal is to stimulate or at least permit innovation, and outright regulatory prohibitions may inhibit technologies that will reduce transaction costs and lead to beneficial innovations; in other words, many traditional regulations may not only be slow but also innovation-dampening.⁷⁷ Thus this essay proposes some different regulatory strategies below for dealing with FinTech's double edges.

A. Purposive, Standards-Based Regulation and a Focus on Internal Compliance Norms

Conventional wisdom in the consumer protection arena is that “bright-line” laws tend to be better for consumers. This is because they will be under-provided with legal services and lack sufficient financial incentives to pursue claims reliant on complex legal theories or factual determinations, including concerning damages.⁷⁸

This conventional wisdom might have to cede some ground, at least temporarily, with respect to FinTech. While the considerations underlying the conventional wisdom remain important, clear and specific laws may not be possible when technology is changing rapidly and when its application provides sufficient flexibility to evade narrowly drawn, bright-line rules. Faced with a concern over legal obsolescence given the speed of change and technologically enabled evasion of legal standards,⁷⁹ a turn to more

FinTech, RegTech and the Reconceptualization of Financial Regulation, 37 NW. J. INT'L L. & BUS. 371 (2017); Jeremy Kidd, *FinTech: Antidote to Rent-Seeking?*, 93 CHI.-KENT L. REV. 165 (2017); Van Loo, *supra* note 32; Nathan Cortez, *Regulating Disruptive Innovation*, 29 BERKELEY TECH. L.J. 175 (2014).

77. See, e.g., Cortez, *supra* note 76, at 189 (discussing some challenges inherent in developing a regulatory policy that will “allow agencies to oversee the formative years of an industry without suffocating it”).

78. See, e.g., Gail Hillebrand, *The Uniform Commercial Code Drafting Process: Will Articles 2, 2b And 9 Be Fair To Consumers?*, 75 WASH. U. L.Q. 69, 124–27 (1997) (explaining that “bona fide error” defenses run counter to consumer interests because “statutory damages serve not only a deterrence function, but they also provide a simple, low-cost substitute to expensive litigation, which requires time consuming questions about the amount and scope of actual damages”); Anne Fleming, *The Rise and Fall of Unconscionability as the “Law of the Poor,”* 102 GEO. L.J. 1383 (2014) (presenting research, including archival research, concerning how unconscionability doctrine served consumers in part by provoking lawmakers to provide bright-line statutory remedies); Jean Braucher, *The Repo Code: A Study of Adjustment to Uncertainty in Commercial Law*, 75 WASH. U. L.Q. 549 (1997) (“[E]xperience provides overwhelming support for the use of specific rules and enhanced remedies, including public enforcement, in the consumer context.”).

79. Advertisers recently sought to exploit a loophole in existing “do not call” laws to force voicemails onto phones that the advertisers would not be able to call directly. This is an excellent example of a new technologies for gaining the attention of consumers that might be within the spirit but not the letter of the existing law. See Tara Siegel Bernard, *No, Your Phone Didn't Ring. So Why Voice Mail From a Telemarketer?*, N.Y. TIMES (June 3, 2017), https://www.nytimes.com/2017/06/03/business/phone-ringless-voicemail-fcc-telemarketer.html?_r=0 [<https://perma.cc/23SK-T5A5>].

purposive, standards-based legislation may be appropriate. A potential approach would be to orient regulations explicitly toward *goals* or *purposes* in regulations,⁸⁰ so the rules can remain applicable as the particular forms of risk or abuse change—in other words, to avoid forcing legislators or regulators into a game of “whack-a-mole” that they are likely to lose.⁸¹ Current “unfair, deceptive, or abusive acts or practices” (UDAAP) laws already include some aspects of a more standards-based approach in addition to statutory damages and other more traditional provisions, but the laws could be developed much further to serve these purposive ends.⁸² While this format has weaknesses, it may be the lesser of two evils when the speed and flexibility of technology is so centrally involved in the regulated entities and practices.

Along these same lines, purposive laws could expressly require that companies put into place internal procedures and policies to address major policy concerns that their business models raise—in other words could require companies to invest in compliance. Startups developing FinTech tools might not have formed any “firm culture,” and a “nudge” toward paying at least some attention to compliance might help form such a culture and prevent obvious abuses. Required compliance policies might include mandatory consideration of discriminatory impact of technologies, or of security risks with respect to personally identifiable information. Although some companies may take an Uber-like approach of “better to ask forgiveness than permission” to regulation no matter how clearly articulated it is,⁸³ many companies will try to comply with reasonable guidelines particularly if the consumer protective purpose is readily apparent or clearly articulated.⁸⁴

80. See Brummer, *supra* note 76, at 1039–42 (discussing “[t]he Attractiveness (and Limitations) of Objectives-Based Regulation”).

81. PORTER, *supra* note 36, at 171 (lauding the “flexibility” of UDAAP statutes because otherwise you leave legislatures to play “whack-a-mole”).

