

# The Nature of the Fintech Firm and its Implications for Financial Regulation

Howell E. Jackson\*

(Draft of July 15, 2020)

## Abstract

*This chapter explores recent Fintech innovations through the lens of Ronald Coase's classic article: *The Nature of the Firm*. Applying a transaction cost analysis, the chapter argues that developments in computer technology, data processing, and information networks are reshaping the manner in which financial services are produced, unsettling the boundaries separating regulated firms from outside vendors and open market transactions. These changes raise challenging questions as to the appropriate contours of regulatory perimeters as well as the structure of regulation and supervision in the many area of financial regulation. Fintech innovations also have the potential to be harnessed to serve public purposes, including expanding access to financial services and improving supervisory practices. At a minimum, Fintech innovations and most especially machine learning and artificial intelligence complicate the application of legal doctrines based on human intentionality. More broadly, the scale and scope of these technological developments may lead to a fundamentally rethinking of the appropriate goals of regulatory policy for financial firms and the economy more broadly, particularly with respect to privacy and the accumulation of personal information in private and public hands.*

---

\* James S. Reid, Jr., Professor of Law, Harvard University. This chapter, which appears in HOWELL E. JACKSON & MARGARET E. TAHYAR, FINTECH LAW: THE CASE STUDIES (July 2020) (avail. at <https://projects.iq.harvard.edu/fintechlaw>), draws on the work of and discussions with my students at Harvard Law School and is an elaboration of an earlier essay that appeared in a symposium issue of the *Washington University Journal on Law and Policy on Regulating Emerging Financial Technologies*. Howell E. Jackson, *The Nature of the FinTech Firm*, 61 WASH. U. J. LAW & POL'Y 9 (2020). My thanks to Professor Dirk Andreas Zetzsche, Jai Massari, Todd Baker, and participants in a Harvard Law School Faculty Workshop on June 25, 2020, for helpful comments and suggestions.

**Table of Contents**

I.	Introduction .....	8
II.	Finance and Fintech.....	9
III.	Entities Versus Activities & The Challenge of Fintech .....	11
IV.	Mounting an Effective Defense to Regulatory Perimeters.....	13
V.	Systemic Risk and Fintech Innovations.....	15
VI.	Exploiting the Potential of Fintech for Public Purposes.....	16
A.	Emergency Savings in the Workplace.....	16
B.	Safe, Low-Cost Accounts for the Unbanked.....	17
VII.	On Discretion & Intentionality.....	19
A.	Market Manipulation and High-Frequency Trading .....	19
B.	Artificial Intelligence and the Enforcement of Fair Lending Rules .....	20
VIII.	Fintech and the Endogeneity of Regulatory Goals.....	21



# The Nature of the Fintech Firm and its Implications for Financial Regulation

## I. INTRODUCTION

The title of this chapter is an homage to Ronald Coase's classic work, *The Nature of the Firm*, in which Professor Coase offered up a pithy, but profound, exposition of the question why some business activities are located within the discretionary control of corporate management, while others are exchanged through arm's length transactions in the marketplace.<sup>1</sup> As explicated decades later in the press release announcing the award of Professor Coase's Nobel Prize in the Economic Sciences, the Royal Swedish Academy of Sciences highlighted the article's focus on transaction costs for market transactions, as well as production costs for activities organized within the firm, as being of "critical importance":

If these circumstances are taken into account, it may be concluded that a firm originates when allocative measures are carried out at lower total production, contract and administrative costs within the firm than by means of purchases and sales on the market. Similarly, a firm expands to the point where an additional allocative measure costs more internally than it would through a contract on markets. If transaction costs were zero, no firms would arise. All allocation would take place through simple contracts between individuals.<sup>2</sup>

For years, Professor Coase's article has inspired theorists of organizational design and earned a place in the pantheon of corporate law scholarship. In this chapter, I return to *The Nature of the Firm* to explore the Fintech revolution and the challenges that aspects of this revolution have posed for regulatory authorities. Several of the examples I discuss concern the distinction between activities located within a firm and those arranged through market transactions often supplied through new and specialized Fintech entities. Later, I focus on the expanded production possibilities that Fintech innovations facilitate, especially in regards to big data, personal and otherwise. This aspect of Fintech raises hard questions for regulatory policy with respect to privacy, institutional design, and cross-border jurisdiction. The expanded use of machine learning and artificial

---

<sup>1</sup> Ronald H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386, 392 (1937). I am hardly the first to make a connection between Professor Coase's classic article and the impact of technological developments on optimal models of productions. See, e.g., Yochai Benkler, *Coase's Penguin, or, Linux and The Nature of the Firm*, 112 *YALE L.J.* 369 (2002) (exploring the potential for peer production in a technologically advanced economy). See also Yueh-Ping Yang & Cheng-Yun Tsang, *RegTech and the New Era of Financial Regulators: Envisaging More Public-Private-Partnership Models of Financial Regulators*, 21 *U. PA. J. BUS. L.* 354 (2018) (applying transaction cost analysis to Fintech developments). In a related vein, Luca Enriques & Dirk Zetsche, *Corporate Technologies and the Tech Nirvana* (July 2019) (available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3392321](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3392321)) has recently engaged in a similarly spirited exercise exploring (with some skepticism) the capacity of artificial intelligence and other Fintech innovations to revolutionize corporate governance.

<sup>2</sup> Press Release, Royal Swedish Academy of Sciences (Oct. 15, 1991) (available at <https://www.nobelprize.org/prizes/economic-sciences/1991/press-release/>).

intelligence in business practices also complicates our understanding of what it means to exercise managerial discretion and may require adjustments to several bodies of legal doctrine, including fair lending and market manipulation. While much of this chapter focuses on the question of how existing legal structures should apply to Fintech innovations, lingering in the background throughout, and addressed briefly in the conclusion, is the possibility that the changes wrought by Fintech innovations are so profound that it is our regulatory structure itself that must now be reimagined and reformed.

