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## Introduction: The Rise of Fintech

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## INTRODUCTION: THE RISE OF FINTECH

Andrew F. Tuch\*

The use of technology has long accompanied the provision of financial products and services. In the late 1950s, financial institutions turned to information technology to help settle and record transactions, a burden that had grown with the surging volume of securities trades.<sup>1</sup> The tool of choice was the mainframe computer, then the state of the art in technology.<sup>2</sup> In the succeeding decades, firms automated processes they had previously conducted manually.<sup>3</sup> They used information technology to gather, process, and report data. They combined information technology with advances in financial economic theory, including portfolio theory and the valuation of financial derivatives, applying mathematical modeling to construct portfolios, refine existing financial instruments, and create new instruments.<sup>4</sup> Advances in technology lowered barriers to entry and generated significant economies of scale.<sup>5</sup> With the aid of these advances, financial institutions consolidated and finance disintermediated.<sup>6</sup>

These changes have only accelerated in recent years. On one account, “[i]n the decade and a half of the twenty-first century, we went through a major technological inflection point,” a consequence of the exponential growth in computation power and data storage capacity and other innovations.<sup>7</sup> These changes are potentially transforming the provision of

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1. See ALAN D. MORRISON & WILLIAM J. WILHELM, JR., *INVESTMENT BANKING: INSTITUTIONS, POLITICS, AND LAW* 230-31 (2007).

2. Alan D. Morrison & William J. Wilhelm, Jr., *Trust, Reputation, and Law: The Evolution of Commitment in Investment Banking*, 7 J. LEGAL ANALYSIS 363, 391-92 (2015).

3. See JOEL SELIGMAN, *THE TRANSFORMATION OF WALL STREET* 571-72 (3d ed., 2003).

4. Morrison & Wilhelm, *supra* note 2, at 382-91.

5. *Id.* at 394.

6. As to these changes, see MICHAEL S. BARR, HOWELL E. JACKSON & MARGARET E. TAHYAR, *FINANCIAL REGULATION: LAW AND POLICY* 17-18, 207-13 (2nd ed. 2018)

7. THOMAS L. FRIEDMAN, *THANK YOU FOR BEING LATE: AN OPTIMIST’S GUIDE TO THRIVING IN THE AGE OF ACCELERATIONS* 382 (2015); see also ERIK BRYNJOLFSSON & ANDREW MCAFEE, *THE SECOND MACHINE AGE: WORK, PROGRESS, AND PROSPERITY IN A TIME OF BRILLIANT TECHNOLOGIES*

financial products and services, altering the institutional landscape, and increasing access to finance.<sup>8</sup> Tech startups in finance are proliferating, attracting talent and capital and making inroads into the business of established firms.<sup>9</sup> Technology giants—the likes of Amazon, Apple, Facebook, and Google—are entering financial services, beginning to offer credit cards and currencies as they attempt to push more fully into retail banking.<sup>10</sup> Meanwhile, incumbents are shifting focus, becoming technology innovators. New financial instruments, among them digital tokens and cryptocurrencies, are emerging. Data analysis and machine learning have growing impact on finance. Fintech may well reshape the financial services industry just as technology is disrupting other industries.<sup>11</sup>

Yet, for all its novelty, fintech raises familiar regulatory challenges.<sup>12</sup> Commentators are examining the benefits and potential downsides of fintech, with particular concern for conduct of business, financial stability, and systemic risk.<sup>13</sup> They are studying how new instruments and structures

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34 (2014) (“[W]e’re at an inflection point—a bend in the curve where many technologies that used to be found only in science fiction are becoming everyday reality.”).

8. Some refer to the current era as the “Bitcoin Era.” See William Magnuson, *Financial Regulation in the Bitcoin Era*, 23 STAN. J.L. BUS. & FIN. 159. For characteristics of this era, differentiating it from earlier periods in which technological advances occurred in finance, see *id.* at 163-74 and Chris Brummer & Yesha Yadav, *FinTech and the Innovation Trilemma*, 107 GEO. L.J. 235 (2019).