82. They have been subject to complaint on grounds that they subject industry to too much risk because the broad, purposive regulations are coupled with potentially powerful damages provisions. See, e.g., Henry N. Butler & Jason S. Johnston, *Reforming State Consumer Protection Liability: An Economic Approach*, 2010 COLUM. BUS. L. REV. 1, 8–9 (2010) (“[W]e identify the two economically crucial features of the current CPA [state consumer protection act] landscape: statutory provisions that offer enormous potential rewards to even dubious lawsuits that are likely brought to secure settlements; and vague substantive standards of liability that the courts have interpreted so expansively that even the most straightforward and informative marketing practices can trigger potential CPA liability.”).

83. See Bruckner, *supra* note 2; Mike Isaac, *How Uber Deceives the Authorities Worldwide*, N.Y. TIMES (Mar. 3, 2017), https://www.nytimes.com/2017/03/03/technology/uber-greyball-program-evade-authorities.html?mcubz=1&_r=0 [<https://perma.cc/P2Y9-BBJX>] (“Uber has long flouted laws and regulations to gain an edge against entrenched transportation providers, a modus operandi that has helped propel it into more than 70 countries and to a valuation close to \$70 billion.”).

84. See Peppet, *supra* note 75, at 148–160 (arguing in the context of consumer devices being developed to connect to the “Internet of Things,” that corporations should be given substantive guid-

None of this is to say that such regulatory approaches will lead to perfectly efficient outcomes. There will remain significant risks of both over- and under-deterrence of socially unproductive activity. But these approaches may allow the law to retain some relevance at least at the minimal bounds of permissible conduct, including simply by building some awareness of existing legal protections among business actors whose prior exposure to compliance norms may be minimal.

B. Regulatory Sandboxes, Experimentalism, and Stakeholder Participation

Several iterative and experimentalist regulatory approaches have been taken in the FinTech arena. These approaches emphasize stakeholder participation in governance so that emerging concerns can be addressed quickly and creatively. One promising approach to the regulation of FinTech has been to permit innovations to be tried out in protected “sandboxes.”

So-called regulatory sandboxes are notional realms created when regulators grant businesses specific permission to engage in real world test-runs of innovative activities that might otherwise fall afoul of existing regulations, often making direct contact with small groups of consumers or portions of markets.⁸⁵ In a well-structured sandbox environment, both industry actors and regulators will be able to gather information concerning the potential costs and benefits of the tools being tested, so that an appropriate regulatory approach can be chosen by the regulators and appropriate internal controls developed by the businesses. Some regulators working in the “crowdfunding” area, for instance, have sought to permit small-scale crowdfunded corporate finance, to promote experimentation and technological development in that arena while regulators in the United States work to

ance regarding regulatory and consumer expectations at an early stage when it can most easily shape corporate behavior).

85. The scholarship on regulatory sandboxes seems to be still in its infancy. For basic accounts of these tools within the broader context of technology regulatory challenges, see, e.g., Mark Fenwick et al., *Regulation Tomorrow: What Happens When Technology Is Faster Than the Law?* 25-27 (Tilburg Univ. Law & Econ. Ctr., Discussion Paper No. 2016-024, 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2834531 [<https://perma.cc/GM45-RLAV>]; Pollman, *supra* note 76; HERBERT SMITH FREEHILLS, HONG KONG LAUNCHES REGULATORY SANDBOX IN WAKE OF DEVELOPMENTS IN AUSTRALIA, MALAYSIA, SINGAPORE, AND THE UK (2016), <http://sites.herbertsmithfreehills.vutrevx.com/103/12430/landing-pages/2016.09.30-apac-fintech-briefing.pdf>. [<https://perma.cc/7DQJ-SRMS>]. For an introduction to an actual sandbox, see *FinTech Regulatory Sandbox*, MONETARY AUTH. OF SING., <http://www.mas.gov.sg/Singapore-Financial-Centre/Smart-Financial-Centre/FinTech-Regulatory-Sandbox.aspx> [<https://perma.cc/995M-KLG7>]. For a reflection on the first year of one of the major regulatory sandbox efforts, see FIN. CONDUCT AUTH., REGULATORY SANDBOX LESSONS LEARNED REPORT (2017), <https://www.fca.org.uk/publication/research-and-data/regulatory-sandbox-lessons-learned-report.pdf> [<https://perma.cc/JTE5-GXSE>].

settle on an appropriate regulatory framework.⁸⁶ Without formally erecting a sandbox, the CFPB has begun pursuing a similar goal by using the tool of no-action letters. In September 2017, it issued a “no-action” letter to a FinTech startup called Upstart Network, Inc., promising temporary regulatory forbearance in exchange for compliance with certain guidelines including the sharing of data concerning business practices and results.⁸⁷

Sandboxes (and no-action letters of similar purpose) are an example of an “experimentalist” approach to governance.⁸⁸ Experimentalist approaches are appropriate in policy areas “in which technological and economic change has outstripped the capacities of established market and bureaucratic safeguards to protect key public interests.”⁸⁹ Experimentalist approaches emphasize exchange of information among stakeholders and regulators, iterative and dynamic regulatory processes, and the simultaneous development of rules as well as the monitoring and enforcement structures to enforce those rules.