## II. FINANCE AND FINTECH

While other scholars have offered a number of plausible definitions of Fintech,<sup>3</sup> my own preference is to define the phenomenon as encompassing a wide range of private and regulatory innovations that have become possible through the rapid decline in the cost of computing, accompanied by the widespread availability of reliable, high-speed connectivity (typically over the internet), and an explosion of newly collected data about a broad swath of personal and commercial characteristics and behaviors. This technological transformation has potentially huge implications for the domain of finance, which, to paraphrase Professors Merton and Bodie, can be helpfully demarked as “the movement of value across time and space under conditions of uncertainty that are not fully knowable by other private parties or government agents.”<sup>4</sup> The critical concept here is “conditions of uncertainty,” which includes, among other things, the uncertainty whether a borrower will repay their loan, the uncertainty whether an insured risk (like an earthquake) will come to pass, the uncertainty whether providers of liquidity (like repurchase counterparties or market-makers for bonds) will withdraw unexpectedly from their markets, or the uncertainty whether interest rates will rise or fall as expected. On many dimensions, Fintech allows for these and other uncertainties (i.e., risks) to be managed in new, more efficient, and more expeditious ways. Moreover, as I explain

---

<sup>3</sup> See, e.g., Chris Brummer & Yesha Yadav, *Fintech and the Innovation Trilemma*, 108 GEO. L.J. 235, 241 (2019) (“the use of digital technologies in finance”); William Magnuson, *Regulating Fintech*, 71 VAND. L. REV. 1167, 1174 (2018) (“the new breed of companies that specialize in providing financial services through technologically enabled mobile and online platforms”); Rory Van Loo, *Making Innovation More Competitive: The Case of Fintech*, 65 UCLA L. REV. 232, 239 (2018) (“Fintech is used here to refer to the relatively new category of companies whose business models are based on digital products[, but] leaves out legacy banks . . . which may now offer similar products but whose services originally lacked a digital component.”). In its recent report on Fintech and related developments, the U.S. Treasury Department did not offer a precise definition, but organized its discussion of Fintech in a manner analogous to my own, embracing both innovations within traditional financial firms and the emergence of new technology based firms. See U.S. DEP’T OF TREASURY, A FINANCIAL SYSTEM THAT CREATES ECONOMIC OPPORTUNITY: NONBANK FINANCIALS, FINTECH, AND INNOVATION 5 (2018). Professor Dirk Zetsche and his many co-authors have refined the concept of Fintech to distinguish “regtech,” the emergence of regulatory technologies, and “techfin,” the entrance of primarily technology companies (like Google or Apple) into the world of finance. See, e.g., Dirk A. Zetsche, Douglas W. Arner, Ross P. Buckley & Rolf H. Weber, *The Future of Data-Driven Finance and Regtech: Lessons from EU Big Bang II* (Eur. Banking Inst. Working Paper Series No. 35, 2019) (available at <https://ssrn.com/abstract=3359399>); Dirk A. Zetsche, Ross P. Buckley, Douglas W. Arner & János N. Barberis, *From FinTech to TechFin: The Regulatory Challenges of Data-Driven Finance*, 14 N.Y.U. J.L. & BUS. 393 (2018). See also Douglas W. Arner, János Barberis & Ross P. Buckley, *The Evolution of FinTech: A New Post-Crisis Paradigm*, 47 GEO. J. INT’L L. 1271, 1272 (2015-2016) (defining Fintech as “the use of technology to deliver financial solutions”).

<sup>4</sup> ZVI BODIE & ROBERT C. MERTON, *FINANCE* 2 (2000).

below, Fintech innovations allow for the management and oversight of many risks and associated operations to be contracted out of regulated entities and into new Fintech firms or market transactions. Sometimes, Fintech innovations create the possibility of entirely new kinds of market transactions, as is the case with the introduction of new networks such as payment platforms or clearing systems.<sup>5</sup> That is, the rise of 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>6</sup> Similarly, technological developments also have the potential to improve the ability of government agents to monitor financial activity and identify more rapidly emerging risks.

A secular erosion of regulated financial firms' franchise substantially predates the rise of the internet or the introduction of distributed ledgers and actually was well underway when Steve Jobs was still working out of his garage.<sup>7</sup> At least as early as the 1970s, the expansion of commercial paper was an early example of disintermediation: short-term funding for high-quality corporate issuers moved from intermediated bank loans into disintermediated commercial paper issuances. The process accelerated in the 1990s with the explosion of securitization practices whereby many other commercial and consumer loans found funding through capital market transactions, and banks and thrifts adopted new originate-to-distribute business models. The emergence of marketplace lending in the new millennium — and the first illustration in this chronology that might properly be labeled “Fintech” — allowed yet more kinds of consumer borrowing to be disintermediated, and in some cases crowdsourced with retail funding, but more commonly now through funding from institutional investors. Moving away from credit markets, one can also observe over the past several decades how swaps and other derivatives moved interest rate risk, foreign exchange risk, credit risk, and even weather risk into the capital markets and off the balance sheets of regulated entities. Innovations in information processing, including the development of options-pricing models and technological developments such as the Bloomberg terminal, as well as the work of the now often maligned — but still historically important — rating agencies, made these advances in finance possible. Now, Fintech is starting to produce similar effects, only more, better, faster, and more economical.

At the same time, some aspects of Fintech — especially those that reward economies of scale and pre-existing network effects — can serve to entrench incumbent firms. Financial institutions have long accumulated information about existing customers and advances in digital technologies, if exploited aggressively and creatively, can serve to

---

<sup>5</sup> See Enriques & Zetzsche, *supra* note 1, at 11-13.

<sup>6</sup> In “The Nature of the Firm,” Professor Coase identified technological developments—then, telephones and telegraphs—as having the potential for changing the scope of efficient firm size, though he interpreted these changes as creating the potential for larger firms rather than the shrinking of incumbent firms contemplated in the text. See Coase, *supra* note 1, at 397.

<sup>7</sup> The history of the developments discussed in this paragraph are reviewed in MICHAEL S. BARR, HOWELL E. JACKSON & MARGARET E. TAHYAR, *FINANCIAL REGULATION: LAW AND POLICY* 207-13, 372-74, 457-61 & 1237-68 (2nd ed. 2018) (Foundation Press) (hereinafter BARR, JACKSON & TAHYAR).

shore up legacy firms and increase market share. In many contexts, a battle is currently underway between, on the one hand, nimble insurgents exploiting digital technologies to create new market niches and, on the other hand, major financial institutions scrambling to upgrade operations through a combination of investments, new hires, and opportunistic acquisitions. In some cases, the insurgencies come from tech firms discovering that their core digital competencies are well suited to expansion into financial services markets. While the lines of expansion differ, what is common to all of these contexts is that technological innovations are transforming the ways in which financial services can be delivered.<sup>8</sup> Some analysts interpret these developments as weakening the capacity of legacy firms to extract rents at the expense of their customers,<sup>9</sup> while others worry that, without careful government oversight, Fintech innovation could, instead, lead to a more dangerously concentrated market, dominated either by Wall Street giants or West Coast technology firms or some unholy bicoastal alliance of the two.<sup>10</sup> Still, others envision Fintech innovations as a pathway for community banks and mid-size financial services firms to recapture the market through strategic alliance with Fintech vendors to gain technological services that are impossible to produce economically on a limited scale.<sup>11</sup> So, while the endpoint of these developments in terms of eventual market structure is very much in doubt, there is a consensus that changes in the means of production that Fintech innovations represent is poised to alter the face of the financial services industry.

