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Regtech, Compliance and Technology Judgement Rule

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REGTECH, COMPLIANCE AND TECHNOLOGY JUDGMENT
RULE

NIZAN GESLEVICH PACKIN[†]

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INTRODUCTION

The development of compliance as an important governance function and the emphasis on risk management as a key element for regulatory strategy are the result of two things. First, the increased government regulation following the 2008 financial crisis that mandated developments in compliance and risk management tools and techniques. Second, the recently established private sector practice of convergence of norms in the global

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financial markets.¹ This Article focuses on regulatory compliance in the financial industry and the assumption that it is improved with the capabilities of regulatory technology (RegTech), which is described as the use of technological solutions to facilitate compliance with and monitoring of regulatory requirements.²

As further described, currently, RegTech is one of the very few answers to the risks and challenges existing in the financial industry, and has a crucial role in our technology-driven era. RegTech also certainly accelerates the evolution towards a cooperative supervisory model, in which the supervisor guides financial institutions in their search for satisfactory compliance and in which financial companies in turn deliver necessary input for the development of efficient guidelines, best practices and RegTech solutions.

Nevertheless, this article argues that RegTech is not a panacea for all corporate governance challenges. First, certain barriers exist that make the adoption of RegTech more difficult. Second, RegTech alone cannot extirpate undesired and unethical business practices or resolve ethical issues resulting from corporate culture. Moreover, technology can be used by businesses to evade regulations and frustrate regulators, a phenomenon referred to as anti-RegTech. Third, technology can hinder good judgment and human input in the governance and risk management decision processes, which operate based on opaque programmed reasoning that is often biased and reflects altered interpretations of the law. Fourth, given the high stakes, financial institutions must be careful when partnering with third party firms, and should include regulators in the conversation before entering into such partnerships, especially given the increasing cyber risks. Lastly, many of the RegTech's automation and efficiency gains have been offset by the expanded regulatory requirements and their costs, such as the increasing number of information requests from regulators.

The Article concludes by suggesting that there is probably a way for society as well as companies to greatly benefit from RegTech, but it requires a carefully tailored design of the technology, a joint effort of the regulators and the private sector and some shifts in corporate thinking.

1. Geoffrey P. Miller, *The Role of Risk Management and Compliance in Banking Integration* (N.Y.U. Ctr. for Law, Econ. & Org., Working Paper No. 14-34, 2014), <https://ssrn.com/abstract=2527222> [<https://perma.cc/8R3C-VT6X>].

2. FIN. CONDUCT AUTH., CALL FOR INPUT: SUPPORTING THE DEVELOPMENT AND ADOPTION OF REGTECH 3 (2015), <https://www.fca.org.uk/publication/call-for-input/regtech-call-for-input.pdf> [<https://perma.cc/FB99-5S6F>].

I. THE RISE OF FINANCIAL TECHNOLOGY

The remarkable growth in data managing abilities and the consequential reduction in transaction costs facilitate the establishment of innovative technological products and services that many did not believe would be possible until recently.³ Particularly relevant to this article are the technological advancements of the twenty-first century that have impacted the financial sector, through the development of financial technology (FinTech).⁴ The transformation is primarily the result of the development of new Internet tools and digital technologies that have changed the lives of billions as financial services and products have become more physically as well as conceptually accessible, partly also because of their user friendly formats. For example, new technologies made it possible for payments to be processed quickly across the globe and for relatively low fees,⁵ or for individual investors to buy and sell online securities directly in the stock market without the advice of any intermediaries.⁶ These changes and the development of FinTech also made social media possible, which in turn enabled billions of people to be constantly connected and facilitated the consumption of unused assets via the sharing economy—a concept often powered by FinTech companies.⁷

3. See Annie Sneed, *Moore's Law Keeps Going, Defying Expectations*, SCI. AM. (May 19, 2015), <https://www.scientificamerican.com/article/moore-s-law-keeps-going-defying-expectations/> [<https://perma.cc/DX4D-5THS>] (discussing the accuracy of what Gordon Moore, the co-founder of chip maker Intel, who predicted over fifty years ago that computers' processor power that will double every two years, and "still holds true a half century later," despite "many technologists have forecast the demise of Moore's [prediction of a] doubling")

4. According to the Financial Stability Board in the UK, "The FSB understands FinTech as technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services. FinTech innovations are poised to affect many different areas of financial services in the coming years." *Monitoring of FinTech*, FIN. STABILITY BD., <http://www.fsb.org/what-we-do/policy-development/additional-policy-areas/monitoring-of-fintech/> [<https://perma.cc/C6SP-PF2J>].

5. Lawrence J. Trautman, *E-Commerce and Electronic Payment System Risks: Lessons from PayPal*, 16 U.C. DAVIS BUS. L.J. 261, 278 (2017).

6. Melanie L. Fein, *Robo-Advisors: A Closer Look 1* (June 30, 2015) (unpublished manuscript), <http://ssrn.com/abstract=2658701> [<https://perma.cc/FKN6-STCZ>].

7. See, e.g., Jim Marous, *Fintech Use Reaching 'Mass Adoption' Among Digital Consumers*, FIN. BRAND (July 18, 2017), <https://thefinancialbrand.com/66384/fintech-digital-banking-usage-trends/> [<https://perma.cc/FJ7Y-WUCA>]; *Financial Technology Services Poised for Mainstream Global Adoption, Led by China and India*, FINTECH INNOVATION (July 20, 2017), <https://www.enterpriseinnovation.net/article/financial-technology-services-poised-mainstream-global-adoption-led-china-and-india> [<https://perma.cc/54RY-QXRT>] ("40% of FinTech users regularly use on-demand services (e.g., food delivery), while 44% of FinTech users regularly participate in the sharing economy (e.g., car sharing). In contrast, only 11% of non-FinTech adopters use either of these services on a regular basis."); Alex Lielacher, *How the Blockchain Can Create a True Peer-To-Peer Sharing Economy*, NASDAQ (June 21, 2017, 8:24 AM), <http://www.nasdaq.com/article/how-the-blockchain-can-create-a-true-peertopeer-sharing-economy-cm806072> [<https://perma.cc/9EGJ-K7Z5?type=image>]

But at the same time the technological developments have provided extremely efficient tools for criminals,⁸ especially because a key characteristic of many of these new technologies is their generation of, and reliance upon, massive volumes of personal data. Indeed, both digital technology companies and financial service institutions are exceptionally data-based and heavy.⁹

Generally classifying the FinTech industry, a subcategory of the digital technology sector,¹⁰ includes two types of companies. The first type is comprised of facilitators, which are companies that upkeep and maintain the technology infrastructure within financial institutions, or just aim to make financial services more efficient.¹¹ The second type is comprised of disruptors, which are companies that defy existing structures and methods with new innovative processes of finance.¹²

A. Revolutionizing Consumer Financial Service Products

FinTech companies work on innovating digital banking and financial services, attempting to revolutionize consumer financial service products such as payments, capital markets, asset management, lending, insurance and maybe even the deposit activity, if legally possible.¹³ Among the new

(“[B]y implementing blockchain technology into the sharing economy, there is no longer a need for a central authority to ensure that terms and conditions are upheld and that transactions are conducted accordingly. The distributed ledger technology can provide smart contracts, digital identities linked to a publicly-viewable user reputation systems and digital currency payments, all of which alleviate the need for a central authority.”).