Experimentalist approaches such as sandboxes carry drawbacks and risks, of course. Advance regulatory consent to, and supervision of, “sandboxes” is required, which adds public costs both up-front and in the form of ongoing monitoring, and which increases risk of regulatory capture.⁹⁰ In

86. The efforts have received significant attention but not been deemed an unqualified success. For background and analysis of regulatory efforts, see Lisa T. Alexander, *Cyberfinancing for Economic Justice*, 4 WM. & MARY BUS. L. REV. 309 (2013) (critiquing the discriminatory effects of some U.S. regulatory efforts); Abbey Stemler, *Equity-Based Crowdfunding: Allowing the Masses to Take a Slice of the Pie*, in INT’L PERSPECTIVES ON CROWDFUNDING 219 (Jérôme Méric et al. eds., 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2767020 [<https://perma.cc/DP8K-5XE8>]; David Groshoff, *Kickstarter My Heart: Extraordinary Popular Delusions and the Madness of Crowdfunding Constraints and Bitcoin Bubbles*, 5 WM. & MARY BUS. L. REV. 489, 494 (2014) (“[T]his Article addresses the U.S. federal government’s apparent contradictory—and perhaps even delusional—behavior when comparing the over-regulation (only partly assuaged in the 2012 JOBS Act) in nascent capital formation platforms—popularly known as crowdfunding—with a near-stunning regulatory absence over decentralized convertible virtual crypto-currencies, the most common of which is presently Bitcoin.” (footnotes omitted)). Recent regulations have permitted limited equity securities issuance through crowdfunding. See, e.g., Press Release, SEC, SEC Adopts Rules to Permit Crowdfunding (Oct. 30, 2015), <https://www.sec.gov/news/pressrelease/2015-249.html> [<https://perma.cc/WSY5-H6U7>].

87. See No-Action Letter from Christopher M. D’Angelo, Assoc. Dir. for Supervision, Enf’t & Fair Lending, Consumer Fin. Prot. Bureau, to Thomas P. Brown, Paul Hastings, LLP (Sept. 14, 2017), http://files.consumerfinance.gov/f/documents/201709_cfpb_upstart-no-action-letter.pdf [<https://perma.cc/5K4K-7S5M>]; Press Release, Consumer Fin. Prot. Bureau, CFPB Announces First No-Action Letter to Upstart Network (Sept. 14, 2017) (summarizing the scope of the relief) <https://www.consumerfinance.gov/about-us/newsroom/cfpb-announces-first-no-action-letter-upstart-network/> [<https://perma.cc/X6BK-9SPC>].

88. For an introduction to experimentalist approaches, see Charles F. Sabel & William H. Simon, *Minimalism & Experimentalism in the Administrative State*, 100 GEO. L.J. 53, 78–92 (2011).

89. Sabel & Simon, *supra* note 88, at 78.

90. See Pollman, *supra* note 76; *Regulatory Sandbox*, FIN. CONDUCT AUTH. (Nov. 5, 2015), <https://www.fca.org.uk/firms/regulatory-sandbox> [<https://perma.cc/FBV4-PEKC>] (“To conduct a regulated activity in the UK, a firm must be authorised or registered by us, unless certain exemptions apply.”).

addition, because sandboxes are inevitably very limited in scope (in part due to the intense supervisory demands they put on regulators), sandboxes can provide only a partial view of how full market implementation of a given technology would go, and what further developments might arise as full-market efforts are undertaken. Nonetheless, regulatory sandboxes provide an initial opportunity for regulators or advocates to assess and gain experience in consumer protection issues arising in emerging business areas. Sandbox procedures can be specifically crafted to require that detailed data be made available on a real-time basis to regulators or consumer advocates⁹¹ and to permit testing of potential consumer implications—testing, for instance, for unlawful discriminatory impacts.⁹²

There are also steps that could be taken to include consumer perspectives in lawmaking, for instance by encouraging ongoing participation by stakeholders in the regulatory process. The idea of stakeholder participation is not just to provide an arena for advocacy, but to gather information concerning effects that regulators and other stakeholders may not be aware of.⁹³

Consumer advocates have sought inclusion for consumer interests in the lawmaking process in several ways that seem relatively easy to implement. For example, when uniform law commissions and similar bodies consider regulation in areas that potentially impact consumers, meetings could be televised and remote participation permitted.⁹⁴ Other ideas are the appointment of “public advisers” as used in some contexts for utility rate negotiations, and the preparation of reports on the anticipated effects of

91. Some reporting is currently required from sandbox participants. See MONETARY AUTH. OF SING., FINTECH REGULATORY SANDBOX GUIDELINES 6 (2016) (“The test scenarios and expected outcomes of the sandbox experimentation should be clearly defined, and the sandbox entity should report to MAS [the regulatory authority] on the test progress based on an agreed schedule.”), <http://www.mas.gov.sg/~media/Smart%20Financial%20Centre/Sandbox/FinTech%20Regulatory%20Sandbox%20Guidelines.pdf> [https://perma.cc/CW7R-49Z4]. But this apparently minimal and after-the-fact reporting requirement falls below what is proposed here. With the proposed data and reporting requirements in place, sandboxes would thus operate as a form of what Wulf Kaal describes as “dynamic regulation.” See Fenwick et al., *supra* note 85; Wulf A. Kaal, *Dynamic Regulation for Innovation, in PERSPECTIVES IN LAW, BUSINESS AND INNOVATION* (Mark Fenwick et al. eds., 2016), <https://ssrn.com/abstract=2831040> [https://perma.cc/YLY3-YFDW]. Obviously, unless the data can be analyzed expeditiously, it isn’t worth gathering. Thus, the limits of regulatory capacity might limit the utility of this type of approach.

