FINTECH AND TECHNO-SOLUTIONISM

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ABSTRACT

Silicon Valley–style technological innovation is ill-suited to address complex problems like financial inclusion and concentrated market power, yet promises abound that "fintech" can fix them. This oversimplified reduction of complex structural problems into technological puzzles has been critiqued as "techno-solutionism," and it poses real dangers for public policy. When we start with the tech industry's favored tools and then ask how to solve complex problems using those tools—rather than starting by defining the problem to be solved—it can distract policymakers from supporting real, structural solutions. Techno-solutionism can also deter policymakers from interrogating the limitations, and regulating the harms, of the proffered technological solutions.

This Article argues that not only are many fintech products themselves extremely techno-solutionist, but techno-solutionism is also impeding financial regulation's ability to protect the public from fintech's harms. It makes several contributions: First, this Article introduces into the financial regulation literature theories of how the law can perpetuate, and then be stymied by, techno-solutionism. Second, it comprehensively calls out the techno-solutionism inherent in many fintech offerings (particularly crypto), laying bare their harms and demonstrating where they are unable to solve the problems they claim to address. Such harmful nonsolutions do not warrant accommodative regulatory treatment—and yet, some policymakers have sought to give fintech products just that. This Article's third contribution is a detailed exploration of techno-solutionism's impact on U.S.

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financial regulatory policy as it pertains to fintech. This Article also uses this lens to consider how techno-solutionism might impact the regulation of AI in financial services.

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INTRODUCTION

Technology has been an integral part of finance for a long time, but the rise of "fintech" has placed Silicon Valley–style technological innovation front and center in financial services. New technologies and technology-based business models have been developed as putative solutions to the limitations of the financial system, but fintech often fails to address the problems it claims to solve. Instead, fintech tends to create new problems that remain unaddressed because of misguided assumptions that technology

can fix any problem—including the ones it causes. This "mistaken belief that we can make great progress on alleviating complex dilemmas, if not remedy them entirely, by reducing their core issues to simpler engineering problems" has been dubbed "techno-solutionism."[1] It is predicated on a reductionist worldview that sees complex problems flattened into engineering puzzles and neglects their multifaceted history and context.

This Article argues that not only are many fintech products themselves extremely techno-solutionist, but techno-solutionism is also impeding financial regulation's ability to protect the public from fintech's harms. Techno-solutionism is often evident in conversations about the financial applications of technologies like artificial intelligence ("AI"), blockchain, cloud computing, and application programming interfaces ("APIs"), which have been promoted as having the power to make the delivery of financial services more inclusive, more efficient, more competitive, and more secure. While there may be promise in some fintech business models, this Article explains why fintech's ability to solve long-standing, complex problems is often oversold. This Article also explores how techno-solutionist fintech hype can distract from more meaningful solutions to long-standing problems and obscure fintech's harms.

Fintech marketing has correctly identified many of the pain points in traditional finance, but these pain points are largely structural problems that cannot be addressed by tech-centric business models that disregard economic and political realities. In this regard, fintech solutions are emblematic of a broader techno-solutionist Silicon Valley worldview that disregards context—as Silicon Valley historian Margaret O'Mara describes it, "Why care about history when you were building the future?"[2] Unfortunately, despite the flimsiness of many fintech promises—and despite the harms that many fintech business models have inflicted on the public—techno-solutionist rhetoric about fintech's potential has been stubbornly resilient. This rhetoric sets the scene for a "wait-and-see" legal environment designed to allow these technological solutions to flourish without regulatory intervention. This Article argues that such accommodative inaction is unacceptable, given how damaging financial harms (to individuals, and to the broader economy) can be, but unfortunately lawmakers and financial regulators have been encouraged to internalize a techno-solutionist

1. Evan Selinger, *The Delusion at the Center of the A.I. Boom*, SLATE (Mar. 29, 2023, 10:00 AM), https://slate.com/technology/2023/03/chatgpt-artificial-intelligence-solutionism-hype.html [https://perma.cc/4DPC-NF2W]. For more on the history of the term techno-solutionism, see Henrik Skaug Sætra & Evan Selinger, *Technological Remedies for Social Problems: Defining and Demarcating Techno-Fixes and Techno-Solutionism*, 60 SCI. & ENG'G ETHICS 1, 7–13 (2024).

2. MARGARET O'MARA, THE CODE: SILICON VALLEY AND THE REMAKING OF AMERICA 7 (2020).

perspective by the fintech businesses and venture capitalists who will profit from such accommodative legal treatment.

Techno-solutionism is not a purely private sector creation, however. Sometimes—whether through the expressive value of their words or the more concrete impacts of their action or inaction—lawmakers and financial regulators perpetuate the very techno-solutionism that will ultimately undermine their ability to protect the public from harm. If financial regulators are convinced or forced to get out of the way so that technological innovation can go ahead and fix things, then that will create a conducive environment for the fintech industry and its funders to arbitrage regulatory requirements and perhaps even harden that arbitrage into durable legal permissions (a strategy known as "regulatory entrepreneurship").[3] To illustrate these dynamics, this Article will examine examples of legislative proposals and administrative actions that highlight where techno-solutionism seems to be driving policy around fintech, as well as examples of pushback against techno-solutionism. This Article also examines nascent regulatory approaches to AI's financial applications through this lens.

The primary aim of this Article is to identify and describe the problems that techno-solutionism creates for financial regulatory policy but that of course invites questions about what can be done to remedy the situation. Recognizing that techno-solutionism is a heuristic that probably will not be eliminated without an alternative, this Article argues that financial regulators and lawmakers should instead adopt a posture of contextually informed skepticism that draws on domain knowledge about what can go wrong in finance and is sensitive to the harms that fintech may cause. Of course, there are many structural impediments to such a shift in perspective and it will not be easily accomplished. Right now, the best that we can do may be to simply call out the phenomenon of techno-solutionism where we see it and, in doing so, rob it of some of its power.

The rest of this Article will proceed as follows: Part I will explore the concept of techno-solutionism, emphasizing its dangers for public policy as a general matter. Part I will also provide some insight into techno-solutionism's relationship with the venture capital industry and with the law. Part II will look more specifically at fintech technologies and business models and expose the techno-solutionism inherent in fintech's claims to improve financial inclusion, efficiency, competition, and security. Part III will explore the relationship between financial regulation and techno-solutionism, looking at legislative proposals and administrative actions

3. Elizabeth Pollman & Jordan M. Barry, *Regulatory Entrepreneurship*, 90 S. CAL. L. REV. 383, 385, 392–98 (2017).

relating to crypto and other fintech. Part III will also consider prospectively how techno-solutionism may impact regulation of the use of AI in financial services. Part IV suggests a posture of contextually informed skepticism as an alternative to techno-solutionism, before the final Part concludes.

I. TECHNO-SOLUTIONISM

A. WHAT IS TECHNO-SOLUTIONISM?

In his 2023 *Techno-Optimist Manifesto*, leading venture capitalist Marc Andreessen stated his belief that "there is no material problem—whether created by nature or by technology—that cannot be solved with more technology."[4] This techno-optimist sentiment has a long heritage: in his book *American Technological Sublime*, David Nye recounts that technological achievements, ranging from "the first railroads, suspension bridges, skyscrapers, city skylines" to "atomic explosions, and the rockets of the space program" have been central to the American national identity for centuries.[5] While it does not always get as much oxygen, criticism of techno-optimism is not a new phenomenon, either. Critiques of "techno-fixes" date back to the 1960s,[6] and interrogations of "innovation worship" and the "cult of innovation" can be found at least as far back as the 2000s.[7]

In his 2013 book, *To Save Everything, Click Here: The Folly of Technological Solutionism*, Evgeny Morozov popularized the related critical term "technological solutionism."[8] Morozov intends techno-solutionism as a pejorative, one that describes the tendency to "[r]ecast[] all complex social situations either as neatly defined problems with definite, computable solutions or as transparent and self-evident processes that can be easily optimized—if only the right algorithms are in place!"[9] Furthermore, Morozov considered techno-solutionist solutions to be "likely to have unexpected consequences that could eventually cause more damage than the problems they seek to address."[10]

4. Marc Andreessen, *The Techno-Optimist Manifesto*, ANDREESSEN HOROWITZ (Oct. 16, 2023), https://a16z.com/the-techno-optimist-manifesto [https://perma.cc/42BC-7JUN].

5. DAVID E. NYE, AMERICAN TECHNOLOGICAL SUBLIME 282 (1996).

6. Sætra & Selinger, *supra* note 1, at 1.

7. *See, e.g.*, Dan Saffer, *The Cult of Innovation*, BLOOMBERG (Mar. 5, 2007), https://www.bloomberg.com/news/articles/2007-03-04/the-cult-of-innovation [https://perma.cc/8HT5-LPXK].

8. EVGENY MOROZOV, TO SAVE EVERYTHING, CLICK HERE: THE FOLLY OF TECHNOLOGICAL SOLUTIONISM 5 (2013).

9. *Id.* at 5. In their critique of fintech, Jones and Maynard, Jr. use the related term "technotopian." Lindsay Sain Jones & Goldburn P. Maynard, Jr., *Unfulfilled Promises of the FinTech Revolution*, 111 CALIF. L. REV. 801, 804 (2023).

10. MOROZOV, *supra* note 8, at 5.

While solutionism itself is nothing new—people have always sought easy solutions to complex problems—Morozov was particularly interested in the solutionism associated with that nebulous thing we call "the Internet."[11] Morozov argued that the internet allows solutionism to be scaled in a way that was never before possible—as he describes it: "the latest technologies make the fixes easier, cheaper, and harder to resist."[12] In recent years, internet technologies have been coupled with increased computing power, mass data storage capabilities, and automation to make technological solutions even more powerful, cheaper, and harder to resist than in 2013. Morozov's concern—that the way we conceptualize social problems is skewed by our desire to solve them with increasingly fancy technological silver bullets—is only becoming more relevant.

Techno-solutionism is in many ways de-contextual: it fails to investigate the context of the problem at hand and starts instead with the technological tools available to fix things.[13] Much as too much reliance on mathematical models can cause us to focus on the risk that can be measured rather than the risk that matters,[14] techno-solutionism can flatten complex problems into just the elements that lend themselves to easy technological fixes, and ignore the rest.[15] Reducing problems to their technological elements can be very seductive, particularly during times of political dysfunction when solving structural problems through democratic means seems nigh on impossible. But the resulting technological solutions are typically inadequate at best, harmful at worst, because they fail to reckon with both the complexity of the issues they purport to solve and their impacts

11. *Id.* at 17.

12. *Id.* at xv.

13. Malcolm Campbell-Verduyn & Marc Lenglet, *Imaginary Failure: RegTech in Finance*, 28 NEW POL. ECON. 468, 471 (2023). This has also been described as an "isolationist approach to technology and technological change." Henrik Skaug Sætra, *Introduction: The Promise and Pitfalls of Techno-Solutionism*, *in* TECHNOLOGY AND SUSTAINABLE DEVELOPMENT: THE PROMISE AND PITFALLS OF TECHNO-SOLUTIONISM 1, 4 (Henrik Skaug Sætra ed., 2023).

14. For a discussion of the dangers of focusing financial models on the risks that can be measured rather than the risks that matter, see James Hackney, *Regulating Through Financial Engineering: The Office of Financial Research and Pull of Models*, 50 LOY. U. CHI. L.J. 695, 698–700, 703 (2019).

15. "[T]he very availability of cheap and diverse digital fixes tells us what needs fixing." MOROZOV, *supra* note 8, at xv.

on people excluded from the technological development process.[16] Sometimes, we will be better off without the proposed technological solution; at other times, the technological solution may have merit but will be effective only as part of a package of other structural reforms, and may require strong regulation.

As an ideology, techno-solutionism also tends to cast technological development as an inevitability,[17] and those who seek a more textured understanding of problems and technologies as Luddites or cranks standing in the way of progress.[18] As Section I.C will explore in more detail, a techno-solutionist orientation can be weaponized to inhibit regulation of a technology's associated harms (in particular, the complexity of the underlying technology can be weaponized to deflect oversight and restraint). More subtly, technologies that overpromise but are incomplete solutions to complex structural problems can also be distractions, alleviating political pressure for solutions to the non-technological dimensions of problems.[19] As tech ethicist Elizabeth Renieris has put it, "Our imaginations and resources are once again diverted from fixing or rehabilitating what exists"[20]: when the technological solution is pitched as so exceptional, the slow plodding changes of structural reform seem less worthy by comparison.[21] This dynamic is sometimes evident, for example, in policy debates about climate change, where the promise of new technologies has sometimes undercut support for policies to reduce emissions.[22]

16. Regarding the "fundamental mismatch between complex social issues and tech solutionism," see Greta Byrum & Ruha Benjamin, *Disrupting the Gospel of Tech Solutionism to Build Tech Justice*, STAN. SOC. INNOVATION REV. (June 16, 2022), https://ssir.org/articles/entry/disrupting_the_gospel_of_tech_solutionism_to_build_tech_justice [https://perma.cc/M7V8-WJ8S].

17. *Hearing on Oversight of A.I.: Legislating on Artificial Intelligence Before the Subcomm. on Priv., Tech., and the L. of the S. Comm. on the Judiciary*, 118th Cong. 11–13 (2023) [hereinafter *Hartzog Testimony*] (Statement of Woodrow Hartzog, Professor of Law, Boston University). Cohen (disparagingly) describes this orientation as "[i]f innovation is autonomous, then what is produced is what should be produced. Regulators can only get in the way, and when they do we are all worse off, so they should not meddle." JULIE E. COHEN, BETWEEN TRUTH AND POWER: THE LEGAL CONSTRUCTIONS OF INFORMATIONAL CAPITALISM 91 (2019).

18. COHEN, *supra* note 17, at 105, 195. See also MOROZOV, *supra* note 8, at xiii, on techno-solutionism's blunting of our ability to ask questions.

19. Techno-solutionism does not envision "fundamental change to the long-existing regulatory perspectives," and so distracts attention from other approaches to financial regulation. Campbell-Verduyn & Lenglet, *supra* note 13, at 473.

20. Elizabeth M. Renieris, *Amid the Hype Over Web3, Informed Skepticism Is Critical*, CIGI (Jan. 14, 2022), https://www.cigionline.org/articles/amid-the-hype-over-web3-informed-skepticism-is-critical [https://perma.cc/N94L-C99F].

21. "The use of technology to transform the lives of these individuals has particular allure when all other policy prescriptions have seemingly failed," Christopher K. Odinet, *Predatory Fintech and the Politics of Banking*, 106 IOWA L. REV. 1739, 1746 (2021); techno-solutionism "promises an affordable, if not cheap, silver bullet in a world with limited resources for tackling many pressing problems," Selinger, *supra* note 1.

22. Sætra, *supra* note 13, at 2.

While techno-solutionist solutions will rarely benefit society writ large, fighting techno-solutionism is an uphill battle. Not only is techno-solutionism highly profitable for Silicon Valley and not only does the law help entrench techno-solutionism (as the next Sections will explore), but our brains are also hardwired toward techno-solutionism to some extent. Humans have long sought easy solutions to complex problems,[23] and we are also susceptible to what are known as "automation biases": tendencies to defer to technologically-generated outputs as more correct and legitimate than human judgments.[24] If we perceive the output of technology to be inherently accurate and superior to anything a human could produce, we will be dissuaded from asking whether technology offers a true solution to the problem at hand.[25]

Even critics of new technologies can fall into the trap of techno-solutionism. By critiquing the hype spun by the technology's developers rather than critiquing the technology's reality and limitations, they can unintentionally validate and amplify that hype in the process.[26] Critics can also entrench techno-solutionism by demanding that these developers fix the technology's problems with more of their own technology, rather than demanding regulatory or other non-technological solutions.[27]

Take, for example, new developments in AI. There will likely be a variety of harms associated with these developments—for example, some kinds of jobs may be eliminated, and the proliferation of phishing scams, misinformation, and discrimination are all likely to increase.[28] However, many leading figures in the AI industry (including OpenAI founder Sam

23. Scholars have been engaging critically with different kinds of "solutionism" since at least the 1950s. Sætra & Selinger, *supra* note 1, at 7. "It feels good to believe that in a complicated world, tough challenges can be met easily and straightforwardly." Selinger, *supra* note 1.

24. For a discussion of automation bias, see Linda J. Skitka, Kathleen Mosier & Mark D. Burdick, *Accountability and Automation Bias*, 52 INT. J. HUM.-COMPUT. STUD. 701, 701–05 (2000).

25. "[T]echnological solutionism reinforces optimism about innovation—particularly the technocratic idea that engineering approaches problems to problem-solving are more effective than alternatives that have social and political dimensions." Selinger, *supra* note 1.

26. For a discussion of the phenomenon of "criti-hype," see Lee Vinsel, *You're Doing It Wrong: Notes on Criticism and Technology Hype*, MEDIUM (Feb. 1, 2021), https://sts-news.medium.com/youre-doing-it-wrong-notes-on-criticism-and-technology-hype-18b08b4307e5 [https://perma.cc/4XW3-YY4W].

27. For a discussion of this issue in the context of children's online safety, see María P. Angel & danah boyd, *Techno-Legal Solutionism: Regulating Children's Online Safety in the United States*, 2024 CS&LAW 86, 91, https://dl.acm.org/doi/10.1145/3614407.3643705 [https://perma.cc/G8VU-K64N] ("Policymakers not only argue that social media platforms are the site of the problem; they also frame technology as the site of the fix. As KOSA's Section 3 makes evident, their rationale appears to go as follows: if design features are the problem, requiring good design can make the harms go away.").

28. On AI discrimination, see generally Ziad Obermeyer, Brian Powers, Christine Vogeli & Sendhil Mullainathan, *Dissecting Racial Bias in an Algorithm Used to Manage the Health of Populations*, 366 SCI. 447 (2019).

Altman) have claimed potential harms on a much greater scale, co-signing a statement that reads, "Mitigating the risk of extinction from A.I. should be a global priority alongside other societal-scale risks such as pandemics and nuclear war."[29] This invocation of AI-doomerism may be self-serving, however, if it is intended to distract lawmakers and regulators from AI's near-term harms and to encourage them to put their faith in private sector technological solutions for heading off more cataclysmic potential harms.[30] It is critical, as the debate about regulating AI (and other technologies) progresses, that critics engage with technology's present realities and not just its hype—even if that hype is apocalyptic in nature.[31]

B. TECHNO-SOLUTIONISM AND VENTURE CAPITAL

Techno-solutionism does not just flatten complex problems; it often flattens the concept of technology itself. If we believe that the only solution we need lies in the components of a machine or lines of software code, we miss the "relationship[] between them and people."[32] When conceptions of technology are stripped of the human agency involved in developing and using the technology, that gives technology an undeserved veneer of neutrality. It also leads to naïve assumptions that the same technology will have the same results regardless of the time and place in which it is deployed.[33] Such purported neutrality and universality are common talking points: we regularly hear statements like, "Technology is technology. It isn't criminal. It has no motive. It's not looking to make more money. It just balances accounts,"[34] and "technology is universalist. Technology doesn't care about your ethnicity, race, religion, national origin, gender, sexuality, political views, height, weight, hair or lack thereof."[35] But the reality is that technology is never neutral; it cannot exist or function separate and apart

29. Kevin Roose, *A.I. Poses 'Risk of Extinction,' Industry Leaders Warn*, N.Y. TIMES (May 30, 2023) https://www.nytimes.com/2023/05/30/technology/ai-threat-warning.html [https://perma.cc/M6F3-LLZ9].

30. As OpenAI CEO Sam Altman said in a Senate Committee hearing, "I think if this technology goes wrong, it can go quite wrong . . . We want to work with the government to prevent that from happening." *Id.*

31. Selinger, *supra* note 1.

32. Norman Balabanian, *On the Presumed Neutrality of Technology*, IEEE TECH. & SOC'Y MAG., Winter 2006, at 15, 16.

33. MOROZOV, *supra* note 8, at 260; Campbell-Verduyn & Lenglet, *supra* note 13, at 474; *see also* Meg Leta Jones, *Does Technology Drive Law? The Dilemma of Technological Exceptionalism in Cyberlaw*, 2018 U. ILL. J.L. TECH. & POL'Y 249, 251 (2018) ("[A] great deal of variation and messiness is found when looking at the same technology in different times and places.").

34. Serj Korj (@SerjKorj), X (Mar. 11, 2023, 11:48 AM), https://twitter.com/SerjKorj/status/1634642595237208067 [https://perma.cc/RLY2-6RXZ] (quoting former U.S. Acting Comptroller of the Currency, Brian Brooks).

35. Andreessen, *supra* note 4.

from the human beings who create and deploy it.[36]

Because the development of technology is not a neutral process, it is important to consider the incentives of those who develop and sell it. When technologies are developed by for-profit businesses, those businesses have strong incentives to develop those technologies in the way that will most benefit them financially (even if doing so could inflict harm on society).[37] Financial incentives will also impact how startup founders and their tech employees describe their technologies to others, including the venture capital ("VC") firms they approach for funding.[38] VCs display significant herd behavior in choosing which "hot" technologies to fund,[39] with the result that founders trying to attract capital are likely to start by asking "how can we use [currently favored technology] to solve X?," rather than "how can we best solve X?"[40]

Compensation for the VCs themselves will depend on the dollar amounts invested in their funds, and on the profits their funds generate by deploying those dollars to fund and then sell startups.[41] In order to maximize their own compensation, VCs must therefore find (and develop a reputation for finding) startups that will grow exponentially in the five or six years before they must be sold in order to return profits to the fund's investors.[42]

36. "Scholarship in science and technology studies has shown that new technologies do not have predetermined, neutral trajectories, but rather evolve in ways that reflect the particular, situated values and priorities of both their developers and their users." COHEN, *supra* note 17, at 3; *see also* Paul Ohm & Jonathan Frankle, *Desirable Inefficiency*, 70 FLA. L. REV. 777, 800 (2018).

37. For a discussion of misconduct by tech "unicorns" like Theranos, Uber, and Juul that detrimentally impacted non-investor third parties, see Matthew Wansley, *Taming Unicorns*, 97 IND. L.J. 1203, 1215–24 (2022). Regarding the political and economic power that may be bound up in a technology, see Jones, *supra* note 33, at 257. *See also* Hartzog, *supra* note 17, at 8 ("[D]angerous, disruptive systems are being released on the world by for-profit companies with scant regard to the potential larger societal effects produced by these systems."). Some have gone further to argue that the technological solutions produced by Silicon Valley are *designed* to thwart real solutions to structural problems: "After all, how could those occupying powerful positions in the tech industry—having directly benefited from the racist, sexist, and classist status quo—ever develop tools that would undo those very sources of power?" Byrum & Benjamin, *supra* note 16.

38. "[C]omputer scientists and engineers are critical participants in propagating ideas about the nature, purposes, and social significance of their work." Silvia Semenzin, *'Blockchain for Good': Exploring the Notion of Social Good Inside the Blockchain Scene*, BIG DATA & SOC'Y, July-December 2023, at 1, 2.

39. Peter Lee, *Enhancing the Innovative Capacity of Venture Capital*, 24 YALE J.L. & TECH. 611, 616 (2022).

40. Molly White, *Blockchain Solutionism (Lecture Transcript)*, MOLLY WHITE (Sept. 21, 2022), https://blog.mollywhite.net/blockchain-solutionism-lecture [https://perma.cc/W2NG-2CGF].

41. "The [limited partners] compensate the VCs in two ways: an annual management fee of 2% of the fund's assets and 'carried interest' equal to 20% of the fund's profits." Matthew T. Wansley & Samuel N. Weinstein, *Venture Predation*, 48 J. CORP. L. 813, 832 (2023).

42. Lee, *supra* note 39, at 668–69. Although venture capital ("VC") funds typically have a term of ten or twelve years, "[v]etting and selling startups takes time, so VCs only have about five to six years between investment and exit for their startups to grow in value." Wansley & Weinstein, *supra* note 41, at

Venture capital is not a passive investment strategy: as Wansley and Weinstein put it, "[t]he most successful VCs . . . do not just try to *find* home runs—they try to *build* home runs."[43] VCs' compensation therefore tends to depend on their ability to engineer exponential growth for their ventures—through managerial advice, certainly,[44] but also by manufacturing hype for industries,[45] lobbying,[46] and engaging in predatory pricing.[47]

In short, the technological solutions that receive VC funding will not necessarily be the best solutions. Often, society would benefit from more nuanced solutions that would involve non-technological elements and take a lot longer to develop than VCs and their investors would tolerate.[48] Furthermore, the VC industry is notoriously white and male, and notoriously funds founders with whom VCs have social connections[49]: this limits the perspectives brought to bear on how technology should solve problems, often excluding the possibility of public sector solutions as well as the voices of those who actually experience the problem in question.[50] Notwithstanding persistent claims that technological innovation exists to "make the world a better place,"[51] Silicon Valley historian Margaret O'Mara has observed that "[t]he Valley's engineering-dominated culture rewarded singular, near-maniacal focus on building great products and growing markets, and as a consequence often paid little attention to the rest of the world."[52] And yet, a

832. For more on the pressures VC faces to exit investments, see Elizabeth Pollman, *Startup Governance*, 168 U. PENN. L. REV. 155, 209–16 (2019).