8. See generally Lawrence J. Trautman, *Cybersecurity: What About U.S. Policy?*, 2015 U. ILL. J. L. TECH. & POL’Y 341 (2015); Lawrence J. Trautman & George P. Michaely, *The SEC & The Internet: Regulating the Web of Deceit*, 68 CONSUMER FIN. L.Q. REP. 262 (2014); Lawrence J. Trautman et al., *Corporate Information Governance Under Fire*, 8 J. STRAT. & INT’L STUD. 105 (2013).

9. Karen McCullagh, *Brexit: Potential Implications for Digital and ‘Fintech’ Industries*, INT’L DATA PRIVACY L., Feb. 2017, at 3, 4.

10. Digital technology companies are defined as entities that offer a digital technical service, product, platform or hardware, or, alternatively, are greatly dependent on it, as their main revenue source. TECH CITY UK & NESTA, *TECH NATION 2016: TRANSFORMING UK INDUSTRIES 9* (2016), http://www.nesta.org.uk/sites/default/files/tech_nation_2016_report.pdf [https://perma.cc/Y2LM-882H].

11. See McCullagh, *supra* note 9, at 4.

12. See Lawrence J. Trautman, *Is Disruptive Blockchain Technology the Future of Financial Services?*, 69 CONSUM. FIN. L. Q. REP. 232, 232 (2016) (offering a discussion of disruptive changes taking place in financial services); ERNST & YOUNG, *LANDSCAPING UK FINTECH 3* (2014), [http://www.ey.com/Publication/vwLUAssets/Landscaping_UK_Fintech/\\$FILE/EY-Landscaping-UK-Fintech.pdf](http://www.ey.com/Publication/vwLUAssets/Landscaping_UK_Fintech/$FILE/EY-Landscaping-UK-Fintech.pdf) [https://perma.cc/8Q94-ZMLG].

13. See generally Pascal Bouvier, *Banking Is Fintech, Like It or Not*, AM. BANKER: BANKTHINK (Oct. 29, 2015, 9:30 AM), <http://www.americanbanker.com/bankthink/banking-is-fintech-like-it-or-not-1077471-1.html> [https://perma.cc/F7C2-HPCD]; PETER MANBECK & MARC FRANSON, CHAPMAN & CUTLER LLP, *THE REGULATION OF MARKETPLACE LENDING* (2015); Nizan Geslevich Packin & Yafit Lev-Aretz, *Big Data and Social Netbanks: Are You Ready to Replace Your Bank?*, 53 HOUS. L. REV.

players offering bank-like services, are businesses attempting to avoid acceptance of traditional deposits, and hence getting classified as a bank. These new forms of bank-like service providers have emerged over the years, gradually biting into the previously dominant market share of traditional banks. Referred to as “nonbanks,” such entities offer a variety of financial functions.¹⁴ Because the legal definition of a nonbank is neither unified nor clear, they are commonly viewed as the mirror image of banks—entities providing financial services that do not include the legal power to receive deposits.¹⁵ When nonbanks first entered the traditional

1211 (2016) [hereinafter Packin & Lev-Aretz, *Social Netbanks*]; Nizan Geslevich Packin & Yafit Lev-Aretz, *On Social Credit and the Right To Be Unnetworked*, 2016 COLUM. BUS. L. REV. 339 (2016).

14. See Steve Antonakes & Peggy Twohig, *The CFPB Launches Its Nonbank Supervision Program*, CONSUM. FIN. PROT. BUREAU: BLOG (Jan. 5, 2012), <http://www.consumerfinance.gov/blog/the-cfpb-launches-its-nonbank-supervision-program/> [<https://perma.cc/4HWP-H74F>] (“There are currently thousands of nonbank businesses that offer consumer financial products and services, and consumers interact with them all the time. . . . While banks, thrifts, and credit unions historically have been examined by various federal regulators, nonbanks generally have not.”).

15. There is no unified definition for “nonbanks” in the legal literature. Historically, nonbanks were considered to be institutions that voluntarily restrict their operations so that they either do not accept demand deposits or do not make commercial loans, thus avoiding inclusion under the Bank Holding Company Act’s (BHCA) definition of “bank.” Arthur E. Wilmarth, Jr., *Why Fed Has Failed to Cope with the Nonbank Bank Dilemma*, AM. BANKER (June 29, 1984), <http://www.highbeam.com/doc/1G1-3327326.html> [<https://perma.cc/J62F-CBG7>]. See generally 4A STACY L. DAVIS ET AL., FEDERAL PROCEDURE, LAWYER’S EDITION § 8:1 (2013), Westlaw FEDPROC; Davis W. Turner, *Nonbank Banks: Congressional Options*, 39 VAND. L. REV. 1735, 1743–57 (1986) (chronicling the regulatory and judicial response to nonbank banks and the numerous interpretations of the BHCA’s definition of bank). That loophole has permitted nondepository institutions like Sears to engage in bank-like services. Luis G. Fortuno, *Non-Bank Banks: Present Status and Prospects for the Future*, 20 REV. JUR. U.I.P.R. 305, 314 (1986). While this definition of nonbanks is very vague, other definitions have also been offered. For example, the Consumer Financial Protection Bureau (CFPB) has recently stated that “[f]or [the CFPB’s] purposes, a nonbank is a company that offers consumer financial products or services, but does not have a bank, thrift, or credit union charter and does not take deposits.” *Explainer: What Is a Nonbank, and What Makes One “Larger”?*, CONSUM. FIN. PROTECTION BUREAU: BLOG (June 23, 2011), <http://www.consumerfinance.gov/blog/explainer-what-is-a-nonbank-and-what-makes-one-larger/> [<https://perma.cc/T2CC-A8LN>]. Differently, according to the Financial Stability Oversight Council (FSOC), any domestic or foreign company that is “predominately engaged in . . . financial activities,” with certain limited exceptions, is a nonbank financial company. See 12 U.S.C. § 5311(a)(4) (2012). The definition exempts a bank holding company, national securities exchange (or parent thereof), clearing agency (or parent thereof), swap (or security-based swap) execution facility, registered swap (or security-based swap) data repository, board of trade designated as a contract maker (or parent thereof), or a derivatives clearing organization (or parent thereof). *Id.* According to the definition, a company is “predominately engaged in financial activities” if 85% or more of the company’s consolidated revenues or assets are related to activities that are defined as financial in nature under Section 4(k) of the BHCA. *Id.* § 5311(a)(6). Additionally, the FSOC may issue recommendations for primary financial regulatory agencies to apply new or heightened standards to a financial activity or practice conducted by companies that are predominantly engaged in financial activities. See *id.* § 5322(a)(2)(K). The Federal Reserve decides what exactly constitutes “financial activity.” See Definitions of “Predominantly Engaged in Financial Activities” and “Significant” Nonbank Financial Company and Bank Holding Company, 78 Fed. Reg. 20,756 (Apr. 5, 2013) (codified at 12 C.F.R. pt. 242 (2015)); Press Release, Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Board Approves Final Rule Establishing Requirements for Determining When a Company Is “Predominantly Engaged in Financial Activities” (Apr. 3, 2013), <http://www.federalreserve.gov/newsevents/press/bcreg/20130403a.htm> [<https://perma.cc/3FQ6-7B4X>].