92. Such a requirement would be similar to the requirement, imposed pursuant to a regulatory settlement in a discrimination lawsuit, that the housing platform Airbnb permit special data and testing access to regulators. See *infra* note 102 and accompanying text.

93. Sabel & Simon, *supra* note 88, at 82 (“Experimentalism emphasizes stakeholder participation to elicit and reconcile the diverse views and interests of people distinctively affected by and knowledgeable about the matters in issue.”).

94. Gail Hillebrand, *What’s Wrong With the Uniform Law Process?*, 52 HASTINGS L.J. 631, 638–43 (2000).

legal changes on consumers similar to environmental impact assessments.⁹⁵ Industry involvement in the regulatory process also merits emphasis in this arena, because start-ups and other non-incumbent actors may not be as adept as traditional industry actors at representing their interests before regulators and lawmakers (or at developing internal compliance norms). There are of course, again, risks of capture and expense of regulatory infrastructure in this type of ongoing regulatory process.⁹⁶

Another experimentalist approach might be to build in the likelihood of technological change and anticipate the obsolescence of certain laws. For instance, consider a law permitting merchants to keep records only for a limited amount of time, or provide only limited information to consumers; such regulations may have represented a reasonable balance of costs and benefits as of the date of promulgation, but as data storage, retrieval, and communication become cheaper, the “balance” recognized by such laws will become quickly outdated.⁹⁷ The use of legislative sunsets could force merchants either to return to seek renewal of legislation or encourage them simply to develop technology that makes legislation unnecessary.

Again, an advantage of what could be called a more “experimentalist” or iterative governance model as espoused in the preceding paragraphs is that it might elicit more collaboration or cooperation from industry. Although capture—the tendency of regulators to take on the values of those regulated rather than those to be protected—remains a concern given the open experimentalist structure, the exchange of values can also travel the other direction: Industry actors unfamiliar with compliance norms or with considering public welfare may be influenced to begin including such concerns in their decision-making processes. In areas where technology is quickly emerging and legal standards may be unclear at best, the influence

95. Hillebrand, *supra* note 78, at 160–62 (promoting these proposals but acknowledging their limitations).

96. Brummer, *supra* note 76, at 1042 (“In a world of objectives-based processes . . . resources are needed for a sustained investment in the infrastructure to support additional supervisory and relationship management personnel with firms, surveillance of market participants, and ongoing education programs to build more dialogic relationships with regulated actors.”).

97. Gail Hillebrand notes:

Article 4 excuses banks from providing the name of the check payee regardless of how inexpensive it might be to provide that information in the future. California and Washington placed a “sunset”—an automatic expiration—on this broad safe harbor. The New York Law Revision Commission has also recommended a “sunset” provision to prevent freezing in this minimal amount of information as all that will ever be required regardless of technological progress.

Id. at 150–51. A similar example is the record keeping requirements of Regulation B of the Equal Credit Opportunity Act, 12 C.F.R. § 1002.12(b) (2017), which could be automatically tightened up over time by a well-drafted law. See PORTER, *supra* note 36, at 140.

of non-industry stakeholders at an early stage of business and technology development may lead to more successful integration of the public interest with FinTech business models. In other words, this may be a way of putting compliance and related public interest norms on the agenda of startups that may not otherwise attend to them.

C. Public Interest Innovation

Another step—not regulatory in nature but rather policy-oriented—could be to foster consumer innovations in service of the public interest. This does not mean some sort of ideologically committed, government-funded venture capital fund, although perhaps in some focused arenas that could be an appropriate strategy, for instance with respect to technology protecting vulnerable populations such as elders, who for economic reasons may be neglected by the products of for-profit enterprises.⁹⁸

Rather, regulators, policymakers, and advocates should simply conceive of their goals as including not just protection in the form of regulation but also development of technological tools that accomplish similar goals.⁹⁹ This could include *data technologies*, such as those that collect and aggregate complaints about merchants and credit providers, which is an important function that the CFPB has provided in the last few years,¹⁰⁰ or that

98. Consider for example technology designed to detect mental disabilities or using communication tools known to be effective with a particular vulnerable population. See PORTER, *supra* note 36, at 28.

99. It bears noting that these “public interest” innovations will be just as susceptible to FinTech’s double edge as any other technological tools and may well lead to unforeseen consequences that will require further attention or intervention. Non-profits such as the Center for Financial Services Innovation, which includes both public interest and industry leadership in its projects, might be one center for such efforts. See CTR. FOR FIN. SERVS. INNOVATION, cfsinnovation.org [https://perma.cc/3YM2-LRLM].