43. Wansley & Weinstein, *supra* note 41, at 833.

44. Elizabeth Pollman, *Adventure Capital*, 96 S. CAL. L. REV. 1341, 1354 (2024).

45. *See, e.g.*, Daren Matsuoka, Eddy Lazzarin, Robert Hackett & Stephanie Zinn, *2023 State of Crypto Report: Introducing the State of Crypto Index*, A16ZCRYPTO (Apr. 11, 2023), https://a16zcrypto.com/posts/article/state-of-crypto-report-2023 [https://perma.cc/CZ6E-C2UW]. For further discussion of Andreessen Horowitz's efforts to hype the crypto industry, see Hilary J. Allen, *Interest Rates, Venture Capital, and Financial Stability*, U. ILL. L. REV. (forthcoming 2025) (manuscript at 23–28), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4513037.

46. *See, e.g.*, Eric Lipton, Daisuke Wakabayashi & Ephrat Livni, *Big Hires, Big Money and a D.C. Blitz: A Bold Plan to Dominate Crypto*, N.Y. TIMES (Oct. 29, 2021) https://www.nytimes.com/2021/10/29/us/politics/andreessen-horowitz-lobbying-cryptocurrency.html [https://web.archive.org/web/20221226052114/https://www.nytimes.com/2021/10/29/us/politics/andreessen-horowitz-lobbying-cryptocurrency.html].

47. Wansley & Weinstein, *supra* note 41, at 817.

48. MARIANA MAZZUCATO, THE ENTREPRENEURIAL STATE: DEBUNKING PUBLIC VS. PRIVATE SECTOR MYTHS 12 (2011).

49. Lee, *supra* note 39, at 650–51.

50. Techno-solutionism can "shape our societies in ways unrooted in democratic processes and democratic will." Sætra, *supra* note 13, at 6–7. Semenzin discusses "the prevailing cultural values of Silicon Valley, portraying society as classless and devoid of socioeconomic struggles, advocating the idea that technological markets, rather than government intervention, act as the catalyst for improving people's lives." Semenzin, *supra* note 38, at 12.

51. "*Technological innovation in a market system is inherently philanthropic*, by a 50:1 ratio." Andreessen, *supra* note 4.

52. O'MARA, *supra* note 2, at 7.

techno-solutionist perspective tends to assume that the solutions emerging from Silicon Valley, even if uninformed by domain expertise, are the superior ones.[53]

This disregard for history and outside perspectives can lead to a disregard for non-technological dimensions of problems, as well as a disregard for technology's harms. In the absence of any legal requirements to minimize those harms, there is no reason to think that they will be addressed by technologists or their VC funders.[54] And yet a techno-solutionist perspective tends to assume that subsequent technological interventions will inevitably fix any problems technology creates, without the need for any government interference.[55] Indeed, techno-solutionism is often weaponized to discourage government oversight, as the next Section will explore.

C. TECHNO-SOLUTIONISM AND THE LAW

Technological advances may challenge laws but they do not in and of themselves drive changes in the law—people do.[56] The ways in which people like legislators, regulators, and judges *respond to* technological advances change how law is applied and developed, and the phenomenon of techno-solutionism can drive law if it impacts these individuals and their responses. Laws and legal institutions that are influenced by techno-solutionism can also nurture and entrench techno-solutionism in a vicious cycle. While a comprehensive discussion of the relationship between techno-solutionism and the law is beyond the scope of this Article, this Section will provide an overview of some of the ways in which the law helps perpetuate the very techno-solutionism that can ultimately co-opt and stymie the law's harm protection functions.

53. "The techno-capital machine makes natural selection work for us in the realm of ideas. The best and most productive ideas win and are combined and generate even better ideas." Andreessen, *supra* note 4.

54. Prominent AI ethicist Dr. Timnit Gebru, for example, has said, "Our recommendations basically say that before you put anything out, you have to understand what's in your data set and document it thoroughly . . . . But at the end of the day this means taking more time, spending more resources and making less money. Who's going to do that without legislation?" Emily Bobrow, *Timnit Gebru Is Calling Attention to the Pitfalls of AI*, WALL ST. J. (Feb. 24, 2023) https://www.wsj.com/articles/timnit-gebru-is-calling-attention-to-the-pitfalls-of-ai-8e658a58 [https://web.archive.org/web/20230329183721/https://www.wsj.com/articles/timnit-gebru-is-calling-attention-to-the-pitfalls-of-ai-8e658a58?cx_testId=3&cx_testVariant=cx_170&cx_artPos=7&mod=WTRN].

55. Jodi L. Short, Reuel Schiller, Susan S. Silbey, Noah Jones, Babak Hemmatian & Leeanna Bowman-Carpio, *The Dog That Didn't Bark: Looking for Techno-Libertarian Ideology in a Decade of Public Discourse About Big Tech Regulation*, 19 OHIO ST. TECH. L.J. 1, 10 (2022); Andreessen, *supra* note 4.

56. Jones, *supra* note 33, at 253.

1. How Law Perpetuates Techno-Solutionism

The starting point here is to recognize that no technology business is built in a vacuum. Any business is built in an environment constructed by laws, and the laws themselves have been impacted by currents of economic and political power.[57] Laws and legal institutions engage with technology-based business models from the beginning,[58] and those laws and legal institutions have been "enlisted to help produce the profound economic and sociotechnical transformations that we see all around us."[59] If citizens concerned about public harms cede the legal sphere to businesses with vested interests in structures that insulate them from the consequences of perpetrating harms, then the ability of the law to protect the public from harm will be further eroded.[60] This is a pervasive political economy problem, but it will be exacerbated by techno-solutionism if public-minded citizens cede their ground because those who stand to profit *also* have intimidating technological bona fides.

The influence of techno-solutionism can shape laws in ways that can maximize industry profitability at the expense of the public interest. We often hear that technologies can "solve all of our most pressing problems—if only the law, which cannot move at the speed of human thought, will stop undermining technology's potential and either get with the program or get out of the way."[61] As Jodi Short and her colleagues have observed, "no industry has been more zealous in crafting and championing a regulatory ideology than the tech sector,"[62] but this regulatory ideology is not a purely private sector creation. Lawmakers and the law have helped perpetuate it.

Many lawmakers helped perpetuate this kind of regulatory ideology in the early years of the internet; for example, Anupam Chander describes Congress, courts, and the Presidential Administration all eagerly checking one another "when they proved less than friendly to Internet innovation."[63] In many ways, this trend continues today, with lawmakers often responding to technological innovations (if they respond at all) with "half-measures" that are designed to allow the underlying technology to flourish without fully addressing the attendant harms.[64] Support for such half-measures stems in

57. COHEN, *supra* note 17, at 1.
58. "Not only does law not linearly follow technology, a great deal of legal work shapes technology and the way in which it will be understood in the future." Jones, *supra* note 33, at 278; *see also* Hilary J. Allen, *Regulatory Sandboxes*, 87 GEO. WASH. L. REV. 579, 587–88 (2019).
59. COHEN, *supra* note 17, at 2.
60. *Id.* at 9.
61. *Id.* at 1.
62. Short et al., *supra* note 55, at 4.
63. Anupam Chander, *How Law Made Silicon Valley*, 63 EMORY L.J. 639, 649 (2014).
64. *Hartzog Testimony*, *supra* note 17, at 1.

part from understandings of technological innovation as so exceptional that the law should not interfere in the same way it would in other spheres—but technological exceptionalism is ultimately in the eye of the beholder. As Meg Jones puts it, "[n]ew technologies' distinctions from legacy technologies are as political as they are technical. Novelty is constructed and as construction is performed, the method and politics of this interpretation should not be overlooked."[65] When lawmakers craft bespoke legal and regulatory regimes for technological solutions, they are communicating their view that those technological solutions are indeed exceptional—superior to other types of solutions that receive no such special legal treatment.

An important point to note here is that law can have a messaging or expressive valence: it "creates a public set of meanings and shared understandings between the state and the public. It clarifies, and draws attention to, the behavior it prohibits. Law's expressed meaning serves mutually reinforcing purposes. Law educates the public about what is socially harmful."[66] While the expressive function of the law is most often discussed in terms of what it prohibits, permissive laws may also change public attitudes about what should *not* be considered socially harmful—and change behavior accordingly.[67] The literature on expressive laws focuses on the law's ability to standardize norms,[68] and the law can perform a particularly potent standardizing function at a time when a technologically-enabled practice is new and the public is looking for guidance as to what to think about that practice.[69] As a result, laws and rules that emphasize the benefits of a technology and related business models and deprioritize their harms can have a normative consequence in addition to their direct impact, lending legitimacy and encouraging adoption. Once public adoption has been encouraged, it will be all the harder for lawmakers to take protective steps that have the practical impact of limiting public access to, or increasing the cost of, a technology-based business model.[70]

Regulators are often the lawmakers who are on the frontlines of dealing with new technologies.[71] While some regulators proactively seek to address problems or harms associated with new technologies, others propose new

65. Jones, *supra* note 33, at 256.

66. Danielle Keats Citron, *Law's Expressive Value in Combating Cyber Gender Harassment*, 108 MICH. L. REV. 373, 407 (2009).

67. "[R]egulators may help generate norms around which market practices may coalesce." Onnig H. Dombalagian, *The Expressive Synergies of the Volcker Rule*, 54 B.C. L. REV. 469, 500 (2013).

68. *Id.* at 493.

69. Citron, *supra* note 66, at 410.

70. *See* Arthur E. Wilmarth Jr., *Citigroup: A Case Study in Managerial and Regulatory Failures*, 47 IND. L. REV. 69, 73–74 (2014).

71. The judiciary is also often on the front lines, but that is beyond the scope of this Article.

regulatory structures or dispense waivers that effectively get law out of the way—or simply accommodate the new technologies through their inaction.[72] In a way, these latter approaches are institutionalized versions of Jonathan Zittrain's procrastination principle: "a propensity to 'set it and forget it' without attempting to predict and avert every imaginable problem," on the assumption that technological advances will be able to fix any problems that do ultimately arise.[73] When regulators take these accommodative approaches, though, they reinforce the perception that law cannot keep up with technological progress (sometimes referred to as the "pacing problem"),[74] and therefore should yield to technological solutions.

Once something does go wrong and Congress and the public demand a response, regulators will find that their own delays with regard to regulating new technologies have made it harder for them to take action. For example, if technological fixes are needed (for example, to "hardwire principles and values . . . such that violating them is impossible or nearly impossible"),[75] regulators will already have forfeited their opportunity to impact the design process. If technological changes are insufficient and regulatory interventions need to take the form of stronger regulation (for example, a preapproval regime),[76] implementation also becomes far more challenging once an ecosystem of vested interests has evolved that is resistant to any change. In short, accommodative regulatory approaches can entrench the mistaken notion that regulators have no option other than to wait and see—that the tech genie cannot be put back in the bottle—which can then thwart subsequent regulatory efforts.

Laws can also put a techno-solutionist thumb on the scale in allocating responsibilities among private parties.[77] In an article titled *How Law Made Silicon Valley*, Chander argues that:

72. Chander describes this dynamic in a more positive fashion, noting that Silicon Valley's success can be attributed in part to "U.S. authorities (but not those in other technologically advanced states) act[ing] with deliberation to encourage new Internet enterprises by both reducing the legal risks they faced and largely refraining from regulating the new risks they introduced." Chander, *supra* note 63, at 645.

73. Jonathan Zittrain, *Fixing the Internet*, 362 SCI. MAG. 871, 871 (2018). On the presumed ability of technology to fix its own problems, see Short et al., *supra* note 55, at 10.

74. Jones, *supra* note 33, at 256.

75. Raúl Carillo, *Seeing Through Money: Democracy, Data Governance, and the Digital Dollar*, 57 GA. L. REV. 1207, 1238 (2023).

76. In a discussion of social media regulation, danah boyd criticizes as overly simplistic the rationale that "if design features are the problem, requiring good design can make the harms go away." Angel & boyd, *supra* note 27, at 91. Regarding preapproval regimes in the financial regulatory context, see generally Saule T. Omarova, *License to Deal: Mandatory Approval of Complex Financial Products*, 90 WASH. U. L. REV. 63 (2012).

77. COHEN, *supra* note 17, at 90.

> Silicon Valley's success in the Internet era has been due to key substantive reforms to American copyright and tort law that dramatically reduced the risks faced by Silicon Valley's new breed of global traders. Specifically, legal innovations in the 1990s that reduced liability concerns for Internet intermediaries, coupled with low privacy protections, created a legal ecosystem that proved fertile for the new enterprises of what came to be known as Web 2.0.[78]

More recently, technology-based businesses have also proactively wielded trade secrecy laws to avoid public scrutiny.[79] The result has already been "a constellation of powerful de jure and de facto legal immunities that insulate their architects and operators from accountability for a wide and growing variety of harms."[80] Certainly, such a faciliatory approach has helped technological innovation flourish, but context matters (notwithstanding that techno-solutionism encourages us to ignore that context). If the attendant harms of technological innovation are seemingly minor, then an accommodative or faciliatory approach may make sense; such an approach is less justifiable when the associated harms are significant. But by insulating technology's harms from legal scrutiny, such legal structures shift public attention away from the harms, entrenching techno-solutionist perspectives that focus only on technology's positives.

Public actions have also perpetuated techno-solutionism by helping to fund Silicon Valley. While the mythology of Silicon Valley tells of innovation born of self-made visionaries, governmental bodies have in fact created significant subsidies for the VC industry, which (together with the liability shields and intellectual property protections already discussed) have allowed Silicon Valley and its techno-solutionism to flourish.[81] As Peter Lee points out, "[t]he federal government played a critical role in catalyzing the VC industry by funding technologies that attracted private investment."[82] State legislatures also created the type of business entity known as the limited partnership, allowing limited liability protection for investors while still preserving favorable capital gains taxation associated with traditional *un*limited liability partnerships—the VC industry has embraced this type of business entity, and its industry associations have aggressively lobbied over the years to lower capital gains taxation rates.[83] The VC industry has also benefitted from other types of favorable tax treatment, outright subsidies,

78. Chander, *supra* note 63.
79. Carillo, *supra* note 75, at 1230.
80. COHEN, *supra* note 17, at 10.
81. On the mythology and reality of Silicon Valley, *see* O'Mara, *supra* note 2, at 5–7.
82. Lee, *supra* note 39, at 627.
83. *Id.* at 629.

and pension fund regulation that permits such funds to invest in VC[84] (institutional investment was a particular boon to the VC industry during the prolonged period of low interest rates that ran from the Global Financial Crisis until 2022—interest rate setting can also function as a type of VC subsidy).[85]

To be clear, providing incentives and subsidies for private sector innovation will often be good public policy. If public authorities remain mindful of potential harms and deploy incentives and subsidies as part of a portfolio strategy that also considers where direct public investment might be more effective, such an approach is likely to broadly benefit society. Unfortunately, the political landscape in the United States has evolved in such a way that the deck is often stacked against pursuing public sector solutions: Mazzucato attributes this in part to "the emergence of 'new public management' theory, which grew out of 'public choice' theory in the 1980s," and "led civil servants to believe that they should take up as little space as possible, fearing that government failures may be even worse than market failures."[86] How to encourage public innovation is an important topic, but it is beyond the scope of this Article. What *is* relevant to this Article is that the flip side of timidity with regard to public innovation can manifest as credulousness with respect to private sector technological solutions and undeserved acceptance of their harms. While such credulousness is often unwarranted—particularly when the problem that needs solving would never truly be attempted by the private sector because solving it will take too long and primarily generate public goods that venture capitalists cannot profit from[87]—the law has helped build this credulousness with its subsidies and waivers for private sector technological innovation.

2. How Law Can Be Stymied by Techno-Solutionism

Law can therefore help perpetuate techno-solutionism—and then find its harm protection functions stymied by it. We regularly hear that existing law is becoming outdated, that the legislative process is too slow to keep up with the pace of technological change, and that the administrative state is becoming obsolete as regulators of specific industries (for example, banks) can no longer comprehend how those industries carry out their functions in a technologically advanced world. These are sometimes real concerns, but they are sometimes overstated and weaponized by those who would rather

84. *Id.* at 629–31.

85. Richard Waters, *Venture Capital's Silent Crash: When the Tech Boom Met Reality*, FIN. TIMES (July 31, 2022) https://www.ft.com/content/6395df7e-1bab-4ea1-a7ea-afaa71354fa0 [https://perma.cc/3SFE-TAEW]. *See generally* Allen, *supra* note 45.

86. MAZZUCATO, *supra* note 48, at xxiii.

87. *Id.* at 12.

not have the existing rules applied to them—even when those rules continue to be fit for purpose. As Julie Cohen puts it, the relationship between technology and law is often framed as "what happens when an irresistible force meets an immovable object."[88] If lawmakers accept this framing, they will internalize the position that innovation and legal protections are in tension[89] and might undermine legal protections so as to not be the immovable object which impedes technological development. The previous Section helped explain how the law can bolster the narrative that technology is an irresistible force; this Section will give an overview of cognitive capture, regulatory arbitrage, and regulatory entrepreneurship—three interrelated dynamics that techno-solutionists can weaponize to undermine existing applicable laws.

There is a classic techno-solutionist narrative that the industry often deploys when confronted with regulation: "[L]auding tech's benefits, suggesting that government regulation will kill innovation, and advocating for technology-enabled self-regulation instead."[90] This kind of narrative suggests that real and present harms should be disregarded in the face of (often unsubstantiated) excitement about potential benefits.[91] Repetition of this narrative can help generate "cognitive capture" that discourages regulators from standing in the way of technological innovation.[92] The concept of "cognitive capture" is often distinguished from the more venal forms of regulatory capture prevalent in public choice literature; in both instances, regulators come to prioritize the interests of industry over the public, but cognitive capture arises not because of bribes or other hopes of aggrandizement, but because regulators genuinely come to see the world the way industry does.[93] If that happens, then public and industry interest may appear synonymous to regulators.

Movements to portray government as ineffective have already helped convince many regulators that they have limited capacity to restrain harms, and that they should be afraid of impeding important progress by the private

88. COHEN, *supra* note 17, at 1.

89. *Id.* at 91.

90. Short et al., *supra* note 55, at 18.

91. "[E]xploring a technology's potential should go beyond its upsides, since there are both existing risks and drawbacks as well as future ones if the sector continues to grow." Tonantzin Carmona, *Debunking the Narratives About Crypto and Financial Inclusion*, BROOKINGS (Oct. 26, 2022), https://www.brookings.edu/research/debunking-the-narratives-about-cryptocurrency-and-financial-inclusion [https://perma.cc/5W2Y-9AQK].

92. "Powerful information-economy actors have worked to craft narratives that make unaccountability for certain types of information harms seem logical, inevitable, and right." COHEN, *supra* note 17, at 89.

93. Willem H. Buiter, *Central Banks and Financial Crises*, *in* FEDERAL RESERVE BANK OF KANSAS CITY SYMPOSIUM 495, 601–02 (2008).

sector.[94] When it comes to technology, regulators are aware that their actions can impact how technology develops, and they may come to feel that actions which could deprive the public of a particular technological innovation are a public disservice (even if there are harms associated with that technological innovation, and even as the general public evinces growing concerns about the power of Big Tech).[95] Technology philosopher Evan Selinger has described how "[s]olutionism is a crucial component of how Big Tech sells its visions of innovation to the public and investors,"[96] but solutionism is also a crucial component of how technological innovation is "sold" to regulators.

Cognitive capture is built in part through relationships,[97] and the subsidies and regulatory waivers discussed in the previous Section have helped VC firms to prosper sufficiently to ensure their access to regulators, enabling them to reinforce the techno-solutionist tendencies that benefit them. Cognitive capture can be particularly insidious when regulators are dependent on industry for information about how a technology works, because then regulators' understanding will have been filtered through and permeated by industry's perspectives on its creations.[98] There is also a status aspect to cognitive capture, where "[r]egulators are more likely to adopt positions advanced by people whom they perceive to be of higher status in social, economic, intellectual, or other terms."[99] With Silicon Valley's successes has come an "an almost mythic reputation for meritocracy, innovation, and long-term value creation," the "political valence" of which can sometimes be hard for regulators to resist.[100]

Such status concerns can be particularly pernicious if they result in regulators (particularly regulators of industries that were not traditionally technologized) undervaluing their own expertise—notwithstanding that their domain knowledge typically far exceeds that of the technologists developing solutions for that domain.[101] In an "Emperor's New Clothes" type scenario,

94. Jodi L. Short, *Regulatory Managerialism as Gaslighting Government*, 86 L. & CONTEMP. PROBS. 1, 5 (2023) ("Civil servants have internalized attacks on them in ways that are at best demoralizing and at worst debilitating.").

95. "The utopian narratives that big tech companies (and their lobbyists) tell about themselves do not seem to have captured the public's imagination." Short et al., *supra* note 55, at 5.

96. Selinger, *supra* note 1.

97. James Kwak, *Cultural Capital and the Financial Crisis*, *in* PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 71, 80 (Daniel Carpenter & David A. Moss eds., 2014).

98. "[I]nputs [from powerful actors] function as information subsidies, supplying policymakers who have limited resources of their own with ready access to a trove of facts, anecdotes, theories, and narrative frameworks from which to draw." COHEN, *supra* note 17, at 104.

99. Kwak, *supra* note 97, at 80.

100. Lee, *supra* note 39, at 620.

101. *See supra* notes 50–53 and accompanying text.

regulators may feel too intimidated to ask preliminary questions about whether their industry's problems can, in fact, be solved with the technological tools at hand (or indeed, by technological tools at all). Or regulators might be discouraged from asking questions about the domain-specific harms that technology could inflict. As Jones puts it, "[s]ometimes, a technology is so innovative, we are told that it cannot be proactively regulated, for how are policymakers to understand its technical complexities or know its potential."[102] If regulators buy into this techno-solutionism, they are likely to adopt a posture of accommodative inaction: viewing even technological solutions that are at best band-aids as plausible solutions that they don't want to stifle—even if those solutions pose significant social harms.

This environment of techno-solutionist cognitive capture is a highly fertile one in which to deploy strategies of regulatory arbitrage and entrepreneurship. "Regulatory arbitrage" describes industry strategies for exploiting gaps and differences in legal treatment—perhaps by performing activities that are prohibited in one jurisdiction in a more friendly jurisdiction, or by achieving the same outcome as a regulated activity but doing so in a way that was not clearly contemplated by existing regulatory regimes.[103] Techno-solutionist narratives can facilitate arbitrage in the latter context, by suggesting that the technology is so novel and so free that it simply cannot be regulated in the same way as existing modes of performing the relevant activities.[104] If regulators wish to respond to such regulatory arbitrage with new regulations, technological exceptionalism may tempt them to create rules that are very specifically tied to the technology in question—but when regulation is made too specific to a particular technology, it can be very easy for industry to evade that regulation by making small technological tweaks.

Businesses built on regulatory arbitrage may seek to "harden" that arbitrage into a durable legal permission through strategies of regulatory entrepreneurship. As used by legal scholars Elizabeth Pollman and Jordan Barry, the term "regulatory entrepreneurship" is most notably associated with the ride-hailing platform Uber, and refers to a growth strategy utilized particularly by VC-funded enterprises that involves "pursuing a line of business in which changing the law is a significant part of the business plan" even when it can "lead to negative consequences when companies' interests

102. Jones, *supra* note 33, at 250.

103. For a discussion of regulatory arbitrage, see Elizabeth Pollman, *Tech, Regulatory Arbitrage, and Limits*, 20. EUR. BUS. ORG. L. REV. 567, 571 (2019).

104. Short et al., *supra* note 55, at 8.

diverge from the public interest."[105] Pollman and Barry have identified

> three creative techniques that modern regulatory entrepreneurs have adopted in various combinations: They break the law and take advantage of legal gray areas, real or imagined, asking forgiveness instead of permission. They seek to grow 'too big to ban' before regulators can act, sometimes referred to as 'guerilla growth.' Perhaps most dramatic, they mobilize their users and stakeholders as a political force.[106]

In other words, regulatory entrepreneurs engage in regulatory arbitrage or outright non-compliance until their businesses have become so large and established that they can paint legal changes permanently authorizing their activities as an inevitable necessity—notwithstanding that the business's public harms will go unchecked as a result.

While the strategy of regulatory entrepreneurship is not exclusive to technology-based businesses,[107] it is most commonly associated with VC-funded startups.[108] Part of the explanation for this lies in the asymmetric incentive structures of VC funders, who face little legal liability for encouraging their portfolio companies to break the law but stand to capture a significant part of any upside from regulatory entrepreneurship strategies.[109] But it is also true that regulatory entrepreneurship is enabled by techno-solutionist narratives that make it particularly difficult for lawmakers and regulators to proactively rein in tech-related legal breaches. Regulatory entrepreneurship capitalizes on the pacing problem, seeking to grow "too big to ban" before the law catches up. But it is not inevitable that the law will fall hopelessly behind technological development. Ultimately, refusing to apply the law to a technology until after it is fully developed and entrenched—and then crafting accommodative laws that treat the extant incarnation of technology-based business models as inevitable—is a choice. That choice, which can stymie the harm-reduction functions of law, is often encouraged by cognitive capture, donations, and lobbying, all of which are part of the regulatory entrepreneurship playbook.[110]

105. Pollman & Barry, *supra* note 3, at 383–84.

106. *Id.* at 390.

107. For example, one could characterize Citigroup's 1998 acquisition of Traveler's Insurance—in an (ultimately successful) attempt to end Glass-Steagall's prohibitions on certain kinds of financial institution affiliations—as regulatory entrepreneurship. For background on this event, see Wilmarth Jr., *supra* note 70, at 73–74.