9. See U.S. DEP’T OF TREASURY, A FINANCIAL SYSTEM THAT CREATES ECONOMIC OPPORTUNITY: NONBANK FINANCIALS, FINTECH, AND INNOVATION 5 (2018) (“From 2010 to the third quarter of 2017, more than 3,330 new technology-based firms serving the financial services industry have been founded, 40% of which are focused on banking and capital markets. In the aggregate, the financing of such firms has been growing rapidly, reaching \$22 billion globally in 2017.”).

10. See, e.g., Peter Rudegeair & Liz Hoffman, *Next in Google’s Quest for Consumer Dominance: Banking*, WALL STREET J. (Nov. 13, 2019), <https://www.wsj.com/articles/next-in-googles-quest-for-consumer-dominancebanking-11573644601>.

11. Thomas Friedman argues that technological advances are reshaping virtually all industries. FRIEDMAN, *supra* note 7, at 133 (2015) (“[A]ll industries are becoming computable. When an industry becomes computable, it goes through a series of predictable changes: It moves from being digitized to being disrupted to being democratized”) (internal quotation marks omitted). See also BRYNJOLFSSON & MCAFEE, *supra* note 7, at 57-70 (examining accelerations in technology in a range of industries).

12. See BARR, JACKSON & TAHYAR, *supra* note 6, at 184-88 (discussing regulatory issues arising from the use of fintech in retail banking).

13. As to conduct of business concerns, see, for example, Christopher K. Odinet, *Consumer Bitcredit and Fintech Lending*, 69 ALA. L. REV. 781 (2018), and Rory Van Loo, *Technology Regulation by Default: Platforms, Privacy, and the CFPB*, 2 GEO. L. TECH. REV. 531 (2018). As to financial stability and systemic risk concerns, see, for example, William Magnuson, *Regulating Fintech*, 71 VAND. L. REV. 1167 (2018), and Saule T. Omarova, *New Tech v. New Deal: FinTech as a Systematic Phenomenon*, 36 YALE J. ON REG. 735 (2019).

fit within existing regulatory regimes and, when they do not, whether and how to regulate them.<sup>14</sup> Regulators are working to stay ahead of market developments and to calibrate their responses in the absence of reliable or complete information about how exactly new technologies are affecting markets—and about how market participants will respond to rule changes.<sup>15</sup> In the United States, the financial-regulatory architecture tasked with corralling fintech remains fragmented across numerous agencies, many of them weakly coordinated and beset by overlapping and disputed jurisdictions. These agencies oversee both financial entities and functions in ways that suggest an almost accidental design.

This volume of the *Washington University Journal of Law and Policy* examines fintech, focusing on the regulatory and other challenges it poses. The symposium benefits from contributions by prominent scholars of financial and securities regulation. These contributions examine the structure of firms and markets, considering fintech activities occurring within existing firms and regulatory perimeters and activities that spill over the boundaries we currently take for granted. The contributors examine the emerging regulatory responses to fintech, taxonomizing them. They consider which regulatory approaches, or ecosystems, will best help fintech to develop. They examine how fintech applies to fundraising, examining initial coin offerings (ICOs) and equity crowdfunding, techniques that attract attention for different reasons—ICOs because they occur so frequently beyond existing regulatory perimeters when they should not and equity crowdfunding because it occurs so infrequently despite enjoying regulatory accommodations. Our authors also examine the promise and limits of “smart” contracts in consumer finance. They explore “stable cryptocurrencies.” They look to Kenya for a case study of fintech lending in fledgling credit markets. A snapshot of these articles follows.

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14. See, e.g., Hilary J. Allen, *Bitcoin?*, 76 MD. L. REV. 877, 920-40 (2017) (examining the regulatory status of virtual currencies); Henry T.C. Hu, *Too Complex to Depict? Innovation, “Pure Information,” and the SEC Disclosure Paradigm*, 90 TEX. L. REV. 1601 (2012) (examining how financial innovation creates complexity that existing disclosure approaches struggle to accurately and completely depict); Jonathan Rohr & Aaron Wright, *Blockchain-Based Token Sales, Initial Coin Offerings, and the Democratization of Public Capital Markets*, 70 HASTINGS L.J. 463, 485-510 (2019) (examining the regulation of initial coin offerings under federal securities laws).