100. The CFPB’s complaint function has drawn significant academic and industry (and political) attention. See generally Foohey, *supra* note 40, at 184; Angela Littwin, *Why Process Complaints? Then and Now*, 87 TEMP. L. REV. 895 (2015); Katherine Porter, *The Complaint Conundrum: Thoughts on the CFPB’s Complaint Mechanism*, 7 BROOK. J. CORP. FIN. & COM. L. 57 (2012); Ian Ayres et al., *Skeletons in the Database: An Early Analysis of the CFPB’s Consumer Complaints*, 19 FORDHAM J. CORP. & FIN. L. 343 (2014); Gretchen Morgenson, *The Watchdog Protecting Consumers May Be Too Effective*, N.Y. TIMES (Feb. 10, 2017), https://www.nytimes.com/2017/02/10/business/consumer-financial-protection-bureau-gretchen-morgenson.html?_r=0 [http://perma.cc/3GDF-J288] (“One of the C.F.P.B.’s best features is its unusual complaint process, in which it acts as intermediary between consumers who believe they have been wronged and the companies they have had problems with. . . . This system is the largest database of consumer finance complaints in the country, bureau officials say. Monthly reports analyzing the grievances received by the bureau are available on its website, providing a real-time snapshot of problems consumers are experiencing in their financial lives.”); David Lazarus, *Revised GOP Bill Would Destroy the Consumer Financial Protection Bureau*, L.A. TIMES, (Apr. 18, 2017), <http://www.latimes.com/business/lazarus/la-fi-lazarus-gop-at-war-with-consumers-20170418-story.html> [http://perma.cc/XD8H-LYQ4] (“[House Financial Services Committee Chair Rep. Jeb] Hensarling’s revised bill would completely do away with the bureau’s database of consumer complaints, which contains more than 700,000 searchable listings. The first version of his bill throttled the effectiveness of

allow for more easily comparisons of prices and terms for complex markets or products.¹⁰¹ It could include *technologies that facilitate collective participation and action*. Social media is the easiest example. For instance, when a social media firestorm broke out about alleged racial discrimination on the housing platform AirBnb, it prompted regulatory attention and significant changes in AirBnb's business with the goal of hindering discrimination by hosts.¹⁰² It could include straightforward *blocking technologies*, like those that block pop-up advertisements within an Internet browser or those that restrict information gathered by websites visited.¹⁰³

It could include other *alternative, consumer-protective products*. There are numerous projects that could fit this bill.¹⁰⁴ For instance, Professor Mehrsa Baradaran has proposed dealing with the problem of the "unbanked" by providing free basic, reliable banking services in the form of postal banking¹⁰⁵; online-only possibilities may be more likely if her particular proposals for relying on the existing postal infrastructure do not catch on.

the database by requiring that all complaints be 'verified' before being posted online. The new version simply says no consumer complaints can be publicly aired.").

101. Van Loo, *supra* note 32 (discussing "digital intermediaries" as technological tools, and proposing a legal framework for them).

102. Elaine Glusac, *As Airbnb Grows, So Do Claims of Discrimination*, N.Y. TIMES (June 21, 2016), <https://www.nytimes.com/2016/06/26/travel/airbnb-discrimination-lawsuit.html> [<http://perma.cc/W8EN-MB78>]. After reaching a settlement, "Airbnb will allow the government to test for racial discrimination by hosts as part of an agreement with California that is the first of its kind and could pave the way for stricter regulations and greater public scrutiny." Sam Levin, *Airbnb Gives in to Regulator's Demand to Test for Racial Discrimination by Hosts*, GUARDIAN (Apr. 27, 2017, 8:02 PM), <https://www.theguardian.com/technology/2017/apr/27/airbnb-government-housing-test-black-discrimination> [<https://perma.cc/SZXD-MVFH>]. The settlement with the California Department of Fair Employment and Housing is available at <http://www.dfeh.ca.gov/wp-content/uploads/sites/32/2017/06/04-19-17-Airbnb-DFEH-Agreement-Signed-DFEH-1-1.pdf> [<https://perma.cc/N4XB-9UNE>].

103. See, e.g., Scott Gilbertson, *Chrome Add-On Kills Tracking Cookies*, WIRED (Jan. 25, 2011, 12:28 PM), <https://www.wired.com/2011/01/chrome-add-on-kills-tracking-cookies/> [<http://perma.cc/4ZWY-GYJR>]; Jia Tolentino, *The Adorable Ads That Are About to Invade Your Text Messages*, NEW YORKER (Nov. 26, 2016), <http://www.newyorker.com/culture/jia-tolentino/the-adorable-ads-that-are-about-to-invade-your-text-messages> [<http://perma.cc/YT2U-XVE3>] ("These days, less than one per cent of Web readers click on an average banner ad; the advertising industry talks about fighting 'banner blindness.' Internet publishers have compensated by pumping out increasingly large volumes of content in order to obtain decreasing amounts of ad-click revenue. Ad-blocking programs drain billions of dollars from the industry . . .").

