



**Written Testimony of**

**Kristin Johnson, Asa Griggs Candler Professor of Law, Emory University School of Law**

Before the United States House of Representatives Committee on Financial Services  
Subcommittee on Consumer Protection and Financial Institutions

Examining “Banking Innovation or Regulatory Evasion?:  
Exploring Trends in Financial Institution Charters”

Thursday, April 15, 2021

10:00 am

2128 Rayburn House Office Building

Chair Perlmutter, Ranking Member Luetkemeyer, and Members of the Subcommittee:

Thank you for inviting me to this hearing. My name is Kristin Johnson. I am the Asa Griggs Candler professor of law at Emory University School of Law, where I teach courses on corporate and securities law, the integration of emerging technologies into financial markets, including distributed digital ledger technologies such as blockchain and the assets these technologies enable (e.g., cryptocurrencies) and the assemblage of technologies commonly described as artificial intelligence technologies. Prior to assuming my current role, I served as the McGlinchey Stafford Professor of Law and Gordon Gamm Fellow at Tulane University Law School (“Tulane”). While at Tulane, I was delighted to serve as the Associate Dean for Faculty Research, the Director of the Program on Financial Market Stability in the Center for Law and the Economy, and as an affiliate of the Murphy Institute, an independently endowed, interdisciplinary (law, political science and economics) undergraduate and graduate school department at Tulane University.

My research and publications examine and promote regulatory, legislative, and market participants’ efforts to achieve the core values that intimate financial markets regulation: promoting consumer protection, maintaining fair and orderly markets, and ensuring the safety and soundness of financial market stability. I am here today solely in my academic capacity and am not testifying on behalf of any entity.

Emory University  
Gambrell Hall  
1301 Clifton Road  
Atlanta, Georgia 30322-1013

kristin.johnson@emory.edu  
Tel 404.727.6816  
Fax 404.727.6820

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As your Committee has noted, over the last several years, the Office of the Comptroller of the Currency (OCC) and the Federal Deposit Insurance Corporation have taken steps to allow firms to engage in banking activities while being subject to less regulations and supervision compared to most other banks and credit unions. My comments below paint a portrait in broad strokes of the colossal technology firms that chiefly provide commercial and consumer services as well as smaller technology based platforms operating on the fringes or in the shadows of payment, custody, and monetary transfer services that seek to penetrate financial services markets. Due to the evolving nature and endemic concerns inherent in the underlying technologies, it is imperative to recognize the limits and perils of permitting these entities to interface directly with consumers in a lightly regulated, and in some instances, unregulated market. These reflections coupled with our historic commitment to the separation of banking and commerce, should lead us to be cautious rather than cavalier in approaching decisions to issue charters or extend deposit insurance protection to such enterprises.

## Fintech Firms

Over the last decade, a growing number of digital startups launched bids to lure business from the financial services industry.<sup>1</sup> Increasingly, large technology platforms engaged essentially in commercial activities and social media platforms seek opportunities to conduct bank-like business. Amazon, Google, Facebook, for example, have launched a growing array of consumer credit and financial transactions services. These firms comprise a small subset of a burgeoning spectrum of businesses integrating complex technologies and financial services. Armed with vast quantities of data and sophisticated algorithmic (supervised and unsupervised machine learning) platforms or inspired by the creation and potential of blockchain-based technologies,<sup>2</sup> these financial technology (“fintech”) firms<sup>3</sup> have revived long-standing debates regarding the architectural design,<sup>4</sup> regulatory framework,<sup>5</sup> and role of the financial services industry.<sup>6</sup> “Fintech” is a catch-all term used to refer to the digital platform or internet-based financial services firms that engage

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1. Andrew Ross Sorkin, *Fintech Firms Are Taking On the Big Banks, but Can They Win?*, N.Y. TIMES: DEALBOOK (Apr. 6, 2016), <https://www.nytimes.com/2016/04/07/business/dealbook/fintech-firms-are-taking-on-the-big-banks-but-can-they-win.html> [<https://perma.cc/8Z6C-DWKQ>]; *The Fintech Revolution*, ECONOMIST (May 9, 2015), <https://www.economist.com/news/leaders/21650546-wave-startups-changing-finance-for-better-fintech-revolution> [<https://perma.cc/UWF3-Z7PZ>].

2. FTC, *BIG DATA: A TOOL FOR INCLUSION OR EXCLUSION?*, at i, (2016), <https://www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion-understanding-issues/160106big-data-rpt.pdf> [<https://perma.cc/R44Z-P4P5>].

3. In previous publications, Frank Pasquale has examined “incrementalist” fintech, which utilizes technology to provide standard financial services, and “futurist” fintech, in which the entire financial system is remade due to distributed technologies. See *Exploring the Fintech Landscape: Hearing Before the S. Comm. on Banking, Hous. & Urb. Affs.*, 115th Cong. (2017) (statement of Frank Pasquale, Professor of Law, University of Maryland). I use the term “fintech firms” to refer to nondepository financial services firms that integrate artificial intelligence technology and predictive analytics into their business models. While there is no universally adopted definition for the term “fintech,” many use the term as a catchall for a broader group of financial services firms that integrate a diverse body of technologies and engage in digital transfers, storage, payments systems, and lending, as well as the origination of virtual currency and robo-advising. See, e.g., Rory Van Loo, *Making Innovation More Competitive: The Case of Fintech*, 65 UCLA L. REV. 232, 238–40 (2018).

4. See *infra* Part I.A.

5. See *infra* Part II.A.

6. See, e.g., E. GERALD CORRIGAN, FED. RSRV. BANK OF MINNEAPOLIS, *ARE BANKS SPECIAL?: ANNUAL REPORT 1982* (1982) (raising fundamental questions regarding the role of banks and discussing their prudential regulation).

in digital transfers, storage, payments systems, digital asset origination (such as cryptocurrency) and secondary market trading, investment advising and digital credit scoring and origination.

To capitalize on economic efficiencies, reduce transaction costs and mitigate commonly-identified enterprise risks, fintech firms integrate artificial intelligence technologies such as supervised or unsupervised machine learning, deep learning or neural networks (“AI”) or distributed ledger technologies into their business models. While there is no universally adopted definition of AI, the term refers to a diverse, but related, set of technologies that train through a reinforcement learning process, simulate human decision-making and cognitive behavior and engage in predictive analysis.<sup>7</sup>

Financial product developers and financial service providers have long engaged statistical and probabilistic models as well as predictive analytics to forecast performance.<sup>8</sup> So fintech is not entirely new. However, sometimes a change in quantity can amount to a change in quality. That may be happening in fintech now, as the inclusion of increasingly comprehensive databases, along with new methods of analysis, means that many fintech firms deploy extremely complex algorithms (including assemblages of earlier models) to predict the likelihood of repayment and profitability of customers.<sup>9</sup> According to some futurists, financial markets’ automation will substitute increasingly sophisticated, objective, analytical model-based assessments of, for example, a borrower’s creditworthiness, for direct human evaluations are irrevocably tainted by bias and subject to the cognitive limits of the human brain.<sup>10</sup> However, even if they do occur, such advances may violate other legal principles.<sup>11</sup>

How might fintech firms accomplish such a lofty goal? Early fintech firms promising to better integrate underresourced communities into financial services markets typically introduced digital money transfer services that facilitated cash distributions among users (such as PayPal, Apple Pay, or Venmo)<sup>12</sup> and credit platforms that offered digitally-distributed consumer loans. Money

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7. Examples of AI modeling techniques include but are not limited to decision trees, random forests, artificial neural networks, k-nearest neighbors, genetic programming, and “boosting” algorithms. Given the limited time available and suggested scope, only an abbreviated description of artificial intelligence and other referenced technologies appears in the submitted written testimony.

8. ANTHONY SAUNDERS & MARCIA CORNETT, *FINANCIAL INSTITUTIONS MANAGEMENT: A RISK MANAGEMENT APPROACH* 97–103 (9th ed. 2017).

9. Note that customers who are late with payments may be much more profitable than a traditionally good credit risk, since they will be paying more in interest and fees.

10. OECD, *FINANCIAL MARKETS, INSURANCE AND PENSIONS: DIGITALISATION AND FINANCE* 10–13 (2018), <https://www.oecd.org/finance/private-pensions/Financial-markets-insurance-pensions-digitalisation-and-finance.pdf>.

11. See, e.g., Odia Kagan, *Finnish DPA Orders Company to Modify Automated Creditworthiness Assessment, Improve Disclosures*, FOX ROTHSCHILD (Apr. 27, 2019), <https://dataprivacy.foxrothschild.com/2019/04/articles/european-union/finnish-dpa-orders-company-to-modify-automated-creditworthiness-assessment-improve-disclosures/> [https://perma.cc/3K55-8MXN] (reporting that the Finnish Data Protection Authority ordered a firm to “provide individuals with information on the logic behind the decision-making process, its relevance to the credit decision and its consequences for the borrower” pursuant to the General Data Protection Regulation’s provisions guaranteeing a right to an explanation).

12. Adam Levitin, *Pandora’s Digital Box: The Promise and Perils of Digital Wallets*, 166 U. PA. L. REV. 305, 335 (2018).

transmission services can provide vital peer-to-peer platforms for those who lack access to conventional bank branches or personal checking and savings accounts.

Over the last decade, federal banking regulators signaled and adopted policies that preempted state regulatory authority over fintech firms. In the summer of 2018, the Office of the Comptroller of the Currency (OCC) announced its intention to allow fintech firms to apply for special purpose charters that would permit fintech firms to operate, in many respects, as national banks.<sup>13</sup> Consistent with a decades-long campaign to expand the scope of its authority, the OCC's seemingly innocuous announcement reflects the agency's increasingly aggressive interpretation of the scope of its statutory mandate.<sup>14</sup> In previously published research co-authored with Frank Pasquale and Jennifer Chapman, I explain that the OCC's decision may create gaps in the supervision of fintech firms and encourage market participants to engage in regulatory arbitrage.<sup>15</sup> The OCC's special purpose charters may also enable fintech firms to minimize their exposure to state antidiscrimination and consumer protection regulations. Reducing regulatory oversight of these important legal and ethical norms in a dynamic and evolving market defined by a technology that may import unconscious biases and disadvantage lower-income individuals and families raises red flags.

In attempting to enter into the financial services ecosystem, fintech firms typically adopt one of several approaches: offer a digital-only services platform that provides financial services directly to consumers,<sup>16</sup> partner platforms with entities that have a charter or license to operate as a bank,<sup>17</sup> or merge with or acquire a licensed banking entity.<sup>18</sup>

The group of firms operating in the first category (“digital-only services platform that provides financial services directly to consumers”) face significant limits in providing financial services and may often endure the costs and challenges of applying state-by-state for operating licenses. These entities also face the continuing, and sometimes conflicting, compliance obligations based on state mandated disclosure or reporting obligations. The second category of fintech firms interpose themselves between consumers and regulated financial institutions, typically providing a service associated with the business of banking. Fintech firms acting as intermediaries may enter into exclusive partnership arrangements, leveraging the integration of technology and the regulated financial institution's established reputation, relationships, and expertise. Perhaps most

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13. News Release, Off. of the Comptroller of the Currency, OCC Begins Accepting National Bank Charter Applications From Financial Technology Companies (July 31, 2018), <https://www.occ.gov/news-issuances/news-releases/2018/nr-occ-2018-74.html>.

14. See *infra* Part II.

15. Kristin Johnson, Frank Pasquale & Jennifer Chapman, *Artificial Intelligence, Machine Learning, and Bias in Finance: Toward Responsible Innovation*, 88 FORDHAM L. REV. 499, 512–51 (2019).