### III. ENTITIES VERSUS ACTIVITIES & THE CHALLENGE OF FINTECH

A classic — and in many areas still dominant — approach to financial regulation is based on the regulation of entities. If a firm engages in some core financial function — like banking, insurance, or the securities business — then the firm itself (often along with all affiliated entities) is subject to strict regulation, such as activities restrictions and capital requirements, as well as supervisory oversights, typically reporting, examination, and an enforcement regime. Once subject to entity-based regulation, a financial firm also enjoys certain benefits not available to other firms. For example, certain aspects of the U.S. payments system are available only to insured depository institutions. Similarly, insured depositories are the only entities that are permitted to “export” interest rates from their home jurisdictions, thereby preempting local usury laws and other state-based consumer protections in other jurisdictions.

Faced with a burdensome and costly system of entity-based regulation, the Fintech firm has every incentive to organize its behaviors to stay outside the relevant regulatory perimeters and simply contract for the provision of critical functions, like access to payment systems, through market transactions with already-regulated entities. So, for example, when Apple wanted to launch Apple Pay, it simply entered into contracts with existing banks and credit card providers to use their payment access and monetized its

---

<sup>8</sup> For an insightful exploration of these issues, see Loo, *supra* note 3.

<sup>9</sup> Jeremy Kidd, *Fintech: Antidote to Rent-Seeking?*, 93 CHI.-KENT L. REV. 165 (2018).

<sup>10</sup> Loo, *supra* note 3.

<sup>11</sup> See, e.g., Independent Community Bankers Association and Hunton & Williams, *Fintech Strategy Roadmap for Community Banks* (Mar. 2018).

payments interface through a share of interchange fees.<sup>12</sup> Similarly, when marketplace lenders wanted the advantages of relaxed usury rules and uniform consumer protection statutes, they negotiated with existing banks located in business-friendly jurisdictions through a process known as “rent-a-charter,” whereby the contracting bank formally originates all loans and then transfers them to the marketplace lenders for permanent funding and servicing.<sup>13</sup> Or, to put it in Coasean terms, as the domain of market-based transactions increased with technological developments, fewer activities had to be located within the discretionary (and costly) management of the regulated firm itself.<sup>14</sup> One of the reasons for the low enthusiasm surrounding the Office of the Comptroller of the Currency’s (OCC) much publicized efforts to develop a new Fintech charter that would attract Fintech firms into the regulated space—aside from legal challenges from entrenched interests<sup>15</sup>—has been the simple fact that Fintech firms have many paths to gaining access to regulatory benefits without the burdens of direct regulation and supervisory control.<sup>16</sup> Some analysts have taken to calling these firms “synthetic” banks.<sup>17</sup>

While new Fintech entrants have incentives to tap into the regulated sector for the bare minimum of activities, regulated entities also have incentives to “push out” new Fintech services into unaffiliated firms operating beyond the regulatory perimeter. Such push-out strategies allow for innovations outside the constraints of supervisory controls while providing a potentially cost-effective mechanism for diversifying revenue streams and customer services of regulated entities. Prominent examples would include efforts of established firms to provide customer access to crypto-currencies, but without assuming full responsibility for custody and other customer protections typically required of broker-dealers.<sup>18</sup> The role of several major financial firms in supporting Facebook’s

<sup>12</sup> See Brummer & Yadav, *supra* note 3, at 277 & n.189.

<sup>13</sup> See Noah Buhayar, *Where Peer-to-Peer Loans Are Born*, BLOOMBERG BUSINESSWEEK (Apr. 16, 2015), <https://www.bloomberg.com/news/articles/2015-04-16/webbank-where-peer-to-peer-loans-are-born> [<https://perma.cc/49LQ-P8G4>].

<sup>14</sup> In his essay, Professor Coase identified government policies as having the potential to influence the location of economic activity. His example concerned sales taxes, which applied primarily to market transactions and thus encouraged the location of activities to within the firm. See Coase, *supra* note 1, at 393. With respect to the examples discussed in the main text, government requirements imposed on regulated firms—or example capital requirements or activities restrictions—operate as a tax on those firms, thereby encouraging the movement of activities to market transactions with unregulated firms.

<sup>15</sup> Rachel Witkowski, *Google and PayPal Explored OCC’s Fintech Charter, Then Walked Away*, AM. BANKER (July 19, 2019), <https://www.americanbanker.com/news/google-and-paypal-explored-occs-fintech-charter-then-walked-away> [<https://perma.cc/LZA9-2R9H>]. See also Vullo v. Office of the Comptroller of the Currency, 378 F. Supp. 3d 271, 292 (S.D.N.Y. May 2, 2019) (finding that New York state banking regulator had standing to challenge the Fintech charter, and that it appeared to at least partially exceed OCC’s authority), *final judgment entered sub nom.* Laceywell v. Office of the Comptroller of the Currency, No. 18-cv-8377 (S.D.N.Y. Oct. 21, 2019) (permanently enjoining OCC from regulating any “Fintech applicant[.] . . . that do[es] not accept deposits”).

<sup>16</sup> Lea Nonniger, *Tech and Fintech Firms Aren’t Interested in the OCC’s Fintech Charter*, BUSINESS INSIDER (June 18, 2019), <https://www.businessinsider.com/google-paypal-not-interested-in-occ-fintech-charter-2019-6> [<https://perma.cc/Z8WJ-NERJ>].

<sup>17</sup> See, e.g., Todd H. Baker, *Charter or not, Fintechs are Already ‘Banking.’* AM. BANKER (Nov. 22, 2019).