108. Pollman & Barry, *supra* note 3, at 424.

109. Allen, *supra* note 45, at 26.

110. As Pollman and Barry observe,

> The regulatory entrepreneur may push social policy away from the optimal outcome. The most direct way this can happen is when the regulatory entrepreneur's business is built on reversing an efficient regulatory regime. When regulatory entrepreneurs change the law through quiet lobbying, without popular support, their behavior is consistent with a story of regulatory capture or rent-seeking and can produce all of the same negative consequences.

II. FINTECH AND TECHNO-SOLUTIONISM

The previous Part spoke about techno-solutionism generally; the rest of this Article will focus more specifically on techno-solutionism as it relates to fintech. Because "finance is at the heart of the economy; is social and political; and is composed of non-stationary relationships that exhibit secular change,"[111] it should be obvious (but sadly often is not) that solutions that neglect the social and political dimensions of financial problems will be inadequate. When technology *is* presented as the whole solution to a financial problem, then the best-case scenario will be that it fails to live up to its promises. Worst-case scenarios will arise if the shiny promises of the technology distract us from interrogating the downsides of business models that use that technology or distract us from addressing the root causes of the problem that is purportedly being solved.

In order to critique fintech's techno-solutionism, we need a framework for thinking about what might need "solving" in finance in the first place. In many ways, the list of potential improvements to financial services and the financial system is infinite, but it is conceptually helpful to start by identifying what finance is supposed to do—at a high level—in order to consider how it could do it better. In the book *Principles of Financial Regulation*, John Armour and his colleagues identify the following as the key socially beneficial functions of the financial system: facilitating payments; mobilizing capital; selecting projects and monitoring their performance; and managing risk.[112] These can be collapsed further into three broad categories of functions: transaction processing, capital intermediation, and risk management.[113] If the financial system is not performing these functions inclusively, efficiently, competitively, or securely, there may be a problem that needs to be fixed.

Of course, going back to first principles, we sometimes rely on the private sector financial industry to perform functions that it is ill-equipped to perform; public sector alternatives will often be needed to ensure reasonably-priced and widely-available transaction processing, capital intermediation, and risk management services.[114] Still, these three goals

Pollman & Barry, *supra* note 3, at 443.

111. John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 YALE L.J. 882, 1003 (2015).

112. JOHN ARMOUR, DAN AWREY, PAUL DAVIES, LUCA ENRIQUES, JEFFREY N. GORDON, COLIN MAYER & JENNIFER PAYNE, PRINCIPLES OF FINANCIAL REGULATION 22–23 (2016).

113. HILARY J. ALLEN, DRIVERLESS FINANCE: FINTECH'S IMPACT ON FINANCIAL STABILITY 14 (2022).

114. As Adam Levitin notes,

> The problem is that the market, left to its own devices, will not produce the desired policy outcome of fair and widely available services absent some form of subsidization. To the extent

reflect general understandings of what the private sector financial system is supposed to achieve, and fintech technologies and business models are typically marketed as improving the delivery of these goals. Transaction processing (particularly payments processing) lends itself most obviously to technological improvement, but fintech entrepreneurs have also sought to improve capital intermediation (for example, with fintech lending and algorithmic trading business models) and risk management (for example, with AI-driven robo-advisory services).[115]

These disparate services all count as fintech. "Fintech" is not really a unified term, and it can be used to describe an assortment of different kinds of firms, technologies, and business models.[116] This Article will focus less on fintech as firms and more on the underlying fintech technologies and business models that rely on them. Morozov focused his critique of techno-solutionism on "the Internet,"[117] but when it comes to fintech, techno-solutionism also extends to other digital technologies like cloud computing, AI, blockchain, and APIs.[118] These technologies are diverse in many ways, but because they are accessed through the Internet, they can all reach significant scale.[119] They also tend to rely on Big Data and often share the capacity for automation.[120]

Notably, fintech technologies and business models are not the exclusive province of new fintech firms, but have found their way into traditional financial institutions as well.[121] There are many different drivers of the adoption of these technologies and business models, but it is likely that some of the adoption is being driven by supply-side incentives to profit from the "next new thing,"[122] and it is also possible that some adoption is being driven by FOMO ("fear of missing out" on new tech trends).[123] The more

> there is a failure here, then, it is a failure of government to intervene when the market fails to produce the desired policy outcome.

Adam J. Levitin, *The Financial Inclusion Trilemma*, 41 YALE J. ON REGUL. 109, 113 (2024). For proposals, see *id.* at 158–63; Mehrsa Baradaran, *Banking on Democracy*, 98 WASH. U. L. REV. 353, 358–59 (2020).

115. ALLEN, *supra* note 113, at 83–86 (regarding fintech lending), 86–89 (regarding algorithmic trading), 66–69 (regarding robo-advisory services).

116. *Id.* at 8.

117. MOROSOV, *supra* note 8, at 14.

118. ALLEN, *supra* note 113, at 11.

119. Capacity for scaling is not unlimited, though, *see infra* note 210 and accompanying text.

120. Yesha Yadav, *Fintech and International Financial Regulation*, 53 VAND. J. TRANSNAT'L L. 1109, 1112 (2020).

121. Chris Brummer & Yesha Yadav, *Fintech and the Innovation Trilemma*, 107 GEO. L.J. 235, 277 (2019).

122. Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. 235, 263–67 (2012).

123. Ina Bansal, *Are Banks Facing FinTech 'FOMO'?*, LINKEDIN (Mar. 18, 2016), https://www.linkedin.com/pulse/banks-facing-fin-tech-fomo-ina-bansal [https://perma.cc/429Q-JG5W].

commonly articulated narratives around fintech adoption, though, are desires to improve financial inclusion, efficiency, competition, and security.[124] This Part will evaluate these narratives with a skeptical eye and conclude that while fintech may sometimes form part of the solutions we need, technology cannot provide the entire solution.

A. FINANCIAL INCLUSION

As noted above, the financial system provides critical payments and other transaction processing services. Everyday people benefit from these services, and they also benefit from the mobilization of capital: both as savers and investors who profit from returns, and as recipients of credit. Building wealth and diversifying investments can also help people manage the financial risks they may face in their lives. People who are excluded from traditional financial services can be charged significant premiums for transacting, locked out of full participation in the economy, and denied opportunities to manage their financial risks and build wealth.[125] Improving access (which is often referred to as "financial inclusion") is therefore viewed as a critically important social goal.[126] However, improving financial inclusion requires an understanding of the reasons why people are currently excluded, and the consequences of that exclusion. These are textured and context-specific, and once we start looking at the relevant context, it soon becomes clear that technology alone cannot solve financial inclusion problems. Unfortunately, though, fintech's hype can undermine support for the kinds of public-driven solutions (including "hard service mandates, public provision, or taxpayer subsidies") that could actually improve financial inclusion.[127]

Whether adults have a bank account or not is often used as a proxy for gauging the level of financial inclusion in a particular country. Research by the World Bank indicates that account ownership often varies by age, by level of education, and by gender (among other things), suggesting that there are structural explanations for financial exclusion.[128] These structural

124. *See infra* Sections II.A, B, C, and D. Regarding inclusion specifically, see Baradaran, *supra* note 114, at 356 ("The language of fintech as financial inclusion is so widespread that one could be forgiven for assuming that increasing access to credit were the sole aim of these companies.").

125. Levitin, *supra* note 114, at 117–18, 120–21.

126. *Id.* at 119. See also Baradaran, *supra* note 114, at 364–82, 399, which advocates for pushing back against the current conceptualization of financial inclusion.

127. Levitin, *supra* note 114, at 114, 145.

128. Asli Demirgüç-Kunt, Leora Klapper, Dorothe Singer & Saniya Ansar, *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*, WORLD BANK GRP. (2022), https://www.worldbank.org/en/publication/globalfindex/Report [https://perma.cc/8NHC-T3EX].

explanations will vary significantly from place to place,[129] and so visions of universally applicable solutions to global financial inclusion will inevitably prove overly simplistic. This Article will focus more narrowly on fintech's aspirations to improve financial inclusion within the United States (although we should not ignore the rest of the world: Silicon Valley-funded firms often try out their new tech solutions on populations in developing countries who lack the regulatory protections available in the United States).[130]

There is a striking racial dimension to financial inclusion problems in America.[131] A 2021 survey found that while 4.5% of U.S. households overall were "unbanked" (in the sense that "no one in the household had a checking or savings account at a bank or credit union"),[132] "[d]ifferences in unbanked rates between Black and White households and between Hispanic and White households in 2021 were present at every income level."[133] As Adam Levitin puts it, "[n]early one in nine Black households and one in eleven Hispanic households lacks a bank account, and nearly one in four Black and Hispanic households are underbanked" (meaning they have bank accounts but still rely on alternative providers like check cashers or payday lenders).[134] Many who are unbanked or underbanked identify the primary reason as either insufficient wealth to meet minimum balance requirements or lack of trust in banks.[135]

Fintech services are regularly depicted as a solution to both this lack of trust and underserved populations' need for reasonably priced financial services: claims to "democratize finance" and "[b]ank the [u]nbanked" abound.[136] Ultimately, though, technology is not a response to the lack of

129. Jones, *supra* note 33, at 251.

130. For more background, see Olivier Jutel, *Blockchain Financialization, Neo-Colonialism, and Binance*, 6 FRONTIERS IN BLOCKCHAIN 2023, at 03 (July 27, 2023); Eileen Guo & Adi Renaldi, *Deception, Exploited Workers, and Cash Handouts: How Worldcoin Recruited Its First Half a Million Test Users*, MIT TECH. REV. (Apr. 6, 2022), https://www.technologyreview.com/2022/04/06/1048981/worldcoin-cryptocurrency-biometrics-web3 [https://perma.cc/9JCW-NMQN]; PETER HOWSON, *The Crypto Colonists*, *in* LET THEM EAT CRYPTO: THE BLOCKCHAIN SCAM THAT'S RUINING THE WORLD (2023).

131. For examples of scholarly work articulating the persistent structural discrimination that has driven disparate financial situations along racial lines, see Jones & Maynard, Jr., *supra* note 9; Darrick Hamilton & William Darity, Jr., *The Political Economy of Education, Financial Literacy, and the Racial Wealth Gap*, 99 FED. RSRV. BANK ST. LOUIS REV. 59, 60 (2017). *See generally* Mehrsa Baradaran, *Jim Crow Credit*, 9 U.C. IRVINE L. REV. 887 (2019).

132. FEDERAL DEPOSIT INSURANCE CORPORATION, 2021 FDIC NATIONAL SURVEY OF UNBANKED AND UNDERBANKED HOUSEHOLDS EXECUTIVE SUMMARY 1 (2022) [hereinafter FDIC SURVEY], https://www.fdic.gov/analysis/household-survey/2021execsum.pdf [https://perma.cc/57Y3-NMTB].

133. *Id.* at 2.

134. Levitin, *supra* note 114, at 111.

135. FDIC SURVEY, *supra* note 132, at 2.

136. *See, e.g.*, CIRCLE, *Serving the Unbanked with USDC*, https://www.circle.com/en/stories/serving-the-unbanked-with-usdc [https://perma.cc/BTR2-XTC5] ("How USDC Can Help Bank the Unbanked"); ROBINHOOD, *About Us*, https://robinhood.com/us/en/about-us [https://perma.cc/

wealth and trust that creates racial disparities in financial inclusion in the United States. Black Americans in particular tend to distrust traditional financial institutions, often with good historical reason.[137] Instead of doing the hard work of repairing that relationship, a techno-solutionist approach to financial inclusion allows new entrants to exploit that lack of distrust, often with even more exploitative results.[138]

While traditional financial institutions have a very mixed track record with regard to underserved populations,[139] they are at least subject to regulations designed to protect consumers and investors. Fintech business models, however, are often designed to skirt these regulations, often leaving their users (once again) with second-best, more exploitative financial services. Fintech proponents may hope that it will help "close the racial wealth gap," but the reality is often a markedly less rosy form of predatory inclusion (similar to prior innovations like payday loans and subprime mortgages).[140]

Christopher K. Odinet, for example, argues that while some fintech credit providers claim that their online interfaces and machine learning-based credit scoring procedures differentiate them from predatory payday lending models, they often charge rates of interest that are similar to those charged by payday lenders.[141] In a similar vein, Nakita Cuttino has examined the earned-wage access fintech business model,[142] which has been described by one proponent as a "revolutionary employee benefit program that offers employees almost instant access to their pay."[143] She finds that while this business model does offer some improvements over the prevailing payday lending model, it still has "varying effects that sometimes perpetuate, and in

6NKK-9NQ9] ("We're on a mission to democratize finance for all"). "A commonly held belief in the world of finance is that what stands between the current landscape of financial exclusion to full financial inclusion is the right technology or innovation." Baradaran, *supra* note 114, at 356.

137. Jones & Maynard, Jr., *supra* note 9, at 822–24.

138. *See supra* notes 156–59 and accompanying text.

139. For a discussion of this history, see MEHRSA BARADARAN, HOW THE OTHER HALF BANKS: EXCLUSION, EXPLOITATION, AND THE THREAT TO DEMOCRACY 138–62 (2015).

140. Predatory inclusion "refers to marginalized communities gaining access to goods, services, or opportunities that they were historically excluded from—but this access comes with conditions that undermine its long-term benefits and may reproduce insecurity for these same communities." Carmona, *supra* note 91.

141. Odinet, *supra* note 21, at 1761–63.

142. These are "internet- and mobile-based platforms that have emerged in recent years to serve as safer alternatives to much-maligned payday loans . . . by facilitating transfers of earned-but-unpaid wages to workers in advance of their standard periodic paydays." Nakita Q. Cuttino, *The Rise of "FringeTech": Regulatory Risks in Earned-Wage Access*, 115 NW. U. L. REV. 1505, 1507–08 (2021).

143. *Is Earned Wage Access the Way of the Future? 5 Tips for Employers Seeking to Attract and Retain Talent Through On-Demand Pay*, FISHER PHILLIPS (Mar. 30, 2022), https://www.fisherphillips.com/news-insights/earned-wage-access-tips-for-employers-seeking-to-attract-retain-talent.html [https://perma.cc/2T25-JA4Y].

some instances exacerbate, the very risks providers claim to eliminate when displacing short-term creditors like payday lenders."[144]

Notwithstanding their deficiencies, there is consumer demand for these kinds of products, and so the problems associated with fintech lending and earned wage access products should be addressed by robust consumer protection regulation. Fintech lending models have, however, been constructed to avoid certain consumer protections like usury limits and state licensing requirements by engaging in "rent-a-bank" partnerships with banks;[145] earned-wage access programs also currently escape most meaningful consumer protection regulation.[146] Odinet notes that the mystique of technology has been strategically weaponized to avoid regulation, observing that "the politics of tech . . . is giving political cover to predatory fintech lenders and clouding what should otherwise be a clear headed and aggressive approach by financial regulators in stamping out these harmful practices."[147]

These fintech lending business models have been billed as "unlock[ing] more credit opportunities" for those who otherwise have bad credit scores or thin credit files,[148] but unfortunately, the kinds of machine learning models used to process non-traditional data sources have often been shown to perpetuate discrimination and bias. Machine learning algorithms are guided by patterns and correlations evident in the data they have been exposed to,[149] and so credit scoring algorithms that learn from biased data will perpetuate those biases in their credit-scoring decisions.[150] This biased algorithmic decision-making can be particularly insidious, though, because it is often hidden: "[m]arkers for protected class membership can be inferred with relative ease and near-impunity from other, seemingly neutral data."[151] Once again, it is very techno-solutionist to assume that technology alone could winnow out centuries of entrenched biases, but automation biases and narratives of technological neutrality can lend undeserved credibility to such assumptions, impacting access to credit.

The bigger picture problem, of course, is the *demand* for credit: many Americans are so strapped for cash that they cannot survive from month-to-

144. Cuttino, *supra* note 142, at 1516–17.
145. Odinet, *supra* note 21, at 1776, 1779.
146. Cuttino, *supra* note 142, at 1568–69.
147. Odinet, *supra* note 21, at 1745.
148. Jones & Maynard, Jr., *supra* note 9, at 837–38; *see also* Carillo, *supra* note 75, at 1211, 1213.
149. Alicia Solow-Niederman, *Information Privacy and the Inference Economy*, 117 NW. U. L. REV. 1, 5–6 (2022).
150. Jones & Maynard, Jr., *supra* note 9, at 837–40; Baradaran, *supra* note 114, at 371.
151. COHEN, *supra* note 17, at 179.

month without interim payments or loans.[152] The predatory fintech loans and earned wage access products discussed here can obfuscate and draw attention away from the need to address this deeper, underlying structural problem.[153] In their work on fintech, Lindsay Sain Jones and Goldburn Maynard explore one part of this underlying problem—the racial wealth gap. They consider a variety of fintech business models (including "e-trading, robo-advising, alternative credit platforms, neobanks, and decentralized payments")[154] and demonstrate that many of fintech's claims about building wealth for traditionally excluded groups do not bear out, and in fact often disguise predatory practices that disproportionately harm vulnerable members of society.[155]

Consumers may struggle to detect predatory practices because of fintech's technological complexity: financial literacy is already extremely challenging for most people,[156] and fintech often overlays a requirement to be technologically literate too, which puts an even more unrealistic burden on users.[157] Baradaran has noted that the rhetoric of financial literacy "pathologize[s] the poor—and assume[s] that their poverty was created by individual choices—or treat[s] their state of poverty or financial exclusion as a trait inherent in the excluded borrower."[158] As Darrick Hamilton has observed, if the poor internalize this critique, it fuels their desire not to look foolish for missing out on financial opportunities presented to them, which can make them more vulnerable to predatory practices.[159] If debunking a too-

152. "[F]or many households, borrowing is the only way to survive." Odinet, *supra* note 21, at 1800; *see also* Baradaran, *supra* note 114, at 398–99. A 2023 survey by the Board of Governors of the Federal Reserve found that

> [w]hen faced with a hypothetical expense of $400, 63 percent of all adults in 2023 said they would have covered it exclusively using cash, savings, or a credit card paid off at the next statement (referred to, altogether, as "cash or its equivalent"). The remainder said they would have paid by borrowing or selling something or said they would not have been able to cover the expense.

BD. GOVERNORS FED. RSRV. SYS., ECONOMIC WELL-BEING OF U.S. HOUSEHOLDS IN 2023, at 31–32 (2024), https://www.federalreserve.gov/publications/files/2023-report-economic-well-being-us-households-202405.pdf [https://perma.cc/38AW-BTS8].

153. "[T]he increased ability to borrow money, cast as a mechanism of positive social change, may function in some ways as a Trojan horse, wheeling in the unique dangers of indebtedness to the front gates of marginalized communities and threatening their already tenuous socioeconomic existence." Abbye Atkinson, *Borrowing Equality*, 120 COLUM. L. REV. 1403, 1405–06 (2020).

154. Jones & Maynard, Jr., *supra* note 9, at 808.

155. *Id.*

156. *See* Lauren E. Willis, *Against Financial-Literacy Education*, 94 IOWA L. REV. 197, 201–02, 205 (2008).

157. "Computer scientists often adopt a worldview where anyone can become a hacker and access the power of computer networks through coding knowledge gained from a DIY perspective. This perspective often downplays social inequalities related to Internet access and technological knowledge." Semenzin, *supra* note 38, at 7.

158. Baradaran, *supra* note 114, at 381.

159. Darrick Hamilton describes the problem as follows:

good-to-be-true financial opportunity requires not just financial knowledge, but also understanding how a new technology works, it is not surprising that vulnerable people are sucked in.

This dynamic is particularly evident in the context of the crypto industry. Often described by its critics as "a solution in search of a problem,"[160] crypto represents in many ways the apotheosis of fintech and techno-solutionism. Promises have been made that crypto's underlying blockchain technology can democratize financial services by making them cheaper, more efficient, and more secure—but none of these promises withstand scrutiny. Ultimately, a blockchain is simply a type of database to which entries can only be added, not removed, and which is controlled by multiple nodes instead of relying on centralized intermediaries.[161] While this technology might be interesting from an academic perspective, according to more than 1,500 independent computer scientists, software engineers, and other technologists who signed a letter to U.S. Congressional leaders in 2022, "[b]y its very design, blockchain technology is poorly suited for just about every purpose currently touted as a present or potential source of public benefit."[162]

It is not the blockchain itself that is offered as an investment opportunity, but the crypto tokens (like Bitcoin) whose ownership is recorded on blockchains. The crypto industry regularly invokes claims of financial inclusion, focusing in particular on reported high uptake of crypto tokens in Black communities in the United States.[163] But most of these crypto tokens are not backed by any real-world productive capacity, and are Ponzi-like in their need for significant amounts of new demand and liquidity to

> The characterization of Black people and their position in the United States is often one of 'they are fools,' 'they make bad choices,' . . . The narrative in America is that you should seize opportunity, make something of yourself, so if you have limited pathways towards traditional ways of wealth building and access to finance, you are particularly vulnerable to not wanting to be left behind.

Americans for Financial Reform, *A Conversation with Ben McKenzie hosted by Americans for Financial Reform*, YOUTUBE (Sept. 25, 2023), https://www.youtube.com/watch?v=U8d_jws-KfA (starting at 16:50) [https://perma.cc/BXV4-MUP3]. *See generally* Hamilton & Darity Jr., *supra* note 131.

160. *See, e.g.*, ARVIND NARAYANAN & SAYASH KAPOOR, AI SNAKE OIL: WHAT ARTIFICIAL INTELLIGENCE CAN DO, WHAT IT CAN'T, AND HOW TO TELL THE DIFFERENCE 235 (2024) ("it has gradually become clear that crypto is a solution looking for a problem"); Adam Lashinsky, *Crypto Is a Solution in Search of a Problem*, WASH. POST (May 20, 2022), https://www.washingtonpost.com/opinions/2022/05/20/crypto-bitcoin-dogecoin-ethereum-crashing [https://perma.cc/88J4-DJ7U]; White, *supra* note 40.

161. Primavera De Filippi & Aaron Wright, BLOCKCHAIN AND THE LAW: THE RULE OF CODE 2 (2018).

162. Letter in Support of Responsible Fintech Policy (June 1, 2022), https://concerned.tech [https://perma.cc/467C-ULJK].

163. *See, e.g.*, *Coinbase Presents: Black Americans & Crypto*, COINBASE, https://www.coinbase.com/learn/community/black-americans-and-crypto [https://perma.cc/9959-NNC9].

support their value.[164] Data analysis by economists at the Bank for International Settlements in 2023 concluded that "a majority of investors have probably lost money on their bitcoin investment," and that large holders (commonly referred to as "whales") likely profited at their expense.[165] Some data does indicate that members of Black communities are disproportionately likely to own crypto,[166] but this will be predatory inclusion if "whales" are using Black communities to provide the liquidity they need to cash out. There is some indication that this is, in fact, the case. Results from a Pew survey conducted in 2023 suggested that Black, Hispanic, and lower-income investors were disproportionately likely to have entered the crypto markets in March 2022 or later, after the market peak at the end of 2021.[167]

When assets have no fundamentals and trade entirely on sentiment, traditional checks on fraud (like independent valuations and audits) break down, leaving crypto investors particularly vulnerable to fraudsters.[168] Crypto is also highly attractive to scammers and hackers because transactions on a blockchain cannot be undone (at least, not without taking

164. Allen, *supra* note 45, at 21–23. A Ponzi *scheme* exists where "early investors are paid returns from funds provided by new investors, as opposed to being paid from actual returns of a purported investment." Catherine Carey & John K. Webb, *Ponzi Schemes and the Roles of Trust Creation and Maintenance*, 24 J. FIN. CRIME 589, 589 (2017). Not all Ponzi processes are coordinated manipulative schemes, however: Shiller notes the existence of Ponzi processes where asset prices rise as a result of purchases made by those who have heard positive stories from those who will benefit from further price increases. ROBERT J. SHILLER, IRRATIONAL EXUBERANCE 93–94 (Rev. & Expanded 3d ed. 2015).

165. GIULIO CORNELLI, SEBASTIAN DOERR, JON FROST & LEONARDO GAMBACORTA, BANK FOR INT'L SETTLEMENTS BULLETIN No. 69: CRYPTO SHOCKS AND RETAIL LOSSES 3–4 (Hyun Song Shin ed., 2023).

166. ARIEL INVS. & CHARLES SCHWAB, 2022 BLACK INVESTOR SURVEY: REPORT OF FINDINGS 7 (2022), https://content.schwab.com/web/retail/public/about-schwab/Ariel-Schwab_Black_Investor_Survey_2022_findings.pdf [https://perma.cc/E72H-35HT].

167. Describing the survey's results, Pew researchers found that

> [i]n 2023, Black users (27%) were more likely than White users (12%) to say they first invested in, traded or used cryptocurrency within the previous year. Roughly two-in-ten Hispanic users (21%) said the same. (There were not enough Asian American cryptocurrency users to look at their responses separately.) . . . About three-in-ten users from lower-income households reported first investing in cryptocurrency within the past year, compared with about one-in-ten adults from middle- or upper-income households.

Michelle Faverio, Wyatt Dawson & Olivia Sidoti, *Majority of Americans Aren't Confident in the Safety and Reliability of Cryptocurrency*, PEW RSCH. CTR. (Apr. 10, 2023), https://www.pewresearch.org/short-reads/2023/04/10/majority-of-americans-arent-confident-in-the-safety-and-reliability-of-cryptocurrency [https://perma.cc/SQM3-5TWR].