16. For example, Rocket Mortgage is an end-to-end, online mortgage lending platform operated by Quicken Loans, a nonbank mortgage originator. See ROCKET MORTGAGE BY QUICKEN LOANS, <https://www.rocketmortgage.com/> [https://perma.cc/R54-LP98] (last visited Aug. 15, 2019).

17. GreenSky is a consumer credit platform that pairs consumers seeking to purchase retail goods or certain services with credit and financial institutions licensed to originate and distribute consumer loans. See GREENSKY, <https://www.greensky.com> [https://perma.cc/U93E-8VLG] (last visited Aug. 15, 2019).

18. SoFi, a fintech lender, recently acquired a bank. See Peter Rudegeair, *SoFi Is Buying a Community Lender to Speed Up Banking Expansion*, WALL ST. J. (Mar. 9, 2021, 7:00 PM), <https://www.wsj.com/articles/sofi-is-buying-a-community-lender-to-speed-up-banking-expansion-11615291202>.

importantly, platforms partnering with or consolidating with regulated financial institutions attain the privileges and benefits from their affiliation with federally chartered banking institutions.

In accord with the distinct design of our nation’s “dual banking system,” both federal and state regulators have the power to issue bank charters.<sup>19</sup> Banks that receive state charters are subject to the day-to-day supervision of state banking regulators<sup>20</sup> but cannot evade federal regulation. Federal regulators supervise federally chartered banks and, to mitigate the challenges of complying with dual—and, at times, incongruent—regulatory obligations, federally chartered banks need only comply with limited state regulatory mandates.<sup>21</sup>

The National Bank Act (NBA) authorizes the OCC to issue federal bank charters to qualifying financial institutions.<sup>22</sup> The statutory language of the NBA grants the OCC broad authority to introduce regulations associated with issuing charters<sup>23</sup> and to determine licensing criteria.<sup>24</sup> In 2003, the OCC amended the regulations governing its authority to issue charters (“2003 Amendments”), creating a path for the agency to issue special purpose national bank (SPNB) charters to nondepository firms.<sup>25</sup> To receive an SPNB charter, however, an entity must be engaged in the “business of banking,” meaning the firm conducts at least one of the following core banking functions: receiving deposits, paying checks, or lending money.<sup>26</sup>

For a decade following the 2003 Amendments, the OCC’s newly promulgated authority lay dormant. In 2016, the OCC published a white paper exploring the regulatory impact of emerging fintech firms.<sup>27</sup> And, in December 2016 at an event at the Georgetown University Law Center,

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19. *See generally* COMPTROLLER OF THE CURRENCY, NATIONAL BANKS AND THE DUAL BANKING SYSTEM (2003), <https://www.occ.treas.gov/publications-and-resources/publications/banker-education/files/pub-national-banks-and-the-dual-banking-system.pdf> [<https://perma.cc/CT4Z-TFB3>].

20. *Id.* at 1.

21. *Cuomo v. Clearing House Ass’n*, 557 U.S. 519, 535–36 (2009) (holding that states cannot informally subpoena national banks in “capacity as supervisor[s] of corporations”).

22. *See* 12 U.S.C. §§ 21, 26–27 (2012). The collective versions, amendments, and regulations commonly referred to as the “National Bank Act” originated with the National Bank Act of 1863, ch. 58, 12 Stat. 665. This Essay describes the collection of versions, amendments, and regulations as the “National Bank Act.”

23. 12 U.S.C. § 26.

24. *Id.* The NBA grants the OCC authority to prescribe rules and regulations to carry out its responsibilities associated with issuing charters. *Id.* Under the NBA, “upon careful examination of the facts,” the comptroller of the currency will determine if an applicant for a national banking charter “is lawfully entitled to commence the business of banking” and issue “a certificate” indicating that the business has complied with the standards required for firms engaged in the business of banking. *Id.* § 27.

25. 12 C.F.R. § 5.20(e)(1) (2019).

26. *Id.* Under the “bank powers clause,” in section 24 (Seventh) of the NBA, the OCC has the authority to charter national banking associations by granting them “all such incidental powers as shall be necessary to carry on the business of banking” and then listing five express powers. 12 U.S.C. § 24 (2012). The express powers of national banks under section 24 (Seventh) include “(1) discounting and negotiating notes; (2) receiving deposits; (3) trading currency; (4) making loans on personal security; and (5) circulating notes.” *Id.* The terms “incidental powers” and the “business of banking” are not expressly defined in the NBA, but include activities authorized at the discretion of the Comptroller, within reasonable bounds. *See* 12 U.S.C. §§ 21, 24 (Seventh), 26–27 (2012).

27. OCC, SUPPORTING RESPONSIBLE INNOVATION IN THE FEDERAL BANKING SYSTEM: AN OCC PERSPECTIVE (2016), <https://www.occ.gov/publications-and-resources/publications/banker-education/files/pub-responsible-innovation-banking-system-occ-perspective.pdf> [<https://perma.cc/7CQD-QWYZ>]. The OCC published supplements to the white paper, requests for comments, and additional white papers following the March 2016 white paper. *See* OCC, EXPLORING SPECIAL PURPOSE NATIONAL BANK CHARTERS FOR FINTECH COMPANIES (2016), <https://www.occ.treas.gov/topics/responsible-innovation/comments/pub-special-purpose-nat-bank-charters-fintech.pdf> [<https://perma.cc/MVX9-ZXJM>] [hereinafter EXPLORING SPNBs]; OCC,

then-Comptroller Thomas Curry announced the OCC's decision to "move forward with chartering financial technology companies that offer bank products and services."<sup>28</sup>

As a result of the OCC's decision to move forward, each class of fintech firms (digital-only platforms or platforms partnering with banks) may apply for an SPNB charter.<sup>29</sup> While subject to federal regulatory oversight, fintech firms that receive an SPNB charter may be exempt from state regulations that the OCC concludes prevent or significantly interfere with the exercise of banking powers authorized under federal law.<sup>30</sup>

According to the OCC, enabling fintech firms to apply for SPNB charters levels the playing field between fintech firms and conventional depository banks, promotes uniform eligibility criteria, and ensures consistency in the development and enforcement of legal standards across the increasingly diverse body of entities providing financial services. The OCC also boasts that the breadth and depth of federal expertise in banking and risk management oversight, the benefits of federal insurance on deposits and national banks' safety and soundness (e.g., "contingency" plan development), and ethical obligations (to increase inclusion and fair access to financial markets) leave little room to challenge the OCC's decision to preempt state financial services regulators' supervision of fintech firms. Proponents argue that the absence of federal oversight will spur a race to the bottom, as states compete to attract fintech firms to their jurisdiction. This account is, however, misleading.

In July of 2020, I joined a group of dozens of law professors led by Arthur Wilmarth of George Washington University Law School, Morgan Ricks of Vanderbilt Law School, Lev Menand of Columbia Law School, and Joseph Sommer, who practiced at the Federal Reserve Bank of New York for 30 years and has written on fintech, payments, bank insolvency, and bank history in submitting an amicus brief in litigation before the United States Court of Appeals. In the brief, we explain that we are teachers and students of banking law, interested in ensuring that banking agencies operate within their statutory mandates and work in the public interest, rather than the interest of any particular industry.

The amicus brief supports positions adopted by the New York Department of Financial Services and rejects the OCC's attempts to dramatically expand its authority. As we note in the brief, "the

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RECOMMENDATIONS AND DECISIONS FOR IMPLEMENTING A RESPONSIBLE INNOVATION FRAMEWORK (2016), <https://www.occ.gov/topics/responsible-innovation/comments/recommendations-decisions-for-implementing-a-responsible-innovation-framework.pdf> [<https://perma.cc/4T8U-C5KU>] [hereinafter EXPLAINING SPNB CHARTERS]; *Public Comments on Exploring Special Purpose National Bank Charters for Fintech Companies*, OFF. COMPTROLLER CURRENCY, <https://web.archive.org/web/20190221152812/https://www.occ.treas.gov/topics/responsible-innovation/fintech-charter-comments.html> [<https://perma.cc/8FJQ-L48K>]. The OCC published a draft supplement to the Comptroller's Licensing Manual signaling that the agency planned to permit fintech firms that do not receive deposits (nondepository entities) to apply for SPNB charters. See OCC, EVALUATING CHARTER APPLICATIONS FROM FINANCIAL TECHNOLOGY COMPANIES (2017), <https://www.occ.gov/publications/publications-by-type/licensing-manuals/file-pub-lm-fintech-licensing-manual-supplement.pdf> [<https://perma.cc/Q6PW-SSFN>]; Press Release, Office of the Comptroller of the Currency, *supra* note **Error! Bookmark not defined.**

28. Thomas J. Curry, Comptroller of the Currency, Remarks at the Georgetown University Law Center Regarding Special Purpose National Bank Charters for Fintech Companies (Dec. 2, 2016), <https://www.occ.treas.gov/news-issuances/speeches/2016/pub-speech-2016-152.pdf>.

29. Press Release, Office of the Comptroller of the Currency.

30. 12 U.S.C. § 25b(b).

Emory University  
Gambrell Hall  
1301 Clifton Road  
Atlanta, Georgia 30322-1013

kristin.johnson@emory.edu  
Tel 404.727.6816  
Fax 404.727.6820

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OCC ... conflate[s] banks' permissible activities with their essential activities. While banks are permitted to conduct a wide range of financial activities, the OCC does not have the power to charter entities that are not in the deposit—that is, money creation—business. Once upon a time, the OCC recognized this limitation.<sup>31</sup> We posit that “the OCC’s new position contravenes the National Bank Act (“NBA”), the organic statute governing the OCC and national banks, and runs counter to its purpose. It is also inconsistent with the federal banking law in which the NBA is embedded, including the Federal Deposit Insurance Act, the Bank Holding Company Act, and the Federal Reserve Act, the last of which it would undermine by giving nondepository companies that play no role in monetary policy direct access to, and governance rights over, our nation’s central bank.”

Simply stated, the OCC lacks the authority to charter nondepository national banks. Lev Menand and Morgan Ricks poignantly note that “nondepository national bank” is an oxymoron. As the amicus brief explains,

The purpose of the NBA’s framers is reflected unambiguously in the statute’s text. U.S.C. § 27(a), adopted by Congress in 1978, empowers the OCC to charter *nondeposit trust companies*. If the OCC already possessed the general power to charter nondepository entities, that amendment was redundant. Under the canon against surplusage, e.g., *Duncan v. Walker*, 533 U.S. 167, 174 (2001), and the associated canon of *expressio unius est exclusio alterius*, the OCC’s claim of unrestricted authority to issue nondepository charters must be rejected.<sup>32</sup>

In other words, we note that the OCC lacks the authority to charter nondepository national banks. As the amicus brief notes,

12 U.S.C. § 24 (Seventh) describes the enumerated powers of national banks. Section 24 (Seventh) authorizes national banks “to exercise . . . all such incidental powers as shall be necessary to carry on the business of banking; by discounting and negotiating promissory notes, drafts, bills of exchange, and other evidences of debt; by receiving deposits; by buying and selling exchange, coin, and bullion; by loaning money on personal security; and by obtaining, issuing, and circulating notes.” Inconveniently for the OCC, Section 24 (Seventh) uses the conjunctive “and,” suggesting that all the enumerated activities are required or, at the very least, that not all of them are optional. The NBA’s monetary purpose, discussed above, confirms beyond any doubt that depository activities are required... four statutes, together with the NBA, embody most of the U.S. law of money and banking. They are (1) the Federal Deposit Insurance Act (FDIA), (2) the Bank Holding Company Act (BHCA), (3) the Banking Act of 1933, and (4) the Federal Reserve Act (FRA). Those statutes define the business of banking in terms of deposit-taking or are

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31. Reply Br. for the Fed. Pet., Robert L. Clarke, Comptroller of the Currency, in *Clarke v. Sec. Indus. Ass’n*, 479 U.S. 388 (1987), 1986 WL 728049, at \*5–6 (identifying “depository . . . services” as an “essential attribute[.]” of the “business of banking”).