banking market, both banks and nonbanks were competing in a physical playfield—they conducted business at a physical venue, where existing and potential customers were able to come and interact with their service providers. Since then, nonbanks have started capitalizing on digital technology and the exposure to a broad audience provided by the Internet, significantly reducing operation costs by relocating from offline to online.¹⁶ The mobile revolution further facilitated access to nonbanks, and was widely received by Millennials, who are big fans of Fintech.¹⁷ The mobile revolution has also been a positive thing for underserved populations as it has allowed the unbanked and underbanked,¹⁸ who cannot or opt not to use banks for a variety of reasons, to enjoy the use of bank-like services.¹⁹ Specifically, the

16. See, e.g., Gary S. Corner, *The Changing Landscape of Community Banking*, CENT. BANKER (Fed. Reserve Bank of St. Louis, St. Louis, Mo.), Fall 2010, at 1, <http://www.stlouisfed.org/publications/cb/articles/?id=1997> [<https://perma.cc/QY7C-N8P3>] (“Financial innovation over the last 30 years has changed the complexion of banking. Made possible by advances in technology, innovations such as . . . the development of a shadow banking system, have provided a greater array of nonbank alternatives to consumers However, for some community banks, the costs and risks to adapt to these changes were too high.”).

17. Millennials, who are members of the generation that was born from 1980 onward and brought up using digital technology and mass media, have been indicating a clear preference for using tech-driven alternatives over traditional bank services. See SCRATCH, THE MILLENNIAL DISRUPTION INDEX (2013), <http://blog.viacom.com/2014/03/scratch-reveals-bankings-increasing-irrelevance-among-millennials/> [<http://perma.cc/A2WU-E4V9>] (Importantly, 73% would reportedly be more excited to have their financial services provided by Google, Amazon, Apple, PayPal, or Square than by their own mainstream banks); Shane Ferro, *33% of Millennials Don’t Think They’ll Need a Bank Five Years from Now*, BUS. INSIDER (Mar. 20, 2015, 9:15 AM), <http://www.businessinsider.com/millennials-dont-think-they-will-need-a-bank-2015-3> [<http://perma.cc/6PFP-QTKB>] (Footnotes that American Millennials increasingly regard banks as irrelevant and on the brink of disruption. Half of those surveyed believe start-ups will overhaul the way banks work and that innovation will come from outside the banking industry.).

18. The unbanked are individuals with no official relationship with a bank, and the underbanked are individuals who maintain some form of formal connection with a traditional bank but chiefly rely on fringe financial institutions like payday lenders or payroll cards for their financial needs. See OFFICE OF INSPECTOR GEN., U.S. POSTAL SERV., REPORT NO. RARC-WP-14-007, PROVIDING NON-BANK FINANCIAL SERVICES FOR THE UNDERSERVED (2014), https://www.uspsoig.gov/sites/default/files/document-library-files/2015/rarc-wp-14-007_0.pdf [<http://perma.cc/44K2-C236>].

19. According to a 2012 report by the World Bank’s Global Financial Inclusion Database, three-quarters of the world’s poor do not have a bank account for a variety of reasons, such as poverty, costs, travel distances, and other difficulties associated with opening an account. See Matthew B. Gross et al., *Use of Financial Services by the Unbanked and Underbanked and the Potential for Mobile Financial Services Adoption*, 98 FED. RES. BULL. 1 (2012), http://www.federalreserve.gov/pubs/bulletin/2012/pdf/mobile_financial_services_201209.pdf [<https://perma.cc/SYG6-XYCS>]; see also Asli Demircuc-Kunt & Leora Klapper, *Measuring Financial Inclusion: The Global Findex Database* 11–18 (World Bank Dev. Research Grp., Working Paper No. 6025, 2012), <http://documents.worldbank.org/curated/en/453121468331738740/pdf/WPS6025.pdf> [<https://perma.cc/3J93-KTP8>]. In the United States, the situation is not quite as bad, yet approximately 10.5% of the American population is still considered to be unbanked and approximately 17% is considered to be underbanked. MAXIMILIAN D. SCHMEISER ET AL., FED. RESERVE BD., CONSUMERS AND MOBILE FINANCIAL SERVICES 2014 5 (2014), <http://www.federalreserve.gov/econresdata/consumers-and-mobile-financial-services-report-201403.pdf> [<http://perma.cc/Y32E-C2YB>].

underserved community makes significant use of mobile phones and smartphones²⁰: 69 percent of the unbanked have access to a mobile phone, 49 percent of which are smartphones; and 88 percent of the underbanked use mobile phones, 64 percent of which are smartphones.²¹ Some of this mobile use is directly targeting financial activities: almost 40 percent of the underbanked with mobile phones reported using mobile banking in 2013.²² This means that mobile technology has not only revolutionized access to broadband connectivity,²³ but it has also enabled access to financial services for the underserved community by traditional banks and by new online nonbanks.²⁴

In addition to digital banking, FinTech companies also operate in several other areas. These include cryptocurrency,²⁵ which has grown massively to comprise, as of August 3, 2017, more than 1,000 different

20. SCHMEISER ET AL., *supra* note 19, at 5.

21. *Id.*

22. *Id.*

23. See Simon Kemp, *Social, Digital & Mobile Worldwide in 2014*, WE ARE SOCIAL (Jan. 9, 2014), <http://wearesocial.net/blog/2014/01/social-digital-mobile-worldwide-2014/> [<http://perma.cc/YZ73-55ZK>] (“With reference to the continued growth in internet penetration, it seems clear that mobile connections will account for the vast majority of new sign-ups in the coming months. . . . [T]he distribution of mobile penetration matches much more closely to the distribution of the world’s population, meaning most people around the world now have a realistic opportunity to access the internet.”).