15. For a recent study considering many of the issues facing regulators, see U.S. DEP’T OF TREASURY, *supra* note 9. For an insightful discussion of challenges facing regulators in an era of technological innovation, see Tom Lin, *The New Investor*, 60 UCLA L. REV. 678, 717-22 (2013).

In “The Nature of the Fintech Firm,” Professor Howell Jackson examines why some fintech activities are located within the firm under corporate managerial control (and often subject to strict regulation), while others occur by means of arm’s length transactions in the marketplace (often beyond direct regulatory oversight).<sup>16</sup> The revolution in fintech “increases the set of viable arrangements for producing financial services, potentially relocating significant amounts of activities that were previously based within the regulated firm and subject to management discretion in a well-supervised environment.”<sup>17</sup> Innovations have thus challenged regulatory regimes. They may nevertheless serve the public interest, by, for example, providing to the unbanked services that regulated firms have found unprofitable. Innovations also pose challenges for applying conventional legal doctrines that turn on a legal actor’s state of mind. These doctrines are poorly suited to conduct produced by computer code and artificial intelligence.

Focusing on regulatory developments, Professor Saule T. Omarova identifies three primary emerging regulatory strategies for fintech in “Dealing with Disruption: Emerging Approaches to Fintech Regulation.”<sup>18</sup> She labels these strategies “experimentation,” “incorporation,” and “accommodation.” Most consequential among the risks fintech creates are macro-level, systemic risks, namely that fintech may disrupt what Professor Omarova calls the “New Deal settlement in finance,” the balance between “private freedom and public control in the financial market.”<sup>19</sup> Experimentation is typified by the “regulatory sandbox,” which allows a “safe space” for regulators to test novel financial products and services, and therefore experiment with regulatory measures. Incorporation is typified by the provision of licenses or charters for fintech firms, an effort to bring these firms within existing regulatory and supervisory regimes. Accommodation is typified by RegTech, the use of technology by regulators and supervisors to adjust to or accommodate fintech developments. Professor Omarova identifies and assesses the elements of these regulatory strategies,

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16. Howell E. Jackson, *The Nature of the Fintech Firm*, 61 WASH. U. J.L. & POL’Y 9 (2020)

17. *Id.* at 11.

18. Saule T. Omarova, *Dealing with Disruption: Emerging Approaches to Fintech Regulation*, 61 WASH. U. J.L. & POL’Y 25 (2020)

19. *See* Omarova, *supra* note 13, at 746-47.

“establish[ing] a helpful baseline for further discussion and policy analysis.”<sup>20</sup>

Also focusing on regulatory developments in fintech, professors Ross Buckley, Douglas Arner, Robin Veidt, and Dirk Zetsche examine how regulators may support the development of fintech in the article “Building Fintech Ecosystems: Regulatory Sandboxes, Innovation Hubs, and Beyond.”<sup>21</sup> Although regulatory sandboxes have proven popular with regulators, innovation hubs are likely to be more effective in fostering innovation, Professor Buckley and colleagues argue. These are “portals” by which fintech industry participants can access regulators “to discuss their proposed fintech innovation, gain some guidance. . . , and potentially seek dispensations or adjustments.”<sup>22</sup> Professor Buckley and his coauthors examine the core features of sandboxes and their primary potential benefits and risks, offering advice on how regulators can “gain the greatest benefits to ecosystem development.”<sup>23</sup>

Contributions by Professor James J. Park and Mr. Howard H. Park and by Professor Usha R. Rodrigues examine ICOs, offerings to fund virtual currency and blockchain-related startups. These articles also consider regulators’ efforts to bring these offerings within existing regulatory perimeters. An elaborate regulatory regime governs raising funds from the public, requiring public offerings of securities to be made under a registration statement filed with and declared effective by the Securities and Exchange Commission (SEC). Issuers and others are subject to a comprehensive liability regime for deceptive statements. Whether ICOs are subject to the regime turns fundamentally on whether digital tokens are investment contracts and therefore securities under the Securities Act of 1933 and Securities Exchange Act of 1934.<sup>24</sup> Since 2017 the SEC has forcefully asserted its jurisdiction.