<sup>18</sup> For an overview of these issues including a reference to “non-custodial models,” see Div. of Trading & Mts., Sec. & Exch. Comm’n & Office of Gen Counsel, Fin. Indus. Regulatory Auth., *Joint Staff Statement on Broker-Dealer Custody of Digital Asset Securities* (July 8, 2019), SEC. & EXCH. COMM’N, <https://www.sec.gov/news/public-statement/joint-staff-statement-broker-dealer-custody-digital-asset-securities> [<https://perma.cc/4Q3J-6BHT>]. For a more general treatment of the subject, see Timothy G. Massad, *It’s Time to Strengthen the Regulation of Crypto-*

Libra initiative for a new stable-value cryptocurrency (a stablecoin), but locating it in a new legally distinct non-U.S. entity, offers another still unfolding illustration of a push-out strategy to accommodate Fintech innovations beyond traditional regulatory perimeters, posing questions (among other things) with respect of the enterprise's ability to ensure compliance with anti-money laundering requirements.<sup>19</sup>

#### IV. MOUNTING AN EFFECTIVE DEFENSE TO REGULATORY PERIMETERS

Drawing an effective line between activities that must be brought within the regulatory perimeter for entity regulation and those activities that can remain outside of direct supervisory oversight is a fraught task.<sup>20</sup> Too bright a line invites evasion through complicated contracting terms with licensing and profit-sharing arrangements that are difficult to interpret and police. Too loose a definition (if backed by the threat of credible enforcement) will discourage innovation and add to compliance burdens. Oftentimes, innovations will occur and contractual arrangements will be put in place before regulatory officials have even focused on the issue, leaving regulators in the unenviable position of having to retrieve the horses once they are out of the barn and already lent out for hire.<sup>21</sup>

To be sure, Fintech firms have not always been able to escape the scrutiny and oversight of financial regulation. Many Fintech innovators in the payments space have evaded direct regulation as banks, but must still comply with state money transmitter requirements. The U.S. operations of PayPal offer one example of this approach.<sup>22</sup> Marketplace lenders that do not rely on the rent-a-charter tactic will also generally be subject to state consumer lending laws.<sup>23</sup> In some instances, regulatory authorities may attempt to gain control over Fintech firm activities as a result of their contractual relationships with regulated firms.<sup>24</sup> As the regulated entities must be attentive to supervisory concerns, there are a variety of ways in which public officials can leverage that influence into indirect control over Fintech entrepreneurs.<sup>25</sup> For example, recent

---

*Assets*, BROOKINGS (Mar. 2019), <https://www.brookings.edu/research/its-time-to-strengthen-the-regulation-of-crypto-assets/> [<https://perma.cc/H4Y5-766G>].

<sup>19</sup> See Timothy Massad, *Is Facebook Libra a Betrayal of Satoshi Nakamoto's Vision?*, FORTUNE (July 15, 2019), <https://fortune.com/2019/07/15/facebook-libra-coin-cryptocurrency-hearing/> [<https://perma.cc/FM95-6ER7>]. See also, Dirk A. Zetzsche, Ross P. Buckley & Douglas W. Arner, *Regulating Libra* (July 2019), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3414401](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3414401).

<sup>20</sup> For an insightful discussion of the perils of entities-based regulation for policing systemic risk, see Jeremy C. Kress, Patricia A. McCoy & Daniel Schwarcz, *Regulating Entities and Activities: Complementary Approaches to Nonbank Systemic Risk*, 92 S. CAL. L. REV. 1455 (2019).

<sup>21</sup> For an insightful characterization of these problems as an irreconcilable trilemma, see Brummer & Yadav, *supra* note 3.

<sup>22</sup> See Van Loo, *supra* note 3, at 239.

<sup>23</sup> For an overview of the overlapping system of federal and state oversight of marketplace lending, see DAVID W. PERKINS, CONG. RESEARCH SERV., R44614, MARKETPLACE LENDING: FINTECH IN CONSUMER AND SMALL-BUSINESS LENDING 12-22 (2018), <https://fas.org/sgp/crs/misc/R44614.pdf> [[perma.cc/AJC8-6YFS](https://perma.cc/AJC8-6YFS)].

<sup>24</sup> For example, the Bank Service Corporation Act has been interpreted to provide federal agencies the authority to obtain information with respect to, and in some instances actually examine, Fintech firms providing important services to regulated entities. See Fed. Deposit Ins. Corp., FIL-19-2019, Financial Institution Letter on Technology Service Provider Contracts (Apr. 2, 2019), <https://www.fdic.gov/news/news/financial/2019/fil19019.pdf> [[perma.cc/NWD9-K6BR](https://perma.cc/NWD9-K6BR)].

<sup>25</sup> See BARR, JACKSON & TAHYAR, *supra* note 7, at 216-21 (exploring other instances in which regulatory officials used supervisory authority to constrain the activities of regulated firms).

efforts to define the ways in which regulated securities firms can maintain custody arrangements for cryptocurrencies can be seen as an effort on the part of government actors to establish some degree of supervisory oversight of cryptocurrencies beyond their direct control.<sup>26</sup>

In addition, if the manipulation of regulatory perimeters becomes too blatant, the legal system has ways of counteracting innovations that appear egregious. Several courts, for example, have disregarded interest-rate terms set through rent-a-charter arrangements when the practices seemed especially abusive.<sup>27</sup> Similarly, the Federal Reserve Board has been reluctant to admit into the payment system a new bank charter whose entire business plan was based on giving unregulated third parties the functional equivalent of access to interest bearing accounts at Federal Reserve Banks.<sup>28</sup> So, there are limits on the extent to which Fintech firms can contract into key financial functions. But, with a very large number of existing banks and other kinds of financial firms available to provide a port of entry, there are ample opportunities for Fintech firms with a new way of managing uncertainty or accessing customers to find a regulated entity willing to partner up for a modest fee.<sup>29</sup>

Sometimes, regulators have a hard time even realizing that a regulatory perimeter has been breached. Here, the rise of robo-advisers offers an object lesson.<sup>30</sup> Robo-advisers are typically organized as broker-dealers and investment advisers under the supervision of the Securities and Exchange Commission (SEC), Financial Industry Regulator Authority (FINRA), and, in certain respects, state securities officials. Robo-advisers use investment algorithms to invest client assets in regulated mutual funds, including exchange-traded funds (ETFs), based on a limited number of characteristics, such as risk-return preference, investment period, and tax status. Robo-advisers are subject to regulation, but a relatively lax form that consists primarily of open-ended fiduciary duties and soft disclosure standards. The product that robo-advisers offer, however, is functionally quite similar to “fund-of-funds” mutual funds, which are subject to much more stringent regulatory requirements, including independent board oversight, well-defined disclosure rules about performance and fees, plus stringent portfolio restrictions. Robo-advisers replicate mutual fund activities through a combination of algorithmic models and client agreements. While they contract into the mutual fund industry for their underlying investments, their outer wrappers (and associated fee arrangements and

<sup>26</sup> See *supra* sources cited note 18. See also Letter of Dalia Blass, Director, SEC Division of Investment Management (Jan. 18, 2018), <https://www.sec.gov/divisions/investment/noaction/2018/cryptocurrency-011818.htm>. (exploring custody and other regulatory aspects of cryptocurrency holdings in investment funds).