24. Many more technology advancements are still in development as major tech companies seek to expand Internet access to underserved populations. For example, Google is pursuing “Project Loon,” a network of balloons traveling on the edge of space with the mission of providing Internet access to rural and remote areas. See PROJECT LOON, <https://x.company/loon/> [<http://perma.cc/V73N-3WU2>]. Likewise, Facebook and several phone companies announced in August 2013 the launch of internet.org, a global partnership to make Internet access available to those around the world who lack broadband connectivity. See *Technology Leaders Launch Partnership to Make Internet Access Available to All*, FACEBOOK: NEWSROOM (Aug. 21, 2013), <http://newsroom.fb.com/news/2013/08/technology-leaders-launch-partnership-to-make-internet-access-available-to-all/> [<http://perma.cc/C6EX-QSKX>]. Both companies have also acquired drone start-ups to promote their Internet delivery projects. See Josh Constine, *Facebook Will Deliver Internet Via Drones with “Connectivity Lab” Project Powered by Acquires From Ascenta*, TECHCRUNCH (Mar. 27, 2014), <http://techcrunch.com/2014/03/27/facebook-drones/> [<http://perma.cc/3ZWT-U926>]; Darrell Etherington, *Google Acquires Titan Aerospace, the Drone Company Pursued by Facebook*, TECHCRUNCH (Apr. 14, 2014), <http://techcrunch.com/2014/04/14/google-acquires-titan-aerospace-the-drone-company-pursued-by-facebook/> [<http://perma.cc/L5ZR-D8EM>].

25. See, e.g., Carla L. Reyes, Nizan Geslevich Packin & Benjamin P. Edwards, *Distributed Governance*, 59 WM. & MARY L. REV. ONLINE 1, 5 (2017), http://wmlawreview.org/sites/default/files/Reyes%2C%20Packin%2C%20Edwards%20-%20Distributed%20Governance_0.pdf [<https://perma.cc/E3B7-DNBC>] (discussing the “significant hype that surrounds cryptocurrencies and the distributed ledger technology upon which they operate”); Trautman, *supra* note 12 (discussing recent developments that provide a validation of blockchain application to financial services markets, as well as the regulatory challenges to the adoption of this technology); Mark Edwin Burge, *Apple Pay, Bitcoin, and Consumers: The ABCs of Future Public Payments Law*, 67 HASTINGS L.J. 1493, 1527 (2016); Jerry Brito et al., *Bitcoin Financial Regulation: Securities, Derivatives, Prediction Markets, and Gambling*, 16 COLUM. SCI. & TECH. L. REV. 144, 150 (2014).

cybercurrencies, and a total market capitalization of approximately \$100,714,988,183.²⁶ Another field of operation for FinTech companies is crowdfunding,²⁷ which is often referred to as alternative or distributed financing, but is actually not really a new phenomenon, since nonprofits have long relied on donor promotions or drives that help raise and aggregate small donations from multiple sources to fund their causes.²⁸ The new elements, therefore, in crowdfunding are its global growth via the different online platforms and the large scale of financing it provides, which is demonstrated by the sales of fixed income instruments to investors driven by financial motives.²⁹ Lastly, FinTech companies also focus their efforts in the area of artificial intelligence, namely, robo-advising. Robo-advisors have developed in the marketplace as an alternative for small investors who are content using Internet technology, but want to have the comfort of having an investment adviser direct them. Robo-advisors offer investment assistance and flexible investment management services without the involvement of a human adviser, building on algorithms and asset allocation models, which are promoted as being custom-made to each and every individual's investment requirements.³⁰

26. *CryptoCurrency Market Capitalizations*, COINMARKETCAP (Aug. 3, 2017), <http://coinmarketcap.com/> [<http://perma.cc/65NX-56F6>].

27. See, e.g., Andrew A. Schwartz, *Inclusive Crowdfunding*, 2016 UTAH L. REV. 661, 673 (2016) (discussing retail crowdfunding and its inclusive nature, being open to all).

28. A typically cited illustration of this concept is Joseph Pulitzer's campaign to fund the pedestal of the Statue of Liberty in 1885, described in *The Statue of Liberty and America's Crowdfunding Pioneer*, BBC NEWS MAG. (Apr. 25, 2013), <http://www.bbc.com/news/magazine-21932675> [<http://perma.cc/328B-4C3B>].

29. See generally P. Raghavendra Rau, *Law, Trust, and the Development of Crowdfunding* (June 20, 2017) (unpublished manuscript), <https://ssrn.com/abstract=2989056> [<https://perma.cc/AL9J-2XS6>] (analyzing the economic determinants of crowdfunding after surveying over 1,300 crowdfunding platforms worldwide.)

30. See Fein, *supra* note 6. The Securities and Exchange Commission (SEC) and Financial Industry Regulatory Authority (FINRA) have warned that robo-advisors recommendations could rely on assumptions which are wrong or irrelevant as they apply to an individual's financial standing and circumstances. Therefore, robo-advisors may recommend investments that can prove to be inappropriate for individual investors. *Investor Alert: Automated Investment Tools*, SEC (May 8, 2015), <https://www.sec.gov/oiea/investor-alerts-bulletins/autolistingtoolshtm.html> [<http://perma.cc/PU87-6493>]. Differently, however, the Department of Labor (DOL) found robo-advisors to be efficient instruments that can help minimize costs and conflicts of interest, and accordingly decided not to subject robo-advisors to heavy regulatory requirements that otherwise governs investment advisers. See, e.g., Mark Schoeff Jr., *DOL Secretary Perez Touts [Robo-Advisor] as Paragon of Low-Cost, Fiduciary Advice*, INVESTMENTNEWS (June 19, 2015, 1:24 PM), <http://www.investmentnews.com/article/20150619/FREE/150619892/dol-secretary-perez-touts-wealthfront-as-paragon-of-low-cost> [<http://perma.cc/64PF-YCTF>].