168. Regarding the ease with which crypto valuations can be manipulated, see Matt Levine, *FTX's Balance Sheet Was Bad*, BLOOMBERG (Nov. 14, 2022, 10:09 AM), https://www.bloomberg.com/opinion/articles/2022-11-14/ftx-s-balance-sheet-was-bad [https://perma.cc/658Y-3TDB]. Financial disclosures from crypto issuers can reflect these manipulated values and often take the form of "attestations" or "proof of reserves" that have not undergone the scrutiny of an audit. Jonathan Weil, *Binance Is Trying to Calm Investors, but Its Finances Remain a Mystery*, WALL ST. J. (Dec. 10, 2022), https://www.wsj.com/articles/binance-is-trying-to-calm-investors-but-its-finances-remain-a-mystery-11670679351 [https://perma.cc/H544-MH2T].

drastic steps).[169] Unsurprisingly, the crypto markets are rife with fraud, hackings, and scams—and crypto users are expected to be able to protect themselves from these.[170] As discussed previously, however, self-protection in these circumstances requires unrealistically high levels of both technological and financial literacy.[171] Even in the absence of frauds, scams, and hackings, blockchain technology struggles to scale,[172] with the result that transactions processed on a blockchain can be subject to unexpected delays and high fluctuating fees at peak times (in addition to the fees users incur converting their crypto into and out of fiat currency on crypto exchanges).[173] It is also important to note that these crypto exchanges typically require users to have a bank account in order to open an exchange account, meaning that unbanked customer will not be able to use an exchange to acquire crypto or to cash out of it in order to transact in the real economy.[174]

This practical need for a bank account to access crypto also undermines industry claims that a type of crypto asset known as a "stablecoin" will bank the unbanked.[175] Unlike most other crypto assets, stablecoins typically have some reserve of assets backing them and are therefore not as volatile as other kinds of crypto assets. Still, stablecoins remain vulnerable to runs where first movers are made whole while the remaining holders suffer losses.[176] Indeed, some stablecoins have collapsed in recent years, causing their users to lose everything.[177] As for those that have not collapsed, the World Economic

169. "Undoing a transaction requires either a change in the ledger's underlying software, or what is known as a "hard fork," where the ledger is split in two with one version of the ledger not recognizing the problematic transaction." ALLEN, *supra* note 113, at 100.

170. For a running tally of crypto hacks, scams, and frauds impacting consumers, see Molly White's website, WEB3 IS GOING JUST GREAT, https://web3isgoinggreat.com [https://perma.cc/S62J-98G2].

171. Jutel, *supra* note 130, at 07; *see also supra* notes 156–59 and accompanying text.

172. *See infra* note 210 and accompanying text.

173. For a discussion of fees, see Levitin, *supra* note 114, at 144.

174. Baradaran, *supra* note 114, at 384–85. Bitcoin ATMs, which tend to cluster in the same locations as payday lenders and check cashers, do provide a bank-free alternative for obtaining Bitcoin, but these usually charge extremely high fees, and while they "will accept cash to buy crypto . . . most aren't equipped to sell crypto and dispense cash." Dan Mika, *High-Fee Crypto ATMs Center Around Low-Income Parts of Kansas City*, KAN. CITY BEACON (Aug. 15, 2023), https://thebeaconnews.org/stories/2023/08/15/high-fee-crypto-atms-center-around-low-income-parts-of-kansas-city/#:~:text=Engagement%20Data%20Economics-,High%2Dfee%20crypto%20ATMs%20center%20around%20low%2Dincome%20parts%20of,targeting%20residents%20with%20extraordinary%20fees [https://perma.cc/PH9Z-PKDA].

175. For an example of such industry claims, see CIRCLE, *supra* note 136.

176. Gary B. Gorton & Jeffery Y. Zhang, *Taming Wildcat Stablecoins*, 90 U. CHI. L. REV. 909, 936–39 (2023).

177. Leo Schwartz & Abubakar Idris, *From Argentina to Nigeria, People Saw Terra as More Stable Than Local Currency. They Lost Everything*, REST OF WORLD (May 26, 2022), https://restofworld.org/2022/argentina-nigeria-terra-crash [https://perma.cc/WXH9-Z53S]. This article references Terra, a particularly risky form of stablecoin known as an algorithmic stablecoin, but as the article observes, "Lots of people lost money they couldn't lose . . . They don't care if it's an algorithmic stablecoin, a collateralized stablecoin, decentralized, or what—their attitude will be, crypto f***ed me, I lost all my

Forum has concluded that stablecoins do not provide any novel payments functionality, noting that "stablecoins as currently deployed would not provide compelling new benefits for financial inclusion beyond those offered by pre-existing options."[178] Ultimately, stablecoins have little to recommend them as a financial inclusion solution.

Despite these realities, techno-solutionist narratives about crypto's ability to improve financial inclusion are stubbornly resilient. Brookings's Tonantzin Carmona has broken down crypto's financial inclusion narrative into two halves: (1) easy access to transactional services for those previously locked out of the financial system, and (2) a wealth building avenue with low barriers to entry.[179] She thoroughly debunks both halves, demonstrating that cryptocurrencies are poorly suited to perform transactional services, and that the volatility of most crypto assets' value makes them unsuited to wealth building.[180] As already mentioned, most crypto exchanges require users to have a bank account to acquire any crypto asset in the first place, so crypto solves little for the unbanked.[181] Crypto loans typically require overcollateralization before they are extended, so those without wealth (in the form of collateral) will not be able to receive loans.[182] Rejecting techno-solutionism, Carmona admonishes policymakers to "first clarify the problems they are trying to solve, and more importantly, why they are trying to solve them."[183]

Unbanked and underbanked individuals in the U.S. would benefit enormously from access to simple, quick, low-cost transactional services.[184] We already have the technology needed to provide these, though, and it seems to be more a lack of political will that prevents such transactional

money. I won't come back." *Id.* Also, Bank for International Settlements ("BIS") research on collateralized stablecoins has found that none of them are as stable as they claim, with depegging from the USD$1 price being a reasonably regular occurrence. Anneke Kosse, Marc Glowka, Ilaria Mattei & Tara Rice, *Will the Real Stablecoin Please Stand Up?* 11 (Bank for Int'l Settlements Papers, No. 141, 2023).

178. WORLD ECON. F., WHAT IS THE VALUE PROPOSITION OF STABLECOINS FOR FINANCIAL INCLUSION 8 (2021), https://www3.weforum.org/docs/WEF_Value_Proposition_of_Stablecoins_for_Financial_Inclusion_2021.pdf [https://perma.cc/K8AG-6XMC].

179. Carmona, *supra* note 91.

180. *Id.*

181. *Id.* This is also true of many other non-crypto fintech products: "[E]lectronic payment systems like PayPal and Venmo allow funds to be transferred among users without requiring a bank account, but the initial loading of funds must either be from a bank account or a credit card or a payment from another user." Levitin, *supra* note 114, at 117.

182. Sirio Aramonte, Wenqian Huang & Andreas Schrimpf, *DeFi Risks and the Decentralisation Illusion*, BIS Q. REV., Dec. 2021, at 21, 27.

183. Carmona, *supra* note 91.

184. "[C]ommunities do not need better blockchain design or mobile apps—they need simple access to a checking account and a debit card." Baradaran, *supra* note 114, at 410.

services from being provided more widely.[185] Reliance on predatorily priced credit is a thornier problem[186]—here, solving the problem of financial inclusion will ultimately require that people have some wealth to begin with, and building that wealth is a complex political and social problem that will require public sector involvement.[187] Mehrsa Baradaran, for example, has argued for compensatory policies designed to build home-ownership in geographical areas that have typically been marginalized.[188] Sain Jones and Maynard have called for infrastructure improvements, tax policy changes, and government wealth transfers—in addition to improvements to financial services and technology oversight.[189] Darrick Hamilton and William Darity, Jr., have proposed "baby bonds," which would allow children in need to build wealth by the time they become adults.[190] While technology might play a minor role in creating the infrastructure for delivering this kind of wealth-building, it will not come close to providing the whole solution. The undeservedly shiny promise of fintech can be weaponized, though, to argue that such meaningful structural solutions are unnecessary.

B. EFFICIENCY

Another big claim of fintech is that it can make financial services more efficient.[191] It is particularly common to hear that fintech is more efficient because it eliminates the need for human customer service or brick-and-mortar bank branches.[192] In many ways, though, this rhetoric is overblown: most fintech payment services and lenders, for example, ultimately depend on traditional bank infrastructure and therefore do not fully eliminate their

185. Aaron Klein identifies a simple amendment to existing law that would significantly help the underbanked:

> The single most impactful thing the federal government could do is to give people access to their own money immediately. This can be done by simply amending the Expedited Funds Availability Act to require immediate access for the first several thousand dollars of a deposit, instead of permitting the lengthy, costly delays that harm people living paycheck to paycheck.

Aaron Klein, *Opening Statement of Aaron Klein at Roundtable on America's Unbanked and Underbanked*, BROOKINGS (Dec. 15, 2021), https://www.brookings.edu/opinions/opening-statement-of-aaron-klein-at-roundtable-on-americas-unbanked-and-underbanked [https://perma.cc/4AS7-WHT9]; *see also* Edmund Schuster, *Cloud Crypto Land*, 84 MOD. L. REV. 974, 981 (2020).

186. For a discussion of why access to credit is a very different problem from access to transaction processing services, see Levitin, *supra* note 114, at 116.

187. "Ultimately, household solvency problems can only be addressed by secular changes in the economy that will result in greater income and lower expenses for households and greater savings rates that can provide cushion against unexpected expenses." *Id.* at 162–63.

188. Baradaran, *supra* note 131, at 946–48.

189. Jones & Maynard, Jr., *supra* note 9, at 848–61.

190. Darrick Hamilton & William Darity, Jr., *Can 'Baby Bonds' Eliminate the Racial Wealth Gap in Putative Post-Racial America?*, 37 REV. BLACK POL. ECON. 207, 215 (2010).

191. Saule T. Omarova, *Technology v. Technocracy: Fintech as a Regulatory Challenge*, 6 J. FIN. REGUL. 75, 89 (2020).

192. Levitin, *supra* note 114, at 142.

costs. Still, that promise of increased efficiency remains the front of many financial inclusion claims: the hope is that transaction processing services that are quicker and cheaper can serve more people (including traditionally excluded populations) more effectively.[193] We have already discussed how these financial inclusion claims are often hollow; many fintech services have, in fact, become profitable by appealing to higher income customers. Still, promises of increased efficiency are also key to how fintech is marketed to these higher income consumers.[194] But solving for "efficiency" in the abstract is an impossible task. It is critical that we define the precise problem to be solved, instead of simply assuming that some version of increased efficiency will get us where we need to go.

Techno-solutionism is tied to commonly accepted notions that "more efficient" is always an improvement: efficiency has been our mantra for so long, in so many business contexts, that it has come to be perceived as an obvious and neutral goal. But there are many different ways of conceptualizing efficiency that are relevant to fintech policy[195]: There is the colloquial sense of efficiency as avoiding wastefulness.[196] We must also contend with economic definitions of allocative efficiency (which often hide distributional inequities),[197] and informational efficiency (which relates to how well prices of financial assets reflect available information).[198] Or we might take a computer science approach and try to "minimize the consumption of time, energy, space, or cost in satisfying a specification of correctness for a given problem"—although Ohm and Frankle note that there are still many axes of efficiency to be traded off even within this technology-centric definition.[199] There has also been increased recognition within the computer science discipline that computational efficiency is not always the right parameter to maximize, with computer scientists and engineers sometimes "turn[ing] away from efficient solutions when faced with the need to inject complex human values into systems."[200] As the previous Section explored, one of the most challenging human values to inject into

193. Odinet, *supra* note 21, at 1755; Levitin, *supra* note 114, at 141–42.

194. Baradaran, *supra* note 114, at 371–72; Levitin, *supra* note 114, at 143.

195. Luke Herrine, *What Do You Mean by Efficiency? An Opinionated Guide*, LPE PROJECT (Oct. 11, 2023), https://lpeproject.org/blog/who-cares-about-efficiency [https://perma.cc/4XDE-6G6A].

196. *Id.*

197. Graham S. Steele, *The Tailors of Wall Street*, 93 U. COLO. L. REV. 993, 1035 (2022). "Efficiency, in the Kaldor-Hicksian optimal allocative efficiency sense, is insensitive to distributional inequalities, and so regulation will be acceptably 'efficient' as long as someone's gains offset someone's harms." Hilary J. Allen, *Regulatory Managerialism and Inaction: A Case Study of Bank Regulation and Climate Change*, 86 L. & CONTEMP. PROBS. 71, 77 (2023).

198. Yesha Yadav, *How Algorithmic Trading Undermines Efficiency in Capital Markets*, 68 VAND. L. REV. 1607, 1610 (2015).

199. Ohm & Frankle, *supra* note 36, at 804.

200. *Id.* at 838.

financial services is distributional equity.

And so there is no single universal definition of efficiency, but it is true that payments often take too long to clear in the United States, which is a real and persistent problem for the underbanked.[201] For more affluent people, such delays are merely an annoyance; for those who live paycheck to paycheck, waiting three days for a payment to clear can result in costly defaults or the need for expensive services like check cashing and payday lending.[202] The earned-wage access fintech products discussed in the previous Section aim to make delivery of funds more rapid, but they too can prove costly.[203]

While slow payments processing may seem at first blush like a technology problem, technologies for faster payments processing *by banks* already exist, and have been widely used (particularly outside of the United States) for some time.[204] The fact that these kinds of technologies are not widely used in the United States is in large part a political problem, requiring political solutions. Banks, for example, could be required to use readily available technologies to clear and settle payments more speedily by amending the Expedited Funds Availability Act.[205] The Federal Reserve launched its real-time payments service, FedNow, on July 20, 2023, but uptake by banks has been slow.[206] Congress could consider mandating that banks join FedNow to ensure that these faster payment rails are available to their customers.

201. Regarding the desire for faster funds availability among the underbanked, see Levitin, *supra* note 114, at 121.

202. Klein, *supra* note 185.

203. Financial regulators in California found that tip-based earned-wage access companies succeeded in pushing customers to tip their provider 73% of the time: the average APR (representing the total cost of using the service) for these tip-based companies was 334%. CAL. DEP'T FIN. PROT. & INNOVATION, 2021 EARNED WAGE ACCESS DATA FINDINGS (2023), https://dfpi.ca.gov/wp-content/uploads/sites/337/2023/03/2021-Earned-Wage-Access-Data-Findings-Cited-in-ISOR.pdf [https://perma.cc/55SJ-N7SN].

204. Real-time transaction processing is common in many other countries. For example:

> India had 89.5 billion real-time transactions in 2022 and an annual growth rate of 76%. Brazil was in second place with 30 billion transactions and a 230% annual growth rate in 2022. . . . By comparison, real-time transactions in North America are expected to expand from 3.9 billion in 2022 to 13 billion by 2027.

John Adams, *Can FedNow Give U.S. Processors an Edge Over Global Rivals?*, AM. BANKER (July 31, 2023), https://www.americanbanker.com/payments/news/can-fednow-give-u-s-processors-an-edge-over-global-rivals [https://perma.cc/J2AR-DSE4].

205. Aaron Klein recommends "amending the Expedited Funds Availability Act to require immediate access for the first several thousand dollars of a deposit, instead of permitting the lengthy, costly delays that harm people living paycheck to paycheck." Klein, *supra* note 185.

206. Felix Salmon, *FedNow Is Live with 35 Banks*, AXIOS (July 20, 2023), https://www.axios.com/2023/07/20/federal-reserve-fednow-payment [https://web.archive.org/web/20240303021335/https://www.axios.com/2023/07/20/federal-reserve-fednow-payment].

To be clear, these political problems can be very intractable. If fintech providers *could* provide an end run around these political problems by providing quick and affordable payments processing, then that would be very appealing. Unfortunately, though, fintech payments providers sometimes overclaim regarding the increased efficiencies of their technologies. For example, despite repeated crypto industry assertions of improved efficiency,[207] the underlying blockchain technology is inefficient by design.[208] Processing transactions on any decentralized permissionless ledger will always be slower and more cumbersome than available centralized alternatives, because in the absence of costly computations, it would be too easy for a bad actor to take over a technologically decentralized system.[209] As a result, transaction processing on blockchains is slow and expensive (and the cost and timing of such processing is often unpredictable), and blockchains struggle to scale to process large volumes of transactions.[210]

Since inefficiency is a feature and not a bug of technologically decentralized systems, if blockchain-based businesses *are* able to increase efficiencies, they are likely to derive from regulatory arbitrage strategies that reduce regulatory compliance costs. Most parties involved in financial transactions are required to engage in "know-your-client" due diligence and other compliance checks to help prevent the financial system from being used for money laundering and sanctions evasion.[211] These checks necessarily add time and expense to transaction processing—time and expense that unregulated members of the crypto industry can avoid by engaging in regulatory arbitrage[212] (the crypto industry has pushed back on legislative attempts to extend anti-money laundering obligations to entities involved in processing crypto transactions, citing the decentralized nature of the crypto ecosystem and the costs of impeding innovation).[213]

There are, of course, many technological alternatives to blockchains. Some fintech alternatives may indeed have the potential to improve the speed

207. Semenzin, *supra* note 38, at 8.
208. Ohm & Frankle, *supra* note 36, at 797.
209. Schuster, *supra* note 185, at 981.
210. White, *supra* note 40.
211. These obligations derive from the Bank Secrecy Act, codified at 31 U.S.C. §§ 5311–36 and 12 U.S.C. §§ 1951–60.
212. "In many ways, the current modus operandi of cryptocurrencies is similar to an old Swiss model of banking where people could set up anonymous accounts and no questions were asked." Igor Makarov & Antoinette Schoar, *Crytpocurrencies and Decentralized Finance (DeFi)*, BROOKINGS PAPERS ON ECON. ACTIVITY, Spring 2022, at 141, 175.
213. *See, e.g.*, CHAMBER DIGIT. COM., STATEMENT ON DIGITAL ASSET ANTI-MONEY LAUNDERING ACT (July 28, 2023), https://digitalchamber.org/statement-on-digital-asset-aml-act [https://perma.cc/K4P4-A2LM].

or cost of payments processing and other financial services. But focusing on these kinds of efficiency to the exclusion of all else can cause problems, too. Faster payments, for example, often enable faster fraud,[214] and are therefore opening up new consumer protection problems that need to be addressed. As we will discuss shortly, increased efficiencies can also increase the susceptibility of the financial system to financial crises, with all the human misery those crises entail.[215] Concerns about efficiency-induced fragility have been percolating since highly efficient but brittle supply chains stalled and crumbled during the Covid-19 pandemic. People are now asking whether we have gone too far in maximizing supply chain efficiency, at the expense of overall resilience and robustness.[216] We should ask the same question of technological innovations that are promising to make finance more efficient: What are they doing to the resilience of our financial system? To put the question a little differently, are increases in efficiency delivering diminishing marginal returns that are not commensurate with the increased fragilities they create?[217]

For example, fintech business models designed to make capital intermediation and risk management more efficient (ranging from robo-advisors to high frequency trading) may end up making our financial system more fragile—as well as undermining other kinds of efficiency, like informational efficiency.[218] Take the high frequency trading business model. It is facilitated entirely by algorithms designed to trade at speeds and in volumes that humans would not be capable of.[219] Proponents of high frequency trading argue that it improves the efficiency of capital intermediation because it increases the volume of trading and by providing

214. "Faster transactions are susceptible to the same social engineering techniques fraudsters have employed to target legacy systems—but with the added twist that funds intercepted via faster payments are often irrecoverable due to their speed." *FIs Look to Advanced Technologies to Protect Faster Payments*, PYMNTS (Apr. 12, 2024), https://www.pymnts.com/money-mobility/2024/fis-look-to-advanced-technologies-to-protect-faster-payments [https://perma.cc/X5BH-C4SS].

215. ALLEN, *supra* note 113, at 23–24.

216. *See generally* RANA FOROOHAR, HOMECOMING: THE PATH TO PROSPERITY IN A POST-GLOBAL WORLD (2022); KATHRYN JUDGE, DIRECT: THE RISE OF THE MIDDLEMAN ECONOMY AND THE POWER OF GOING TO THE SOURCE (2022).

217. In the context of algorithmic trading, Adair Turner commented that

> the benefits of market liquidity must, like the benefits of any market completion, be of declining marginal utility as more market liquidity is attained. The additional benefits deliverable, for instance, by the extra liquidity which derives from flash or algorithmic training, exploiting price divergences present for a fraction of a second, must be of minimal value compared to the benefits from having an equity market which is reasonably liquid on a day-by-day basis.

Adair Turner, Chairman of the Financial Services Authority, Lecture at CASS Business School: What Do Banks Do, What Should They Do and What Public Policies Are Needed to Ensure Best Results for the Real Economy? 27 (Mar. 17, 2010), https://www.bayes.city.ac.uk/__data/assets/pdf_file/0006/77136/Adair-Turner-March-2011.pdf [https://perma.cc/RR4T-764U].

218. Yadav, *supra* note 198, at 1610.

219. *Id.*; *see also* ALLEN, *supra* note 113, at 86–87.

more opportunities to transact, increases liquidity and lowers trading costs.[220] But that is only true in normal times. When things are obviously wrong in the market (at least, obvious to a human), the algorithm may continue to trade in a way that generates "flash crashes" of asset prices, which could spark fire sale externalities that threaten the stability of the financial system.[221] If the algorithm *does* recognize that something is really wrong, more often than not its preprogrammed instruction is to simply stop trading, draining liquidity from the system when it is most needed.[222]

"Tokenization" of real-world assets is another efficiency-driven form of fintech that could make the financial system more vulnerable during unanticipated circumstances.[223] These tokens are digital representations of real-world assets that can be preprogrammed such that financial transactions will self-execute without human intervention.[224] Automating transactions can certainly increase speed and reduce costs[225] (tokenization is typically associated with blockchain technologies, but programmable tokens can also be hosted on other kinds of ledgers and so avoid blockchain's inefficiencies).[226] However, the speed of self-execution can cause problems when the world has changed in ways that were not contemplated by the token's programmers.[227] During periods of systemic stress (when flexibility is critical to avoiding a crisis),[228] automated transactions will still execute rapidly—even if the parties would otherwise have agreed to negotiate or extend some grace to their counterparties to prevent temporary liquidity

220. SENIOR SUPERVISORS GROUP, ALGORITHMIC TRADING BRIEFING NOTE 1 (2015), https://www.newyorkfed.org/medialibrary/media/newsevents/news/banking/2015/SSG-algorithmic-trading-2015.pdf [https://perma.cc/Z88L-LZ9C].

221. *Id.* at 1, 3.

222. "[I]n periods of heightened volatility . . . passive HFT market players, ie those that provide liquidity, typically keep a low profile by deleting trading orders, thereby reducing the supply of liquidity." *High-Frequency Trading Can Amplify Financial Market Volatility*, DEUTSCHE BUNDESBANK (Oct. 25, 2016), https://www.bundesbank.de/Redaktion/EN/Topics/2016/2016_10_25_monthly_report_october_high_frequency_trading.html [https://perma.cc/E4RG-9MGG].

223. BANK FOR INT'L SETTLEMENTS, *Blueprint for the Future Monetary System: Improving the Old, Enabling the New*, *in* BIS ANN. ECON. REP. 2023, at 85, 85 (2023) [hereinafter *BIS Blueprint*], https://www.bis.org/publ/arpdf/ar2023e3.pdf [https://perma.cc/UX8E-YXG4]. For further discussion of this issue, see generally *Next Generation Infrastructure: How Tokenization of Real-World Assets Will Facilitate Efficient Markets Before the Subcomm. on Digit. Assets, Fin. Tech., & Inclusion of the H. Comm. on Fin. Servs.*, 118th Cong. (2024) (statement of Hilary J. Allen, Professor of Law, American University Washington College of Law).

224. *BIS Blueprint*, *supra* note 223, at 85.

225. "The projects . . . reportedly seek to improve efficiency . . . [by] embedding features like programmability, and automaticity." FIN. STABILITY OVERSIGHT COUNCIL, ANNUAL REPORT 2023, at 45 (2023).

226. *BIS Blueprint*, *supra* note 223, at 94.

227. Just like legal contracts, computer programs cannot anticipate all future states of the world. For an overview of the literature on incomplete contracts, see Cathy Hwang, *Collaborative Intent*, 108 VA. L. REV. 657, 665–67 (2022).

228. Katharina Pistor, *A Legal Theory of Finance*, 41 J. COMPAR. ECON. 315, 321 (2013).

problems from metastasizing into something worse.

If we want our financial system to be more robust and resilient overall, we will sometimes need to focus on preserving or adding back *in*efficiencies, to allow the system to reconfigure when the unexpected happens in order to prevent failure.[229] This may require certain aspects of the financial system to have frictions (like circuit breakers), or to be slower, or to have more redundancies. Obviously, a system that is entirely inefficient would be of no use at all, so the key is to achieve the right balance of efficiency against other system attributes.[230] We are more likely to achieve the right balance if we reject techno-solutionist exhortations for efficiency *qua* efficiency. Then we can start interrogating on a case-by-case basis where a type of efficiency will deliver only diminishing marginal returns and is not worth the attendant fragilities, as well as where financial regulation might help compensate for those fragilities.

C. COMPETITION

Where there is a perceived lack of efficiency in the provision of financial services, innovation-driven competition is often seen as the answer.[231] Fintech proponents often trumpet the disruption and competition fintech creates for the financial industry's more highly-regulated institutions when it comes to providing capital intermediation (particularly credit), risk management, and transaction processing services.[232] However, as with efficiency, if the competition benefits associated with fintech are a product of regulatory arbitrage rather than technological superiority, then they may not be worthwhile or desirable from a public policy perspective.