<sup>27</sup> For a critical overview of the principal legal cases setting aside efforts of lenders to contract out of usury limits, see Davis Polk White Paper: Federal Banking Regulators Can and Should Resolve Madden and True Lender Developments (Aug. 14, 2018), [https://www.davispolk.com/files/madden-true-lender-federal-regulatory-fix-whitepaper\\_final.pdf](https://www.davispolk.com/files/madden-true-lender-federal-regulatory-fix-whitepaper_final.pdf). The OCC and FDIC have since finalized rules that seek to pre-empt the ability of courts to make such decisions. See FDIC Press Release on Rule to Codify Permissible Interests on Transferred Loans (June 25, 2020); OCC News Release on Rule to Clarify Permissible Interest on Transferred Loans (May 29, 2020).

<sup>28</sup> See Carolyn Duren & Rucha Khole, ‘Narrow Bank’ Challenges Traditional Industry Model, But Fed Pushes Back, S&P GLOBAL MKT. INTELLIGENCE (Mar. 27, 2019), <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/49204495> [https://perma.cc/JYQ6-K2EN].

<sup>29</sup> Cf. Kidd, *supra* note 9 (envisioning the rise of Fintech firms as having the potential for reducing rent-seeking in the financial service industry).

<sup>30</sup> The points made in this paragraph are elaborated upon in Howell E. Jackson, *Limits of Fiduciary Protections for Investors in Mutual Funds and Other Collective Investment Vehicles*, in FIDUCIARY OBLIGATIONS IN BUSINESS (Arthur Laby & Jacob H. Russell, eds., Cambridge Univ. Press, forthcoming 2020).

disclosure requirements) are substantially different than those imposed on functionally similar fund-of-fund mutual funds. To date, robo-advisors arguably constitute a successful illustration of regulatory arbitrage.

## V. SYSTEMIC RISK AND FINTECH INNOVATIONS

Another area of uncertainty with respect to Fintech innovations are the implications for financial stability and systemic risks, that is, the possibility that an exogenous shock to one part of the financial system could lead to serious disruptions to the broader economy.<sup>31</sup> Like many things related to Fintech, this possibility is contested. On the one hand, to the extent that Fintech innovations lead to greater competition in the financial services industry, one might imagine that the introduction of new technologies will reduce the significance of dominant market actors and thereby ameliorate too-big-to-fail concerns. Of course, this perception proceeds under the assumption that Fintech innovation will reduce the dominance of major players, a prediction which, as discussed above, itself remains contested. But, even if technological innovations do not increase traditional measures of concentration, it is possible that these new technologies could create concerns for financial stability.<sup>32</sup>

For example, to the extent that marketplace lending supersedes intermediated finance as a source of funding for small and medium-size enterprises in the United States, there are questions as to how this funding mechanism will operate in periods of financial instability. Without direct ties to central-bank support and lender of last resort facilities, marketplace lenders may be more vulnerable to funding interruptions in times of financial stress, a weakness that could become manifested in the course of the pandemic of 2020. In addition, there are other pathways whereby Fintech innovations could accelerate the transmission of exogenous shocks to the broader economy. For example, if algorithmic trading programs lead capital market participants to pursue trading strategies based on common models, then trading responses to unexpected information could enhance volatility beyond what would have been experienced with more traditional trading practices based on human decision-making. Computer software, that is, may be even more susceptible to herd behavior than human beings. It is also possible that the new information networks and mechanisms of interconnectivity can themselves become sources of systemic risks of the sort experienced in the unregulated OTC derivatives markets of 2008. Perhaps the greatest potential source of systemic risk is the development of new payment systems, either expanding upon public models supported by the Federal Reserve and other central banks or created by private entities such as the Libra Foundation. In addition to problems inherent in the creation of any new complex system, these mechanisms for the safe and easily accessible storage of value pose the possibility of new forms of runs out of the commercial banking sector in times of financial stress.

---

<sup>31</sup> Howell E. Jackson, *Introduction: Thinking Hard about Systemic Risk*, in SYSTEMIC RISK IN THE FINANCIAL SECTOR: TEN YEARS AFTER THE GLOBAL FINANCIAL CRISIS 1, 8 (Douglas Arner, Emiliós Avgouleas, Danny Busch & Steven L. Schwarcz, eds., Centre for International Governance Innovation, 2019). See also BARR, JACKSON, & MARGARET E. TAHYAR, *supra* note 7, at 738-46.

<sup>32</sup>For one view of these concerns, see William Magnuson, *Regulating Fintech*, 71 VAND. L. REV. 1167 (2018) (exploring systemic risks from a decentralized Fintech market). See also Douglas W. Arner, Ross P. Buckley, and Dirk Zetsche, *Fintech, Regtech and Systemic Risk: The Rise of Global Technology Risk*, in SYSTEMIC RISK IN THE FINANCIAL SECTOR, *supra* note 31, at 69.

Anticipating actual sources of systemic risk as opposed to purely theoretical ones, is extraordinarily difficult, especially in early stages of innovation. But as our experience from the authorization of money market mutual funds many decades ago demonstrates, what originally appears as an incrementally and procompetitive innovation can grow over time into a major market segment built on profoundly unstable foundations.<sup>33</sup> Whether today's Fintech innovations have similar potentials for market instability in the future, remains to be seen.

## VI. EXPLOITING THE POTENTIAL OF FINTECH FOR PUBLIC PURPOSES

While it is easy—and perhaps natural for a law professor—to focus on the extent to which Fintech innovations pose challenges to regulatory regimes, Fintech and its ability to reduce transaction costs and expand the range of contractual options also can offer possibilities to promote the public interest. I offer here a brief account of two examples: one ongoing and one hypothetical.<sup>34</sup> I then comment briefly on the possibility that Fintech innovations could be incorporated into the regulatory and supervisory process itself.