B. Regulating the Rapidly Evolving Financial Industry

In general, plenty of ink has been spilled over the growth of shadow banks and nonbanks in the last decade, the regulation that should cover them, and the appropriate regulatory authority.³¹ Moreover, while traditionally regulators focused mainly on banks as entities that could pose risk to the financial system, and especially the biggest banks, which are classified as systemically important financial institutions (SIFIs),³² following the 2008 financial crisis it has become widely accepted that nonbanks could also pose risks to the financial system,³³ and might need to be better monitored. But when discussing nonbanks and shadow banking, up until recently, the emphasis was not on Fintech.

Since the dot.com bubble, technology providers, scholars, regulators, financial institutions, and industry advisers, have started discussing the rapid developments in technology and their potential impact on society as a whole. Yet while the technology revolution has transformed the financial industry in significant ways, making it more efficient and inclusive,³⁴ the financial industry—unlike the tourism, hotel, and even transportation industries, among others—has proven challenging to disrupt. The difficulty is mainly due to the fact that the industry’s already existing key players have an enormous advantage given their political capabilities, which directly influence their ability to circumnavigate rigorous financial laws and regula-

31. See, e.g., DAVID SKEEL, *THE NEW FINANCIAL DEAL: UNDERSTANDING THE DODD-FRANK ACT AND ITS (UNINTENDED) CONSEQUENCES* 117–18 (2011); Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. 235, 237–38, 267 (2012); William M. Isaac & Melanie L. Fein, *Facing the Future Life Without Glass-Steagall*, 37 CATH. U. L. REV. 281, 291–96 (1988) (discussing the rise of nonbanks and analyzing the “technological, economic, and competitive forces [that shifted] financial markets away from traditional banking channels toward increased use of the securities markets for financial intermediation”); Morgan Ricks, *Money and (Shadow) Banking: A Thought Experiment*, 31 REV. BANKING & FIN. L., 731, 744–45 (2012); CATHERINE ENGLAND, CATO INST., POLICY ANALYSIS NO. 85, *NONBANK BANKS ARE NOT THE PROBLEM* (1987), <http://object.cato.org/sites/cato.org/files/pubs/pdf/pa085.pdf> [<http://perma.cc/Q2HM-X2X3>] (analyzing the economic and technological changes that took place in the financial services industry).

32. Congress determined that any bank holding company with \$50 billion or more in assets should be viewed as a SIFI, as would any foreign bank with U.S. banking operations that has worldwide assets of \$50 billion or more. See 12 C.F.R. § 1310.23 (2015).

33. “The growing influence of nonbank companies poses a risk to the financial system, and perhaps a national security threat [B]ankers should recognize the potential dangers posed by nonbank players, particularly in the payments industry.” Kristin Broughton, *Apple Pay a Systemic Risk? Banker Warns About Nonbank Players*, AM. BANKER (Nov. 21, 2014, 11:43 AM), <http://www.americanbanker.com/news/bank-technology/apple-pay-a-systemic-risk-banker-warns-about-nonbank-players-1071357-1.html> [<http://perma.cc/WP45-2RPZ>].

34. A great example for this inclusion is FinTech’s ability to bring under the financial services’ umbrella individuals that were not covered before. As a result, financially underserved populations that historically could not, opted not to, or simply did not know how to use banks for a variety of reasons, started to enjoy the use of bank-like services. See Packin & Lev-Aretz, *Social Netbanks*, *supra* note 13.

tions.³⁵ Similarly, the more complex the regulation is, the more incumbents get a preference, as they have the capital to participate in sophisticated regulatory proceedings, or hire expensive lobbyists to favorably present them and make it harder for new competitors to successfully enter the market.³⁶ Trying to fight this bias that favors traditional financial institutions, in recent years technology companies have lobbied trying to promote more lenient regulation towards Fintech. In fall 2015, notable among these initiatives and efforts, is the technology industry leaders' lobbying coalition—Financial Innovation Now—that advances the companies' interests, advocates for greater innovation in financial services,³⁷ and confirms their official presence in the financial services market.³⁸ Financial Innovation Now is defined as “an alliance of technology leaders working to modernize the way consumers and businesses manage money and conduct commerce.” The group's goal is to “promote policies that enable these innovations.”³⁹ By trading votes in favor of protectionism for pledges of support from politicians, representatives of the technology industry try to promote policies that work in their benefit.

In addition, policymakers all over the world, have struggled for quite some time with figuring out how to enable young businesses to enter and

35. Greg Yang, *Innovation and Disruption in the Financial Technology Industry*, BOS. UNIV. SCH. OF LAW (Feb. 27, 2017), <http://www.bu.edu/law/2017/03/24/innovation-and-disruption-in-the-financial-technology-industry/> [https://perma.cc/D3AS-VG53]; Alison K. Gary, Comment, *Creating a Future Economic Crisis: Political Failure and the Loopholes of the Volcker Rule*, 90 OR. L. REV. 1339, 1366–67 (2012) (“Under the public choice theory, public policies with broad benefits and concentrated costs, like the Dodd-Frank Act, generally have well-organized opposition, as was the case with the Wall Street lobby. The resulting policy, then, tends to be only as strong as the minority bearing the costs is willing to pay Main Street demanded action, but the Wall Street Lobby made it nearly impossible for Congress to come to agreement on many details of the bill.” (footnotes omitted)).

36. Morris Panner, *Strangling Innovation with Red Tape*, WASH. POST (Nov. 19, 2010), <http://www.washingtonpost.com/wp-dyn/content/article/2010/11/18/AR2010111806073.html> [https://perma.cc/NTB7-V2LL].

37. See Maggie McGrath, *A Peek Inside Apple, Google and Amazon's New Capitol Hill Lobbying Coalition*, FORBES (Nov. 9, 2015, 5:50 PM), <https://www.forbes.com/sites/maggiemcgrath/2015/11/09/a-peek-inside-apple-google-and-amazons-new-capitol-hill-lobbying-coalition/#6758e5ad4eb4> [https://perma.cc/6JYH-X446]; Jim Marous, *Google, Apple, Facebook and Amazon Should Terrify Banking*, FIN. BRAND (Aug. 6, 2014), <http://thefinancialbrand.com/41484/google-apple-facebook-amazon-banking-payments-big-data> [https://perma.cc/3UF5-Q4W3].

38. See, e.g., Christoffer O. Hernæs, *What Facebook's European Payment License Could Mean for Banks*, TECHCRUNCH (Jan. 12, 2017), <https://techcrunch.com/2017/01/12/what-facebooks-european-payment-license-could-mean-for-banks/> [https://perma.cc/SU7J-DMLZ]; Robinson Meyer, *Could a Bank Deny Your Loan Based on Your Facebook Friends?*, ATLANTIC (Sept. 25, 2015), <https://www.theatlantic.com/technology/archive/2015/09/facebooks-new-patent-and-digital-redlining/407287/> [https://perma.cc/RGE5-SMVV].