It is true that disrupting incumbents can be challenging in highly regulated industries, like finance, because regulatory compliance can serve as a barrier to entry—arguments have been made for repealing or waiving financial regulations as a result.[233] This Article will take up the topic of deregulation in Part III: here, it suffices to say that we've already seen that businesses like fintech lenders and crypto intermediaries often find their competitive advantage not by fundamentally changing how financial services are delivered, but by using the veneer of techno-solutionism to justify their regulatory arbitrage.[234] This kind of regulatory arbitrage may in

229. J.B. Ruhl, *Governing Cascade Failures in Complex Social-Ecological-Technological Systems: Framing Context, Strategies, and Challenges*, 22 VAND. J. ENT. & TECH. L. 407, 422 (2020).
230. *Id.*
231. Brummer & Yadav, *supra* note 121, at 275.
232. *Id.* at 275–77.
233. Allen, *supra* note 58, at 587–88.
234. *See supra* notes 145–47, 211–13 and accompanying text.

some circumstances result in reduced costs for consumers (although predatory pricing exists in some fintech markets, so this is by no means guaranteed).[235] However, where the law being skirted serves an important social purpose—particularly if it exists to protect the public from harm—then this kind of competition may be socially undesirable even if it lowers prices. In a recent article, Saule Omarova and Graham Steele argued that prudential banking regulation, which seeks to ensure that banks are managed in a safe and sound manner, does not in fact inhibit competition but actually restrains incumbents from abusing their existing market power.[236] They argue that without this regulation, new firms would have to contend with even more firmly entrenched incumbent banks.[237] They also argue that firms who skirt this regulation can develop market power in an antisocial way where gains are privatized and losses socialized.[238]

Ultimately, whether rent-a-bank partnerships and other business models that use new technologies to arbitrage existing laws are seen as a "solution" to imperfectly competitive markets will depend on how the problem of "competition" is construed. For nearly fifty years, competition law in the United States has focused very narrowly on addressing inefficiencies arising from market power that impact the prices paid by consumers.[239] If, however, we embrace a more expansive and nuanced notion of the public harms that can result from excessive economic concentration, and appreciate that "[m]arket power also harms society as a whole by lessening economic growth and productivity and by contributing to our Gilded Age levels of inequality,"[240] then it will become clear that technology cannot resolve these kinds of concerns on its own.

Technology may, in fact, be the *source* of some of these concerns about market power (or at least, their accelerant). For example, the power of dominant technology platforms to use algorithms to manipulate their users

235. On the high cost of fintech loans, see Odinet, *supra* note 21, at 1743.

236. Saule T. Omarova & Graham S. Steele, *Banking and Antitrust*, 133 YALE L.J. 1162, 1171 (2024).

237. *Id.*

238. Omarova and Steele identify a number of risks of regulatory arbitrage:

> Shadow banking in general, and fintech and crypto specifically, are often motivated by a desire to arbitrage around the existing banking rules and regulations, thereby capturing the benefits of banks' 'specialness' while evading the constraints of banking law. As the pre-2008 experience shows, unchecked growth of such alternative markets impairs regulators' ability to prevent excessive accumulations of risk and leverage in the financial system. More fundamentally, permitting the rampant growth of private forms of money and money substitutes threatens the sovereign public's ability to control the supply and flow of money and credit in the economy.

Id. at 1245.

239. *Id.* at 1177–78.

240. Jonathan B. Baker, *Finding Common Ground Among Antitrust Reformers*, 84 ANTITRUST L.J. 705, 707 (2022).

and their competitive environment has been a dominant concern of Lina Khan and other "neo-Brandeisian" antitrust scholars.[241]

These scholars have proposed antitrust law reforms to the economic concentration and market power of the giant tech platforms,[242] but the tech industry prefers its own tech solution in the form of Web3.[243] "Web3" is not so much a reality as it is a marketing term for a more utopian vision of an internet where the use of blockchain technology helps wrest control and ownership away from the existing tech platforms. (By way of background, Web1 describes the read-only internet of the 1990s; Web2 is our current era in which we can read and also create content, but it is all intermediated through large platforms; and Web3 is supposed to let us "read, write, and own" the Internet.)[244] Although this may sound superficially appealing, there are many reasons to be cynical about this techno-solutionist vision (which many consider to be no more than a cynical crypto rebrand).[245]

First of all, we can look at who is investing in Web3. Andreessen Horowitz, the preeminent VC firm investing in Web3 companies, also has important relationships with Web2 platform companies (like Meta) that Web3 purports to disrupt.[246] Meta (née Facebook) itself invested heavily in a Web3-aligned Metaverse that incorporated blockchain technology—although Meta has now largely pivoted away from the Metaverse to AI.[247] Obviously, none of this investment would have happened if the players involved did not see opportunities to profit in Web3—some have surmised that the real vision was for a Web3 where institutional players could use blockchain technology to make a small profit from every interaction that happens online.[248]

Even if we put aside cynicism about the bona fides of Web3 proponents and take it at face value, though, it is clear that the technology alone will not

241. *Id.* at 706.

242. *Id.*

243. CHRIS DIXON, READ, WRITE, OWN: BUILDING THE NEXT ERA OF THE INTERNET xix (2024); *see also* Semenzin, *supra* note 38, at 1.

244. White, *supra* note 40.

245. *Id.*

246. Ephrat Livni, *Tales from Crypto: A Billionaire Meme Feud Threatens Industry Unity*, N.Y. TIMES (Jan. 18, 2022), https://www.nytimes.com/2022/01/18/business/dealbook/web3-venture-capital-andreessen.html [https://web.archive.org/web/20220923102005/https://www.nytimes.com/2022/01/18/business/dealbook/web3-venture-capital-andreessen.html].

247. Selinger, *supra* note 1. For a discussion of the relationship between Web3, the Metaverse, and blockchain technology, see generally Thien Huynh-The, Thippa Reddy Gadekallu, Weizheng Wang, Gokul Yenduri, Pasika Ranaweera, Quoc-Viet Pham, Daniel Benevides da Costa & Madhusanka Liyanage, *Blockchain for the Metaverse: A Review*, 143 FUTURE GENERATION COMPUT. SYS. 401 (2023).

248. "[I]n blockchain discourses, almost every human transaction is conceived in terms of value . . . and every human relationship can be conceptualized in terms of economics." Semenzin, *supra* note 38, at 6.

solve the Internet's economic concentration problem. Visions of Web3 rely on the same blockchain technology as crypto.[249] Blockchain technology is designed to ensure that no one single node in the system has centralized control over which transactions are added to the blockchain;[250] the tokens and other protocols built on blockchains like Ethereum are designed to decentralize control by distributing ownership among token holders and automating transactions so that no humans are required to execute those transactions. As already discussed, many inefficiencies are incurred in order to achieve this kind of technological decentralization,[251] but even after all that, technological decentralization does not guarantee economic decentralization.[252] A system can have lots of nodes, but if someone controls a lot of those nodes, then they can control the system.

Aspirations notwithstanding, economic power in crypto is often highly concentrated and can be exploited in many ways. When projects are built on blockchains, for example, they often take the form of nominally "decentralized autonomous organizations," in which participants are given governance tokens that allow them to vote on the direction of the project, which are then preprogrammed using software called a smart contract. However, as economists Makarov and Schoar have documented, "in the majority of crypto projects, developers and early investors choose to keep control of the platform by allocating significant stakes to themselves. In addition, even if developers do not have a large stake, in many cases they managed to maintain de facto significant control over the platform."[253]

When it comes to the process of validating transactions on the blockchains themselves, again, there are strong economic incentives that have resulted in the concentration of validation power in the hands of just a few groups.[254] There is evidence that some concentrated groups of validators process transactions in the order that reflects the wishes of the highest bidder and potentially harms the interests of those whose transactions are processed later (a practice known as maximal (formerly miner) extractable value

249. Web3 is the "internet of the metaverse," and blockchain is considered a critical technology for that metaverse. Huynh-The et al., *supra* note 247, at 409.

250. De Filippi & Wright, *supra* note 161, at 2.

251. *See supra* notes 207–210 and accompanying text.

252. *See generally* Aramonte et al., *supra* note 182.

253. Makarov & Schoar, *supra* note 212, at 184; *see also* Tom Barbereau, Reilly Smethurst, Orestis Papageorgiou, Johannes Sedlmeir & Gilbert Fridgen, *Decentralised Finance's Timocratic Governance: The Distribution and Exercise of Tokenised Voting Rights*, TECH. SOC'Y, May 2023, at 1, 11 ("[M]inority rule is the probable consequence of tradable voting rights . . . and no applicable anti-monopoly or anti-concentration laws.").

254. "[T]here are strong implicit incentives for validators to pool their capacity and coinsure their risk of winning a block reward." Makarov & Schoar, *supra* note 212, at 147.

("MEV")).[255] We therefore need a solution other than blockchain if we wish to ensure that powerful technology platforms do not inhibit inclusive economic growth. That solution will likely be found in antitrust law, not in technology.

D. SECURITY

The concentration of validation power in the hands of just a few groups will also create security vulnerabilities for blockchains. In 2022, cybersecurity researchers found that just four pools of Bitcoin validators working in concert could subvert the Bitcoin blockchain.[256] There are also security vulnerabilities associated with the fact that no person or entity is designated accountable for ensuring that a blockchain's software is maintained and kept secure from cyberattacks.[257] In 2024, for example, the Department of Justice indicted two MIT graduate brothers for attacking the protocols of the Ethereum blockchain and stealing approximately $25 million of Ethereum cryptocurrency in 12 seconds.[258] It is not realistic to think all of a blockchain's users will protect and maintain the blockchain's software by way of a collective effort,[259] and so blockchain security tends to depend on informal groups of core software developers with no legal responsibilities.[260] This is in stark contrast with regulated financial infrastructure providers like the Depositary Trust & Clearing Corporation, who must comply with the internationally accepted Principles for Financial Market Infrastructure. These Principles require, among other things, that financial infrastructure providers have a clear legal basis and governance structure, and policy and procedures around the management of risks

255. "[A]s a pending transaction sits in a mempool, miners and validators have found ways to profit from them by including, excluding or reordering transactions in a block. This strategy involves maximal (formerly miner) extractable value, or MEV." Ekin Genç, *What is MEV, aka Maximal Extractable Value?*, COINDESK (Sept. 2, 2022, 7:00 PM), https://www.coindesk.com/learn/what-is-mev-aka-maximal-extractable-value [https://web.archive.org/web/20250112130542/https://www.coindesk.com/learn/what-is-mev-aka-maximal-extractable-value].

256. EVAN SULTANIK, ALEXANDER REMIE, FELIPE MANZANO, TRENT BRUNSON, SAM MOELIUS, ERIC KILMER, MIKE MYERS, TALLEY AMIR & SONYA SCHRINER, TRAIL OF BITS, ARE BLOCKCHAINS DECENTRALIZED?: UNINTENDED CENTRALITIES IN DISTRIBUTED LEDGERS 4 (2022), https://apps.dtic.mil/sti/pdfs/AD1172417.pdf [https://perma.cc/7ZED-3CZW].

257. Angela Walch, *The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk*, 18 N.Y.U. J. LEGIS. & PUB. POL'Y 837, 870 (2015).

258. Press Release, U.S. Dep't of Just. Off. of Pub. Affs., Two Brothers Arrested for Attacking Ethereum Blockchain and Stealing $25M in Cryptocurrency (May 15, 2024), https://www.justice.gov/opa/pr/two-brothers-arrested-attacking-ethereum-blockchain-and-stealing-25m-cryptocurrency [https://perma.cc/6YWX-EZ9S].

259. "Everyone involved in a blockchain ecosystem benefits from the existence of a rock-solid protocol and high-quality software, but everyone is also better off free riding on someone else's work to develop them." James Grimmelmann & A. Jason Windawi, *Blockchains as Infrastructure and Semicommons*, 64 WM. & MARY L. REV. 1097, 1120 (2023).

260. Walch, *supra* note 257, at 870.

(including security risks).[261] No such requirements are currently applied to blockchains.

Blockchains are not the only new fintech infrastructure that has generated new security vulnerabilities. Consider, for example, the push for open banking, which has been described as "the sharing and leveraging of customer-permissioned data by banks with third party developers and firms to build applications and services, such as those that provide real-time payments, greater financial transparency options for account holders, and marketing and cross-selling opportunities."[262] Application programming interfaces ("APIs") are computer programs that allow different technology systems to speak directly to one another, and they form the backbone of many open banking initiatives.[263] However, API development is often outsourced to third-party software developers,[264] and there can be quality control issues with regard to the maintenance and security of API software: it has been documented in the healthcare context, for example, that APIs are often the "weakest link" in cybersecurity protections.[265]

Even when APIs work well, their efficiencies may cause new security vulnerabilities, in the vein of the efficiency-induced fragilities discussed in Section II.B. One use case for APIs is to increase the speed of payments processing by making it easier for different systems to share payments data.[266] However, APIs are not just more efficient at passing desired data between systems—they may potentially be very efficient at passing along problems as well. It is underappreciated that APIs may work as channels that transmit operational problems from one institution to another.[267] If, by linking all the players in a financial system, we improve efficiencies in normal times but increase the chance that the players will all fail together if something goes wrong, then that will undermine financial stability. The same could be said of a financial system where just a few cloud computing

261. *See generally* COMM. ON PAYMENT & SETTLEMENT SYS., BANK FOR INT'L SETTLEMENTS, & TECH. COMM. OF THE INT'L ORG. OF SEC. COMM'NS, PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES (2012), https://www.bis.org/cpmi/publ/d101a.pdf [https://perma.cc/F9MG-VRRF].

262. BASEL COMM. ON BANKING SUPERVISION, BANK FOR INT'L SETTLEMENTS, REPORT ON OPEN BANKING AND APPLICATION PROGRAMMING INTERFACES 19 (2019), https://www.bis.org/bcbs/publ/d486.pdf [https://perma.cc/8K9Y-VSSN].

263. Dan Awrey & Joshua Macey, *The Promise & Perils of Open Finance*, 40 YALE J. ON REGUL. 1, 3–4 (2023).

264. *Id.* at 42.

265. Steve Alder, *100% of Tested mHealth Apps Vulnerable to API Attacks*, HIPAA J. (Feb. 16, 2021), https://www.hipaajournal.com/100-of-tested-mhealth-apps-vulnerable-to-api-attacks [https://web.archive.org/web/20240629000000*/https://www.hipaajournal.com/100-of-tested-mhealth-apps-vulnerable-to-api-attacks/].

266. BASEL COMM. ON BANKING SUPERVISION, *supra* note 262, at 16.

267. Hilary J. Allen, *Reinventing Operational Risk Regulation for a World of Climate Change, Cyberattacks, and Tech Glitches*, 49 J. CORP. L. 727, 759 (2024).

providers efficiently store critical data for *all* of the world's financial institutions.[268]

The broader idea behind open banking is to use APIs to make it easier for bank customers to share their data with, and thus obtain services from, other fintech providers. While pitched as a solution to some of the barriers to competition discussed in Section II.C, the rise of open banking implicates important questions about information security that we need to grapple with. Most obviously, using insecure APIs to transmit data creates opportunities for data breaches, fraud, and identity theft (fintech lending business models that assemble extensive non-traditional data profiles to address the creditworthiness of their users will also be attractive targets for such practices).[269] But the sharing of data contemplated by open banking will also generate more subtle threats to our informational security, in the form of increased surveillance by an increased number of parties who can then use that data to manipulate us and others like us.

Raul Carillo has noted that fintech firms, like other technology companies, "reconstitute people into 'data doubles,' which can then be sorted, stored, scored, shared, and sold."[270] The increased sophistication of machine learning technology is only making this kind of data more valuable.[271] Data about consumers' payments are particularly valuable, because those data yield rich, detailed, and unvarnished insights into how individuals behave and what they value.[272] Individuals will often fail to understand how their payments data might be used or what it communicates about them,[273] but this kind of data can be used to surveil and then manipulate them.[274] For example, Consumer Finance Protection Bureau ("CFPB") Director Rohit Chopra raised concerns that "Big Tech firms can use detailed payments data to develop personalized pricing algorithms for e-commerce or increase engagement with behavioral advertising."[275] Alicia

268. *Id.* at 757–58; U.S. DEP'T OF TREASURY, THE FINANCIAL SERVICES SECTOR'S ADOPTION OF CLOUD SERVICES 57 (2023), https://home.treasury.gov/system/files/136/Treasury-Cloud-Report.pdf [https://perma.cc/6VMQ-XD2Q].

269. The information economy has given rise to a "seemingly continuous stream of major data breaches and epidemic levels of fraud and identity theft" where "vulnerability is a given, and eventual loss seems only a matter of time." COHEN, *supra* note 17, at 101.

270. Carillo, *supra* note 75, at 1210.

271. Solow-Niederman, *supra* note 149, at 6.

272. Carillo, *supra* note 75, at 1211. On the value of unmediated data, see COHEN, *supra* note 17, at 84.

273. Solow-Niederman, *supra* note 149, at 1.

274. Carillo, *supra* note 75, at 1222.

275. Rohit Chopra, CFPB Director, Remarks at the Global Financial Innovation Network's Annual General Meeting (Nov. 8, 2023), https://www.consumerfinance.gov/about-us/newsroom/prepared-remarks-of-cfpb-director-rohit-chopra-at-the-global-financial-innovation-networks-annual-general-meeting [https://perma.cc/6CFW-UGXU].

Solow-Niederman has emphasized that machine learning technology can now be deployed to "use available data collected from individuals to generate further information about both those individuals and about other people," and these inferences can then be used to predict people's behavior, manipulate them, and color reputations.[276] Payments platforms may even use the data they collect about their users to deplatform them, censoring people's ability to engage in financial transactions.[277] These kinds of harms are not distributed equally, and often the most vulnerable groups will be surveilled the most as well as suffer the most from this surveillance: "[M]any lower-income users rely exclusively on mobile platforms that are less versatile, less amenable to user customization and control, and designed to maximize data sensing and harvesting."[278]

The subtle and not-so-subtle harms associated with payments data collection prompt a need to minimize the collection of payments data in the first place.[279] Fintech once again proposes a techno-solutionist solution to this problem, in the form of the pseudonymous blockchain. However, the blockchain does not minimize the production of data—it still records every transaction on the blockchain, although it cloaks them in pseudonymity.[280] Blockchains make all transactions associated with a public key visible to everyone—meaning that once someone (law enforcement, an intimate partner, a stalker) knows someone's public key, they can easily identify all of their transactions.[281] This reality exposes the folly of techno-solutionist proposals to use crypto to assist women seeking abortions in the United States, for example.[282] As one *New York Times* article put it, "though many crypto enthusiasts dangle the lure of anonymity . . . because of the precision with which the blockchain traces transactions, paying for abortions using crypto could potentially have the opposite effect: exposing both the women getting abortions and the people paying for them."[283] And not only is the

276. Solow-Niederman, *supra* note 149, at 5; *see also* COHEN, *supra* note 17, at 76.

277. "PayPal updated its regulations to give itself the power to levy fines and take other punitive actions, including deplatforming, against users engaged in conduct that would not otherwise violate federal law. (PayPal withdrew the regulation.)" Rohit Chopra, CFPB Director, Remarks at the Brookings Institution Event on Payments in a Digital Century (Oct. 6, 2023), https://www.consumerfinance.gov/about-us/newsroom/prepared-remarks-of-cfpb-director-rohit-chopra-at-the-brookings-institution-event-on-payments-in-a-digital-century [https://perma.cc/VC3C-VTPS].

278. COHEN, *supra* note 17, at 177.

279. Carillo, *supra* note 75, at 1227–28.

280. *Id.* at 1240.

281. Anna P. Kambhampaty, Alisha Haridasani Gupta & Valeriya Safronova, *Crypto Joins the Abortion Conversation*, N.Y. TIMES (May 14, 2022), https://www.nytimes.com/2022/05/14/style/abortion-crypto-donations.html [https://web.archive.org/web/20241201161402/https://www.nytimes.com/2022/05/14/style/abortion-crypto-donations.html].

282. *Id.*

283. *Id.*

blockchain itself highly legible, but those who use blockchain-based financial services typically also rely on a number of intermediaries who can also collect user data.[284]

If we truly wish to minimize the production of payments data, the most simple solution does not require any technology—lawmakers could take steps to preserve physical cash infrastructure, as cash transactions do not generate any data (there are also financial inclusion and resilience justifications for ensuring that cash continues to be accepted).[285] As a supplement to physical cash, Carillo proposes a "Postal Cash Card" that can store value and facilitate transactions in a way that emulates debit cards but does not generate any data about the holder.[286] Carillo's proposal is an illustration of the principle that rejecting techno-solutionism does not necessarily mean rejecting technology: he has proposed a technological innovation (the card), but also provided a detailed proposal about the institutional context in which it will be offered (non-profit, at the post office), in a way that is responsive to expressed privacy concerns and pushes back against the tide of "data-vacuuming" in for-profit technological development. Carillo's proposal also supplies another illustration of the point that when it comes to technological innovation, incentives matter, and so a technology developed by a public entity for a non-profit purpose is more likely to avoid the siren song of mass data collection than a private sector payments technology.

III. FINANCIAL REGULATION AND TECHNO-SOLUTIONISM

The previous Parts have described what techno-solutionism is and how it manifests in the context of fintech. As part of that discussion, Part II identified a panoply of fintech harms in need of regulation, but the law's ability to rein in such harms is often stymied by techno-solutionism *that it helps perpetuate*. We certainly should not assume that the law is the only thing at work here—techno-solutionism is itself a complex phenomenon with many causes.[287] However, illuminating financial regulation's relationship with techno-solutionism is an important precondition to addressing the negative impacts of fintech.

284. Carillo, *supra* note 75, at 1245. For a discussion of the different kinds of crypto intermediaries who may collect data, see Hilary J. Allen, *DeFi: Shadow Banking 2.0?*, 64 WM. & MARY L. REV. 919, 924 (2023).

285. BRETT SCOTT, CLOUDMONEY: CASH, CARDS, CRYPTO, AND THE WAR FOR OUR WALLETS 191–92, 200 (2022); Hilary J. Allen, *Payments Failure*, 62 B.C. L. REV. 453, 513 (2021).

286. Carillo, *supra* note 75, at 1295–99.

287. *See supra* notes 24–26 and accompanying text.

A. QUICK PRIMER ON FINANCIAL REGULATION

This Article has already observed that technology businesses are constructed in part by law; as Katharina Pistor has explained, the same is true for finance.[288] Financial regulation is a constitutive part of fintech's evolution, but the law as applied to fintech has sometimes had an unhealthy relationship with techno-solutionism. One problem with techno-solutionism is that it downplays the value of non-technological domain area expertise,[289] but the history and context for why we regulate finance are critical parts of any discussion of how the law should address fintech. This Section therefore provides some background on financial regulation more generally, before the next Section demonstrates how financial regulation can both facilitate and be inhibited by techno-solutionism.

We have already explored techno-solutionism's false neutrality.[290] Along with this false neutrality often comes a false equivalence where different applications of technologies are painted as equally transformative and equally worthy of pursuit, notwithstanding that the benefits and costs of different applications will inevitably vary. We often hear fintech services analogized to other internet services—"send money around the world as easily as you can send an email"[291]—but losing money is much more consequential than losing an email (certainly for the person involved, and potentially also for confidence in financial institutions and the broader financial system). Because the stakes are so high, and because we have so many historical examples of things going badly wrong in the financial system, finance has long been heavily regulated—in a way that couriered letters never were. Techno-solutionists ignore that history at their (or rather, our) peril.

Financial regulatory agencies are typically given mandates to pursue one or more of the following "menu" of financial regulatory goals: financial stability, consumer protection, investor protection, market efficiency, competition, and preventing financial crime.[292] Notably, no U.S. financial regulatory agency has an express statutory mandate to promote innovation.

288. Pistor, *supra* note 228, at 321.

289. *See supra* notes 50–53 and accompanying text.

290. *See supra* notes 32–36 and accompanying text. More specifically to fintech, Omarova observes that "even the most advanced technology is merely a tool. How to use it—for what purposes, and to what effect—is a choice." Omarova, *supra* note 191, at 76.

291. *See, e.g.*, *Decentralized Finance (DeFi)*, ETHEREUM, https://ethereum.org/en/defi [https://perma.cc/J8H6-SVB9] ("Ethereum makes sending money around the world as easy as sending an email.").

292. ARMOUR ET AL., *supra* note 112, at 61–69. It should be noted that the Commodity Futures Trading Commission's ("CFTC") mandate to pursue market integrity does not fit easily into this menu but relates most closely to missions to promote market efficiency.