### A. Emergency Savings in the Workplace

One of the greatest sources of financial vulnerability for low- and moderate-income individuals is the absence of emergency savings. To invoke an oft-quoted statistic, some nearly forty percent of Americans do not have immediate access to four hundred dollars of funds in the event of an emergency need.<sup>35</sup> Much regulatory effort has gone into policing abusive short-term lending practices, like some payday lending programs, to address a consequence of the absence of meaningful emergency savings, but another more direct solution would be to increase emergency savings balances. A good place to start such an effort is with major employers with large numbers of low- and moderate-income employees.<sup>36</sup> For the most part, these employers are not financial institutions and, while they may offer various kinds of fringe benefits (like health care and retirement savings plans), emergency savings is not yet typically on the menu of most employee benefit plans. There are, however, a number of Fintech firms that provide a range of linkages between employer payrolls and regulated emergency savings vehicles. One could easily imagine a combination of nonprofit leadership with limited government support to promote Fintech linkages and employer nudges to steer workers into emergency savings programs. Here, Fintech firms might exploit technological

<sup>33</sup> See BARR, JACKSON & TAHYAR, *supra* note 7, ch. 12.3.

<sup>34</sup> For additional discussions in a similar vein, see Ross P. Buckley, Douglas W. Arner, & Dirk A. Zetzsche, *Sustainability, FinTech and Financial Inclusion* (EBI Working Paper Series, no. 41, 2019).

<sup>35</sup> See BD. OF GOVERNORS OF THE FED. RESERVE SYS., *REPORT ON THE ECONOMIC WELL-BEING OF U.S. HOUSEHOLDS IN 2018 21-22* (May 2019), <https://www.federalreserve.gov/publications/files/2018-report-economic-well-being-us-households-201905.pdf>, [https://perma.cc/829Y-LFPU].

<sup>36</sup> The concepts presented in this paragraph are illustrated by a recent initiative, funded by BlackRock, to promote emergency savings. See BLACKROCK'S EMERGENCY SAVINGS INITIATIVE, <https://savingsproject.org/> [https://perma.cc/R2PZ-A96K].

innovations to accumulate funds in a manner that has proven unprofitable and therefore unattractive to regulated firms operating on their own.

### B. Safe, Low-Cost Accounts for the Unbanked

Finding safe and cost-effective savings vehicles for other unbanked individuals poses a related problem that may also allow a Fintech solution. Many kinds of depository institutions operating in the United States today have historical roots in efforts to promote savings among working Americans: savings banks, thrifts, and credit unions all share these common roots. And recent efforts to revive a U.S. Postal Bank also are rooted, at least in part, on the view that such a bank would provide increased access to savings for the presently unbanked.<sup>37</sup> But all of these approaches are entity-centric and focus on the creation of a well-motivated legal entity to issue deposits to underserved communities and reinvest those assets through the entity's own balance sheet.

However, it is entirely possible to create safe savings without the balance sheet of a new legal entity.<sup>38</sup> The U.S. Treasury issues trillions of dollars of safe assets each year. Even putting aside the large volumes held on the Federal Reserve's balance sheet, there are ample Treasuries available for public purchase in a variety of maturities. There is even an internet portal—Treasury Direct—where the general public can purchase Treasuries directly, albeit with an interface that is currently quite clunky.<sup>39</sup> One could easily imagine, however, a refreshed Treasury Direct portal, supported through open-access APIs that would allow Fintech firms to market safe savings products to a range of consumers. The Treasury Department already has statutory authority to adjust the terms of Treasury securities to accommodate such a program. And, to appease industry resistance, the size of permissible balances could be set at a level to avoid competition with private firms, just as the Obama Administration did with its now terminated myRA program.<sup>40</sup> The product would solely be targeted at customers with account balances beneath commercially viable levels. Fintech entrepreneurs would provide all of the

---

<sup>37</sup>See MEHRSA BARADARAN, *HOW THE OTHER HALF BANKS: EXCLUSION, EXPLOITATION, AND THE THREAT TO DEMOCRACY* 183-225 (Harvard Univ. Press 2015); see also Mehrsa Baradaran, *It's Time for Postal Banking*, 127 HARV. L. REV. F. 165 (2014); Mehrsa Baradaran, *How the Poor Got Cut out of Banking*, 62 EMORY L.J. 483 (2013).

<sup>38</sup>See Commonwealth, *Increasing Access to U.S. Savings Bonds: Recommendations for Bond Innovations* (Dec. 9, 2016). The legal issues summarized in this paragraph are presented more fully in a Memorandum from Kathleen Shelton, Harvard Law Sch. Class of 2018, to Howell Jackson (Mar. 16, 2017) (on file with author). The adaptation of the Treasury Direct Program in this manner is functionally similar to The Narrow Bank approach discussed above, see *supra* text accompanying note 28, albeit targeted at low and moderate income individuals in need of a safe saving vehicle rather than the wholesale institutional market.

<sup>39</sup>See *Guided Tour*, TREASURYDIRECT, <https://www.treasurydirect.gov/indiv/TDTour/default.htm> [https://perma.cc/K4W3-CRAD].

<sup>40</sup>See Richard Eisenberg, *R.I.P. myRA Retirement Account, Gone Too Soon*, *Forbes* (July 28, 2017), <https://www.forbes.com/sites/nextavenue/2017/07/28/r-i-p-myra-retirement-account-gone-too-soon/#73c1db0a7885> [https://perma.cc/KB5G-DP6Y].

necessarily linkages, including (perhaps) offloading programs to private banks when Treasury accounts reach high enough balances.<sup>41</sup>

### **C. Incorporating Fintech into Regulatory and Supervisory Processes**

Fintech innovation are not limited to private agents, and a number of academic commentators have speculated as to the possibility that regulatory agencies might themselves exploit new technologies to improve supervisory capabilities and refine regulatory standards.<sup>42</sup> Just as private firms utilize Fintech to reduce uncertainty with respect to market risks and borrower creditworthiness, regulatory officials might employ similar innovations to detect more efficiently potential problems in regulated firms and financial markets as well as to deploy more efficiently supervisory resources. A 2017 report from the Toronto Centre identified five potential areas for such “SupTech” applications:

- Real-time supervision, by looking at data as it is created in the regulated institutions’ operational systems;
- Exceptions-based supervision, in which automated checks on institutions’ data and other information automatically collected and analyzed by the supervisory agency identify “exceptions” or “outliers” to pre-determined parameters for expected behavior, triggering supervisory action; Automated implementation of supervisory measures, such as sending a (automatically created) direction for capital increases based on automated data analysis, and decision-making;
- Algorithmic regulation and supervision in areas such as high-frequency trading, algorithm-based credit scoring, robo-advisors or any service or product that automates decision-making;
- Dynamic, predictive supervision by using machine learning, which could move supervisors to take supervisory actions in a preemptive manner based on predictive behavioral analysis.<sup>43</sup>

While the challenges of developing and maintaining regulatory expertise in these areas are considerable and much work would need to be done to integrate automated supervision with the operating systems of financial firms (with non-trivial issues with respect to privacy and trade secrets needing to be worked through), Fintech innovations do offer the possibility of improved regulatory and supervisory processes for the future.