39. See FIN. INNOVATION NOW, <https://financialinnovationnow.org/> [https://perma.cc/2UT4-G8TT].

compete in the financial markets,⁴⁰ while safeguarding consumers from new and innovative risky products and services, and preventing future financial crises.⁴¹ Some even expressly admitted that they are promoting such an agenda because they believe that the current status quo, in which FinTech companies compete against banks without the oversight and requirements facing banks, disadvantages banks, and that companies that provide banking products and services should be regulated and supervised like a bank.⁴² Among those attempting to foster the emerging FinTech industry are lawmakers in the U.S., where the Office of the Comptroller of the Currency (OCC) proposed a special purpose FinTech charter.⁴³

Likewise, in Spring 2017, the Commodity Futures Trading Commission (CFTC) approved the creation of LabCFTC, a new initiative aimed at promoting responsible FinTech innovation to improve the quality, resilient-

40. See, e.g., Rachel Witkowski & Andrew Ackerman, *Fintech Firms Get Chance to Apply for Banking License*, WALL ST. J. (Mar. 15, 2017, 7:03 PM), <https://www.wsj.com/articles/fintech-firms-get-chance-to-apply-for-banking-license-1489599873> [<https://perma.cc/A7MH-7KF3>] (U.S. regulators have been supportive of FinTech companies and their innovative businesses, as they started to approve unique licenses, which will enable FinTech businesses such as online lenders and payment processors to apply for a federal charter.).

Finally, certain states have adopted regulation that relates to FinTech initiatives. See, e.g., Joanna Diane Caytas, *Blockchain in the U.S. Regulatory Setting: Evidentiary Use in Vermont, Delaware, and Elsewhere*, COLUM. SCI. & TECH. L. REV. BLOG (May 30, 2017), <http://stlr.org/2017/05/30/blockchain-in-the-u-s-regulatory-setting-evidentiary-use-in-vermont-delaware-and-elsewhere/> [<https://perma.cc/3PTA-STGY>].

41. See, e.g., Yang Jie & Liyan Qi, *People's Bank Of China Has Fintech On Its Mind*, WALL ST. J. (Aug. 7, 2017, 8:31 AM), <https://www.wsj.com/articles/peoples-bank-of-china-has-fintech-on-its-mind-1502109079> [<https://perma.cc/X4LX-6CZU>] (“China’s central bank is increasing its monitoring of the loosely regulated financial-technology sector—a major source of risk, given the enormous sums involved.”); Todd Baker, *Marketplace Lenders Are a Systemic Risk*, AM. BANKER: BANKTHINK (Aug. 17, 2015 9:30 AM), <http://www.americanbanker.com/bankthink/marketplace-lenders-are-a-systemic-risk-1076047-1.html> [<http://perma.cc/SS9U-X3DM>]; cf. Mike Cagney, *How Marketplace Lenders Will Save Financial Services*, AM. BANKER: BANKTHINK (Aug. 19, 2015, 4:33 PM), <http://www.americanbanker.com/bankthink/how-marketplace-lenders-will-save-financial-services-1076174-1.html> [<https://perma.cc/WBR8-ZREV>].

42. See Keith A. Noreika, Acting Comptroller of the Currency, U.S. Dep’t of the Treasury, Remarks Before the Exchequer Club of Washington, D.C. (July 19, 2017), <https://www.occ.gov/news-issuances/speeches/2017/pub-speech-2017-82.pdf> [<https://perma.cc/9MXU-ALCL>].

43. Discussing this charter, the Acting Comptroller Keith A. Noreika said that he thinks “it is a good idea that deserves the thorough analysis and the careful consideration we are giving it.” *Id.* at 5. The Acting Comptroller noted that the OCC’s “authority clearly includes granting charters to companies engaged in the business of banking,” and “[w]e should be careful to avoid defining banking too narrowly or in a stagnant way that prevents the system from evolving or taking proper and responsible advantage of advances in technology and commerce.” While acknowledging that, in general, “companies that offer banking products and services *should* be allowed to apply for national bank charters so that they can pursue their businesses on a national scale if they choose, *and* if they meet the criteria and standards for doing so,” he specified that the national charter “option exists alongside other choices that include becoming a state bank or operating as a state-licensed financial service provider, or pursuing some partnership or business combination with existing banks.” *Id.* Noreika even went as far as stating affirmatively that the OCC believes it has the authority to grant national bank charters to financial technology businesses that do not take deposits “in appropriate circumstances.” *Id.* at 9.

cy, and competitiveness of the markets the CFTC oversees.⁴⁴ The Securities and Exchange Commission (SEC) launched a FinTech Forum and working group, hoping to find ways the agency can improve clarity on regulation while encouraging innovation.⁴⁵ And, other federal agencies, such as the Consumer Financial Protection Bureau (CFPB), have been attempting to promote FinTech tools, via projects such as ‘Project Catalyst.’⁴⁶ Finally, the different states have also shown interest in regulating the new FinTech industry, and a battle might be under way between state and federal regulators who are competing to draft and enforce the rules that will guide the future development of the FinTech industry.⁴⁷ And to make things even more complex, each state has a department or agency that is responsible for licensing and supervising state-chartered banks, and in many instances also sub-divisions that monitor and regulate lending institutions, money transmitters and other nonbank financial companies.⁴⁸

44. LabCFTC will also try to accelerate CFTC engagement with FinTech and RegTech companies that may enable the CFTC to carry out its mission responsibilities more effectively and efficiently. See Press Release, U.S. Commodity Futures Trading Comm’n, CFTC Launches LabCFTC as Major FinTech Initiative (May 17, 2017), <http://www.cftc.gov/PressRoom/PressReleases/pr7558-17> [<https://perma.cc/664K-LLDR>] (“The purpose of LabCFTC is twofold: The first is to provide greater regulatory certainty [sic] that encourages market-enhancing FinTech innovation to improve the quality, resiliency, and competitiveness of our markets. The second is to identify and utilize emerging technologies that can enable the CFTC to carry out its mission more effectively and efficiently in the new digital world.” (quoting CFTC Acting Chairman J. Christopher Giancarlo)).