Professor Park and Mr. Park focus on the SEC’s enforcement record involving ICOs in “Regulation by Selective Enforcement: The SEC and

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20. Omarova, *supra* note 18, at 53.

21. Ross P. Buckley, Douglas Arner, Robin Veidt & Dirk Zetsche, *Building Fintech Ecosystems: Regulatory Sandboxes, Innovation Hubs and Beyond*, 61 WASH. U. J.L. & POL’Y 55 (2020)

22. *Id.* at 58.

23. *Id.* at 84.

24. See SEC. & EXCH. COMM’N, REPORT OF INVESTIGATION PURSUANT TO SECTION 21(A) OF THE SECURITIES EXCHANGE ACT OF 1934: THE DAO (2017).

Initial Coin Offerings.”<sup>25</sup> They note scholarly criticism of the SEC’s decision to regulate through enforcement actions rather than by propounding and applying clear rules.<sup>26</sup> But they argue that the SEC “had little choice” other than to take the approach it has: bringing only a “handful” of “carefully chosen” and highly visible enforcement actions.<sup>27</sup> Professor Park and Mr. Park argue that the SEC has provided guidance to market participants and reduced the incidence of unregistered ICOs. But while the SEC’s approach “has largely been successful,” it has created potential dangers, which the authors examine.<sup>28</sup> Perhaps inevitably, the status of ICO tokens is still the subject of open questions, and thus the limits of the SEC’s jurisdiction are also unclear.

Professor Rodrigues observes that many issuers seek to avoid, or even ignore, having their ICOs regulated as public offerings of securities and argues that they *should* change course and comply with the regime. Her article, “Embrace the SEC,” contends not that the SEC’s interpretation of ICOs’ status as subject to SEC regulation is correct (although she does not dispute it), but that it is in issuers’ interests to comply since the benefits of doing so exceed the costs.<sup>29</sup> Professor Rodrigues “seeks to persuade the blockchain community that what it really needs to offer the general public is a security.”<sup>30</sup> Investors find registered offerings attractive, since they carry both the imprimatur of the SEC and important investor protections. Registration also empowers entrepreneurs. But Professor Rodrigues cautions that the SEC must be flexible, seeking to make ICOs more viable. She also explores an innovation designed to better protect investors, namely, the use of escrow agents to protect investors’ funds.<sup>31</sup>

The symposium volume examines the extent to which equity crowdfunding is realizing its promise. In “Crowdfunding Issuers in the

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25. James J. Park & Howard H. Park, *Regulation by Selective Enforcement: The SEC and Initial Coin Offerings*, 61 WASH. U. J.L. & POL’Y 99 (2020).

26. For a discussion of the critique, see James J. Park, *The Competing Paradigms of Securities Regulation*, 57 DUKE L.J. 625, 635-38 (2007).

27. Park & Park, *supra* note 25, at 101.

28. *Id.* at 126.

29. Usha R. Rodrigues, *Embrace the SEC*, 61 WASH. U. J.L. & POL’Y 133 (2020).

30. *Id.* at 136.

31. See also Usha Rodrigues, *Semi-Public Offerings? Pushing the Boundaries of Securities Law* 18-35 (Univ. of Ga. Sch. of Law Legal Studies Research Paper No. 2018-30, 2018), <https://ssrn.com/abstract=3242205> (examining various other safeguards to address fraud in ICOs).

United States,” Professor Andrew A. Schwartz builds on his considerable work in the field by providing an empirical report<sup>32</sup> on the use of crowdfunding in the United States from 2016 to 2018, the three-year period since crowdfunding formally commenced under the SEC’s Regulation Crowdfunding.<sup>33</sup> Professor Schwartz’s report complements and extends a recent review by the SEC Staff.<sup>34</sup> Among other findings, Professor Schwartz reveals that crowdfunding tended to be used by early startups that were structured as corporations or limited liability companies, employed ten or fewer employees, and generated zero or negative revenue. His evidence suggests that crowdfunding has provided greater access to capital than traditional alternatives, primarily venture capital. During the study period, issuers came from forty-four states, not just from the typical startup hotbeds. And twenty-eight percent of a large sample of firms had signatories with traditionally female names, suggesting that a larger-than-usual proportion of firms were founded or led by women.