Instead, the banking agencies (the Federal Deposit Insurance Corporation ("FDIC"), Office of the Comptroller of Currency ("OCC"), and the Federal Reserve) were all formed in response to episodes of financial instability, and all have some form of "safety and soundness" mandate oriented toward ensuring the stability of the financial system[293] (a council of these and other regulatory agencies known as the Financial Stability Oversight Council has an explicit mandate to promote financial stability).[294] Financial stability regulation can have microprudential and macroprudential orientations: a microprudential approach seeks to ensure the solvency of individual financial institutions, whereas a more macroprudential approach seeks to protect the financial system as a whole by understanding and responding to how those financial institutions are interconnected, and to other market dynamics.[295] Regardless of orientation, the ultimate goal of financial stability regulation is to ensure that the financial system can continue to supply the credit and transactional services on which the broader economy depends for growth.[296]

Market regulators like the Securities and Exchange Commission ("SEC"), Commodity Futures Trading Commission ("CFTC"), and CFPB were also formed in response to specific episodes of public harm. The SEC was created as an investor protection body in the wake of the stock market crash of 1929 and ensuing Great Depression (later, in 1996, the SEC was given additional mandates to promote efficiency and capital formation).[297] The CFTC was created in 1974 in response to concerns about excessive speculation and manipulation in agricultural futures markets.[298] The CFPB was formed in 2010 as a response to the consumer protection failures that

293. Hilary J. Allen, *Regulating Fintech: A Harm Focused Approach*, 52 COMPUT. L. & SEC. REV. 1, 2–3 (2024).

294. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No 111-203, § 112(a), 124 Stat. 1394–96 (2010) (codified at 15 U.S.C. § 5322).

295. Jeremy C. Kress & Jeffery Y. Zhang, *The Macroprudential Myth*, 112 GEO. L.J. 569, 578 (2024).

296. When a financial system is stable, it is "able to withstand shocks without giving way to cumulative processes which impair the allocation of savings to investment opportunities and the processing of payments in the economy." Tommaso Padoa-Schioppa, *Central Banks and Financial Stability: Exploring a Land in Between* 20 (Second ECB Cent. Banking Conf., Policy Panel Introductory Paper, 2002), http://www.ecb.de/events/pdf/conferences/tps.pdf [https://perma.cc/8ZJH-3EQC].

297. National Securities Markets Improvement Act of 1996, Pub. L. No. 104-290, § 106, 110 Stat. 3424–25 (1996).

298. In 1973, "[g]rain and soybean futures prices reach record highs. This is blamed in part on excessive speculation and there are allegations of manipulation. Congress begins to consider revising the Federal regulatory scheme for commodities." *History of the CFTC: US Futures Trading and Regulation Before the Creation of the CFTC*, CFTC, https://www.cftc.gov/About/HistoryoftheCFTC/history_precftc.html [https://web.archive.org/web/20241225012428/https://www.cftc.gov/About/HistoryoftheCFTC/history_precftc.html].

contributed to the 2008 financial crisis,[299] and has mandates to protect consumers and promote competition.[300] In 2023, some Republican lawmakers sought to give the SEC an additional mandate to promote innovation, but the provision was eventually struck from the proposed legislation (had such a provision been enacted, it would no doubt have served as a weapon for those seeking to invalidate the SEC's investor protection rules on the grounds that they stifled innovation).[301] In the absence of any express innovation mandates, efficiency and competition mandates are the ones typically invoked to justify innovation-friendly regulatory policies.

While it is possible to interpret efficiency and competition mandates as complementary to the goals of investor and consumer protection and financial stability,[302] efficiency and competition mandates are often framed in ways that conflict with those other goals (for example, as Part II explored, fintech that has been touted as promoting efficiency and competition can come at the price of exposing consumers and investors to predatory inclusion). If it is assumed that technology is the best, easiest, or only way to improve efficiency and competition, this techno-solutionist framing will lend itself to accommodative regulatory strategies that sacrifice investor, consumer, and financial stability protection goals. This is not just an issue for regulators: lawmakers in Congress have also sometimes been swayed by techno-solutionism. The next Section will consider whether fintech-specific legislative and regulatory proposals have helped perpetuate techno-solutionism in a way that undermines financial regulation's ability to protect the public from harm.

299. Leonard J. Kennedy, Patricia A. McCoy & Ethan Bernstein, *The Consumer Financial Protection Bureau: Financial Regulation for the Twenty-First Century*, 97 CORNELL L. REV. 1141, 1144–45 (2012).

300. "The Bureau shall seek to implement and, where applicable, enforce Federal consumer financial law consistently for the purpose of ensuring that all consumers have access to markets for consumer financial products and services and that markets for consumer financial products and services are fair, transparent, and competitive." 12 U.S.C. § 5511.

301. Hilary J. Allen, *The SEC Should Not Sacrifice Citizens on the Altar of Private Sector Innovation*, THE HILL (July 18, 2023, 9:00 AM), https://thehill.com/opinion/finance/4101392-the-sec-cannot-sacrifice-citizens-on-the-altar-of-private-sector-innovation [https://web.archive.org/web/20231106022916/https://thehill.com/opinion/finance/4101392-the-sec-cannot-sacrifice-citizens-on-the-altar-of-private-sector-innovation].

302. For example,

> [i]f the genesis of financial regulation was the desire to force the financial industry to internalize the costs of the harm it creates for others, then it would be more consistent with that harm reduction function to interpret the efficiency criterion in a distributionally sensitive way and consider what would be more efficient from the perspective of society more broadly.

Allen, *supra* note 293, at 5 (emphasis omitted).

B. FINANCIAL REGULATION AND TECHNO-SOLUTIONISM

Fintech poses many challenges for the enterprise of financial regulation: as Saule Omarova has observed, fintech disrupts financial regulation's "basic normative thrust, its hierarchy of goals, its procedural mechanisms and tools, and its practical efficacy."[303] Furthermore, there are some truly novel privacy-type harms arising from the movement toward an economy "oriented principally toward the production, accumulation, and processing of information," and existing financial regulation is not up to protecting against these kinds of harms.[304] For example, existing financial privacy statutes (like the Gramm-Leach-Bliley Act) are simply not up to the task of responding to the types of privacy concerns explored in Section II.D,[305] and existing financial regulation would similarly struggle to address the harms that would arise from the integration of large tech platforms and finance.[306] With all that said, though, existing financial regulation can still force a reckoning with many of the negative consequences of fintech innovation and require them to be remedied. We have decades of experience with many of the kinds of harms that fintech is inflicting, and many of the problems raised in Part II have solutions based in existing legal remedies. The fact that new technologies have come to play an increasingly important role in delivering financial services has sometimes been weaponized (through cognitive capture and related strategies) to obscure the applicability of existing law, but we should not unquestioningly accept the premise that all previous grants of regulatory authority (and the rules implementing them) are hopelessly outmoded and obsolete as a result of technological change.

This Section will look at fintech-specific legislative proposals and administrative actions that illustrate how techno-solutionism is impacting the creation of new financial regulation, and the implementation of existing financial regulation (this is not a comprehensive survey of all fintech-related financial regulation to date, but instead a series of illustrative examples). The Section will finish by looking at a developing area of financial regulatory practice: regulation of the financial industry's use of AI.

303. Omarova, *supra* note 191, at 77. For further discussion of the challenges that fintech poses for financial regulation, see ALLEN, *supra* note 113, at 135–62.

304. COHEN, *supra* note 17, at 6.

305. Carillo, *supra* note 75, at 1224.

306. Section 4 of the Bank Holding Company Act ("BHC Act") enforces a separation between deposit-taking banks and other commercial enterprises but does nothing to separate commercial enterprises from lending or payments activities. 12 U.S.C. 1843. There are also loopholes in the BHC Act's definition of "bank" for things like industrial loan companies that tech platforms may seek to exploit. *See infra* note 332.

1. Legislative Proposals

As of the date of writing, the United States Congress has not enacted any fintech-specific legislation. However, a number of fintech-related bills have been introduced, and in a context where norms about how to respond to fintech and its harms are still developing, these bills can have an expressive valence. Some of these bills express the standard techno-solutionist message that

> government regulation will stifle innovation in the dynamic tech sector, that it is unnecessary because market forces and the tech companies' own benevolence will prevent social harms, and that, where regulation is called for, self-regulation is the only effective way to order the behavior of companies in this complex industry.[307]

Other proposed bills have sought to address the harms associated with fintech business models and serve as something of a counterbalance to the formation of techno-solutionist norms.

In particular, a number of crypto-related bills have been introduced into Congress. Some of these bills are targeted narrowly at the harms associated with using crypto for money laundering and sanctions evasion, consistent with the regulatory goal of preventing financial crime.[308] The more far-reaching bills, however, (like the Lummis-Gillibrand Responsible Financial Innovation Act,[309] the Digital Commodities Consumer Protection Act,[310] and the Financial Innovation and Technology for the 21st Century Act[311] passed by the House of Representatives in May 2024) are widely regarded to have been driven by the crypto industry and their VC funders.[312] Given their genesis, these bills are unsurprisingly deeply techno-solutionist in orientation, ignoring the history and context that led to the development of existing financial regulatory structures in their bid to allow the crypto

307. Short et al., *supra* note 55, at 4.

308. *See, e.g.*, Digital Asset Anti-Money Laundering Act, S. 2669, 118th Cong. (2023).

309. S. 4356, 117th Cong. (2022).

310. S. 4760, 117th Cong. (2022).

311. H.R. 4763, 118th Cong. (2023).

312. "Crypto lobbyists pushed heavily for [the Financial Innovation and Technology for the 21st Century Act] on Capitol Hill, and the bill was publicly supported by leading voices in the industry including Coinbase, The Block, and Digital Currency Group." Sophia Kielar & Samidh Guha, *The Future of Crypto Regulation: What is FIT 21?*, THOMSON REUTERS (Sept. 20, 2024), https://www.thomsonreuters.com/en-us/posts/government/crypto-regulation-fit-21 [https://perma.cc/A95J-KMEE]; *see also* Cheyenne Ligon, *The 'SBF Bill': What's in the Crypto Legislation Backed by FTX's Founder*, COINDESK (Nov. 15, 2022, 3:05 PM), https://www.coindesk.com/policy/2022/11/15/the-sbf-bill-whats-in-the-crypto-legislation-backed-by-ftx-founder [https://perma.cc/8LUN-ULC4]. The same dynamic is playing out at the state level. *See* Eric Lipton & David Yaffe-Bellany, *Crypto Industry Helps Write, and Pass, Its Own Agenda in State Capitols*, N.Y. TIMES (Apr. 10, 2022), https://www.nytimes.com/2022/04/10/us/politics/crypto-industry-states-legislation.html [https://web.archive.org/web/20240907152718/https://www.nytimes.com/2022/04/10/us/politics/crypto-industry-states-legislation.html].

industry to innovate outside of these structures: House Financial Services Committee leadership described its bill as "facilitating a regulatory environment that allows this technology to flourish in the United States."[313]

Among other problems, these bills seek to remove the vast majority of crypto assets from the investor protection oversight of the SEC and give jurisdiction to the CFTC—a regulatory body that has significantly fewer resources than the SEC, lacks a statutory investor protection mandate or culture of protecting retail investors, and also allows exchanges to self-certify the assets they list.[314] Doing so would deprive investors of the protections afforded by the SEC's registration and disclosure regime for public offers and sales of securities, as well as the protections of securities broker/dealer and exchange registration requirements that would help mitigate the conflicts of interest inherent in the crypto exchange business model.[315] As I testified in 2022, these kinds of bills "are designed to offer fewer investor protections than the existing securities laws, and they were intentionally designed in this way in order to facilitate crypto innovation."[316] They would also lend legitimacy and credibility to crypto assets in the eyes of both retail and institutional investors, expanding a market for such assets that the industry has struggled to sustain in the absence of government endorsement.[317] Furthermore, these bills would create regulatory arbitrage opportunities outside of the crypto industry: while crypto advocates have described these bills as bespoke regimes for crypto, issuers of other types of securities would also have incentives to migrate into the new, lighter-touch regime (which would seemingly be accessible to them if they simply recorded ownership of their securities on a blockchain). Finally, these bills often suffer from trying to tie law too specifically to crypto technology and business models at a particular moment in time, ensuring that technological innovation could be used to arbitrage any such law that is enacted, quickly

313. Press Release, Patrick McHenry, Chairman, House Fin. Servs. Comm., McHenry Delivers Opening Remarks at Historic Markup of Comprehensive Digital Asset Market Structure Legislation (July 26, 2023), https://financialservices.house.gov/news/documentsingle.aspx?DocumentID=408928 [https://perma.cc/FBQ9-QCW4].

314. For elaboration on these types of concerns, see Letter from Dennis M. Kelleher to House Agricultural and Financial Services Committee Leadership Regarding Concerns About Provisions in the Digital Asset Market Structure Discussion Draft (July 11, 2023) [hereinafter Kelleher Letter], https://bettermarkets.org/wp-content/uploads/2023/07/Final-Ltr-to-FSCAG-re-cryptocurrency-.pdf [https://perma.cc/TRN5-T7WE]. For more on the CFTC and self-certification, see Lee Reiners, *Bitcoin Futures: From Self-Certification to Systemic Risk*, 23 N.C. BANKING INST. 61, 90–92 (2019).

315. Kelleher Letter, *supra* note 314, at 2–5.

316. *Hearing on Crypto Crash: Why the FTX Bubble Burst and the Harm to Consumers Before the S. Comm. on Banking, Hous., & Urb. Affs.*, 117th Cong. (2022) [hereinafter *Allen Testimony*] (statement of Hilary J. Allen, Professor of Law, American University Washington College of Law), https://www.banking.senate.gov/imo/media/doc/Allen%20Testimony%2012-14-22.pdf [https://perma.cc/EV9C-NR2K].

317. Faverio, Dawson & Sidoti, *supra* note 167.

rendering the investor protections that *are* included in the bill obsolete.

There have also been crypto bills introduced that would undermine the financial stability regulation implemented by the federal banking agencies by creating new lighter-touch regulatory regimes for stablecoins.[318] The stated aim of these bills is to support stablecoins as "an exciting technological development that could transform money and payments,"[319] notwithstanding that from a technological perspective, stablecoins are extremely ill-suited to large-scale payments processing.[320] As I previously testified regarding the Stablecoin TRUST Act introduced by then-Senator Toomey, the Lummis-Gillibrand Responsible Financial Innovation Act, and a draft House Financial Services Committee stablecoin bill:

> If any of these bills were enacted, they would authorize banks to issue stablecoins, making it highly probable that the Federal Reserve would feel compelled to bail out a failing stablecoin (which would operate as an indirect bailout of the crypto speculation the stablecoins are used for). Even more problematic, those bills would also authorize non-banks to issue stablecoins, yet be subject to lighter-touch regulation ex ante than traditional banks.[321]

This critique applies equally to a later iteration of the House Financial Services Committee stablecoin bill that was voted out of committee in July 2023.[322]

The techno-solutionism inherent in these crypto bills is all the more striking because crypto inverts the typical dynamic where the benefits of innovation are immediately obvious, but the harms take longer to manifest. As Federal Reserve Vice Chair for Supervision Michael Barr has observed, people often "assume too quickly that they know how the new products work, and novel products can appear both safe and lucrative, particularly if

318. In commenting on the Lummis-Gillibrand bill, Wilmarth notes that it includes excessively lenient chartering criteria and dangerously weak capital standards for stablecoin issuers, woefully inadequate supervisory powers over stablecoin issuers and entities controlling those issuers, nonexistent stabilizing measures (like federal deposit insurance) to reduce the risks of contagion from failures of stablecoin issuers, misguided opportunities for stablecoin issuers to engage in risky derivatives activities, and a disturbing lack of regulatory controls over stablecoin transactions occurring on crypto exchanges and other crypto trading venues.

Arthur E. Wilmarth, Jr., Policy Brief: Congress Should Reject the Lummis-Gillibrand Stablecoin Bill Because It Would Endanger Consumers, Investors, and Our Financial System 1 (Apr. 30, 2024) (unpublished manuscript), https://scholarship.law.gwu.edu/cgi/viewcontent.cgi?article=2989&context=faculty_publications [https://perma.cc/76SB-YGUS].

319. *Toomey Introduces Legislation to Guide Future Stablecoin Regulation*, U.S. S. COMM. ON BANKING, HOUS. & URB. AFFS. (Dec. 21, 2022), https://www.banking.senate.gov/newsroom/minority/toomey-introduces-legislation-to-guide-future-stablecoin-regulation [https://perma.cc/ZJU8-GALP].

320. Regarding the costs and delays associated with processing transactions on a blockchain, see White, *supra* note 40; Levitin, *supra* note 114, at 144.

321. *Allen Testimony*, *supra* note 316.

322. Clarity for Payment Stablecoins Act, H.R. 4766, 118th Cong. (2023).

they have not been tested through bouts of market stress."[323] This kind of dynamic can unsurprisingly make lawmakers loath to crack down on new technologies with evident benefits, but with crypto, harms have been evident for some time, while the industry still struggles to articulate concrete use cases after fifteen years.[324] As explored in Part II, there are strong impediments to crypto-related innovation *ever* delivering on its promises of financial inclusion, efficiency, competition, and privacy: it is a testament to the rhetorical power of techno-solutionism that facilitating this "solution in search of a problem" remains a defensible goal for many Members of Congress.

Of course, techno-solutionism is not the only force at work here. When it came time to vote on the Financial Innovation and Technology for the 21st Century Act, Members of Congress facing tough reelection campaigns were loath to draw the ire of the crypto industry (the pro-crypto Fairshake Political Action Committee amassed an unprecedented $114 million war chest from the crypto industry and prominent venture capitalists to spend in the 2024 election cycle).[325] But still, techno-solutionism was used as window dressing. When that bill was passed by the House of Representatives with bipartisan support, House Financial Services Committee Chair Patrick McHenry made the following statement:

> FIT21 provides the regulatory clarity and robust consumer protections necessary for the digital asset ecosystem to thrive in the United States. The bill also ensures America leads the financial system of the future and remains a hub for technological innovation.[326]

323. Michael S. Barr, Vice Chair for Supervision, Bd. of Governors of the Fed. Rsrv. Sys., Remarks at the Peterson Institute for International Economics, Supporting Innovation with Guardrails: The Federal Reserve's Approach to Supervision and Regulation of Banks' Crypto-Related Activities (Mar. 9, 2023), https://www.federalreserve.gov/newsevents/speech/barr20230309a.htm [https://perma.cc/Q2TN-ZSVE].

324. Regarding use cases (and lack thereof), *see* White, *supra* note 40. Regarding harms, for a running tally of crypto hacks, scams, and frauds impacting consumers, see WEB3 IS GOING JUST GREAT, *supra* note 170. For a discussion of the environmental toll of crypto that relies on proof-of-work blockchains, see Sanaz Chamanara, S. Arman Ghaffarizadeh & Kaveh Madani, *The Environmental Footprint of Bitcoin Mining Across the Globe: Call for Urgent Action*, 11 EARTH'S FUTURE 1, 2 (2023). For a discussion of the use of crypto for money laundering, ransomware attacks, and sanctions evasion, see generally *Hearing on Understanding the Role of Digital Assets in Illicit Finance Before the S. Comm. on Banking, Hous., & Urb. Affs.*, 117th Cong. (2022) [hereinafter *Stansbury Testimony*] (statement of Shane T. Stansbury, Professor of Law, Duke University School of Law), https://www.banking.senate.gov/imo/media/doc/Stansbury%20Corrected%20Statement%203-17-22.pdf [https://perma.cc/RV92-3R58].

325. Rick Claypool, *Big Crypto, Big Spending: Crypto Corporations Spend an Unprecedented $119 Million Influencing Elections*, PUB. CITIZEN (Aug. 21, 2024), https://www.citizen.org/article/big-crypto-big-spending-2024 [https://perma.cc/LEJ5-6DKL].

326. Press Release, Financial Services Committee, House Passes Financial Innovation and Technology for the 21st Century Act with Overwhelming Bipartisan Support (May 22, 2024), https://financialservices.house.gov/news/documentsingle.aspx?DocumentID=409277 [https://perma.cc/

Some other non-crypto fintech bills have evinced a less techno-solutionist approach to fintech business models, though. For example, Congressman Jesus García introduced a "Close the ILC Loophole Act,"[327] designed to prevent technology platform companies from exploiting a loophole in the Bank Holding Company Act that could allow those companies to acquire banks without being regulated by the Federal Reserve (which would essentially allow them to avoid financial stability regulation).[328] Congressman Lynch also introduced an "ECASH Act"[329] that proposed to direct the Treasury Department to develop and issue "an electronic version of the U.S. Dollar for use by the American public."[330] This bill is an example of technology-focused public policy that is not techno-solutionist: it is focused on developing technology to solve financial inclusion concerns, but is sensitive to non-technological context. In particular, in response to the kinds of consumer protection and privacy concerns raised in Section II.D, the proposal for ECASH is intended to "preserve a role in our financial system for smaller anonymous cash-like transactions which are currently transacted in physical dollars, and which have seen a rapid decline in use."[331]

2. Administrative Action

While this discussion has focused so far on Congress, the federal financial regulatory agencies are on the front lines of dealing with fintech in the United States (state regulation is also relevant but largely beyond the scope of this Article).[332] Unlike unpassed legislation, the actions taken by regulatory agencies can have more than just normative valence. We will now examine a sample of the fintech-related rulemaking, monitoring, and enforcement activities of financial regulators and consider whether they are perpetuating, or being stymied by, techno-solutionism.

Acting Comptroller of the Currency Michael Hsu identified a dichotomy between regulators "taming" and "accommodating" financial

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327. H.R. 5912, 117th Cong. (2022).

328. Senator Sherrod Brown introduced similar legislation in 2023 titled Close the Shadow Banking Loophole Act, S. 3538, 118th Cong. (2023).

329. Electronic Currency and Secure Hardware (ECASH) Act, H.R. 7231, 117th Cong. (2022).

330. Press Release, Stephen F. Lynch, U.S. Representative (MA-08), Rep. Lynch Introduces Legislation to Develop Electronic Version of U.S. Dollar (Mar. 28, 2022), https://lynch.house.gov/2022/3/rep-lynch-introduces-legislation-to-develop-electronic-version-of-u-s-dollar [https://perma.cc/48X5-M5GE].

331. *Id.*

332. For a discussion of states' regulatory treatment of crypto, see Arthur E. Wilmarth, Jr., *We Must Protect Investors and Our Banking System from the Crypto Industry*, 101 WASH. U. L. REV. 235, 269–71 (2023); Lipton & Yaffe-Bellamy, *supra* note 312. For a discussion of state regulation of fintech lending, see generally Odinet, *supra* note 21.

innovation. Taming forces the technology to "conform to regulatory standards," whereas an accommodative stance that dictates that "regulation should adjust to . . . and accept the new technology and possibilities for what they are" is much more techno-solutionist.[333] Accommodative regulators may take steps to actively loosen regulatory requirements, but often, accommodation takes the form of *inaction* with regulators simply refraining from exercising their jurisdiction when new technologies are involved. Either way, an overly accommodative stance will subordinate regulatory goals to the claimed promise of the technology, neglecting the reality that sometimes the negative consequences of a technology are such that accommodating that technology is bad policy (particularly if the technology itself is considered by independent experts to have limited utility).[334]

Another framing that financial regulators often use when discussing fintech regulation is "tech neutrality,"[335] or "same activity, same risk, same rules."[336] This is often a good starting point for taming fintech, because it recognizes that regulatory arbitrage should not be allowed simply because a new kind of technology is involved: techno-solutionism may otherwise lull us into believing that new technologies are doing the disrupting, when in reality the only disruption may be lawyers devising new regulatory arbitrage strategies that can be "sold" to lawmakers using techno-solutionist rhetoric. However, a posture of technological neutrality can turn out to be accommodative in practice if regulators are too amenable to the fintech industry's own techno-solutionist descriptions of activities and risks as novel, or if regulators assume that the technology is just another way of discharging an existing economic function and won't pose any sui generis risks of its own.

Regulators should dig beneath the techno-solutionism to ask fundamental preliminary questions about whether a technology actually performs the activity its purveyors say it performs—otherwise regulators may mistakenly apply the wrong regulatory regime. They also need to ask whether changes in technological delivery mechanisms are creating new kinds of risks (for example, new technology-related operational risks). Although existing regulatory approaches will often be useful, sometimes

333. Michael J. Hsu, Acting Comptroller of the Currency, Remarks to the Harvard Law School and Program on International Financial Systems Roundtable on Institutional Investors and Crypto Assets: "Don't Chase," 3 (Oct. 11, 2022), https://www.occ.gov/news-issuances/speeches/2022/pub-speech-2022-126.pdf [https://perma.cc/XUR3-8DNS].

334. *See, e.g.*, note 162 and accompanying text.

335. Janet L. Yellen, Secretary of the Treasury, Remarks from Secretary of the Treasury Janet L. Yellen on Digital Assets (Apr. 7, 2022), https://home.treasury.gov/news/press-releases/jy0706 [https://perma.cc/5F9L-SGJ8].

336. Wilmarth, Jr., *supra* note 332, at 314.

new methods will need to be devised in order to discharge existing mandates in a financial system populated by new technologies. Regulators should not be deterred from developing these new methods by a desire to be perceived as technology neutral.

Unfortunately, reality does not always meet these ideals. This is no doubt due, in part, to cognitive capture. The financial industry has long weaponized complexity to deflect regulatory scrutiny,[337] but with the rise of fintech, that financial complexity is being overlaid with technological complexity. Many financial regulatory agencies are primarily staffed with lawyers, economists, and accountants who may need to rely on the fintech industry to help them understand how a particular technology works,[338] and this can be a fertile environment for cognitive capture to develop. Of course, individual agency personnel are just that—individuals. It is often remarked that "personnel is policy,"[339] and those with some technological expertise may feel more empowered to push back against techno-solutionism.