32. See also *Indep. Ins. Agents of Am. v. Hawke*, 211 F.3d 638, 641–45 (D.C. Cir. 2000) (statutory authorization for national banks to sell insurance in towns with populations not greater than five thousand precludes national banks from selling crop insurance in larger communities); *Am. Land Title Ass’n v. Clarke*, 968 F.2d 150, 155–57 (2d Cir. 1992) (similarly holding that national banks cannot sell title insurance in larger communities), cert. denied, 508 U.S. 971 (1993).

written in ways that do not make sense in a world that includes all manner of nondepository national banks. Those statutes are in pari materia with the NBA. The OCC's scheme would also disrupt monetary policymaking and upset the competitive balance in the nonbank financial sector by giving technology firms direct access to Fed services as well as a say in Fed governance.

### **FDIC Proposed ILC Rule**

Industrial loan companies began as small state-chartered banks in the early 1900s, offering financial services to industrial workers – a niche market servicing a population that had limited access to commercial banking, and more specifically credit, services. Over the last century, ILCs have performed an important role in the financial services markets. The Garn-St. Germain Depository Institutions Act adopted in 1982 expanded eligibility for Federal deposit insurance protection to industrial banks and brought industrial banks under the supervision of both a State authority and the FDIC.

The Federal Deposit Insurance Act consequently provides that industrial banks are “state banks” and all of the existing FDIC-insured industrial banks are “state nonmember banks.”<sup>33</sup> In 1987, Congress enacted the CEBA, which exempted industrial banks from the definition of “bank” in the BHCA. As a result, parent companies that control industrial banks are not BHCs under the BHCA and are not subject to the BHCA’s activities restrictions or FRB supervision and regulation. The industrial bank exception in the BHCA therefore allows for commercial firms to own or control a bank.

Read together the statutes and amendments establish that ILCs are state-chartered banks that have direct access to the federal safety net--deposit insurance and the Federal Reserve’s discount window and payments system--and have virtually all of the deposit-taking, lending, and other powers of a full-service commercial bank. As Scott Alvarez, the Federal Reserve Board’s former General Counsel, explained to this Committee in his testimony before this committee over a decade ago:

Despite their access to the federal safety net and broad powers, these banks operate under a special exception to the federal Bank Holding Company Act (BHC Act). This special exception allows any type of firm, including a commercial firm or foreign bank, to acquire and operate an ILC chartered in one of a handful of states outside the framework of federal supervision of the parent holding company and without the restrictions on the scope of activities conducted by the ILC’s affiliates that govern the ownership of insured banks by bank holding companies.<sup>34</sup>

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<sup>33</sup> Parent Companies of Industrial Banks and Industrial Loan Companies, 86 Fed. Reg. 10703, 10704 (Feb. 23, 2021) (to be codified at 12 C.F.R. pt. 354).

<sup>34</sup> Scott G. Alvarez, *Industrial loan companies*, BD. OF GOVERNORS OF THE FED. RSRV. SYS. (July 12, 2006), <https://www.federalreserve.gov/newsevents/testimony/alvarez20060712a.htm>.



In general, “any company which has control over any bank” is a bank holding company (“BHC”).<sup>35</sup> BHCs are “subject to the [Federal Reserve] Board’s regulations and supervisory oversight, which includes examinations, regular financial reporting, capital and liquidity requirements, source of strength obligations, activities restrictions, and restrictions on affiliate transactions.”<sup>36</sup>

The Bank Holding Company Act defines a bank as either an insured bank or an entity that accepts demand deposits and makes commercial loans.<sup>37</sup> ILCs receive federal safety-net deposit insurance, and would satisfy the BHCA definition of bank. However, the BHCA explicitly excludes ILCs from the BHCA definition of bank,<sup>38</sup> thus excluding their holding companies from consolidated Fed supervision and restrictions on their activities.

The lack of activity restrictions along with the lack of consolidated supervision threatens the separation of banking and commerce that is a general feature of the US banking system. In addition, critics of the ILC loophole argue that:

Many existing industrial banks are captive lenders for their commercial and industrial parents. They provide loans to promote the sale of their parents' goods and services. They are not, and could never be, objective and impartial providers of credit. If we allow commercial and industrial firms to acquire more captive banks, the result will be an increasingly skewed allocation of credit across our economy.<sup>39</sup>

Weakness in the (unrestricted, unsupervised) ILC parent could threaten the safety and soundness of the ILC. A common example is that of GMAC, which was GM’s ILC. GMAC required a \$17 billion bailout and had to convert into a bank holding company.<sup>40</sup>

GM’s deteriorating financial condition throughout the early 2000s “caused GMAC’s credit rating to be lowered to junk status,” increasing the cost of capital to GMAC and interest costs to GMAC’s borrowers.<sup>41</sup> GMAC had also become active in the mortgage market and thus was exposed to the housing bust and declines in auto sales.<sup>42</sup> While Dodd-Frank now requires ILC parents to serve as

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35. 12 USC 1841(a)(1).

36. Control and Divestiture Proceedings, 85 Fed. Reg. 12398, 12399 (Mar. 2, 2020) (to be codified at 12 C.F.R. pts. 225 and 228), <https://www.federalreserve.gov/aboutthefed/boardmeetings/files/control-rule-fr-notice-20200130.pdf> (footnotes omitted).

37. 12 USC 1841(c)(1).

38. 12 USC 1841(c)(2)(H).

39. Arthur E. Wilmarth Jr., Opinion, *Beware the return of the ILC*, AM. BANKER (Aug 2, 2017, 3:28 pm), <https://www.americanbanker.com/opinion/beware-the-return-of-the-ilc>.

40. *Id.*

41. BAIRD WEBEL & BILL CANIS, CONG. RSCH. SERV., R41846, GOVERNMENT ASSISTANCE FOR GMAC/ALLY FINANCIAL: UNWINDING THE GOVERNMENT STAKE 4 (2015), <https://fas.org/sgp/crs/misc/R41846.pdf>.

42. *Id.* at 5.

a source of strength to the ILCs they control, it is unlikely that a failing GM could have served as a source of strength to GMAC. Just over a decade after that experience, GM is once again planning to acquire an ILC.<sup>43</sup>

Further, Rakuten, known as the “the Amazon.com of Japan,”<sup>44</sup> is currently attempting to form an ILC.<sup>45</sup> The ILC exception allows a company such as Rakuten (or GM), which otherwise would not be allowed to control a bank, to control an ILC, which is functionally equivalent to a bank, without restrictions on its commercial activities and without consolidated supervision that BHCs are subject to. Press reports suggest that a potential approval of Rakuten’s application and the FDIC’s final ILC rule could allow large US technology companies into the banking realm.<sup>46</sup>

In addition to the OCC’s SPNB and the FDIC’s final ILC rule, the OCC’s true-lender rule may also permit fintechs to charge consumers excessive interest rates. The true-lender rule establishes “a bank makes a loan when it, as of the date of origination, (1) is named as the lender in the loan agreement or (2) funds the loan.”<sup>47</sup> This rule is partly in response to situations where a “loan is originated as part of a lending partnership involving a bank and a third party.”<sup>48</sup> In essence, the rule allows a bank to be the true-lender by being named on the loan agreement as of the origination date. This effectively allows the loan to circumvent any state interest rate caps.<sup>49</sup> The OCC acknowledges that commentators have raised concerns that the true-lender rule “facilitates inappropriate ‘rent-a-charter’ lending schemes—arrangements in which a bank receives a fee to ‘rent’ its charter and unique legal status to a third party.”<sup>50</sup> While acknowledging these concerns, the OCC observes that “[t]hese arrangements have absolutely no place in the federal banking system.”<sup>51</sup> Yet, the final rule effectively legitimizes these arrangements.

Taken together, the OCC’s SPNB, the FDIC’s permissiveness towards ILCs, and the OCC’s true-lender rule all serve to undermine state usury laws. Because “a combination of federal and state

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<sup>43</sup> Orla McCaffrey & Mike Colias, *GM Plans to Seek Banking Charter to Grow Auto-Lending Business*, WALL ST. J. (Nov. 27, 2020, 1:19 pm), <https://www.wsj.com/articles/gm-plans-to-seek-banking-charter-to-grow-auto-lending-business-11606501125>.

<sup>44</sup> Arthur E. Wilmarth, Jr. *The FDIC Should Not Allow Commercial Firms to Acquire Industrial Banks*, 39 BANKING & FIN. SERVS. POL’Y REP. 1, 1–2 (2020).

<sup>45</sup> *Rakuten files third application for FDIC insurance*, JD SUPRA (Jan. 26, 2021), <https://www.jdsupra.com/legalnews/rakuten-files-third-application-for-8039599/>.

<sup>46</sup> Jesse Hamilton, *FDIC Eases Path for Amazon and Facebook to Become Lenders*, Bloomberg (Dec. 15, 2020, 12:47 pm), <https://www.bloomberg.com/news/articles/2020-12-15/wall-street-faces-prospect-of-amazon-bank-as-fdic-eases-path>.

<sup>47</sup> National Banks and Federal Savings Associations as Lenders, 85 Fed. Reg. 68742, 68742 (Oct. 30, 2020) (to be codified at 12 C.F.R. pt. 7), <https://www.occ.gov/news-issuances/federal-register/2020/85fr68742.pdf> (“True-Lender Rule”).

<sup>48</sup> *Id.*

<sup>49</sup> Raul Carrillo, *Examining “Banking Innovation or Regulatory Evasion?: Exploring Trends in Financial Institution Charters”* Thursday, April 15, 2021.

<sup>50</sup> True-Lender Rule at 68742.

<sup>51</sup> *Id.*

law changes eliminated rate caps for most banks,” fintechs can now (depending on the outcome of the SPNB litigation), either charter SPNBs or ILCs to charge consumers excessive interest rates. Failing that, a fintech can enter into a partnership with a bank which, with the protection afforded by the true-lender rule, can (in name only) originate an excessively high interest loan then immediately assign it to the fintech company.

## **Expanding Bank Charter Offerings Without Sufficient Guardrails Raises Significant Consumer Protection, Fairness, and Safety and Soundness Concerns**

### **Alternative Data**

Supplementing traditional credit underwriting data inputs and processes, fintech firms employ newer modeling techniques and consider a broader range of source data referred to descriptively (rather than normatively) as alternative data. These new inputs include information regarding consumers’ financial transactions, recurring payments history and a behavioral score based on social networking and digital-interface. Fintech firms include both the non-depository digital platforms that operate independently and platforms that partner with legacy banks to originate loans.<sup>52</sup> Fintech firms servicing credit scoring and underwriting markets offer great promise but also present unique concerns.<sup>53</sup>

The introduction of alternative data may improve access to credit for many consumers with nonexistent or insufficient credit histories. According to estimates, twenty-six million Americans do not have traditional credit histories and are considered “credit invisible.” Another nineteen million Americans have thin (limited), impaired or stale (outdated) credit histories and, as a result, cannot obtain credit scores using traditional scoring methodologies (“credit unscorable”).

Unsavory lending practices, detestable marketing tactics and usurious interest rates have too often plagued marginalized consumers who face persistently fragile financial circumstances.<sup>54</sup> Unlike legacy credit scoring businesses such as Equifax, Experian and Transunion that rely on commercially available credit scoring models like the Fair Isaac Corporation Lenders (“FICO”) methodology fintech firms increasingly rely on alternative credit scoring models and nontraditional source data. According to proponents, the development of nascent methodologies and alternative data enables fintech firms to expand access to credit to consumers historically deemed invisible or unscorable.