In “Smart Contracts and the Illusion Automated Enforcement,” Professor Danielle D’Onfro focuses on the limits of “smart” contracts in consumer finance, rejecting the notion that these “self-executing and self-enforcing agreements” will make “perfectly automated enforcement” possible.<sup>35</sup> Professor D’Onfro identifies three barriers to the use of smart contracts in consumer finance. First, “no one,” neither consumers nor financial firms, wants perfect enforcement of contracts, instead wanting flexibility in enforcement.<sup>36</sup> Second, consumer protection laws may be incompatible with smart contracts. Third, market participants, particularly those that cannot take advantage of smart contracts, will oppose their use. These barriers “render perfectly automated enforcement all but impossible.”<sup>37</sup> Professor D’Onfro can imagine smart contracts that are “modifiable ex-post” but

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32. Andrew A. Schwartz, *Crowdfunding Issuers in the United States*, 61 WASH. U. J.L. & POL’Y 155 (2020).

33. See Crowdfunding, 80 Fed. Reg. 71,388 (Nov.16, 2015) (to be codified at various parts of 17 C.F.R.).

34. STAFF OF THE SEC. & EXCH. COMM’N, REPORT TO THE COMMISSION: REGULATION CROWDFUNDING (2019), [https://www.sec.gov/files/regulation-crowdfunding-2019\\_0.pdf](https://www.sec.gov/files/regulation-crowdfunding-2019_0.pdf) [<https://perma.cc/3RLH-REQY>].

35. Danielle D’Onfro, *Smart Contracts and the Illusion of Automated Enforcement*, 61 WASH. U. J.L. & POL’Y 173 (2020)

36. *Id.* at 181-82.

37. *Id.* at 175.



suggests we cannot know yet whether these contracts will be more efficient than traditional contracts.

In “Stable Cryptocurrencies,” Professors Craig Calcaterra, Wulf A. Kaal, and Vadhindran Rao examine cryptocurrencies that tend to be stable in value and therefore to operate as a “safe haven” for investors during periods of currency instability.<sup>38</sup> They consider the limitations of fiat currencies. Stable cryptocurrencies have grown in popularity, offering important benefits to users. In a wide-ranging analysis, the authors describe many of these benefits and some that may be realized in years ahead. The authors suggest that in some markets cryptocurrencies may supplement or even replace fiat currencies, although “open questions need to be answered as the technology and associated stability designs evolve.”<sup>39</sup>

Finally, Dr. Jonathan Greenacre provides a case study of the spread of fintech lending in Kenya since 2012. His article “What Regulatory Problems Arise When FinTech Lending Expands into Fledgling Credit Markets?”<sup>40</sup> examines the benefits and costs of fintech lending in Kenya and similar markets, but offers important lessons for U.S. regulators as well. Dr. Greenacre notes the promise of fintech, including increased financial inclusion, but observes significant downsides, including inaccurate risk-pricing and high default rates, particularly among first-time borrowers. Financial regulation, which tends to regulate entities rather than functions, has struggled to effectively regulate fintech lending in Kenya and requires reform.

Scholarship in fintech is burgeoning as fintech itself develops and regulators grapple with the associated challenges. These contributions to the *Washington University Journal of Law and Policy* will help chart the course for future research in the field.

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38. Craig Calcaterra, Wulf A. Kaal & Vadhindran Rao, *Stable Cryptocurrencies*, 61 WASH U. J.L. & POL’Y 193 (2020).

39. *Id.* at 226.

40. Jonathan Greenacre, *What Regulatory Problems Arise When Fintech Lending Expands into Fledgling Credit Markets?*, 61 WASH U. J.L. & POL’Y 229 (2020).