104. See, for example, CFPB's Project Catalyst, whose "mission is to encourage consumer-friendly innovation in markets for consumer financial products and services." *Project Catalyst*, CONSUMER FIN. PROT. BUREAU, <https://www.consumerfinance.gov/about-us/project-catalyst/> [<https://perma.cc/SJ66-239Q>]. See also Lauren E. Willis, *Performance-Based Remedies: Ordering Firms to Eradicate Their Own Fraud*, 80 LAW & CONTEMP. PROBS. 7, 8 (2017) (proposing reasons and mechanisms for "enlisting defendant firms [in consumer-protection cases] to eradicate the effects of their own fraud," in part through technological means).

105. See generally MEHRSA BARADARAN, *HOW THE OTHER HALF BANKS* (2015).

Frequently, ideas for improvement will require some mix of public and private action. To take an example of this, Professor Fairfield has proposed ways in which consumers could be empowered by smart contracts and “consumer software agents,” which would permit consumers to program their cyber-/robotic representative to “counter-propose” terms to commercial transactions with merchants.¹⁰⁶ But as he notes, for this technology to work, the current law on “battles of the forms” would have to be altered.

These strategies would not necessarily involve high-tech research or the procurement of patents; rather they would largely involve what could be called “low-tech FinTech”: development of tools that meet some unmet social need but rely on existing, widely available technologies. The Consumer Finance Protection Bureau’s complaint collection and analysis mechanism is an example of a tool that is not particularly technologically sophisticated but has been a successful tool for bringing change to business practices even without direct regulatory interventions such as rule-making or enforcement litigation.¹⁰⁷

It bears noting that there may be reason for optimism about *pro-consumer market forces*; technology lowers the cost of coordination, and for instance, if a developer can make an inexpensive app that people actually use, or can attract some consumer traffic to her website and build advertising revenue, it might become more commercially feasible than in the past to make money from developing this type of technology.¹⁰⁸ Perhaps, banks and other mainstream market participants might be interested in providing higher-quality services in competition with “alternative” loan providers—although in light of the Wells Fargo scandal we may be skeptical of this hope.¹⁰⁹

106. Fairfield, *supra* note 66, at 45.

107. Foohey, *supra* note 40, at 181 (discussing the “Yelp-like” function of the CFPB’s consumer finance complaint aggregation service). For a detailed, skeptical view of “digital intermediaries,” see Van Loo, *supra* note 32, at 1285.

108. Ryan Rigney, *How to Make a No. 1 App with \$99 and Three Hours of Work*, WIRED (Mar. 5, 2014, 6:30 AM), <https://www.wired.com/2014/03/flappy-bird-clones/> [<http://perma.cc/JP8U-JSWZ>] (providing an account of the ease of creating a functional app with little programming skill); GOOGLE ADSENSE, https://www.google.com/adsense/start/#/?modal_active=none [<https://perma.cc/T6QR-ZER4>] (“AdSense is a free, simple way to make money online by placing ads on your website.”); 3 *Types of Sites That Have Quality AdSense Revenue*, GOOGLE ADSENSE, https://www.google.com/adsense/start/resources/quality-adsense-revenue.html# [<https://perma.cc/FUR3-VPDY>] (noting that blogs, forums, and free online tools are the types that typically “make the most money with Google AdSense”).

109. Concerning the Wells Fargo scandal, see Hamilton, *supra* note 15; Cowley, *supra* note 15; Arnold, *supra* note 15; Levine, *supra* note 15. It seems clear in this situation that Wells Fargo cared little about its reputation with consumers if it meant sacrificing revenue. Wells Fargo might not, of course, be representative, although other major institutions have had their own consumer-relations

The ideas given above are not only few in number but also stated in very general terms. Even if given more substance and then implemented they might well be inadequate to the problem. The proposals here are starting-points only, and it is hoped that more ideas for policy responses to FinTech tools and their double edges may emerge as the issue draws more study. If that does not occur, traditional regulatory interventions may have to fill the gap, despite their various inadequacies—or protections may simply decline.

IV. ACCESS TO FINTECH AS ACCESS TO JUSTICE

FinTech has potential to serve numerous important social ends, among other things facilitating access to financial services, to consumer financial education and information, and to dispute resolution tools. But financial and cognitive barriers to FinTech remain.¹¹⁰ Accordingly, to the degree that FinTech tools are necessary to or protective of those engaging in transactions, restricted access to FinTech may restrict access to markets, to financial services, and to the legal system. In other words, access to FinTech may be a part of access to justice.¹¹¹

Although their use is widespread, smart phones remain expensive even on the resale market,¹¹² and advances in the requirements of advanced software renders older hardware obsolete.¹¹³ Even after a device is procured, thoroughly integrating the use of a device into one's financial life

scandals. *See, e.g.*, Bill Chappell, *JPMorgan Chase Will Pay \$13 Billion in Record Settlement*, NPR (Nov. 19, 2013), <http://www.npr.org/sections/thetwo-way/2013/11/19/246143595/j-p-morgan-chase-will-pay-13-billion-in-record-settlement> [<https://perma.cc/UK92-J6U6>] (providing description of settlements and fines by J.P. Morgan Chase totaling to more than \$20 billion in 2013).