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<sup>52</sup> Christopher K. Odinet, *Consumer Bitcredit and Fintech Lending*, 69 ALA. L. REV. 781 (2018)

<sup>53</sup> FED. TRADE COMM’N, *BIG DATA: A TOOL FOR INCLUSION OR EXCLUSION?*, at i, (2016).

<sup>54</sup> Kathleen C. Engel & Patricia A. McCoy, *A Tale of Three Markets: The Law and Economics of Predatory Lending*, 80 TEX. L. REV. 1255, 1261 (2002).

Legislative and regulatory authorities must, however, balance fintech firms' laudable promises of greater inclusion with the significant risks posed by integrating alternative data and new methodologies. Careful examination of the rise of alternative data and the evolution in consumer credit underwriting methods casts a spotlight on fintech firms' promises of inclusion and reveals the perils of relying on source data that may not be demonstrably predictive of creditworthiness as well as the potential for predatory or discriminatory practices to undermine the anticipated benefits of alternative source data and credit evaluation processes.

Fintech firms integrating alternative data and modeling techniques must satisfy long-standing fairness and accountability standards, engage in responsible innovation and commit to provide sufficient transparency, meaningful disclosure, auditing and necessary internal controls to meet statutory obligations regarding their methodologies and minimize the potential for discriminatory effects on legally protected classes.

Advancements in the collection, storage and analysis of vast volumes of data ("big data") fuel AI platforms designed to automate decision-making in several key sectors including healthcare, education, employment, criminal law, security, surveillance, communications and finance. While the inclusion of data crunching algorithms is nothing new – investment banking firms, for example, have long relied on sophisticated algorithms to predict timing, pricing, risk and other factors that influence investment and trading decisions - the rapid adoption of learning algorithms that interpret alternative data in consumer credit markets presents significant risks.

### **Automating Credit Decisions**

Learning algorithms at the center of fintech platforms' credit evaluation processes analyze vast quantities of data in fractions of a second. Fintech platforms replace face-to-face meetings with loan officers and cumbersome and time-consuming paper-based credit application processes with applications accessible on internet-enabled smartphones, tablets and other mobile or personal devices. Removing human underwriting agents and their biases arguably reduces the likelihood of intentional discrimination. AI-based credit scoring methodologies may enhance consumer default predictions and lead to better credit classification and possibly lower-priced credit than traditional credit scoring methodologies. Together these process-oriented improvements enhance efficiency and accuracy, improve pricing, reduce operating and loan origination costs and enable fintech firms to offer credit to a greater diversity of consumers, in particular those who have struggled to obtain credit.

Traditional credit evaluation processes like FICO consider tradeline information, including but not limited to existing and previous loan obligations, repayment history, credit limits, account status for revolving accounts, credit inquiries, public records such as civil judgments, tax liens and bankruptcies. Incumbent credit scoring methodologies predominantly use multivariate regression analysis to correlate past credit history to consumer credit outcomes and evaluate the likelihood of default or delinquency. Increasingly, incumbent credit scoring firms and traditional methodologies

are shifting their evaluation criteria. As fintech firms tout the benefits of AI driven decision-making, both incumbent credit scoring firms and insurgent fintech platforms rely on alternative sources of data and scoring methodologies.

According to industry and federal and state agency reports, alternative data refers to information not traditionally used by the national consumer reporting agencies ("CRA") in calculating a consumer's credit score. In some instances, alternative data simply expands the categories of payment history beyond those considered by CRAs. For example, some fintech platforms integrate telecommunications (mobile phone and cable bills), utilities or residential rental payment history. In other instances, fintech firms expand the types of information considered in credit scoring processes and include financial transaction data (checking account cashflows).

*Alternative data may assist historically marginalized (credit invisible and unscorable consumers) to gain access to conventional credit markets.* There is good reason to believe that capturing nontraditional data may enable consumers with thin, impaired or nonexistent credit files to demonstrate a history of timely bill payment. The frequency of telecommunications, utility and rental payments may enable consumers to generate a different but valuable track record or consistent, timely bill payment history.

*Limitations and conflicts arising from the use of alternative data to expand access to credit.* Consumer advocates have, however, expressed some concerns regarding the impact of integrating certain data points, such as utility bill payments. Relying on utility or cable bill payment histories may disadvantage low-income consumers for various reasons. First, dispute resolution processes for public utilities and cable services may differ from other types of recurring obligations. Second, utility bill balances may fluctuate seasonally, prompting some consumers to delay payments or fall behind on pay utilities bills. Low-income or fixed income families are particularly susceptible to these circumstances.

Consider, for example, the families living in areas of the country that face severe seasonal weather patterns. For families living in the northeastern part of the country, for example, home heating bills may present significant monthly demands during the winter and families may not be able to pay utility bills on-time or in full at the close of each billing cycle. Similar challenges may arise for families living in southern states during the summer months. Finally, the significance assigned to recurring residential bills may disadvantage families that migrate seasonally based on employment opportunities or periodically relocate based on service in the armed forces.

*Financial transaction and social networking data.* Expanding credit evaluation criteria beyond additional types of recurring payments, alternative data may also include personal consumer financial transaction data – bank account and credit/debit card transactions, including deposits, transfers or withdrawals. Methodologies integrating alternative data may also incorporate educational (major and university attended) or professional accomplishments.

Proponents of alternative data also advocate for the inclusion of nonfinancial, behavioral data. These data points may include digital interface information such as clickstream data, audio and text data, internet browsing and search habits, geo-spatial data and survey or questionnaire data.<sup>55</sup> Beyond simply browsing preferences, fintech firms are also integrating highly-personalized reputational data. For example, fintech firms are assessing consumers' social network status, web-scraping data from consumers' financial transactions and social media activities and ranking consumers based on relational social connections (consumers' status as "social influencers") through analysis of exchanged messages and friends tagged in social media posted photos.

It is not yet clear how these new sources of data will impact those without credit reports or with thin or stale credit files. It is also unclear how credit invisibles and unscorables who do not have conventional checking and savings accounts or credit cards will generate financial transaction data. Similarly, ranking consumers based on higher educational or professional accomplishments seems likely to replicate the current credit scoring patterns. Finally, credit invisibles and unscorables that lack a presence on social media are unlikely to engender the relational benefits or rewards associated with social networking. In fact, familial and neighborhood associations may make it more difficult for consumers who have not traditionally qualified for credit on fair and reasonable terms to gain access to better, higher quality credit products.

Indisputably, however, the rising significance of alternative data has ignited interest across various markets for greater access to consumer financial data. Consistent with its dominance in the general technology market, Facebook has directly approached banks requesting access to consumers' financial transaction data<sup>56</sup> and registered for a patent for a technology that assesses users based on social network connections. Technology firms often seek to gather sensitive data from consumers but resist transparency regarding the uses of consumer data.<sup>57</sup>

### **Regulating Alternative Data**

The harvesting, distribution and integration of financial transaction and behavioral scoring data raises significant questions regarding consumer protections, privacy and discriminatory practices. Alternative data such as financial transaction data - credit and debit card and checking account transaction history- may offer valuable insights. Information regarding financial transaction activities and behavior may better inform evaluations of factors that are correlated to consumer credit risk assessment. A consumer's financial history is, however, sensitive information. Unmonitored use and distribution of this information challenges consumer protections and privacy norms.

### **Privacy Concerns – Existing and Proposed Federal Oversight**

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<sup>55</sup> Mikella Hurley and Julius Adebayo, *Credit Scoring in the Era of Big Data*, 18 YALE J. L. & TECH. 148, 159 (2016).

<sup>56</sup> Emily Glazer, Deepa Seetharaman and AnnaMaria Andriotis, *Facebook to Banks: Give Us Your Data, We'll Give You Our Users*, WALL ST. J., Aug. 6, 2018.

<sup>57</sup> FRANK PASQUALE, *THE BLACK BOX SOCIETY* (Harvard Univ. Press, 2015).

A host of state and federal regulators and this Committee are actively seeking to clarify the types of alternative data and the method for including these new class of information in emerging and evolving credit scoring processes. This Committee has held multiple hearings to explore these questions.

More specifically, in February of 2017, the Consumer Financial Protection Bureau (“CFPB”) announced a comprehensive Request for Information Regarding Use of Alternative Data and Modeling Techniques in the Credit Process. The Government Accountability Office (“GAO”) issued a report in March of 2018 - *Additional Steps by Regulators Could Better Protect Consumers and Aid Regulatory Oversight* - and a second report in December of 2018 - *Agencies Should Provide Clarification on Lenders’ Use of Alternative Data* – recommending a series of policies including proposals to coordinate agencies’ regulatory efforts, clarify standards governing alternative data and minimize uncertainty regarding the use of alternative data in the underwriting process. In the absence of effective state or federal regulatory intervention, many warn that fintech firms will take advantage of gaps in oversight and engage in regulatory arbitrage.

Advocates argue that existing regulations sufficiently address consumer protection, privacy and antidiscrimination concerns. Under the Gramm Leach-Bliley Act, financial institutions may not distribute “raw” consumer data to third parties; instead, prior to distributing consumers’ personal financial data, financial institutions must aggregate, anonymize and de-identify personalized transaction details. Financial institutions must also send consumers initial and annual privacy notices and allow them to opt-out of sharing their personal transaction information with unaffiliated third parties.

These protections are, however, weak and evidence suggests that they do not effectively protect consumers’ confidential personal financial information. Using statistical methods, data scientists can decode or de-anonymize aggregated consumer social media and financial transaction data. In other words, data scientists can reverse the steps taken by financial institutions to de-identify consumer data and match consumer data with individual consumers’ profiles. A recent study by Stanford and Princeton researchers details a theoretical methodology for de-identified web browsing histories and linking individual search histories to social media profiles using only publicly available data to facilitate the matching process.<sup>58</sup>

Behavioral scoring presents even more pernicious concerns. According to proponents of behavioral scoring, the likelihood that a consumer will default on payment obligations may be determined by evaluating the consumer’s network of friends, neighbors, folks with similar interests, income levels, and backgrounds. Unlike consumer financial transaction data and payment history evaluations, however, behavioral scoring may not be demonstrably predictive of financial responsibility.

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<sup>58</sup> Jessica Su, Ansh Shukla, Sharad Goel, Arvind Narayanan, *De-anonymizing Web Browsing Data with Social Networks*, Apr. 3, 2017, <https://5harad.com/papers/twivacy.pdf>.

Credit is, indisputably, a critical resource. Individuals and families increasingly rely on credit to finance household purchases or overcome significant, unanticipated expenses.<sup>59</sup> Without access to credit on fair and reasonable terms, it can be extraordinarily expensive to be poor. For families with fragile financial circumstances, credit may serve as a lifeline, enabling consumers to meet short term debt obligations, and to pay for education, housing, and even food.<sup>60</sup>

Consumers navigate an ever-widening web of debt. According to the Federal Reserve Bank of New York's Center for Microeconomics – at the close of the first quarter 2019, families and individuals face over \$13 trillion in debt obligations.<sup>61</sup> Rising college and university tuition rates have fueled an increase in educational debt obligations. Students and their families currently owe approximately \$1.5 trillion in student loan debt.<sup>62</sup> A parallel narrative in the home mortgage loan market has led American households to borrow over \$9 trillion in mortgage debt.<sup>63</sup>

Credit reporting agencies have a special role in financial markets and fintech firms operating at the intersection of startup innovation and consumer credit origination raise a number of the normative questions.<sup>64</sup> As AI increasingly influences the terms and availability of credit, this nascent technology will also inevitably perform a gatekeeping function, determining who receives access to credit, and for those with access, learning algorithms will likely decide the most fundamental terms of any credit arrangement.