45. Stating that “regulators have an obligation to understand, monitor, and — where appropriate — encourage such developments, while simultaneously being prepared to implement safeguards where necessary to protect investors and our markets,” the SEC admitted that it is focused on the following technologies: (i) automated investment products that are registered under the Advisers Act, their compliance with that regulation, and robo-advisors’ potential to democratize investment; (ii) distributed ledger technology and its potential impact on trading, clearing, settlement operations and players; and (iii) marketplace lending platforms, crowdfunding portals and consumer protection-related issues. Mary Jo White, Chair, U.S. Sec. & Exch. Comm’n, Opening Remarks at the Fintech Forum (Nov. 14, 2016), <https://www.sec.gov/news/statement/white-opening-remarks-fintech-forum.html> [<https://perma.cc/GWR7-86XL>].

46. See, e.g., Patrick McHenry, CFPB’s ‘Project Catalyst’ Failed. Fintech Deserves Better, AM. BANKER: BANKTHINK (Apr. 25, 2017, 12:00 PM), <https://www.americanbanker.com/opinion/cfpbs-project-catalyst-failed-fintech-deserves-better> [<http://perma.cc/6NSV-VEV9>].

47. See Jeffrey Alberts & Ingrid He, *OCC vs. New York DFS: Battle for the Future of FinTech*, BLOOMBERG BNA (July 17, 2017), <https://www.bna.com/occ-vs-new-n73014461841/> [<https://perma.cc/W8GP-LCCD>] (“For example, in June 2015, New York’s Department of Financial Services (DFS) promulgated rules for the licensing of virtual currency companies, which the DFS itself dubbed ‘Bit Licenses.’ Other state regulators, such as the Washington State Department of Financial Institutions, the Texas Department of Banking and the Connecticut Banking Department have instituted, or been granted authority to promulgate, similar regulations.”).

48. The Conference of State Bank Supervisors (CSBS) is the nationwide organization of the state banking agencies. Its Vision 2020 initiatives aim to streamline licensing and harmonize supervision of nonbank financial firms. Press Release, Conference of State Bank Supervisors, CSBS Announces Vision 2020 for Fintech and Non-Bank Regulation (May 10, 2017), <https://www.csbs.org/news/press-releases/pr2017/Pages/051017.aspx> [<https://perma.cc/V9CV-4ZDQ>].

Similar to their American peers, the U.K. regulators have also shown interest in supporting FinTech tools. In particular, the Financial Conduct Authority (FCA) is one of the most notable regulators to have adopted a regulatory sandbox approach, which allows businesses to test innovative products, services, business models and delivery mechanisms in a live environment.⁴⁹ The sandbox provides a safe space for testing innovative products and services without being forced to comply with the applicable set of rules and regulations, and was adopted as part of Project Innovate, an initiative that started in 2014.⁵⁰ Project Innovate's goal has been to coordinate the FCA's approach to Fintech, and indeed the U.K. has been a true leader in facilitating and incorporating FinTech into the financial industry.⁵¹ Other adopters of similar innovative approaches include, *inter alia*, the Australian,⁵² Singaporean,⁵³ and even Lithuanian⁵⁴ regulators, which have been promoting similar efforts in their respective countries, with the

49. See, e.g., Christopher Woolard, Dir. of Strategy & Competition, Fin. Conduct Auth., Address at the Innovate Finance Global Summit (Apr. 11, 2016), <https://www.fca.org.uk/news/speeches/innovate-finance-global-summit> [https://perma.cc/3D2B-KGQ2]; Erik Vermeulen et al., *Regulation Tomorrow: What Happens When Technology is Faster than the Law?* 25 (Tilburg Law & Econ. Ctr., Discussion Paper No. 2016-024, 2016), <https://ssrn.com/abstract=2834531> [https://perma.cc/3HQS-5PDQ] (explaining that “[i]n April 2016, the FCA broke new ground by announcing the introduction for a ‘regulatory sandbox’ which allows both startup and established companies to roll out and test new ideas, products and business models in the area of Fintech”).

50. FIN. CONDUCT AUTH., REGULATORY SANDBOX 1 (2015), <https://www.fca.org.uk/publication/research/regulatory-sandbox.pdf> [https://perma.cc/E7ZY-RFNN] (“This paper is a report . . . on the feasibility and practicalities of developing a regulatory sandbox that is a ‘safe space’ in which businesses can test innovative products, services, business models and delivery mechanisms without immediately incurring all the normal regulatory consequences of engaging in the activity in question. We believe there is opportunity to expand Project Innovate and introduce a regulatory sandbox.”).

51. Press Release, Fin. Conduct Auth., Financial Conduct Authority Provides Update on Regulatory Sandbox (June 15, 2017), <https://www.fca.org.uk/news/press-releases/financial-conduct-authority-provides-update-regulatory-sandbox> [https://perma.cc/F373-KHAQ].

52. As part of the Federal Budget 2017–18 released on May 9, 2017, the Australian Government announced plans to enhance the regulatory sandbox established by the Australian Securities and Investment Commission (ASIC) in 2016. See COMMONWEALTH OF AUSTRALIA, BACKING INNOVATION AND FINTECH (2017), http://www.budget.gov.au/2017-18/content/glossies/factsheets/download/FS_Innovation.pdf [https://perma.cc/4KQ2-BCKK] (“The Government is committed to establishing Australia as a leading global financial technology (FinTech) hub and is announcing a new package.”).

53. Enoch Yiu, *Singapore Licenses First Chinese FinTech Firm, Heating Up Competition with Hong Kong*, S. CHINA MORNING POST (July 17, 2017, 7:30 PM), <http://www.scmp.com/business/companies/article/2102993/singapore-licenses-first-chinese-fintech-firm-heating-competition> [https://perma.cc/Z2VE-UFTX].

54. *For FinTech Companies – Unique Opportunity to Join Financial Innovation-Friendly Lithuania*, BANK OF LITH. (Aug. 7, 2017), <http://www.lb.lt/en/news/for-fintech-companies-unique-opportunity-to-join-financial-innovation-friendly-lithuania> [https://perma.cc/JRF5-GP43] (the Bank of Lithuania discussing its launch of a sponsored FinTech Sandbox.)

hope of opening them to new businesses, sources of revenue and technology advances.