110. Concerning this “digital divide” in the financial arena, *see, e.g.*, WU & SANDERS, *supra* note 35, at 2–6; LISA J. SERVON, BRIDGING THE DIGITAL DIVIDE: TECHNOLOGY, COMMUNITY AND PUBLIC POLICY (2002); Neil Selwyn, *Reconsidering Political and Popular Understandings of the Digital Divide*, 6 NEW MEDIA & SOC’Y 341 (2004).

111. Mark Lloyd, *The Digital Divide and Equal Access to Justice*, 24 HASTINGS COMM. & ENT. L.J. 505, 506 (2002) (“Will the problems of equal justice be exacerbated by unequal access to technology?”). In this respect, traditional “access to justice” efforts within the legal industry may provide some models for ensuring wide access to technology. *See, e.g.*, Gabrielle Orum Hernandez, *Access to Justice Tech Leaders Have a Few Lessons for Their Corporate Counterparts*, INSIDE COUNSEL (Feb. 24, 2017), <http://www.insidecounsel.com/2017/02/24/access-to-justice-tech-leaders-have-a-few-lessons?ref=nav> [<https://perma.cc/VX5Q-P4TD>].

112. One reputable technology resale site, Gazelle, sells a baseline certified used iPhone 5s (originally released in 2013), for use on AT&T’s network, for \$99. *See Certified Used iPhone 5s – 16GB Unlocked*, GAZELLE, <https://buy.gazelle.com/buy/used/iphone-5s-16gb-unlocked> [<https://perma.cc/2EGX-2BF9>].

113. For an explanation of the ways in which smart phones become obsolete, and whether such obsolescence is intentional or incidental in the development of new products, see Catherine Rampell, *Planned Obsolescence, as Myth or Reality*, N.Y. TIMES: ECONOMIX (Oct. 31, 2013, 1:00 PM), <https://economix.blogs.nytimes.com/2013/10/31/planned-obsolescence-as-myth-or-reality/?mcubz=1> [<https://perma.cc/4EMH-NUEU>].

requires reliable and secure access to the Internet either through a cellular service plan¹¹⁴ or through an Internet connection¹¹⁵ (which even if obtained freely in a public location such as a library¹¹⁶ requires transportation and ample time to access). Thus even “free” email accounts, such as those available from Google,¹¹⁷ may serve little purpose without such access to hardware and to an Internet connection.

The cognitive demands of using FinTech may also represent an access barrier to many would-be users.¹¹⁸ Users who by reason of age or educational background are not true “digital natives” may struggle to select appropriate tools, to avoid being taken advantage of by scams, to recognize reliable sources of information, to take appropriate security steps, to monitor accounts and transactions, and to pursue and resolve claims or disputes online and through technological means.¹¹⁹

For users whose access to FinTech is limited by any of the factors discussed above, its advent may be a loss without much corresponding gain. Financial opportunities that might have been available before might now be denied to them as a result of their lack of access. In the same way that the “unbanked” or “un-credit-carded” lost out as credit providers increasingly

114. A current AT&T data-only plan for smart phones (1 gigabyte per month high speed, the rest at a much slower rate) appears to run at least \$30 per month, not including phone or text messaging service, or taxes and fees. See *Family Plans—Mobile Share Advantage*, AT&T, <https://www.att.com/shop/wireless/data-plans.html> [<https://perma.cc/V8FM-3N4N>].

115. Lee Rainie & D’Vera Cohn, *Census: Computer Ownership, Internet Connection Varies Widely Across U.S.*, PEW RESEARCH CTR. (Sept. 19, 2014), <http://www.pewresearch.org/fact-tank/2014/09/19/census-computer-ownership-internet-connection-varies-widely-across-u-s/> [<https://perma.cc/9F77-35U4>].

116. Stephan Barker, Opinion, *Libraries Help Close the Digital Divide*, WASH. POST (May 1, 2015), https://www.washingtonpost.com/opinions/libraries-help-close-the-digital-divide/2015/05/01/bd6d6e84-edef-11e4-8abc-d6aa3bad79dd_story.html?utm_term=.4ac9b057c0a9 [<https://perma.cc/HEE9-QF6W>].

117. See GMAIL, <https://www.google.com/gmail/about/> [<https://perma.cc/AY7J-JH3N>].

118. See generally Amy Gonzales, *The Contemporary US Digital Divide: From Initial Access to Technology Maintenance*, 19 INFO. COMM. & SOC’Y 234 (2016); Ellen Johanna Helsper & Alexander J.A.M. van Deursen, *Digital Skills in Europe: Research and Policy*, in DIGITAL DIVIDES: THE NEW CHALLENGES AND OPPORTUNITIES OF E-INCLUSION 125–148 (Kim Andreasson ed., 2015).