## Privacy Concerns - Adopted and Proposed State Laws and Regulation

In the absence of definitive federal regulation addressing the use of alternative data, several state laws require disclosure regarding the use of alternative data by credit scoring platforms or limit the use of alternative data.

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<sup>59</sup> REPORT ON THE ECONOMIC WELL-BEING OF U.S. HOUSEHOLDS IN 2018, BRD. GOVERNORS FED. RESERVE SYS. (2019), <https://www.federalreserve.gov/publications/files/2018-report-economic-well-being-us-households-201905.pdf>.

<sup>60</sup> See Abbye Atkinson, *Rethinking Credit as Social Provision*, 71 STAN. L. REV. 1093 (2019) (describing the dangers of making credit a key determinant of whether and how basic needs are met).

<sup>61</sup> QUARTERLY REPORT ON HOUSEHOLD DEBT AND CREDIT (Q1 2019), CTR. MICROECON. DATA: FED. RESERVE BANK N.Y. (2019), [https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC\\_2019Q1.pdf](https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC_2019Q1.pdf).

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> E. Gerald Corrigan, *Are Banks Special?: ANNUAL REPORT 1982*, FEDERAL RESERVE BANK OF MINNEAPOLIS (raising fundamental questions regarding the role of banks and prudential regulation).



*California Consumer Privacy Act*. Signed by Governor Jerry Brown on June 28, 2018, the California Consumer Privacy Act (“CCPA”) grants a consumer the right to request that a business “disclose the categories and specific pieces of personal information that it collects about ...consumer[s], the categories of sources from which that information is collected, the business purposes for collecting or selling the information, and the categories of [third] parties with which the information is shared.”<sup>65</sup> The CCPA also enables consumers to request the deletion of personal information, opt out of the sale of personal information, and access the personal information in a “readily useable format.”<sup>66</sup>

The CCPA construes “personal information” broadly. Under the CCPA, “personal information” means “information that identifies, relates to, describes, is capable of being associated with, or could reasonably be linked, directly or indirectly, with a particular consumer or household.”<sup>67</sup> Similarly, the law also offers a broad definition of the term “sell;” consequently, any of the following activities constitutes a sale of consumer data: “disclosing, disseminating, making available, transferring or otherwise communicating orally or in writing or by electronic or other means” a consumer’s personal data. Examples of personal information include consumer’s personal identifiers, education information, geolocation, biometric data, internet browsing history, psychometric data, and “inferences” drawn from information used to create a profile about a consumer, reflecting the consumer’s preferences, predispositions or behavior, among other attributes.

The CCPA requires companies to obtain consent from customers before selling their personal data to third parties, but it does not apply to consumer information that is de-identified. “De-identified” information is personal information that cannot reasonably identify, relate to, describe, or be linked to a particular consumer.<sup>68</sup> In addition, the CCPA does not apply to “aggregate consumer information,” which is information that relates to a group or category of consumers, from which individual consumer identities have been removed, that is not linked or reasonably linkable to any consumer or household or device.<sup>69</sup>

Critics have challenged the breadth of the CCPA and the likely impact that the law would have on established business models in the technology sector including several of the largest technology companies such as Facebook, Twitter, and Google.<sup>70</sup> This restriction may extend to internet service providers such as AT&T and Verizon, which collect broadband activity data (web browsing data) and may generate behavioral profiles to enable digital advertising.<sup>71</sup>

<sup>65</sup> Assembly Bill No. 375, [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180AB375](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB375).

<sup>66</sup> Dipayan Gosh, *What You Need to Know About California’s New Data Privacy Law*, Harvard Business Review (July 11, 2018), <https://hbr.org/2018/07/what-you-need-to-know-about-californias-new-data-privacy-law>.

<sup>67</sup> Assembly Bill No. 375, [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180AB375](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB375).

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

<sup>70</sup> *Id.*

<sup>71</sup> *Id.*

## **New York State Senate 2302 and Department of Financial Services Regulatory Guidance**

As of July 2019, the New York State Assembly is considering the adoption of Senate bill 2302 - a bill that would prohibit consumer reporting agencies from using information about the members of a consumer's social network to evaluate the consumer's creditworthiness.<sup>72</sup> The bill defines the term "members of a consumer's social network" as "a group of individuals authorized by a consumer to be part of his or her social media communications and network."<sup>73</sup> The bill prohibits consumer reporting agencies from "collect[ing], evaluat[ing], report[ing], or maintain[ing] in the file on a consumer the credit worthiness, credit standing or credit capacity of members of the consumer's social network for purposes of determining the credit worthiness of the consumer; the average credit worthiness, credit standing or credit capacity of the consumer's social network; or any group score that is not the consumer's own credit worthiness, credit standing or credit capacity."<sup>74</sup> In addition to pending legislation limiting the use of social networking behavioral information in consumer credit evaluation processes, New York state financial services regulators have expressly limited the use of alternative data in the context of life insurance underwriting methodologies.

### **Preventing Redlining: New York State Department of Financial Services Insurance Circular: Use of External Consumer Data and Information Sources in Underwriting for Life Insurance**

On January 18, 2019, the New York State Department of Financial Services ("NYSDFS") issued an insurance circular with two guiding principles on the use of alternative data in life insurance underwriting. First, insurers must independently determine that external data sources do not collect or use prohibited criteria. Insurers may not rely on a vendor's claim of that alternative data does not reflect bias or result in discrimination against protected classes. Insurers may not evade their obligations to comply with antidiscrimination laws by pointing to the proprietary nature of a third-party process.<sup>75</sup> Notwithstanding the fact that alternative data may be provided by third-party vendors, the NYSDFS emphasized that "the burden" to ensure compliance with antidiscrimination laws "remains with the insurer at all times."<sup>76</sup>

Second, insurers should not use external data unless they can establish that it is not "unfairly discriminatory."<sup>77</sup> Insurers must be confident that the use of alternative data is demonstrably predictive of mortality risk. The Circular also notes that "transparency is an important

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<sup>72</sup> <https://legislation.nysenate.gov/pdf/bills/2019/S2302>.

<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*

<sup>76</sup> [https://www.dfs.ny.gov/industry\\_guidance/circular\\_letters/cl2019\\_01](https://www.dfs.ny.gov/industry_guidance/circular_letters/cl2019_01)

<sup>77</sup> *Id.*

consideration in the use of external data sources to underwrite life insurance.” Insurers using external data should be confident that the use of the data is demonstrably predictive of mortality risk and that they can explain how and why this is the case.<sup>78</sup>

### **Fair Credit Reporting – Alternative Data as a “Consumer Report”**

The Fair Credit Reporting Act (“FCRA”) imposes obligations on CRAs - entities that provide consumer reports - as well as anyone who uses or furnishes information included in consumer reports. The FCRA defines consumer reports as “communication[s] of any information by a consumer reporting agency bearing on a consumer’s creditworthiness, credit standing, credit capacity, character, general reputation, personal characteristics, or mode of living which is used or expected to be used or collected in whole or in part for determining a consumer’s eligibility for credit, employment purposes, or any other purposes enumerated in the statute.”

A number of questions arise as fintech firms begin to gather alternative data and generate credit assessments. If fintech firms’ consumer credit assessments based on alternative data constitute “consumer reports,” consumers and consumer advocates may assert that fintech firms are subject to the obligations imposed on CRAs under the FCRA. In addition, CRAs may only distribute consumer reports for limited purposes identified in the statute. Consumer reports may be furnished (i) in connection with a credit transaction involving the consumer, (ii) for employment purposes, (iii) in connection with insurance underwriting, or (iv) in accordance with the consumer’s written instructions. Consequently, entities gathering data and fintech firms and other firms that obtain and resell data may violate the FCRA by impermissibly using and transferring assessments based on alternative data if such assessments constitute consumer reports. As described in the CFPB request for information and the GAO reports, federal regulators should clarify the contexts in which nontraditional data or alternative data will be deemed “consumer reports” and the instances in which fintech firms may be deemed CRAs.

### **Adverse Action Notices – Explainability**

The FCRA and Equal Credit Opportunity Act (“ECOA”) also impose an adverse action notice requirement for entities that take action with respect to any consumer that is based, in whole or in part, on any information contained in a consumer report. State law parallels federal obligations for adverse action notices.

Under relevant provisions of New York Insurance Law referenced above, for example, insurers must notify consumers of their right to receive the “specific reason or reasons for a declination, rate differential, or other adverse underwriting decision.” According to the NYSDFS Circular issued earlier this year, if an insurer uses alternative data to underwrite insurance, the reason(s)

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<sup>78</sup> *Id.*

provided to the consumer for any adverse action “must include details about all information” underlying the decision, including the specific source of the information.

Satisfying adverse action notice requirements may present a significant challenge for platforms using learning algorithms to review large volumes of alternative data. The inscrutable and non-intuitive nature of learning algorithms suggests that even developers may be unable to explain the specific rationale underlying an algorithm’s credit or insurance underwriting decision.<sup>79</sup> As a result, it may be difficult for CRAs to explain adverse actions as contemplated under the existing regulatory framework.

### **Bias, Fairness and Inclusion**

Under ECOA and federal fair lending regulations, intentional discrimination based on a protected trait is prohibited under antidiscrimination statutes. Facially-neutral algorithms mitigate the risk that consumers will face intentional discriminatory treatment based on legally protected traits such as race, gender or religion; this suggests that fintech firms employing automated decision-making platforms are not likely to engage in intentional discrimination and therefore are less likely to violate antidiscrimination statutes. The operational mechanics of learning algorithms may, however, mask an algorithm’s reliance on a trait that functions as a proxy for a legally protected trait.

Evidence demonstrates that incomplete or inaccurate data sets may influence the objectivity of learning algorithms. Perhaps even more alarming, learning algorithms are designed to identify the most expedient path or optimal variable for solving a problem or making a decision. Learning algorithms seek to identify variables that simplify and expedite the sorting, classifying and ranking of identified subjects. To that end, learning algorithms may rely on proxies or traits that are highly-correlated with protected traits.<sup>80</sup>

This approach may result in the learning algorithm relying on facially-neutral variables in a manner that masks prohibited decision-making behavior.<sup>81</sup> In other words, the algorithm may make decisions using facially neutral variables that function as proxies in the decision-making process for prohibited criteria, violating antidiscrimination protections.

Even if developers expressly program algorithm’s not to discriminate on the basis of a protected trait, the developers’ biases may creep in and influence the algorithm’s operation. Three examples illustrate concerns regarding biases in the data sets. First, inaccurate, incomplete and otherwise

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<sup>79</sup> Andrew D. Selbst & Solon Barocas, *The Intuitive Appeal of Explainable Machines*, 87 *FORDHAM L. REV.* 1085 (2019)

<sup>80</sup> Daniel Schwarcz and Anya Prince, *Proxy Discrimination In The Age Of Artificial Intelligence And Big Data*, *IOWA L. REV.* (Forthcoming 2020).

<sup>81</sup> Solon Barocas & Andrew Selbst, *Big Data’s Disparate Impact*, 104 *CAL. L. REV.* 671, 678 (2016).

flawed data sets may potentially amplify discrimination.<sup>82</sup> To illustrate this concerns, consider Amazon’s attempt to use an automated decision-making platform to evaluate, score and rank job applicants for a software developer position.