---

<sup>41</sup> For a recent paper fleshing out a proposal along very similar lines, see Robert C. Hockett, Digital Greenbacks: A Sequenced “Treasury Direct” and “FedWallet” Plan for the Democratic Digital Dollar (May 18, 2020), avail. at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3599419](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3599419).

<sup>42</sup> See, e.g., Douglas W. Arner, János N. Barberis & Ross P. Buckley, *The Emergence of Regtech 2.0: From Know Your Customer to Know Your Data*, 44 J. FIN. TRANSFORMATION 79 (2016); Yang & Tsang, *supra* note 1.

<sup>43</sup> See Toronto Centre Global Leadership in Financial Supervision. FinTech, RegTech and SupTech: What They Mean for Financial Supervision 12-13 (Aug. 2017). See also Dirk Broeders & Jermy Prenio, Innovative Technology in Financial Supervision (Suptech): The Experience of Early Users 1 (July 2018) (BIS Financial Stability Institute Insights on Policy Implementation No. 9) (“Suptech is currently found in two areas of applications: data collection and data analytics.”).

## VII. ON DISCRETION & INTENTIONALITY

In *The Nature of the Firm*, Professor Coase identified managerial discretion as a critical strength of the firm and a principal justification for moving activities away from market transactions and into firm control. But, Fintech and, most especially, the emergence of artificial intelligence based on machine learning offer new ways of organizing activities within the firm but outside the control of managerial discretion, at least as the concept has traditionally been understood. This phenomenon has many important implications—among other things, for personal privacy and intellectual property<sup>44</sup>—but the one that I want to explore here concerns state-of-mind requirements in various legal regimes. In many contexts, legal liability turns on the state of mind of a legal actor, requiring in some cases a showing of negligence and in others a finding of intentionality. Much of the first-year law school curriculum and a fair bit of jurisprudence explores the justifications for different state of mind requirements, but—put crudely—the law tends to impose intentionality requirements when the social desirability of some activity is ambiguous and doctrine has evolved to limit liability to those cases where the likelihood of social harm is greatest and the culpability of the defendant clearest. With artificial intelligence, however, firms now have the opportunity to move activities away from the kinds of discretionary management that can give rise to a finding of human intentionality and into the domain of machine learning, where the concept of intentionality becomes opaque if not evanescent.<sup>45</sup>

### A. Market Manipulation and High-Frequency Trading

A good example of this phenomenon can be seen in the area of market manipulation and high-frequency trading (HFT). One potential concern with high-frequency trading is that its trading practices are often reminiscent of traditional forms of manipulation.<sup>46</sup> For example, HFT strategies often entail the posting of large numbers of trade orders, the vast majority of which are withdrawn before execution. This practice could be seen as analogous to fictitious trading proscribed under traditional market manipulation doctrine. Another example would be trading strategies in which HFT firms detect the presence of large “buy” orders—typically from institutional investors—and then seek to place orders ahead of the institutional buyer, pushing prices away from the large purchaser and allowing the HFT trader to earn quick profits by placing itself between

---

<sup>44</sup> For an overview of the issues with an emphasis on financial stability, see FINANCIAL STABILITY BOARD, ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN FINANCIAL SERVICES: MARKET DEVELOPMENTS AND FINANCIAL STABILITY IMPLICATIONS (2017). See also William Magnuson, *Artificial Financial Intelligence*, HARV. BUS. L. REV. (forthcoming 2020) (available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3403712](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3403712)).

<sup>45</sup> *But cf.* Enriques & Zetsche, *supra* note 1 (emphasizing the challenges in delegating discretion to algorithms in the contest of corporate governance).

<sup>46</sup> For a good overview of the differences between old manipulation practices and new manipulation practices, see Tom C.W. Lin, *The New Market Manipulation*, 66 EMORY L.J. 1253, 1280-94 (2017).

the orders in the marketplace. In certain respects, this practice is analogous to front-running.<sup>47</sup>

A robust and insightful body of academic literature and policy papers have recently explored the question as to how traditional anti-manipulation rules should be applied to these new concepts. One component of this literature is an examination of how intentionality—traditionally a key element of manipulation cases—should be applied in these concepts where human intentionality is not directly at issue in the trading, but arguably something akin to intentionality might be found in the design of the code that supports the trade.<sup>48</sup> Of course, to the extent the HFT trading algorithms have their own elements of machine learning, it is quite easy to imagine the algorithms themselves developing trading practices wholly unanticipated by the humans that generated the underlying code in the first place.

## **B. Artificial Intelligence and the Enforcement of Fair Lending Rules**

Another example of this phenomenon occurs in the area of antidiscrimination law defining the boundaries of fair lending practices. Traditionally, the Equal Credit Opportunity Act (ECOA) and related antidiscrimination laws prohibit discrimination in lending through a doctrinal structure that includes a combination of disparate treatment and disparate impact analysis.<sup>49</sup> The doctrines that evolved in this area look to whether a lending firm intentionally discriminated on the basis of protected characteristics (such as race), or made use of factors that had a disparate impact on protected groups without there being a legitimate business justification for the lender's underwriting practices. Cases arising under these provisions often turn on the state of mind of the lender for both intentional use of race and business justifications for the use of other factors.<sup>50</sup>

Increasingly, lenders today and, most particularly, many Fintech lenders, rely on algorithms and machine learning to make credit decisions. In this context as well, the use of algorithms does not easily map on to traditional doctrinal test of intentionality and, as my colleague Talia Gillis has explored in several recent articles, advanced machine learning techniques seek to find variables correlated with creditworthiness and profitability, acting without the intervention of any human state of mind or discretionary

<sup>47</sup> See Alan Chan, *Do High Frequency Traders Front-Run the Market by Using Their Speed Advantage?*, FORBES (Apr. 3, 2014, 1:41 P.M.), <https://www.forbes.com/sites/quora/2014/04/03/do-high-frequency-traders-front-run-the-market-by-using-their-speed-advantage/#4c0442fb25a0> [https://perma.cc/548V-CD62].