An individual regulator's susceptibility to techno-solutionism may also be impacted by their political ideology. Techno-solutionism is often aligned with libertarianism,[340] and those dispositionally opposed to government involvement will, all things being equal, probably be more supportive of agency policies that accommodate private sector innovation. The following discussion of fintech-related administrative actions sometimes demonstrates whipsaws in an agency's fintech policy that can be partially explained by changes in the political orientation of agency leadership. This dynamic has been most obvious with the CFPB; at the other end of the spectrum, the SEC has been quite consistent in its fintech policy across administrations.[341]

i. Rulemaking and Guidance

There have been some proposals for formal fintech-specific administrative rulemakings, but federal financial regulatory agencies have often preferred to issue informal guidance when it comes to fintech. The formal rulemaking process has sometimes struggled to address rapid technological change in a timely manner,[342] and the Supreme Court's embrace of the major questions doctrine has created greater uncertainty about courts' willingness to invalidate rulemakings pertaining to new

337. Awrey, *supra* note 122, at 275–76.

338. Omarova, *supra* note 191, at 101.

339. *See, e.g.*, Jeff Hauser & David Segal, *Personnel Is Policy*, DEMOCRACY J. (Feb. 6, 2020, 3:43 PM), https://democracyjournal.org/magazine/personnel-is-policy [https://perma.cc/DB7D-VK8E].

340. *See* Short et al., *supra* note 55, at 4.

341. Gary Gensler, Chairman of the SEC, Speech: Kennedy and Crypto (Sept. 8, 2022), https://www.sec.gov/news/speech/gensler-sec-speaks-090822 [https://perma.cc/WT8J-5NMP].

342. *See* Tim Wu, *Agency Threats*, 60 DUKE L.J. 1841, 1841–43 (2011).

technologies.[343] In June of 2024, the Supreme Court also overruled the longstanding *Chevron* precedent that had previously directed courts to defer to reasonable agency interpretations of statutory provisions.[344] Given these challenges, it is unsurprising that regulators of all stripes have often preferred to rely on more nimble informal guidance when it comes to fintech.

Like the legislative proposals discussed above, fintech-related informal guidance and proposed rulemakings have been a mixed bag with some embracing, and some rejecting, techno-solutionist approaches. Notably accommodative administrative actions include the OCC's 2018 announcement of a nonbank fintech charter and the CFPB's 2019 proposal for a fintech regulatory sandbox. Both of these had a techno-solutionist orientation, although neither were ultimately successful in their accommodations. The OCC's proposed fintech charter was a response to concerns that nonbank fintech firms had to comply with consumer protection regulations in every state where they did business.[345] A national special purpose charter from the OCC would have preempted many of these state consumer protection regulations—and the OCC justified the proposal on the assumption that it would facilitate technological innovation that would further financial inclusion.[346] Ultimately, however, this proposal was mired in legal challenges and industry largely eschewed the fintech charter.[347]

The CFPB's proposed "Compliance Assistance Sandbox" also sought to preempt the enforcement of state consumer protection laws but was ultimately abandoned for failing to advance its "stated objective of facilitating consumer-beneficial innovation."[348] Before it was abandoned, though, this sandbox had a very techno-solutionist orientation. For example, in a policy document that was incorporated by reference into the Compliance Assistance Sandbox policy, the CFPB expressly rejected a consumer group's contention that a sandbox was unnecessary because fintech products rarely

343. Daniel T. Deacon & Leah M. Litman, *The New Major Questions Doctrine*, 109 VA. L. REV. 109, 1087–88 (2023). Regarding the application of the major questions doctrine to crypto, see Chris Brummer, Yesha Yadav & David Zaring, *Regulation by Enforcement*, 96 S. CAL. L. REV. 1297, 1328–29 (2024).

344. Loper Bright Enters. v. Raimondo, 144 S. Ct. 2244, 2273 (2024).

345. Recent Policy Statement, *Office of the Comptroller of the Currency, Policy Statement on Financial Technology Companies' Eligibility to Apply for National Bank Charters*, 132 HARV. L. REV. 1361, 1361 (2019) (citing OFFICE OF THE COMPTROLLER OF THE CURRENCY, POLICY STATEMENT ON FINANCIAL TECHNOLOGY COMPANIES' ELIGIBILITY TO APPLY FOR NATIONAL BANK CHARTERS 1 (2018), https://www.occ.gov/publications/publications-by-type/other-publications-reports/pub-other-occ-policy-statement-fintech.pdf [https://perma.cc/KS3S-JTQC]).

346. *Id.* at 1363.

347. *Id.* at 1366–68.

348. CFPB, STATEMENT ON COMPETITION AND INNOVATION (Sept. 30, 2022), https://public-inspection.federalregister.gov/2022-20896.pdf [https://perma.cc/5GN3-2MFG].

raised "novel questions of law and policy."[349] The policy document also stated the techno-solutionist position that "the Bureau's statutory mission of protecting consumers is not limited to vigorously enforcing the law. It includes facilitating innovation in markets for consumer financial products and services, as innovation drives competition, which in turn lowers prices and promotes access to more and better products and services."[350]

Regulatory sandboxes have been adopted elsewhere (both internationally and at the state level in the United States) and are generally techno-solutionist in orientation: they loosen financial regulations and use scarce regulatory resources for the primary purpose of promoting private-sector fintech innovation.[351] This implicitly positions "regulation" as the problem that needs to be solved, and if regulators fixate on the private-sector innovation they hope their sandboxes will generate, that may be a distraction from the public goods that regulation was adopted to create and the social harms that regulation was adopted to protect against. Regulatory sandboxes also put regulators in the unusual position of championing participating private sector firms to help them succeed in the marketplace—likely a recipe for cognitive capture.[352]

Following the appointment of Rohit Chopra as Director of the CFPB in 2021, the CFPB evinced a far less techno-solutionist stance in its informal guidance and proposed rules. In September 2023, the CFPB responded to concerns about algorithmic discrimination by issuing guidance that made clear "that lenders must be able to accurately inform consumers as to why an adverse credit decision was made and explain specifically what factors led to the decision," emphasizing that the use of AI is not a get-out-of-jail-free card when it comes to compliance with laws like the Equal Credit Opportunity Act.[353] In October 2024, the CFPB finalized a Personal Financial Data Rights rule to implement the previously dormant Section 1033 of the Dodd-Frank Act.[354] This was an attempt to address a true lacuna in financial regulation and speaks to new kinds of privacy harms and the market power associated with financial data.[355] In November 2023, the CFPB proposed a rule designed to crack down on regulatory arbitrage by nonbank payments providers, which will be discussed in more detail

349. CFPB, POLICY ON NO ACTION LETTERS 5–6 (Sept. 10, 2019), https://files.consumerfinance.gov/f/documents/cfpb_final-policy-on-no-action-letters.pdf [https://perma.cc/C44L-YMDF].

350. *Id.* at 2.

351. Allen, *supra* note 58, at 580.

352. *Id.* at 635–36.

353. Chopra, *supra* note 277.

354. *Required Rulemaking on Personal Financial Data Rights*, CFPB (Oct. 22, 2024), https://www.consumerfinance.gov/personal-financial-data-rights [https://perma.cc/LB7G-KTLN].

355. *Id.*

below.[356] It is worth noting that the CFPB is itself a creation of the digital era: launched in 2011 with an intentional technological bent, the agency has been praised for its technological savvy, and that savvy may have equipped the agency to push back against techno-solutionist claims.[357]

Turning to crypto, regulators have not promulgated any formal rules, but they have issued a significant amount of informal guidance. In June 2018, then-SEC Corporate Finance Director Bill Hinman delivered what has come to be known as the "Hinman speech" in which he expressed his excitement about blockchain's potential for decentralization, and he suggested that tokens might not be considered securities "[i]f the network on which the token or coin is to function is sufficiently decentralized."[358] This speech uncritically accepted the crypto industry's decentralization rhetoric, neglecting the fact that blockchain's technological decentralization does nothing to prevent the economic centralization that the SEC is concerned with.[359] Overall, however, the SEC has generally looked beyond that rhetoric and concluded that crypto tokens are subject to the securities laws—as SEC Chair Gary Gensler stated in 2022:

> Of the nearly 10,000 tokens in the crypto market, I believe the vast majority are securities. Offers and sales of these thousands of crypto security tokens are covered under the securities laws. . . . For the past five years . . . the Commission has spoken with a pretty clear voice here: through the DAO Report, the Munchee Order, and dozens of Enforcement actions, all voted on by the Commission. Chairman Clayton often spoke to the applicability of the securities laws in the crypto space.[360]

As for the banking regulators, the OCC initially took a somewhat accommodative position on crypto, issuing a number of documents authorizing banks to hold crypto assets in custody for their customers and to hold reserves for stablecoins.[361] These documents sometimes evince an unquestioning acceptance of crypto's claims to be a wealth-building and payments technology; for example, the letter authorizing banks to hold

356. *CFPB Proposes New Federal Oversight of Big Tech Companies and Other Providers of Digital Wallets and Payment App*, CFPB (Nov. 7, 2023), https://www.consumerfinance.gov/about-us/newsroom/cfpb-proposes-new-federal-oversight-of-big-tech-companies-and-other-providers-of-digital-wallets-and-payment-apps [https://perma.cc/Z9RA-YH4N]. For further discussion, see text accompanying notes 378–80, *infra*.

357. Rory Van Loo, *Technology Regulation by Default: Platforms, Privacy, and the CFPB*, 2 GEO. L. TECH. REV. 531, 531 (2018).

358. William Hinman, Director, Division of Corp. Fin., SEC, Digital Asset Transactions: When Howey Met Gary (Plastic) (June 14, 2018), https://www.sec.gov/news/speech/speech-hinman-061418 [https://perma.cc/9N6R-RAUU].

359. *See supra* notes 251–55 and accompanying text.

360. Gensler, *supra* note 341 (internal citations omitted).

361. Wilmarth, Jr., *supra* note 332, at 268.

stablecoin reserves starts from the premise that "[r]eports suggest stablecoins have various applications, including the potential to enhance payments on a broad scale, and are increasingly in demand."[362] This premise lacks a strong foundation, however, given blockchain technology's inability to scale to the level needed to compete with traditional payments providers.[363]

More recently, guidance from banking regulators has paid less heed to unsubstantiated promises of crypto's technological innovation. Most notably, in January 2023, the Federal Reserve, FDIC, and OCC jointly issued strong guidance indicating their expectations that banks would remain separated from crypto, in order to ensure the continuing stability of the banking system.[364] In that statement, the agencies articulated the following non-techno-solutionist position:

> Given the significant risks highlighted by recent failures of several large crypto-asset companies, the agencies continue to take a careful and cautious approach related to current or proposed crypto-asset-related activities and exposures at each banking organization.[365]

ii. Monitoring

Once regulatory bodies have promulgated rules or informal guidance, they must then engage in supervision, examination, or other monitoring to ensure compliance. It can be difficult to interrogate how these processes are being discharged, as they are often confidential, performed away from the public eye.[366] Sometimes information about these processes is made public, however, and Art Wilmarth has used publicly available sources to document many of the entanglements between banking and crypto that banking supervisors have permitted.[367] Although it seems unlikely that these entanglements could presently threaten the stability of the overall financial system—particularly because regulators have not authorized any U.S. bank to invest directly in crypto assets or accept them as collateral—such entanglements *did* help bring down Signature Bank and Silvergate Bank,

362. Off. of the Comptroller of the Currency, OCC Chief Counsel's Interpretation on National Bank and Federal Savings Association Authority to Hold Stablecoin Reserves, OCC Interpretive Letter No. 1172, at 1 (Sept. 21, 2020), https://www.occ.gov/topics/charters-and-licensing/interpretations-and-actions/2020/int1172.pdf [https://perma.cc/5DTF-NBQB].

363. White, *supra* note 40.

364. *See generally* BD. OF GOVERNORS OF THE FED. RSRV. SYS., FED. DEPOSIT INS. CORP. & OFF. OF THE COMPTROLLER OF THE CURRENCY, JOINT STATEMENT ON CRYPTO-ASSET RISKS TO BUSINESS ORGANIZATIONS (2023), https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20230103a1.pdf [https://perma.cc/QK4N-QXPS].

365. *Id.* at 2.

366. Peter Conti-Brown & Sean Vanatta, *Focus on Bank Supervision, Not Just Bank Regulation*, BROOKINGS (Nov. 2, 2021), https://www.brookings.edu/research/we-must-focus-on-bank-supervision [https://perma.cc/CT8H-LR25].

367. Wilmarth, Jr., *supra* note 332, at 271–78.

which relied heavily on the crypto industry for deposits and fee income.[368] The failure of these banks exacerbated a broader regional banking crisis in 2023, and in its report on that crisis, the FDIC conceded that "in retrospect, the FDIC could have acted sooner and more forcefully to compel the bank's management and its board to address these [AML and risk management] deficiencies more quickly and more thoroughly."[369] Nothing was said in the report, though, about whether regulators had accommodative attitudes toward crypto business models and technologies that helped induce their inaction.

Of course, there is a preliminary question when it comes to fintech supervision, which is whether financial regulators even believe they have supervisory jurisdiction over fintech business models in the first place.[370] If industry actors can successfully convince regulators that their technology is too new to fit into existing regulatory structures, then they will avoid supervision, examination, or other monitoring. James Kwak observed that in the lead-up to the 2008 crisis, "[t]he financial sector . . . seems to have gained the cooperation of the federal regulatory agencies . . . [in part] by convincing them that financial deregulation was in the public interest."[371] Techno-solutionist narratives make these same claims about advancing the public interest by getting law out of the way so that technological solutions can flourish.

With regard to fintech lending, for example, Chris Odinet has spelled out the arbitrage strategies that have allowed these businesses to operate largely outside of the supervisory powers of the CFPB and federal banking agencies.[372] Odinet argues that this regulatory arbitrage is the main point of the fintech lending business model: to seek an end-run around both state usury laws and bank capital regulations by having fintech providers partner with or "rent" a bank in a way that avoids both types of rules.[373] Fintech lenders (and their associated banks), however, describe these business models as driven by superior technological interfaces and credit scoring

368. *Id.* at 278–88.

369. FDIC, FDIC'S SUPERVISION OF SIGNATURE BANK 16 (Apr. 28, 2023), https://www.fdic.gov/news/press-releases/2023/pr23033a.pdf [https://perma.cc/T3UR-BPZ4].

370. "With any novel financial product, the threshold question is always that of its legal and regulatory status as a security, banking product, commodity, insurance contract, and so on." Omarova, *supra* note 191, at 82.

371. Kwak, *supra* note 97, at 77–78.

372. Odinet, *supra* note 21, at 1774 (noting that state regulators often have jurisdiction here, but "occupy an interesting position because they are in theory very powerful but can often be very weak in practice").

373. Banks have preferential treatment that allows them to export favorable usury laws in their home jurisdiction so that they can make high-cost loans throughout the country, even in states with more restrictive usury rules—nonbank fintech firms cannot do this. Odinet, *supra* note 21, at 1775–76, 1778.

systems—this allows them to tap into the positive political valence of technological innovation to facilitate cognitive capture.[374] When regulators are persuaded into inaction by such rhetoric, then consumer harm can be perpetuated without oversight.

Many fintech payments providers also engage in regulatory arbitrage. To use Venmo as an example, federal banking regulation would apply to balances in Venmo accounts if they were construed as deposits, but Venmo has entered into carefully crafted relationships with regulated banks to avoid such characterization.[375] However, nonbank payments providers can pose consumer protection and financial stability concerns. Awrey and Zwieten have explained that some Venmo customers store funds in Venmo accounts and assume that those funds will remain available for transactions, notwithstanding that Venmo may have used the funds elsewhere or that the funds may be commingled in a Venmo bankruptcy.[376] Venmo customers may not appreciate these vulnerabilities now, but if concerns develop about Venmo and the way it holds customer funds, customers may pull their funds out in something that closely resembles a bank run.[377]

Different nonbank payments providers pose different permutations of these prudential and consumer protection concerns, but have generally escaped the types of stringent regulation that apply to banks and other insured deposit–taking institutions.[378] The CFPB expressed a willingness to help level this playing field, however, by exercising existing authorities over firms that serve as service providers for banks,[379] and by proposing a rule that would establish an examination program for larger nonbank digital consumer payment companies.[380] In so doing, the CFPB rejected the contention that technology companies should be treated differently from legacy financial institutions when they provide equivalent services.

iii. Enforcement

When regulatory agencies bring enforcement actions against firms deploying fintech business models and technologies, those enforcement actions tend to signal a rejection of techno-solutionism. The mere fact that

374. "The partnership is, in essence, a regulatory arbitrage scheme meant to allow high-cost predatory lending to proliferate online, all while enjoying the political cover accorded by being labeled a 'fintech.' " Odinet, *supra* note 21, at 1765.

375. John L. Douglas, *New Wine into Old Bottles: Fintech Meets the Bank Regulatory World*, 20 N.C. BANKING INST. 17, 25–36 (2016).

376. Dan Awrey & Kristin van Zwieten, *The Shadow Payment System*, 43 J. CORP. L. 775, 806 (2018).

377. *Id.*

378. CFPB, *supra* note 356.

379. Chopra, *supra* note 277.

380. CFPB, *supra* note 356.

an enforcement action was brought tends to suggest a willingness on the part of a regulatory body to look behind the techno-solutionist rhetoric and conclude that new technologies are being used to perpetuate familiar harms for which there are legal consequences.

To be clear, enforcement may be made more challenging by increasing technological sophistication. For example, when it comes to the CFPB seeking to address discrimination in the provision of credit, enforcement is "increasingly difficult when decisions . . . are made via criteria deeply embedded in complex algorithms used to detect patterns in masses of data."[381] As the Financial Stability Oversight Council ("FSOC") has noted, "[m]any AI approaches present 'explainability' challenges that make it difficult to assess the suitability and reliability of AI models and to assess the accuracy and potential bias of AI output."[382] But the harm identified here (discrimination in the provision of credit) is familiar, and the CFPB's necessary legal authority (pursuant to the Equal Credit Opportunity Act) holds up, despite the technological innovation. The CFPB confirmed that it will enforce the law "regardless of the technology being used" and that arguing that "the technology used to make a credit decision is too complex, opaque, or new is not a defense for violating these laws."[383]

A techno-solutionist approach to enforcement, on the other hand, is likely to manifest in accommodative inaction. Financial regulators who are cognitively captured by techno-solutionist rhetoric may come to believe that technological solutions are exceptional and therefore both need and deserve special treatment under the law—and so they refrain from enforcing existing laws. Ryan Calo has argued that technology is exceptional "when its introduction into the mainstream requires a systematic change to the law or legal institutions in order to reproduce, or if necessary displace, an existing balance of values."[384] This is the kind of argument the crypto industry makes as to why blockchain-hosted assets should *not* be subject to the long-standing, technology-neutral "Howey test" for determining whether something is an investment contract regulated by the SEC.[385] Another well-

381. COHEN, *supra* note 17, at 179.

382. FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 225, at 9.

383. ROHIT CHOPRA, CFPB, KRISTEN CLARKE, U.S. JUST. DEP'T, C.R. DIV., CHARLOTTE A. BURROWS, EEOC & LINA M. KHAN, FTC, JOINT STATEMENT ON ENFORCEMENT EFFORTS AGAINST DISCRIMINATION AND BIAS IN AUTOMATED SYSTEMS 2 (2023), https://files.consumerfinance.gov/f/documents/cfpb_joint-statement-enforcement-against-discrimination-bias-automated-systems_2023-04.pdf [https://perma.cc/Y5VD-CQ74].

384. Ryan Calo, *Robotics and the Lessons of Cyberlaw*, 103 CALIF. L. REV. 513, 552 (2015).

385. The seminal Supreme Court case interpreting the term "investment contract" does so in a way that "embodies a flexible rather than a static principle, one that is capable of adaptation to meet the countless and variable schemes devised by those who seek the use of the money of others on the promise of profits." SEC v. W.J. Howey Co., 328 U.S. 293, 299 (1946).

worn trope of techno-solutionism is the belief that technology can solve its own problems: this trope, coupled with exceptionalist arguments that technological change is too rapid and complex for the law to effectively address, is often invoked in support of calls for self-regulation.[386] The crypto industry has made repeated arguments that it should regulate itself.[387]

Fortunately, many regulatory personnel have not been swayed by these kinds of techno-solutionist arguments. In particular, the SEC has been quite aggressive about enforcing the securities laws against the crypto industry;[388] in so doing, it is challenging techno-solutionist claims that the use of decentralized technology changes the economic realities of securities investments.[389] These claims are the latest in a long line of tech industry arguments that decentralization defies regulation,[390] but as of the time of writing, courts have largely agreed with the SEC's anti-techno-solutionist approach (with one notable partial exception).[391] A district court also upheld the CFTC's determination that the Ooki DAO, a blockchain-hosted decentralized autonomous organization, was a "person" within the meaning of the Commodity Exchange Act and could therefore be held liable for violations of that law.[392]

Cryptocurrencies have also come to play an important role in funding criminal activities and in sanctions evasion.[393] While Section II.D emphasized the legibility of transactions recorded on a blockchain, sophisticated criminals use tools like mixers and tumblers to make it much

386. Short et al., *supra* note 55, at 17–18.

387. *See, e.g.*, Joe Light, *The Crypto Industry's Solution for Regulation: We'll Handle It*, BLOOMBERG (Nov. 19, 2021), https://www.bloomberg.com/news/articles/2021-11-19/crypto-industry-s-solution-to-regulation-is-self-regulation [https://perma.cc/QDT4-6WRT].

388. For a comprehensive listing of the SEC's crypto enforcement actions, see *Crypto Assets and Cyber Enforcement Actions*, U.S. SEC, https://www.sec.gov/spotlight/cybersecurity-enforcement-actions [https://web.archive.org/web/20241227170034/https://www.sec.gov/securities-topics/crypto-assets].

389. *See supra* notes 358–359 and accompanying text.

390. Short et al., *supra* note 55, at 8–10.

391. *See, e.g.*, SEC v. Telegram Grp. Inc., 448 F.Supp. 3d 352, 352 (S.D.N.Y. 2020); SEC v. Kik Interactive Inc., 492 F.Supp. 3d 169, 169 (S.D.N.Y. 2020); SEC v. LBRY, Inc., 639 F.Supp. 3d 211, 220–21 (D.N.H. 2022); SEC v. Terraform Labs. Pte. Ltd., 708 F.Supp. 3d 450, 471–74 (S.D.N.Y. 2023). The notable partial exception was *SEC v. Ripple Labs, Inc.*, 682 F.Supp. 3d 308, 328–30 (S.D.N.Y. 2023), in which Judge Torres concurred with the SEC's allegations that a security had been sold to institutional investors, but found against the SEC with respect to "programmatic" sales of the XRP token to retail investors. Judge Torres's reasoning has been expressly rejected by other SDNY judges, including in *SEC v. Terraform Labs. Pte. Ltd.*, 684 F.Supp. 3d 170, 197 (S.D.N.Y. 2023), and in SDNY Judge Failla's denial of Coinbase's motion to dismiss the SEC's enforcement action. SEC v. Coinbase, Inc., 726 F.Supp. 3d 260, 268, 288–89 (S.D.N.Y. 2024).

392. Press Release, CFTC, Statement of CFTC Division of Enforcement Director Ian McGinley on the Ooki DAO Litigation Victory (June 9, 2023), https://www.cftc.gov/PressRoom/PressReleases/8715-23 [https://web.archive.org/web/20241214222114/https://www.cftc.gov/PressRoom/PressReleases/8715-23].

393. *Stansbury Testimony*, *supra* note 324, at 2.

harder for authorities to trace funds[394]—in response, the Office of Foreign Assets Control ("OFAC") has sanctioned virtual currency mixers like Tornado Cash, Blender, and Sinbad.[395] Another high profile enforcement action in this area was brought by the Department of Justice (working in conjunction with OFAC, Financial Crimes Enforcement Network ("FinCEN"), and the CFTC) against the Binance cryptocurrency exchange for failing to comply with anti-money laundering and other laws. Using decidedly non-techno-solutionist rhetoric, Attorney General Merrick Garland announced the charges by saying "using new technology to break the law does not make you a disruptor, it makes you a criminal."[396]

Many of these enforcement actions have been criticized by the crypto industry (and sometimes by crypto industry–supportive Members of Congress) for impeding fintech innovation.[397] The crypto industry has in particular decried the "regulatory uncertainty" created by such enforcement actions and court decisions, arguing that such uncertainty has undermined the crypto industry's ability to thrive.[398] However, the SEC has been largely unequivocal in its communications that the vast majority of crypto tokens are securities: as Chair Gensler has said, "not liking the message is not the same thing as not receiving it."[399] In any event, few areas of the law provide perfect certainty, and as the Supreme Court implicitly recognized in formulating the Howey test, preserving a degree of flexibility often proves

394. "One well-known technique is the use of "mixing" or "tumbling" services, which allow for the commingling of legitimate cryptocurrency transmissions with those involving illicit payments, thereby making the criminal activity harder to trace." *Id.* at 3.

395. Press Release, U.S. Treasury Dept., Treasury Sanctions Mixer Used by the DPRK to Launder Stolen Virtual Currency (Nov. 29, 2023), https://home.treasury.gov/news/press-releases/jy1933 [https://perma.cc/DCL8-N5XW].

396. Press Release, U.S. Dept. of Justice Off. of Pub. Affs., Binance and CEO Plead Guilty to Federal Charges in $4B Resolution (Nov. 21, 2023), https://www.justice.gov/opa/pr/binance-and-ceo-plead-guilty-federal-charges-4b-resolution [https://perma.cc/X4CY-3J7Q].