Amazon created a resume review platform designed to identify and sort candidates with desirable attributes for a software developer position. The platform received facially- neutral instructions regarding educational or skill prerequisites and analyzed the resumes of employees recently hired for similar computer programmer positions. Beyond this initial data set and series of instructions, the platform taught itself to mimic human-like decision-making behavior. As the platform began to review real candidates’ resumes, it operated independently, using cognitive analysis to decide which candidates to interview without specific instructions regarding the submitted resumes.<sup>83</sup>

Amazon’s goal was to identify best athletes in a competitive pools of applicants.<sup>84</sup> Notwithstanding programmers’ intentions, the platform began to “penalize resumes that included the word ‘women’s,’ as in ‘women’s chess club captain,’” and “downgraded graduates of. . . women’s colleges.”<sup>85</sup> Amazon’s experiment illustrates the risk that an automated platform will inherit the biases that data sets and developers unknowingly introduce, leading to unanticipated and potentially prohibited discrimination against individuals who are members of a legally protected class.

Second, selecting and cleaning data sets involves human judgment. Data sets are often compiled by third party vendors and distributed to developers who utilize the data to create a training data set. A learning algorithm’s successful analysis depends significantly on the data used to train the algorithm.

In order to achieve the predictive benefits of learning algorithms, data sets require a large number of observations. Even if a data set has a sufficient number of observations, the data must be subjected to several pre-processing steps including, among others, cleaning, partitioning, sampling, scaling and feature selection. These steps are necessary because datasets are rarely free from missing or inaccurate values. Data scientists must decide how to resolve missing values. The options for addressing these concerns may include removing the subjects with missing values from the data set and excluding them from the analysis. At each step from data collection decisions to the development of the algorithm, human judgment will influence how the algorithm operates.

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<sup>82</sup> SAFIYA NOBLE, *ALGORITHMS OF OPPRESSION* (2018); VIRGINIA EUBANKS, *AUTOMATING INEQUALITY: HOW HIGH-TECH TOOLS PROFILE, POLICE AND PUNISH THE POOR* (2018); Margaret Hu, *Algorithmic Jim Crow*, 86 *FORDHAM L. REV.* 633 (2017).

<sup>83</sup> See Jeffrey Dastin, *Amazon Scraps Secret AI Recruiting Tool That Showed Bias Against Women*, *REUTERS* (Oct. 9, 2018), <https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G>.

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

Finally, some commentators have demonstrated that underrepresentation, particularly of members of legally protected classes, may lead to digital discrimination.<sup>86</sup>

One study suggests that fintech firms using AI based methodologies are replicating historic biases. According to the results of the study both fintech and traditional mortgage origination firms lending practices result in discrimination against Latinx and African-American borrowers.<sup>87</sup>

### **Cyber Security Concerns**

In addition to privacy and discrimination concerns, permitting fintech firms and CRAs to collect alternative data heightens cybersecurity concerns. The rising cost, frequency, and severity of data breaches now dominate risk management discussions. Over the last ten years, more than 4,000 known data breaches have shocked, debilitated, and even (temporarily) paralyzed markets. Commentators estimate that vast numbers of records containing confidential or sensitive data have been compromised. Experts suggest that data breaches cost the global economy more than \$ 400 billion dollars of losses annually.

As cyberattacks multiply, governments, corporations, and citizens scramble to mount a successful defense against cyber-intrusions. The size, sophistication, and diversity of styles of the cyberattacks renders these activities among the most perilous of emerging risk management concerns.

The cyberattacks against financial institutions threaten the stability of financial markets and create personal costs for consumers exposed during data breaches. As the New York State Department of Financial Services noted, “[c]yber hacking is a potentially existential threat to our financial markets.” Federal regulators have warned that cybersecurity threats may “wreak serious havoc on the financial lives of consumers.”

Financial transaction and social media data present particularly attractive targets for hackers. Pursuant to federal regulation and consistent with their business models, large financial institutions acquire, collect, and retain significant volumes of personal information. Collection, storage and transfer of this sensitive data renders financial institutions and retailers highly attractive targets for hackers.

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<sup>86</sup> Joy Buolamwini and Timnit Gebru, *Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification*, 81 PROCEEDINGS OF MACHINE LEARNING RESEARCH, CONFERENCE ON FAIRNESS, ACCOUNTABILITY, AND TRANSPARENCY 1-15 (2018) (present an approach to evaluate bias present in automated facial analysis algorithms and datasets).

<sup>87</sup> See, e.g., Robert Bartlett et al., *Consumer-Lending Discrimination in the Era of FinTech* (October 2018) (unpublished manuscript), <https://faculty.haas.berkeley.edu/morse/research/papers/discrim.pdf> (an empirical study comparing discrimination in lending by traditional mortgage origination firms with face-to-face interaction with borrowers and decisions made by fintech platforms; the study finds that “lenders charge Latinx/African-American borrowers 7.9 and 3.6 basis points more for purchase and refinance mortgages respectively, costing them \$765M in aggregate per year in extra interest”).

Cyberattacks capture national and international attention because of their pervasive effects. For example, in December 2013, Target, a national retailer, announced that it was the target of a massive data breach. The hackers who orchestrated the data breach obtained the confidential credit and debit card information of more than 40 million customers. As investigations ensued, Target continued to adjust its estimate of the number of records accessed, ultimately reporting that hackers captured the personal data of as many as 110 million customers. In 2014, hackers invaded home improvement retailer Home Depot's records and acquired 56 million customers' credit and debit account information and 53 million customers e-mail addresses.

Equifax's settlement this week illustrates the perils of cyberattacks against credit reporting agencies. Between mid-May 2017 and July 2017, Equifax, one of the country's largest CRAs suffered one of the largest known financial data breaches, exposing the personal information (names, addresses, dates of birth, Social Security numbers, and driver's license numbers) of more than 148 million Americans, 8,000 Canadians, and nearly 700,000 UK citizens.

Former Equifax CEO Richard Smith in testimony before Congress explained that the data breach resulted from hackers' exploitation of a flaw in "Apache Struts," an open source web application. While a patch was released during the first week of March 2017, Equifax failed to apply the security updates until two months later. Equifax should have addressed this vulnerability within forty-eight hours, but it did not.<sup>88</sup> Equifax's information security scans also failed not detect the Apache Struts vulnerability.<sup>89</sup>

On May 13, 2017, hackers exploited this vulnerability to access Equifax's systems and consumers' personally identifiable information.<sup>90</sup> Between May 13, 2017 and July 30, 2017, evidence suggests that the attackers continued to access sensitive information, exploiting the same Apache Struts vulnerability without being detected by Equifax's security tools.<sup>91</sup>

Mr. Smith notified the Equifax board about the breach on August 22, 2017.<sup>92</sup> On September 7, 2017, Equifax disclosed the breach to the American public.<sup>93</sup> In other words, Equifax waited six

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<sup>88</sup> *Oversight of the Equifax Data Breach: 7 Answers for Consumers, Hearing Before the U.S. H. Comm. on Energy and Commerce Subcomm. on Digital Commerce and Consumer Protection*, 115th Cong. 3 (2017) (statement of Richard F. Smith, CEO, Equifax), <https://democrats-energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Testimony-Smith-DCCP-Hrg-on-Oversight-of-the-Equifax-Data-Breach-Answers-for-Consumers-2017-10-03.pdf>.

<sup>89</sup> *Id.*

<sup>90</sup> Stacy Cowley, *2.5 Million More People Potentially Exposed in Equifax Breach*, N.Y. TIMES (Oct. 2, 2017), <https://www.nytimes.com/2017/10/02/business/equifax-breach.html>.

<sup>91</sup> *Oversight of the Equifax Data Breach: 7 Answers for Consumers, Hearing Before the U.S. H. Comm. on Energy and Commerce Subcomm. on Digital Commerce and Consumer Protection*, 115th Cong. 3 (2017) (statement of Richard F. Smith, CEO, Equifax), <https://democrats-energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Testimony-Smith-DCCP-Hrg-on-Oversight-of-the-Equifax-Data-Breach-Answers-for-Consumers-2017-10-03.pdf>.

<sup>92</sup> *Id.*

<sup>93</sup> *Id.*

weeks from the time they discovered the breach until they disclosed said breach to the American public. The Equifax settlement marks one of the largest data breach settlements and will provide up to \$425 million in consumer restitution. The settlement reflects a number of measures that Equifax will take to protect consumers' personal data and assist with fraud detection.

The Equifax data breach demonstrates the systemically important role of CRA in credit markets and US financial markets. As the universe of fintech firms expands, regulatory oversight of these entities must reflect the nature of the information that the firms will collect, store and transfer. Regulation must also reflect the significant role of these firms in the stability of consumer credit markets and broader financial markets.

As the Office of the Comptroller of the Currency ("OCC") and Federal Deposit Incorporation's ("FDIC") consider paths for granting fintech firms special purpose nonbank charters and Industrial Loan Corporation ("ILC") charters concerns mount regarding careful monitoring of fintech firms' privacy and cybersecurity measures and their ability to protect the collection, storage and transfer of alternative data.

### **Blockchain-Based Credit Scoring and Lending Models**

For several years, fintech firms and conventional CRAs have integrated learning algorithms into credit scoring models. In more recent years, developers began to advocate for credit scoring models built on decentralized, distributed digital ledger protocols.

On January 27, 2018, Jesse Leimgruber, Alain Meier, John Backus published a whitepaper for Bloom Protocol, a "credit staking" decentralized credit scoring platform powered by Ethereum and the Interplanetary File System. According to the whitepaper, Bloom plans to offer three main services: Bloom ID (Identity Attestation), BloomIQ (Credit Registry) and BloomScore (Credit Scoring). According to Bloom, its model addresses the shortcomings of traditional credit scoring by transitioning the credit scoring process to the blockchain protocol. Touting its success as one of the first distributed ledger credit scoring and lending platforms in the world, Bloom promises to facilitate cross border credit scoring, accommodate users with no credit history, secure personal information, increase global access to credit development and provide greater competition in the credit risk evaluation market.

Bloom introduces three unique models: the BloomID, BloomIQ and Bloom Score. Using a peer assessment methodology, Bloom claims that consumers with thin, limited, impaired or no credit history may demonstrate creditworthiness and enjoy greater access to credit. While the whitepaper clearly indicates that the model will evaluate conventional criteria such as loan and bill repayment history, Bloom relies heavily on social networking to assess a consumer's eligibility to receive credit. A number of important details regarding Bloom's methodology are not revealed in the whitepaper, but there is significant potential for a decentralized distributed ledger based credit



scoring platform to assist invisible and unscorable consumers by offering greater transparency in the credit evaluation process, a more easily reviewable and correctible credit report and reduced incidents of fraud and data breaches.

For decades, consumer advocates, academics, regulators and state and federal legislators have recognized that low-income consumers pay remarkably more for basic financial services such as check cashing, money transfers and short-term loans. Nearly ten percent of American households continue to lack access to traditional savings and checking accounts.

Consumers with limited access to basic banking services, those living in financial services deserts (requiring them to commute significant distances to bank branches) have had too few options for obtaining access to credit on fair and reasonable terms. Check cashing storefronts, payday loan outlets and other predatory financial services providers exploited invisible or unscorable consumers' lack of access to conventional banking and credit services.<sup>94</sup>

Fintech firms operating at the intersection of startup innovation and consumer credit evaluations raise a number of the normative questions.<sup>95</sup> As artificial intelligence increasingly influences the terms and availability of credit, this nascent technology and the firms adopting it will come to perform an important gatekeeping function, determining whose receives access to credit, and for those with access, learning algorithms will likely decide the most fundamental terms of any credit arrangement.

To be sure, the advent of artificial intelligence technology disrupts legacy banking, inspires a new market infrastructure and spurs development that *may* benefit unbanked and underbanked consumers. The successful expansion of access to credit may depend largely on regulators' effective supervision of the integration of alternative data and reliance on opaque, inscrutable and non-intuitive algorithms.