<sup>48</sup> For an overview of sources on this topic, see Lin, *supra* note 46, at 1300-03. See also *id.* at 1303-06 (advocating intermediary integrity obligations as an alternative approach); Merritt B. Fox & Kevin S. Haeberle, *Evaluating Stock-Trading Practices and Their Regulation*, 42 J. CORP. L. 887 (2017) (advocating that legal doctrine focus on the second market impact of trading practices). For a more general, but still quite helpful, proposal for the analysis of manipulation, see Merritt B. Fox, Lawrence R. Glosten & Gabriel V. Rauterberg, *Stock Market Manipulation and its Regulation*, 35 YALE J. ON REG. 67 (2018).

<sup>49</sup> See Equal Credit Opportunity Act, 15 U.S.C. §§ 1691-1691f (2018).

<sup>50</sup> See, e.g., *Anderson v. Wachovia Mortg. Corp.*, 621 F.3d 261, 269-79 (3d Cir. 2010) (performing detailed analysis of alleged intentional discrimination and business justifications); *Golden v. City of Columbus*, 404 F.3d 950, 963-65 (6th Cir. 2005) (affirming dismissal of ECOA disparate-impact claim regarding utility fees, in part relying on legitimate business justification that measuring unit-by-unit consumption was impracticable).

authority to make pricing or credit allocation decisions.<sup>51</sup> One of the great debates of consumer financial regulation today is how to align these new lending practices with traditional fair lending doctrine.

To put these two examples into the Coasean framework, underwriting decisions and trading strategies were typically organized within the operations of a regulated firm because of the advantages of delegating to expert personnel the discretion to decide to whom to make loans or by which trading strategies to execute transactions. While lending algorithms and HFT strategies may formally remain within the regulated firm, the discretionary component and also the possibility of ascertaining human intentionality have disappeared. Traditional legal doctrines are incapable of providing relief unless regulatory officials devise new approaches to enforcement and detection. Efforts of these sorts are underway, but for the purposes of this chapter the need for such refinement of legal doctrines is further evidence that Fintech innovations are challenging the boundaries of regulated firm behavior.

### VIII. FINTECH AND THE ENDOGENEITY OF REGULATORY GOALS

A final question to consider, one that is implicit in much of the earlier discussion, is whether Fintech innovations themselves warrant change in the way we define our goals in the field of regulation or possibly in the structure of our supervisory system. In the *Nature of the Firm*, Professor Coase was not concerned with this question and accepted legal requirements as a fixed and exogenous constraint. But, for legal scholars and policy analysts this constraint is appropriately lifted, at least from time to time. This approach is nicely illustrated in Chris Brummer and Yesha Yadav's article *Fintech and the Innovation Trilemma*, in which they raise the possibility that Fintech developments might prompt us to recalibrate what they define as an enduring trilemma of regulatory design: tradeoffs among the provision of clear legal rules, the maintenance of market integrity, and the encouragement of financial innovation.<sup>52</sup> Whether or not one accepts this trilemma as embracing the full set of tradeoffs in our system of financial regulation, Professors Brummer and Yadav are undoubtedly correct that technological developments could necessitate a more profound rethinking of our regulatory structure than mere redefining of regulatory perimeters or adjustments in legal doctrine. And, the emergence of regulatory "sandboxes" to foster Fintech innovations is simply one manifestation of this intuition.<sup>53</sup>

This possibility is perhaps nowhere better illustrated than in the case of the regulation of big data and personal privacy more generally. The collection and manipulation of data is at the heart of many Fintech innovations and it has been the subject of considerable

---

<sup>51</sup> See Talia Gillis, *False Dreams of Algorithmic Fairness: The Case of Credit Pricing* (Working Draft of Sept. 26, 2019) (available at <https://scholar.harvard.edu/gillis/job-talk-paper>); see also Talia B. Gillis & Jann L. Spiess, *Big Data and Discrimination*, 86 U. CHI. L. REV. 459 (2019).

<sup>52</sup> Brummer & Yadav, *supra* note 3.

<sup>53</sup> Ross P. Buckley, Douglas W. Arner, Robin Veidt, and Dirk A. Zetsche, *Building FinTech Ecosystems: Regulatory Sandboxes, Innovation Hubs, and Beyond*, 61 WASH. U. J. L. AND POL'Y 55 (2020). For a similarly motivated proposal to increase the use of internal compliance mechanisms to address problems associated with the use of artificial intelligence in credit underwriting, see Katja Langenbucher, *Responsible A.I.-Credit Scoring – A Legal Framework*, 31 EUROPEAN BUS. L. REV. 527 (2020).

attention in recent academic literature.<sup>54</sup> One of the recurring questions that arise in this literature is the question of whether data utilized in the context of financial services should be treated as distinct from data regulation more generally. Historically, at least in the United States, financial services firms have been subject to specialized regulation of data, such as title V of the Gramm-Rudman-Hollings Act regarding personal financial information, the Fair Credit Reporting Act for information used to determine the creditworthiness of borrowers, and a wide range of requirements governing impermissible uses of information in insurance and credit underwriting. Europe, in contrast, has adopted more general and far-reaching data protection rules, creating both substantial challenges for cross-border compliance as well as an alternative model for the supervision in this area of the law. The centrality of data in the modern economy has led some observers to argue that the United States should create an new uber-privacy authority to oversee data protection measures through the economy.<sup>55</sup> This would certainly be a plausible approach to the overarching problem of data protection and privacy, but also one that would create further fragmentation in our oversight of financial services and potentially limit the capacity of financial regulators to address core regulatory concerns within their jurisdiction, such as the promotion of financial stability or the preservation of competitive markets.

The larger point—and the point that readers should bear in mind as they work through the case studies that follow—is that Fintech innovations and the technological developments upon which they rest may necessitate a fundamental rethinking of the regulatory goals of financial authorities and the most appropriate institutional structures through which those goals should be achieved.

---

<sup>54</sup>See e.g., Dirk A. Zetsche, Douglas W. Arner, Ross P. Buckley & Rolf H. Weber, *The Future of Data-Driven Finance and RegTech: Lessons from EU Big Bang II* (EBI Working Paper Series, no. 35, 2019). See also Douglas W. Arner, János N. Barberis & Ross P. Buckley, *The Emergence of Regtech 2.0: From Know Your Customer to Know Your Data*, 44 J. FIN. TRANSFORMATION 79 (2016).

<sup>55</sup>Rory Van Loo, *Rise of the Digital Regulator*, 66 DUKE L. REV. 1267, 1267-1329 (2017).