397. *See, e.g.*, Marisa T. Coppel, *How OFAC's Tornado Cash Sanctions Violate U.S. Citizens' Constitutional Rights*, COINDESK (Apr. 18, 2023, 3:06 PM), https://www.coindesk.com/opinion/2023/04/18/how-ofacs-tornado-cash-sanctions-violate-us-citizens-constitutional-rights [https://perma.cc/EN8S-L3S6]; Paul Kiernan, *Republicans Pummel SEC's Gary Gensler Over Crypto Crackdown*, WALL ST. J. (Apr. 18, 2023), https://www.wsj.com/articles/sec-chair-gensler-to-defend-climate-crypto-plans-before-gop-led-panel-2e3a6ade [https://web.archive.org/web/20231204050108/https://www.wsj.com/articles/sec-chair-gensler-to-defend-climate-crypto-plans-before-gop-led-panel-2e3a6ade]; David Dayen, *Congressmembers Tried to Stop the SEC's Inquiry into FTX*, AM. PROSPECT (Nov. 23, 2022), https://prospect.org/power/congressmembers-tried-to-stop-secs-inquiry-into-ftx [https://perma.cc/43EX-R8YB].

398. *See, e.g.*, Chris Prentice & Hannah Lang, *Coinbase Rejects U.S. Regulator's Claim It Broke Rules on Crypto*, REUTERS (Apr. 27, 2023, 1:00 PM), https://www.reuters.com/markets/currencies/coinbase-does-not-list-securities-company-tells-us-regulator-2023-04-27 [https://web.archive.org/web/20230503124643/https://www.reuters.com/markets/currencies/coinbase-does-not-list-securities-company-tells-us-regulator-2023-04-27/].

399. Gensler, *supra* note 341.

quite useful in "future-proofing" the law.[400] Experience with the legal innovation of the limited liability company also makes it clear that perfect certainty under the securities laws is not necessary for something to thrive: courts have refused to lay down bright-line rules for when interests in limited liability companies will be considered investment contracts under the Howey test,[401] but limited liability companies have nonetheless experienced exponential growth in popularity since they were first created.[402] Given all of this, crypto industry complaints about the uncertain application of existing laws often seem like a pretext for an unwillingness to comply.

It may be that running a legally compliant business is not economically viable for some crypto industry participants, but without techno-solutionism to cloud our vision, we may be glad to see the end of businesses that have little to recommend them other than regulatory arbitrage. While Brummer, Yadav, and Zaring have argued that regulatory agencies "risk being viewed as less technocratic and expert and driven more by selfish, rather than public interests" when they bring crypto enforcement actions,[403] this assumes a techno-solutionist public interest in seeing the crypto industry and its innovation flourish. While enforcement actions may indeed lessen the legitimacy of regulators in the eyes of the crypto industry and some crypto users, those same enforcement actions may very well bolster the legitimacy of regulators in the eyes of other members of the public (the vast majority of whom are distrustful of crypto).[404] And of course, once something goes wrong, the public will always ask, "[w]here were the regulators?" Techno-solutionist accommodative inaction can be very damaging to the legitimacy of a regulatory agency in retrospect.

3. Looking Forward: Financial Regulation and AI

AI is currently the "buzziest" technology both within and outside of the financial industry. In the wake of OpenAI's launch of ChatGPT, much of the hype, fervor, and VC funding pertaining to crypto shifted to AI-related technologies.[405] These AI technologies can be applied in any number of

400. The Supreme Court noted that Congress had chosen to include "investment contracts" within the definition of "security" as it "embodies a flexible rather than a static principle, one that is capable of adaptation to meet the countless and variable schemes devised by those who seek the use of the money of others on the promise of profits." SEC v. W.J. Howey Co., 328 U.S. 293, 299 (1946).

401. *See, e.g.*, United States v. Leonard, 529 F.3d 83, 89 (2d Cir. 2008) ("[A]n interest in an LLC is the sort of instrument that requires 'case-by-case analysis' into the 'economic realities' of the underlying transaction.").

402. "LLCs are far and away the most popular legal entity form for new businesses." Eric H. Franklin, *A Rational Approach to Business Entity Choice*, 64 KAN. L. REV. 573, 586 (2016).

403. Brummer, Yadav & Zaring, *supra* note 343, at 1302.

404. Faverio, Dawson & Sidoti, *supra* note 167.

405. Hannah Miller, *Tech Investors Bet on AI, Leaving Crypto Behind*, BLOOMBERG (July 11, 2023,

different fields,[406] but this Section's discussion will focus primarily on whether *financial* regulation will be stymied by techno-solutionism associated with the application of AI-related technologies to *financial* services.

As a starting point, it's worth noting that AI-related technologies are particularly likely to invite techno-solutionism because they are especially effective in obscuring the reality of human agency and incentives: the very name "artificial intelligence" connotes autonomy and superiority to human flaws and imperfections. The technologies we call "artificial intelligence" do not currently display characteristics of real human intelligence, though—they lack the ability to reflect on or engage with their existence in a world where others exist too.[407] Some have suggested that the term "applied statistics" is therefore a more accurate description of these technologies, but the "AI" label has stuck.[408] This label can serve to distract people from the important role that human computer scientists play in programming the software that will "learn" from the data presented to it, and the role that data scientists can play in selecting and curating that data.[409] The term "learn" is in quotation marks because AI does not learn in the same way a human does. AI does not seek to establish causality or engage in formal reasoning but instead looks for correlations (even weak correlations) in data and uses these to formulate decision-making rules that will guide it in performing an assigned task[410] (hence the moniker "applied statistics").

This explanation of AI encompasses "generative AI" like ChatGPT, as well as earlier generations of machine learning technology that were used in financial services prior to the development of generative AI. The primary difference is that unlike previous iterations of AI, generative AI can generate uniquely constructed content of its own in the form of things like text,

11:01 AM), https://www.bloomberg.com/news/articles/2023-07-11/startup-investors-are-betting-on-ai-and-leaving-crypto-behind [https://perma.cc/FFB8-UR7X].

406. For an indication of the many policy areas affected by AI, see *FACT SHEET: President Biden Issues Executive Order on Safe, Secure, and Trustworthy Artificial Intelligence*, WHITE HOUSE (Oct. 30, 2023), https://www.whitehouse.gov/briefing-room/statements-releases/2023/10/30/fact-sheet-president-biden-issues-executive-order-on-safe-secure-and-trustworthy-artificial-intelligence/?utm_source=substack&utm_medium=email [https://perma.cc/782F-CNBZ].

407. For an overview of the debate on what is meant by "intelligence" in the context of AI, see generally Christopher Newfield, *How to Make "AI" Intelligent; or, The Question of Epistemic Equality*, CRITICAL AI , October 2023, at 1.

408. Madhumita Murgia, *Sci-fi Writer Ted Chiang: "The Machines We Have Now Are Not Conscious*," FIN. TIMES (June 2, 2023), https://www.ft.com/content/c1f6d948-3dde-405f-924c-09cc0dcf8c84 [https://perma.cc/CCE7-RVR8].

409. While we may hear that "there are no bad AI systems, only bad AI system users" and "there is nothing value-neutral about any information technology, including AI systems." *Hartzog Testimony*, *supra* note 17, at 8–9.

410. Solow-Niederman, *supra* note 149, at 25.

images, and code.[411] Despite the developments in Generative AI, most AI-driven financial services applications currently rely on machine learning technologies that were available before the advent of ChatGPT, particularly in risk management and portfolio construction contexts.[412] There is, however, interest in using Generative AI to improve consumer-facing chatbots and for report summarization; some financial services firms have also expressed interest in using generative AI in regtech tools (for example, fraud detection and AML compliance tools, as well as automated reporting).[413]

There is a particular interest in the efficiency gains that generative AI can make[414]—but those claims to efficiency are quite techno-solutionist. The large language models ("LLMs") used for generative AI are extremely expensive to create, and after those sunk costs have been incurred, they will continue to be extremely expensive to maintain and run—at the most basic level, they require significant amounts of electricity and water[415] (as with blockchains, we should not forget the environmental costs of these technologies). Efficiency gains therefore depend on LLMs eliminating the cost of human oversight, but LLMs can "hallucinate" incorrect answers, often informed by specious correlations drawn from lackluster data.[416] More generally, AI is poorly suited to predicting low-probability but high-stakes events, and widespread reliance on such AI tools could result in more homogenous behavior that ends up undermining assumptions in the data that the tools were trained on.[417] Because of these limitations, humans who are highly skilled in domain expertise should be kept in the loop to check the output of AI tools if that output is to be used in a high stakes risk management

411. LINKLATERS, AI IN FINANCIAL SERVICES 3.0: MANAGING MACHINES IN AN EVOLVING LEGAL LANDSCAPE 5 (2023), https://www.linklaters.com/insights/thought-leadership/fintech/artificial-intelligence-in-financial-services [https://perma.cc/Z2FP-XZWW].

412. *Id.* at 4–5.

413. *Id.*

414. FIN. STABILITY OVERSIGHT COUNCIL, *supra* note 225, at 91. "The purpose of AI, the source of its value, is its capacity to increase productivity, which is to say, it should allow workers to do *more*, which will allow their bosses to fire some of them, or get each one to do more work in the same time, or both." Cory Doctorow, *Cory Doctorow: What Kind of Bubble Is AI?*, LOCUS (Dec. 18, 2023), https://locusmag.com/2023/12/commentary-cory-doctorow-what-kind-of-bubble-is-ai [https://perma.cc/AJ56-H5JE].

415. Doctorow, *supra* note 414. *See generally* Shaolei Ren, Pangfei Li, Jianyi Yang & Mohammad A. Islam, Making AI Less "Thirsty": Uncovering and Addressing the Secret Water Footprint of AI Models (Mar. 26, 2025) (unpublished manuscript), https://arxiv.org/pdf/2304.03271.pdf [https://perma.cc/B8NE-QAJE].

416. *What Are AI Hallucinations?*, IBM (Sept. 1, 2023), https://www.ibm.com/topics/ai-hallucinations [https://perma.cc/6WB9-H8XK].

417. ALLEN, *supra* note 113, at 55–56, 64–65; *see also* Juan Luis Perez, *How AI Will Change Investment and Research*, FIN. TIMES (Nov. 29, 2023), https://ft.com/content/2390e8f3-88ba-40a0-b684-7fb6fada9bde.

or portfolio construction situations (individuals without this domain expertise are more likely to fall prey to automation biases and defer to the model's output unquestioningly).[418] A combination of AI and human intelligence will often produce the most accurate answers, but that increased accuracy will be very expensive.[419]

To reduce costs, some in the financial industry may seek to automate their risk management and portfolio construction practices while limiting or dispensing with the use of domain experts—this could ultimately threaten the stability of our financial system.[420] AI may also be used to arbitrage regulation. For example, banks could potentially arbitrage an important kind of microprudential regulation known as capital requirements by using "machine learning-capable risk management models" and "selectively exposing those models to data sets that neglect tail risks."[421] If tacitly permitted, this kind of arbitrage could result in lower bank capital levels (undermining a cornerstone of financial stability regulation), and could even harden into a regulatory entrepreneurship strategy if industry participants "pressure regulators to certify that the output of a particular . . . tool constitutes sufficient compliance."[422]

This arbitrage is a problem of degree, not an entirely new problem. Financial institutions were attempting complex regulatory arbitrage and entrepreneurship strategies with regard to capital requirements long before machine learning came along.[423] In many ways, these old problems have simply been amped up by the inscrutability of AI. Long-standing calls for capital regulation to be simplified would also be quite effective in making capital regulation more robust to AI-facilitated arbitrage.[424] Unless and until such reforms are adopted, though, it is true that banking regulators will need increased technological sophistication to scrutinize algorithms and data sets in order to detect AI-enabled arbitrage of regulatory capital requirements.

The use of AI could also amplify consumer protection problems, like those associated with discrimination in the provision of credit.[425] Once again,

418. On the importance of domain knowledge experts scrutinizing AI output, see Perez, *supra* note 417; Doctorow, *supra* note 414.

419. Doctorow, *supra* note 414.

420. ALLEN, *supra* note 113, at 55–58.

421. *Id.* at 157–58.

422. *Id.*

423. The complexity of regulatory capital requirements "provides near-limitless scope for arbitrage." Andrew G. Haldane, Executive Director, & Vasileios Madouros, Economist, Bank of England, Speech at the Federal Reserve Bank of Kansas City's 366th Economic Policy Symposium, "The Changing Policy Landscape": The Dog and the Frisbee 8 (Aug. 31, 2012), https://www.bis.org/review/r120905a.pdf [https://perma.cc/JN45-MH6L].

424. *See id.* at 14–19 for one of the most prominent such proposals.

425. *See supra* notes 148–151 and accompanying text.

we have existing regulatory frameworks within which to respond to many of these issues so long as regulators are not too dazzled or cowed by the technology, and the CFPB has indicated its willingness to continue enforcing its anti-discrimination laws when AI tools have been used.[426] In one speech, CFPB Director Chopra noted that

> AI certainly poses new risks, or at least exacerbates old ones. While many new approaches may be necessary, it is clear we must all make use of existing laws and regulations on the books. In the United States . . . there is no 'fancy new technology' carveout to existing laws. Even if firms are using a complex new algorithm or AI model, they must follow the law.[427]

This is a promising start. Chopra recognizes that many of the problems likely to be caused by the use of AI in finance are familiar ones that should not be accommodated but instead should be addressed with existing regulatory tools. He also remains humble about truly new problems that could emerge from the use of AI and new regulatory tools that may be needed to address them.[428] The question is—given that "personnel is policy"—will other financial regulators and lawmakers follow suit?

The VC industry has invested heavily in AI and has strong incentives to deploy cognitive capture, regulatory arbitrage, and regulatory entrepreneurship strategies in order to make those investments more profitable.[429] Andreessen Horowitz has been particularly aggressive in deploying techno-solutionist rhetoric in lobbying for favorable legal and regulatory treatment *for crypto*[430] and has made it clear that it plans to deploy a similar strategy for AI. In a December 2023 blog post, Andreessen Horowitz's co-founder Ben Horowitz announced:

> We are non-partisan, one issue voters: If a candidate supports an optimistic technology-enabled future, we are for them. If they want to choke off important technologies, we are against them. Specifically, we believe . . . Artificial Intelligence has the potential to uplift all of humanity to an unprecedented quality of living and must not be choked off in its infancy . . . Every penny we donate will go to support like-minded candidates and oppose candidates who aim to kill America's advanced technological future.[431]

426. See *supra* notes 381–83 and accompanying text.

427. Chopra, *supra* note 275.

428. Hartzog has recommended the continued application of time-tested legal doctrines like fiduciary duties and consumer protection laws to activities carried out using AI, and—where harms are significant—licensing regimes or even bans. *Hartzog Testimony*, *supra* note 17, at 4–6, 11.

429. *See supra* note 405.

430. Lipton, Wakabayashi & Livni, *supra* note 46.

431. Ben Horowitz, *Politics and the Future*, ANDREESSEN HOROWITZ (Dec. 14, 2023), https://a16z.com/politics-and-the-future [https://perma.cc/6NU2-ZMTE].

To give you an example of the kind of "optimistic technology-enabled future" that Horowitz will lobby fiercely to protect from regulation, Andreessen Horowitz has funded a startup at the intersection of AI and crypto known as Worldcoin.[432] Co-founded by Open AI-CEO Sam Altman, Worldcoin is using a device known as "The Orb" to collect millions of retinal scans in the developing world in exchange for a crypto asset that has no real value at present, "but someday, Worldcoin says, it'll form the basis of a new economic system and maybe will also provide a universal basic income stream for the world's poor."[433] This is an exquisite example of techno-solutionism: Worldcoin has been designed to respond to problems that do not yet exist, but that Worldcoin's founder expects his other technology to cause (i.e., the lack of income opportunities that will be available if AI renders many jobs obsolete). If AI does indeed end up eliminating lots of jobs, we will need policy solutions that take into account the dignity of work as well as people's need for income.[434] Worldcoin, however, offers (at best) an oversimplified solution to such a complex problem—a potential method for paying people to watch their screens once they no longer have jobs. And Worldcoin downplays the privacy concerns associated with training its models on the biometric data of vulnerable people and the predatory aspects of paying those people for their biometric data with a potentially worthless crypto asset.[435]

It remains to be seen how lawmakers and regulators will respond to Silicon Valley's techno-solutionist appeals to allow this and other kinds of AI-related innovation to flourish.

IV. A POSSIBLE ANTIDOTE TO TECHNO-SOLUTIONISM

The primary goal of this Article has been to identify the techno-solutionism rife in the fintech industry and to explore how this techno-solutionism has both stymied and been facilitated by financial regulation. Techno-solutionist narratives gain some of their power through unchallenged repetition,[436] and so this very act of calling out fintech's techno-solutionist narratives will hopefully go some small way toward inoculating lawmakers, regulators, and the public against fintech's most

432. Guo & Renaldi, *supra* note 130.

433. Max Chafkin, *Don't Scan Your Eyeballs for Worldcoin's Magic Beans*, BLOOMBERG (Aug. 7, 2023, 9:30 AM), https://www.bloomberg.com/news/newsletters/2023-08-07/what-s-the-purpose-of-worldcoin-orb-eye-scanning-crypto-token-project [https://perma.cc/5R9K-4DE4].

434. DARON ACEMOGLU & SIMON JOHNSON, POWER AND PROGRESS: OUR 1000-YEAR STRUGGLE OVER TECHNOLOGY & PROSPERITY 416–17 (2023).

435. Guo & Renaldi, *supra* note 130.

436. COHEN, *supra* note 17, at 104.

outlandish claims.[437] As Morozov notes in the postscript to his book, we cannot eliminate solutionism, but we can "ridicule" it,[438] hopefully depriving it of some of its power.

Right now, there may not be much more that can be done to diminish techno-solutionism and its detrimental impacts on regulatory regimes designed to protect the public from harm. Techno-solutionism is entrenched in our society in many ways: by corporate political expenditures (including expenditures by venture capitalists, as already discussed);[439] by the lack of political access for the very communities impacted by the problems to be solved;[440] by challenges in inducing skilled technologists to work for government agencies;[441] by tech industry funding of academic research on technology and its impacts;[442] by limited public support for public sector innovation (which could stand as a counterfactual techno-solutionist narrative);[443] by computer science pedagogy that fails to teach students how to conceptualize or contextualize the problem to be solved;[444] and surely much more. This Article has consistently rejected techno-solutionism's silver bullet solutions, and there are also no silver bullet solutions for addressing techno-solutionism itself.

Still, as this Article has emphasized, personnel is policy, and we have already seen examples of policymakers who are predisposed toward pushing back against fintech's harms—these kinds of policymakers can be empowered by the articulation of an alternative to techno-solutionism. As a heuristic, techno-solutionism will default to permitting technological innovation, regardless of potential harms: it becomes easy to "simply assume the rightful existence of [technologies] and go straight to building guardrails so they can flourish."[445] When it comes to assessing fintech's claims to improve financial inclusion, efficiency, competition, and security, what is needed is a fundamental shift in rhetoric and perspective away from techno-solutionism and toward contextually-informed skepticism regarding technological solutions.

437. Campbell-Verduyn & Lenglet, *supra* note 13, at 469 (stressing "the value added for political economy of scrutinising how the visions and materialisation of technology fail").

438. MOROZOV, *supra* note 8, at 355.

439. *See supra* notes 325, 430–31, and accompanying text.

440. Byrum & Benjamin, *supra* note 16.

441. Hilary J. Allen, *Resurrecting the OFR*, 47 J. CORP. L. 1, 31 (2021).

442. Joseph Menn & Naomi Nix, *Big Tech Funds the Very People Who Are Supposed to Hold It Accountable*, WASH. POST (Dec. 7, 2023), https://www.washingtonpost.com/technology/2023/12/06/academic-research-meta-google-university-influence [https://perma.cc/TR6V-33PK].

443. MAZZUCATO, *supra* note 48, at 12–15.

444. Ohm & Frankle, *supra* note 36, at 779.

445. *Hartzog Testimony*, *supra* note 17, at 12.

Adopting a posture of contextually informed skepticism is precautionary to a degree but does not require the embrace of an overly strong "precautionary principle" where activities have to be proven riskless before they can proceed. Contextually informed skepticism is therefore not incompatible with innovation; instead, it sets up incentives for the kind of innovation that is mindful of harms and consequences.[446] It is, however, likely that contextually informed skepticism from regulators will impede *some* innovation in the name of protecting the public from harm—which will inevitably invite intense criticism from the tech industry.[447] However, a posture of contextually informed skepticism can embolden policymakers to take this industry criticism with a grain of salt, because contextually informed skepticism recognizes that not all innovation is socially beneficial and that the tech industry's appreciation of potential public harm will often be skewed by financial incentives and lack of domain expertise.[448] This kind of perspective shift is desperately needed with regard to crypto, for example, where the harms are many, the benefits few, and yet a bipartisan group of lawmakers has shown itself willing to support industry-favored deregulation designed to encourage more crypto innovation.[449]

This is by no means a call for fintech innovators to stand down—society often benefits from techno-optimists' efforts to push frontiers.[450] But when the stakes are high, this yin of techno-optimism needs to be balanced by the yang of contextually-informed skepticism from regulators or else history and domain expertise will be ignored and harms will proliferate unchecked. This Article has already explored why finance is an arena in which the potential harms are too significant for unfettered technological experimentation.[451] Finance might also be different in another respect: the potential benefits of technological innovation may prove to be structurally limited in finance. Often, with technology, it is the users who unlock truly unexpected innovative use cases through their experimentation.[452] In the financial

446. COHEN, *supra* note 17, at 90, 92.

447. In his manifesto, Andreessen decries precautionary approaches as preventing "virtually all progress since man first harnessed fire," as well as calling them "our enemy," "evil," and "deeply immoral." Andreessen, *supra* note 4.

448. Ford has also stressed that "[r]egulatory staffers . . . need sufficient confidence in their own judgment and a healthy degree of skepticism about industry." Cristie Ford, *New Governance in the Teeth of Human Frailty: Lessons from Financial Regulation*, 2010 WIS. L. REV. 441, 474 (2010).

449. *See supra* notes 325–26 and accompanying text.

450. For a discussion of the socially valuable residue of the dot.com bubble, see Doctorow, *supra* note 414.

451. *See supra* notes 291–300; *see also* ALLEN, *supra* note 113, at 23–24.

452. "[T]he public has a huge range of intentions and desires and often brings far more imagination to new technologies than those who first market [or design] them." David E. Nye, *Technological Prediction: A Promethean Problem*, *in* TECHNOLOGICAL VISIONS: THE HOPES AND FEARS THAT SHAPE NEW TECHNOLOGIES 159, 170 (Marita Sturken et al. eds., 2004).

industry, though, much of the innovation that has occurred has been driven by the supply-side, rather than consumer demand.[453] It may be that where money is at stake, industry (including the crypto industry, which tends towards economic centralization)[454] will afford users limited ability to actively construct how they receive their financial services. If this is the case, then unexpected uses of technology will have limited opportunities to emerge—and if technological experimentation is primarily benefitting the supplier rather than the users, then there is far less reason for policymakers to accommodate it.

CONCLUSION

Further research on how to disrupt techno-solutionism is welcome, because if fintech is to serve as a force for good in society, it needs to be severed from techno-solutionism. We need to recognize that if new technology is adopted without addressing the broader context in which it operates, then discrimination, distributional inequalities, concentrations of power, privacy incursions, and other harms will continue to proliferate. When it comes to fixing finance, technological innovation will not obviate the need for the hard slog of structural reform. Furthermore, where technological tools *do* have a role to play in addressing complex structural problems, they may be tarnished by "techlash" unless we can find a way to address techno-solutionism.[455]

Financial regulators need to adopt a posture of contextually informed skepticism instead of techno-solutionism, keeping firmly in mind that they have express statutory mandates to protect the American public from harm—and no express mandates to facilitate technological innovation. If financial regulators can resist cognitive capture and enforce existing laws such that regulatory arbitrage and regulatory entrepreneurship are not profitable strategies, then technology is more likely to deliver benefits without serious social harms. Where technologies pose genuinely new problems, then Congressional action will be needed, and that action should also proceed

453. Awrey, *supra* note 122, at 263–67.

454. Aramonte et al., *supra* note 182, at 27–29; Allen, *supra* note 284, at 924.

455. One meta analysis of public discourse between 2010–2020 found that discussion of big tech is dominated not by solutionist appeals for self-regulation but instead by "calls to regulate big tech, growing critiques of technology's influence in society, and declining discussion of the tech sector as a driver of economic growth." Short et al., *supra* note 55, at 6; *see also* Shira Ovide, *Big Tech's Backlash Is Just Starting*, N.Y. TIMES (July 30, 2020), https://www.nytimes.com/2020/07/30/technology/big-tech-backlash.html [https://web.archive.org/web/20231029031307/https://www.nytimes.com/2020/07/30/technology/big-tech-backlash.html]; Edward Ongweso Jr., *The Incredible Temper Tantrum Venture Capitalists Threw Over Silicon Valley Bank*, SLATE (Mar. 13, 2023, 11:24 AM), https://slate.com/technology/2023/03/silicon-valley-bank-rescue-venture-capital-calacanis-sacks-ackman-tantrum.html [https://perma.cc/3DC4-WPU3].

from a position of contextually informed skepticism. To slightly adapt testimony from AI and privacy expert Woody Hartzog, "[l]awmakers will make little progress until they accept that the toothpaste is never out of the tube when it comes to questioning and curtailing the design and deployment of [technology] for the betterment of society."[456]

456. *Hartzog Testimony*, *supra* note 17, at 11.