### **State Chartered Cryptocurrency Exchanges**

A central issue in the discussion above is *how* the government ought to use its authority to charter banks. In recent years, states legislatures have adopted regulation to expand the types of businesses eligible for state banking charters. In July of 2014, the State of New York announced the creation of the "BitLicense," to regulate persons or companies involved in virtual currency business activity. To date, New York has authorized roughly two dozen licenses.

In 2019, the State of Wyoming enacted laws enabling the chartering of special purpose depository institutions (SPDIs). SPDIs may "receive deposits and conduct other incidental activities,

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<sup>94</sup> Twenty percent of families with traditional bank accounts still rely on alternative financial services outlets. Jason Furman, *Financial inclusion in the United States*, June 10, 2013 available at <https://obamawhitehouse.archives.gov/blog/2016/06/10/financial-inclusion-united-states>.

<sup>95</sup> E. Gerald Corrigan, *Are Banks Special?: ANNUAL REPORT 1982, FEDERAL RESERVE BANK OF MINNEAPOLIS* (raising fundamental questions regarding the role of banks and prudential regulation).

including fiduciary asset management, custody and related activities.” An SPDI may operate in a manner similar to a custodian bank, offering services such as “storing assets, fiduciary management, conducting a variety of transactions with assets and providing an ‘on/off’ ramp to securities markets, commodities markets and customer bank accounts.” In September 2020, Wyoming approved the SPDI application for Kraken Bank, a digital asset company based in Cheyenne, Wyoming.

Wyoming’s approval of Kraken’s SPDI application triggers concerns as the company’s stated goal is to “establish a connection between cryptocurrency and the traditional financial system.” Unlike traditional banks, Kraken deposits will not be insured by the FDIC. To address this issue, Wyoming regulators will require Kraken to maintain a reserve of 100 percent of deposits as fiat currency and “liquid assets.”

While laudable, Wyoming’s efforts may not be sufficient to address the enterprise and systemic risk management concerns that chartering cryptocurrency banks or exchanges create. Immediately following Wyoming’s announcement, critics raised concerns. Cryptocurrency exchanges operating as banks present unique consumer protection and safety and soundness concerns.

Global financial markets are in the midst of a transformative movement that marks a watershed moment in the evolution of the financial markets ecosystem. Purportedly, peer-to-peer distributed digital ledger technology eliminates legacy financial market intermediaries such as investment banks, depository banks, exchanges, clearinghouses, and broker-dealers.

Yet careful examination reveals that cryptocurrency issuers and the firms that offer secondary market cryptocurrency trading services have not quite lived up to their promise. Notwithstanding crypto-enthusiasts’ calls for disintermediation, evidence reveals that platforms that facilitate cryptocurrency trading frequently employ the long-adopted intermediation practices of their traditional counterparts. In fact, when emerging technologies fail, cryptocurrency and token trading platforms partner with and rely on traditional financial services firms. As a result, these platforms face many of the risk-management threats that have plagued conventional financial institutions as well as a host of underexplored threats. Automated or algorithmic trading strategies, accelerated high frequency trading tactics, and sophisticated Ocean’s Eleven-style cyberheists leave crypto-investors vulnerable to predatory practices.

Early responses to fraud, misconduct, and manipulation emphasize intervention when originators first distribute cryptocurrencies—the initial coin offerings. This testimony rejects the dominant regulatory narrative that prioritizes oversight of primary market transactions. Instead, I propose that regulators introduce formal registration obligations for cryptocurrency intermediaries – the exchange platforms that provide a marketplace for secondary market trading. This approach recognizes the dynamic nature of cryptocurrency secondary market actors seeking to achieve disintermediation yet balances the potential benefits of trading intermediaries with normative regulatory goals—protecting investors from fraud, theft, misconduct, and manipulation; enforcing

accountability; preserving market integrity; and addressing enterprise and systemic risk-management concerns.

Despite federal and state regulators' warnings and mounting civil and criminal enforcement actions, investors continue to flock to cryptocurrency markets, buying coins and tokens in initial coin offerings (ICOs).<sup>96</sup> At its high-water mark in 2021, exponential growth characterized the near \$1 trillion cryptocurrency market.<sup>97</sup> As governments, private stakeholders, and academics cast a spotlight on ICOs, a shadow fell, obscuring nefarious activity on secondary trading market platforms.

Media reports chronicle the endemic challenges in cryptocurrency secondary markets. Bitfinex, one of the world's largest cryptocurrency exchanges, is a prominent example. Founded in 2012, Bitfinex has survived *Ocean's Eleven*-style heists that emptied hundreds of millions of dollars of customer assets from its coffers.<sup>98</sup> Periodic cyberattacks have temporarily paralyzed Bitfinex's platform, suspending trading and halting customer withdrawals.<sup>99</sup> Yet, these incidents are only the tip of the iceberg.

Bad actors swarm secondary market trading in cryptocurrency markets. Traditional banks are reticent to permit cryptocurrency exchanges to open accounts; thus, these platforms often rely on "shadow banks."<sup>100</sup> For example, Bitfinex initially routed customer transactions through a Taiwanese bank to Wells Fargo.<sup>101</sup> Then, on April 18, 2017, Wells Fargo began blocking Bitfinex

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96. See Jake Frankenfield, *Initial Coin Offering (ICO)*, INVESTOPEDIA (Sept. 26, 2020), <https://www.investopedia.com/terms/i/initial-coin-offering-ico.asp> [<https://perma.cc/VT78-LB7R>] ("An Initial Coin Offering (ICO) is the cryptocurrency industry's equivalent to an Initial Public Offering (IPO).").

97. *Global Charts: Total Market Capitalization*, COINMARKETCAP, <http://coinmarketcap.com/charts/> [<https://perma.cc/NS33-QDQ7>].

98. Nathaniel Popper, *Warning Signs About Another Giant Bitcoin Exchange*, N.Y. TIMES (Nov. 21, 2017), <https://www.nytimes.com/2017/11/21/technology/bitcoin-bitfinex-tether.html> [<https://perma.cc/77A6-4GZ7>].

99. Daniel Palmer, *Major Crypto Exchanges Bitfinex and OKEx Hit by Service Denial Attacks*, COINDESK (June 12, 2020, 3:27 PM), <https://www.coindesk.com/major-crypto-exchanges-bitfinex-and-okex-hit-by-traffic-denial-attacks> [<https://perma.cc/42EN-2MLP>]; Andrey Shevchenko, *Crypto Exchanges OKEx and Bitfinex Suffer Simultaneous DDoS Attacks*, COINTELEGRAPH (Feb. 28, 2020), <https://cointelegraph.com/news/crypto-exchanges-okex-and-bitfinex-suffer-simultaneous-ddos-attacks> [<https://perma.cc/KS5P-T4FA>]. For examples of earlier cyberattacks, see Steven Russolillo, *Hackers Swipe More Than \$40 Million of Bitcoin from Cryptocurrency Exchange*, WALL ST. J. (May 8, 2019, 2:27 AM), [https://www.wsj.com/articles/hackers-swipe-more-than-40-million-of-bitcoin-from-cryptocurrency-exchange-11557296830?mod=article\\_inline](https://www.wsj.com/articles/hackers-swipe-more-than-40-million-of-bitcoin-from-cryptocurrency-exchange-11557296830?mod=article_inline) [<https://perma.cc/H4RJ-7ZGD>].

100. Paul Vigna, *Lack of Banking Options a Big Problem for Crypto Businesses*, WALL ST. J. (May 17, 2019, 12:34 PM), <https://www.wsj.com/articles/lack-of-banking-options-a-big-problem-for-crypto-businesses-11558092600> [<https://perma.cc/F7RD-NYN6>].

101. *Id.*

wire transfers.<sup>102</sup> Bitfinex pivoted to a Puerto Rican bank—Noble Bank.<sup>103</sup> On October 1, 2018, Noble Bank lunged toward bankruptcy.<sup>104</sup> Bitfinex transferred \$850 million to a Panamanian nonbank payment processing platform—Crypto Capital.<sup>105</sup> Another fleeting solution. Within a year, the Polish government arrested Crypto Capital’s President Ivan Manuel Molina Lee for his role laundering money on behalf of an international drug cartel.<sup>106</sup> Bitfinex shocked the cryptoworld, announcing that the \$850 million in customer funds held by Crypto Capital had vanished.<sup>107</sup>

Beyond Bitfinex’s firm-specific risk-management concerns—the conflicts of interest, woefully deficient compliance controls, anemic consumer protection policies, and remarkably inadequate cybersecurity measures—the entire industry grapples with operational and systemic risks: fake bank accounts, mismanagement of customer funds, blatant theft, garden-variety fraud, and exploitative and abusive trading strategies.<sup>108</sup>

Stunningly, none of the three hundred trading platforms facilitating cryptocurrency secondary market transactions has obtained requisite approval from federal or state authorities to operate as an exchange.<sup>109</sup> Regulators have formally prosecuted only a handful of trading platforms.<sup>110</sup> Most

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102.*See id.*

103.Ana Berman, *Bloomberg: Puerto Rico’s Noble Bank Reportedly Loses Clients Tether, Bitfinex, Seeks Buyer*, COINTELEGRAPH (Oct. 2, 2018), <https://cointelegraph.com/news/bloomberg-puerto-ricos-noble-bank-reportedly-loses-clients-tether-bitfinex-seeks-buyer> [<https://perma.cc/D53Y-RUA9>].

104.*Id.*

105.Paul Vigna, *Bitfinex Used Tether Reserves to Mask Missing \$850 Million, Probe Says*, WALL ST. J. (Apr. 25, 2019, 11:21 PM), <https://www.wsj.com/articles/bitfinex-used-tether-reserves-to-mask-missing-850-million-probe-finds-11556227031> [<https://perma.cc/R4EW-4NDH>]; *see also* Press Release, N.Y. Att’y Gen., Attorney General James Announces Court Order Against “Crypto” Currency Company Under Investigation for Fraud (Apr. 25, 2019), <https://ag.ny.gov/press-release/2019/attorney-general-james-announces-court-order-against-crypto-currency-company> [<https://perma.cc/G4YV-63A6>].

106.Samuel Haig, *Bitfinex Cries Fraud as Crypto Capital Executive Indicted by US*, COINTELEGRAPH (Oct. 30, 2019), <https://cointelegraph.com/news/bitfinex-cries-fraud-as-crypto-capital-executive-indicted-by-us> [<https://perma.cc/M65Y-SVWE>].

107.Steve Ehrlich, *After an \$850 Million Controversy, What Everyone Should Know About Bitfinex, Tether and Stablecoins*, FORBES (May 2, 2019, 9:09 AM), <https://www.forbes.com/sites/stevenehrlich/2019/05/02/after-an-850-million-controversy-what-everyone-should-know-about-bitfinex-tether-and-stablecoins/?sh=19d2f02e492f> [<https://perma.cc/4GTT-BH75>].

108.David Floyd, *Fraudulent Trading Drove Bitcoin’s \$150-to-\$1,000 Rise in 2013: Paper*, INVESTOPEDIA (June 25, 2019), <https://www.investopedia.com/news/bots-drove-bitcoins-150to1000-rise-2013-paper/> [<https://perma.cc/JQZ3-W3BB>].

109.*See Today’s Cryptocurrency Prices by Market Cap*, COINMARKETCAP, <http://coinmarketcap.com/> [<https://perma.cc/RU94-8KH3>]; *see also* Nathan Reiff, *How Much of the World’s Money is in Bitcoin?*, INVESTOPEDIA (June 21, 2020), <https://www.investopedia.com/tech/how-much-worlds-money-bitcoin/> [<https://perma.cc/DA2X-CL5R>].