119. To take one recent and prominent example, “[h]ackers accused of working for Russian intelligence breached the Gmail account of John Podesta, the chairman of Hillary Clinton’s campaign, using an old-fashioned technique called ‘spear-phishing’: sending an e-mail under false pretenses to garner personal information, such as a password.” Evan Osnos, *How Not to Freak Out About Cyber War*, NEW YORKER (Mar. 15, 2017), <http://www.newyorker.com/news/daily-comment/how-not-to-freak-out-about-cyber> [<http://perma.cc/7VZQ-MCUF>]. “Even Mr. Podesta, a savvy Washington insider who had written a 2014 report on cyberprivacy for President Obama, did not truly understand the gravity of the hacking.” Eric Lipton et al., *The Perfect Weapon, How Russian Cyberpower Invaded the U.S.*, N.Y. TIMES (Dec. 13, 2016), <https://www.nytimes.com/2016/12/13/us/politics/russia-hack-election-dnc.html?mcubz=1> [<http://perma.cc/E4AG-3E5A>]. In fact the attack fooled not Podesta directly as an initial matter but the IT specialist tasked with reviewing his emails. “‘This is a legitimate email,’ Charles Delavan, a Clinton campaign aide, replied to another of Mr. Podesta’s aides, who had noticed the alert.” *Id.* Delavan has subsequently claimed that this was a typo and he actually was not fooled. *Id.*

relied on credit scoring for loan underwriting, those without the appropriate online “presence” may suffer if online profiles and activities become standards by which creditworthiness is judged.¹²⁰

Even government services may be restricted, as agencies rely on online interfaces rather than staffed offices.¹²¹ While of course online interfaces may be superior in all sorts of ways for the bulk of users, if they crowd out other existing alternatives, there will be distributive consequences. Identification of this problem by policymakers may be difficult because “FinTech creep” along these lines may occur gradually and thus be imperceptible (to all but those most affected).

Any consumer-protective FinTech work must include consideration of the distributive consequences of widespread reliance on FinTech. This is true because consumer protection laws are largely justified by reference to distributive goals and to the features of bounded rationality that consumers are known to suffer from but which themselves are not evenly distributed in the population.¹²²

Finally, “consumer” protective steps should not be thought of too narrowly, as affecting only individuals engaging in activities relating solely to their households. Small business, sole proprietors, and the increasingly broad category of “independent contractors,”¹²³ may all merit protections for the same reasons traditionally given for those meeting the standard definitions of “consumers,”¹²⁴ in that they may lack some of the cognitive or financial ability to participate on equal footing with other market participants and may therefore require regulatory interventions to be made on their behalf.

120. See Odinet, *supra* note 18; BARADARAN, *supra* note 105.

121. See, e.g., Janice C. Sipior & Burke T. Ward, *Bridging the Digital Divide for e-Government Inclusion: A United States Case Study*, 3 ELEC. J. E-GOV'T 137 (2005), www.ejeg.com/issue/download.html?idArticle=52 [<https://perma.cc/H98G-29W2>]; Antoine Harfouche, *The Same Wine but in New Bottles. Public E-Services Divide and Low Citizens' Satisfaction: An Example from Lebanon*, in TECHNOLOGY ENABLED TRANSFORMATION OF THE PUBLIC SECTOR: ADVANCES IN E-GOVERNMENT 267 (Vishanth Weerakkody ed., 2012).

122. See, e.g., Bar-Gill, *supra* note 31; Russell Korobkin, *Bounded Rationality, Standard Form Contracts, and Unconscionability*, 70 U. CHI. L. REV. 1203 (2003); Richard M. Hynes & Eric A. Posner, *The Law and Economics of Consumer Finance*, 4 AM. L. & ECON. REV. 168 (2002).

123. See, e.g., PORTER, *supra* note 36, at 25.

124. “Consumer protection appropriately also applies to what I call ‘quasi consumers’—sole proprietorships and small businesses without the sophistication and resources to use legal counsel regularly.” Braucher, *supra* note 78, at 558 (citing Jean Braucher, *Politics and Principle in the Drafting of UCC Consumer Protection Provisions*, 29 UCC L.J. 68, 78 (1996)).

CONCLUSION

FinTech tools are already pervasive in virtually every aspect of commerce life, both for businesses and for individuals. These tools have unquestionably lowered transactions costs to the benefit of all, and also have all sorts of other unpredictable effects. Their development is also unpredictable (depending on not just technological but also a wide range of social dynamics), and path-dependent (if they are restricted in one way, further developments along that line will be blocked). Abuses may be overlooked if blind optimism concerning a technological tool holds sway—or innovations may be stifled if distrust dominates instead. Confident, *ex ante* determination of the uses to which technologies may be put is simply not possible. The task of policy makers is to permit technological development to be as free as possible while restraining fraudulent, anti-competitive, or consumer-abusive uses of those tools.

In light of these realities, this essay has proposed several approaches that may hold some promise at regulating and enabling FinTech: the use of purposive and compliance-driven regulatory frameworks; regulatory “sandboxes” and other experimentalist and stakeholder-participatory approaches to FinTech governance; and the development of consumer-protective and consumer-enabling FinTech as an alternative to legal regulatory tools.

The essay has also drawn attention to the fact that the benefits and dangers of FinTech are not evenly distributed and that as FinTech tools are used to organize even the most basic commercial relationships, access to such technology may implicate access to markets, to financial services, and to the judicial system. As such, enabling fair and broad access to such tools may well become a policy imperative.