110.*See e.g.*, Press Release, U.S. Commodity Futures Trading Comm’n, CFTC Orders Bitcoin Exchange Bitfinex to Pay \$75,000 for Offering Illegal Off-Exchange Financed Retail Commodity Transactions and Failing to Register as a

troubling, however, are the breadth and depth of these challenges among the small group of actors that has captured the greatest market share in global cryptocurrency secondary trading markets. Why have Congress and regulators failed to impose order in the Wild West of cryptocurrency secondary market trading?

Financial services regulation is complex and growing more complex each day.<sup>111</sup> Among other challenges, regulators do not always understand *what* exactly (transactions, other activities, or attributes) gives rise to regulatory intervention.<sup>112</sup> Complicated financial products precipitated the financial crisis that began in 2007,<sup>113</sup> and, in the wake of the crisis, many were disillusioned. Legacy financial institutions and other market participants' avaricious, self-serving, and predatory behavior initiated a polarized debate regarding the federal government's \$700 billion bailout of Wall Street intermediaries.<sup>114</sup> Developers began to imagine a financial services industry without traditional intermediaries—depository banks, investment banks, stock exchanges, brokers, and dealers.

Innovative financial technology (fintech) products and firms aimed to disrupt conventional financial markets and displace legacy financial institutions.<sup>115</sup> Programmers introduced alternative financial products and platforms, namely peer-to-peer distributed digital ledger platforms that originate and distribute cryptocurrencies.<sup>116</sup>

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Futures Commission Merchant (June 2, 2016), <https://www.cftc.gov/PressRoom/PressReleases/pr7380-16> [<https://perma.cc/DCZ9-FUAS>].

111. See Shaanan Cohney, David Hoffman, Jeremy Sklaroff & David Wishnick, *Coin-Operated Capitalism*, 119 COLUM. L. REV. 591, 603 (2019); see also *Examining Facebook's Proposed Cryptocurrency and Its Impact on Consumers, Investors, and the American Financial System: Hearing Before the H. Comm. on Fin. Servs.*, 116th Cong. (2019) (statement of Chris Brummer, Professor of Law, Georgetown University Law Center) [hereinafter Statement of Chris Brummer], <https://financialservices.house.gov/uploadedfiles/hhrg-116-ba00-wstate-brummer-20190717.pdf> [<https://perma.cc/T7EU-5NEJ>] (describing the structure of Facebook's proposed Libra network); *id.* (statement of Katharina Pistor, Edwin B. Parker Professor of Comparative Law and Director, Center on Global Legal Transformation, Columbia Law School) [hereinafter Statement of Katharina Pistor], <https://financialservices.house.gov/uploadedfiles/hhrg-116-ba00=wstate-pistork-20190717.pdf> [<https://perma.cc/5LJG-CT2P>].

112. See Chris Brummer & Yesha Yadav, *Fintech and the Innovation Trilemma*, 107 GEO. L.J. 235, 263-64 (2019).

113. See, e.g., Saule T. Omarova, *The Quiet Metamorphosis: How Derivatives Changed the "Business of Banking,"* 63 U. MIAMI L. REV. 1041, 1041 (2009).

114. See David M. Herszenhorn, *Congress Approves \$700 Billion Wall Street Bailout*, N.Y. TIMES (Oct. 3, 2008), <https://www.nytimes.com/2008/10/03/businessworldbusiness/03iht-bailout.4.16679355.html> [<https://perma.cc/K6J8-TUHM>].

115. Brummer & Yadav, *supra* note , at 263-64; Rory Van Loo, *Making Innovation More Competitive: The Case of Fintech*, 65 UCLA L. REV. 232, 232 (2018); William Magnuson, *Regulating Fintech*, 71 VAND. L. REV. 1167, 1167 (2018); Adam J. Levitin, *Pandora's Digital Box: The Promise and Perils of Digital Wallets*, 166 U. PA. L. REV. 305, 305-06 (2018); Jeanne L. Schroeder, *Bitcoin and the Uniform Commercial Code*, U. MIAMI BUS. L. REV. 1, 1 (2016); Angela Walch, *The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk*, 18 N.Y.U. J. LEGIS. & PUB. POL'Y 837, 837 (2015).

116. This Article refers to distributed digital technology protocols as "enterprises." A rich literature explores the development of entities operating in a manner that is colloquially described as partnerships, trusts, and other business

Emory University  
Gambrell Hall  
1301 Clifton Road  
Atlanta, Georgia 30322-1013

kristin.johnson@emory.edu  
Tel 404.727.6816  
Fax 404.727.6820

*An equal opportunity, affirmative action university*

Since the publication of the Bitcoin blockchain White Paper in 2010, markets have witnessed the origination of more than five thousand cryptocurrencies.<sup>117</sup> In the ensuing decade, regulators have scrambled to keep pace. Distributed digital ledger technology and the popular subset of blockchain-based technologies are among the most innovative technologies in the financial markets ecosystem.<sup>118</sup> Central banks, national governments, and significant financial institutions increasingly signal an interest in the origination, distribution, and exchange of proprietary cryptocurrencies.<sup>119</sup> Indisputably, these coins and tokens have moved from the shadows to center stage.

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organizational forms notwithstanding their failure to formally adopt (and in some cases they even reject) the notion that they operate pursuant to a conventional business structure; an even more interesting discussion emerges upon recognizing that these entities increasingly rely on algorithms to make fundamental operational and investment decisions. *See* Shawn Bayern, *Are Autonomous Entities Possible?*, 114 NW. U. L. REV. ONLINE 23, 24-25 (2019) (responding to criticism from Lynn Lopucki); *see also* Lynn M. Lopucki, *Algorithmic Entities*, 95 WASH. U. L. REV. 887, 887 (2018).

117. *Compare Historical Snapshot-01 January 2017*, COINMARKETCAP, <http://coinmarketcap.com/historical/20170101/> [<https://perma.cc/78XM-6FGQ>] (listing 636 coins on the market in 2017), *with Historical Snapshot-06 January 2019*, COINMARKETCAP, <http://coinmarketcap.com/historical/20190106/> [<https://perma.cc/5GUS-3RAA>] (listing slightly over two thousand coins on the market in 2019).

118. While many use the language “blockchain technology” and “digital ledger technology” (DLT) interchangeably, the two are not synonymous. Media accounts, popular accounts, and the literature conflate the general theory of DLT with blockchain applications and, perhaps even more disappointingly, use the terms interchangeably. For the purposes of this Article, I will aim to use DLT to describe the foundational technology, and blockchain to refer to specific protocols or applications. While DLT and blockchain are not synonymous, the distinctions are too technical to explore here and do not alter the analysis and conclusions presented in this Article.

For a useful introduction to DLT and an analysis of the epistemological challenges in the literature, see Carla L. Reyes, *If Rockefeller Were a Coder*, 87 GEO. WASH. L. REV. 373, 379-82 (2019) (describing DLT as “computer software that is distributed, runs on peer-to-peer networks, and offers a transparent, verifiable, tamper-resistant transaction-management system maintained through a consensus mechanism rather than by a trusted third-party intermediary that guarantees execution”); *see also* Angela Walch, *The Path of the Blockchain Lexicon (and the Law)*, 36 B.U. REV. BANKING & FIN. L. 713, 719-20 (2017) (“Blockchain technology, sometimes called ‘the blockchain’ or just ‘blockchain,’ is alternatively referred to as ‘distributed ledger technology’ (DLT), ‘shared ledger technology’ (SLT), ‘consensus ledger’ technology, ‘mutual distributed ledger’ technology, or even a decentralized or ‘distributed database.’” (citations omitted)).

For an interesting comparative discussion, see Samantha Stein, *Hashgraph Wants to Give You the Benefits of Blockchain Without the Limitations*, TECHCRUNCH (Mar. 13, 2018, 11:00 PM), <https://techcrunch.com/2018/03/13/hashgraph-wants-to-give-you-the-benefits-of-blockchain-without-the-limitations/> [<https://perma.cc/5V6L-RDJQ>]. While the bitcoin blockchain protocol is one of the most popular and well-known blockchain protocols, there are an increasing number of financial and nonfinancial blockchain protocols. Consider, for example, Ethereum (another exceedingly popular blockchain with diverse financial and nonfinancial applications), Hashgraph (a hashgraph algorithm), or an asynchronous Byzantine Fault Tolerance (aBFT) consensus mechanism based on a virtual voting algorithm combined with the gossip protocol or Directed Acyclic Graphs (DAGs). *Cf.* Press Release, Globe Newswire, *tune.fm Launches New Token Protocol on Hedera Hashgraph* (Aug. 5, 2020), <https://apnews.com/press-release/globe-newswire/3601a20bf7c29098f1df2eb77dfee4f9> [<https://perma.cc/XH8C-URZY>].

119. Anna Isaac & Caitlin Ostroff, *Central Banks Warm to Issuing Digital Currencies*, WALL ST. J. (Jan. 23, 2020, 11:15 AM), <https://www.wsj.com/articles/central-banks-warm-to-issuing-digital-currencies-11579796156>

Emory University  
Gambrell Hall  
1301 Clifton Road  
Atlanta, Georgia 30322-1013

kristin.johnson@emory.edu  
Tel 404.727.6816  
Fax 404.727.6820

*An equal opportunity, affirmative action university*

In my recent article, *Decentralized Finance: Regulating Cryptocurrency Exchanges*, I introduce the general attributes of cryptocurrencies and propose the need to carefully evaluate the use of specific terminology by regulators and cryptocurrency market participants, specifically, the use of the terms “centralized” and “decentralized” as applied to cryptocurrencies and cryptocurrency exchanges. I argue that many of exchanges that self-identify as “decentralized” or disintermediated continue to rely on some aspect of “off-chain” or traditional intermediation.

Several exchanges market themselves to trading communities as decentralized distributed digital ledger platforms, however their use of the term “decentralized” varies from misnomer, to mistake, to an active misrepresentation of the operational infrastructure of the exchange. Regulators must refuse to elevate form over substance and investigate the central operational mechanics of the platforms and interrogate the cryptocurrency platforms’ plans to minimize or eliminate attributes that centralize trading.

Unless genuinely “decentralized,” cryptocurrency secondary market platforms face many of the same risks and concerns that conventional market participants struggle to address within their firms and across the industry. As the Bitfinex example illustrates, regulation (or the lack thereof) casts cryptocurrency trading markets into the shadows and invites variegated forms of manipulation and misconduct. The automation or integration of increasingly sophisticated algorithms in trading markets has altered the nature of secondary market trading, resulting in market conditions that may disadvantage less sophisticated trading counterparties. Coupled with automation, high frequency trading (HFT) strategies accelerate the pace of trading. HFT strategies may employ algorithms or bots or co-locate their server closer to an exchange to take advantage of the delay between a buyer or seller placing an order and the execution of the trade (latency). HFT strategies also often employ controversial trading tactics such as front-running, ping-pong, and spoofing.

Finally, my research suggests that another class of pernicious concerns challenges cryptocurrency secondary trading markets—cybersecurity threats. Evidence of the harms and losses that result from these enterprise risk-management failures should raise alarms. These risks will increase as cryptocurrency markets grow, and likely create spillover effects and systemic risks that impact other areas of financial markets.

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[<https://perma.cc/Y9EP-FS4D>]; Nathaniel Popper, *Central Banks Consider Bitcoin’s Technology, if Not Bitcoin*, N.Y. TIMES (Oct. 11, 2016), <https://www.nytimes.com/2016/10/12/business/dealbook/central-banks-consider-bitcoins-technology-if-not-bitcoin.html> [<https://perma.cc/9E5J-Y6HF>].

Emory University  
Gambrell Hall  
1301 Clifton Road  
Atlanta, Georgia 30322-1013

kristin.johnson@emory.edu  
Tel 404.727.6816  
Fax 404.727.6820

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