Nevertheless, despite the appeal that FinTech has among regulators, some believe that using FinTech entails great risks,⁵⁵ and certain commentators have even gone as far as advocating for the biggest FinTech companies to be viewed as financial institutions, and possibly even SIFIs, for risk management purposes.⁵⁶

II. REGULATORY TECHNOLOGY

In light of the fast and dramatic technological developments in recent years, conversations about the application of technology to regulation, a concept commonly referred to as Regulation Technology (RegTech),⁵⁷ have gotten much attention.⁵⁸ There are several reasons for the interest in RegTech, especially in the context of financial regulation and the financial markets. First, the financial services industry has faced large amounts of new regulation since the 2008 banking crisis. Learning, interpreting and complying with voluminous legal requirements necessitates many resources and enough manpower, and so the need to conduct the compliance work in an efficient, effective and cheaper way, has become apparent.⁵⁹

55. See, e.g., OFFICE OF THE COMPTROLLER OF THE CURRENCY, SEMI-ANNUAL RISK PERSPECTIVE (2017), <https://www.occ.treas.gov/publications/publications-by-type/other-publications-reports/semiannual-risk-perspective/semiannual-risk-perspective-spring-2017.pdf> [https://perma.cc/6G27-M4P9]. One of the key takeaways is that “[s]trategic risk remains elevated as banks make decisions to expand into new products or services or consider new delivery channels.” *Id.*

at 4. Especially, as a “[h]eavy reliance on third-party service providers for critical activities and the increasing changes driven by new products offered by emerging fintech companies create increased risk relating to third-party risk management.” *Id.* at 5.

56. Broughton, *supra* note 33.

57. See generally Janos Barberis & Douglas Arner, *FinTech in China: From Shadow Banking to P2P Lending*, in *BANKING BEYOND BANKS AND MONEY* 69 (Paolo Tasca et al. eds., 2016).

58. See, e.g., Nicole Bullock & Martin Arnold, *Nasdaq to Buy London-Based Regtech Company Sybenetix*, *FIN. TIMES* (July 25, 2017), <https://www.ft.com/content/6dad3956-7092-11e7-93ff-99f383b09ff9> [https://perma.cc/VUY7-HUDN] (“The takeover of Sybenetix comes amid a wave of interest in using technology, such as cloud computing, artificial intelligence and biometrics, to help the financial services industry meet a tsunami of regulation unleashed since the 2008 banking crisis. In Europe, the incoming Mifid II rules for investment services are set to force banks and fund managers to collect much more data on trading for regulators than is currently required, creating an opportunity for companies such as Sybenetix.”); Ryan Browne, *UK Regulator Looking to Use A.I., Machine-Learning to Enforce Financial Compliance*, *CNBC* (July 13, 2017, 5:19 AM), <https://www.cnn.com/2017/07/13/uk-regulator-looking-to-use-a-i-machine-learning-to-enforce-financial-compliance.html> [https://perma.cc/XY7Y-DH9Y]; *Regtech Supplier Performance Report: Ignorance Is No Longer Bliss, It's Now Criminal Offence*, *BANKING TECH.* (Aug. 11, 2017), <http://www.bankingtech.com/941652/regtech-supplier-performance-report-ignorance-is-no-longer-bliss-its-now-criminal-offence/> [https://perma.cc/737C-CRTR].

59. See, e.g., BART VAN LIEBERGEN ET AL., *INST. FOR INT’L FIN., REGTECH IN FINANCIAL SERVICES: TECHNOLOGY SOLUTIONS FOR COMPLIANCE AND REPORTING 2* (2016) (according to which RegTech is “the use of new technologies to solve regulatory and compliance requirements more effec-

This need resulted in the invasion of entrepreneurs and innovators into the complicated and often hidden world of regulatory compliance with some of the same technologies that have disrupted the core operations of the financial services industry, such as machine learning, biometrics and the interpretation of social media and other unstructured data. The hope is that these technologies, and others, will help improve compliance tools for regulatory obligations. Second, by automating and improving the compliance procedures and tools the new technologies can reduce the investments and costs associated with the surging compliance and regulatory costs.⁶⁰ Third, the increased use of technology within the financial services industry gives regulators the ability to access a level of granularity in risk assessments that has not existed before. Regulatory compliance is time consuming and expensive not just for the businesses that need to comply, but often times even more so for the regulators. The volume of information that parties must monitor and evaluate is massive.⁶¹

A. Regulatory Monitoring, Reporting and Compliance

Typically, financial regulation goals include, *inter alia*, the following fundamental mandates: (i) financial stability; (ii) prudential regulation; (iii) conduct and fairness; and (iv) competition and market development.⁶² In addition, the issue of when to regulate can be as critical as what to regulate,

tively and efficiently”); Gregory Roberts, *Fintech Spawns Regtech to Automate Compliance with Regulations*, BLOOMBERG PROF'L (June 28, 2016), <https://www.bloomberg.com/professional/blog/fintech-spawns-regtech-automate-compliance-regulations/> [https://perma.cc/29D9-Y5VT].

60. The costs are very high and continue to rise for financial institutions. According to Federal Financial Analytics, a policy analysis firm, the six largest US banks spent US\$70.2 billion on compliance in 2013, twice the US\$34.7 billion spent in 2007. Kirsten Grind & Emily Glazer, *Nuns with Guns: The Strange Day-to-Day Struggles Between Bankers and Regulators*, WALL ST. J. (May 30, 2016, 10:39 PM), <https://www.wsj.com/articles/nuns-with-guns-the-strange-day-to-day-struggles-between-bankers-and-regulators-1464627601> [https://perma.cc/MYZ9-8ADX]. See generally FED. FIN. ANALYTICS, THE REGULATORY PRICE-TAG: COST IMPLICATIONS OF POST-CRISIS REGULATORY REFORM (2014), http://www.fedfin.com/images/stories/client_reports/Cost%20Implications%20of%20Post-Crisis%20Regulatory%20Reform.pdf [https://perma.cc/RP7E-53B4]. In 2015, the Financial Times estimated that some of the world's largest banks each spent an additional US\$4 billion a year on compliance since the financial crisis. Laura Noonan, *Banks Face Pushback over Surging Compliance and Regulatory Costs*, FIN. TIMES (May 28, 2015), <https://www.ft.com/content/e1323e18-0478-11e5-95ad-00144feabdc0> [https://perma.cc/43YH-9FVY].

61. KEVIN PETRASIC ET AL., WHITE & CASE, REGTECH RISING: AUTOMATING REGULATION FOR FINANCIAL INSTITUTIONS 1 (2016).

62. Douglas W. Arner et al., *The Evolution of Fintech: A New Post-Crisis Paradigm?* 32–33 (Univ. of New S. Wales Law Research Series, Working Paper No. 62, 2016), <https://ssrn.com/abstract=2676553> [https://perma.cc/3NQH-N4HJ]. The necessity for regulators to interact pro-actively with industry so as to perform and uphold their mandates, can be accomplished more easily through the development of “regulatory technology” or RegTech. *Id.* at 4.

so that certain rules may not be enforced until specific thresholds are met, merely because early regulation can result in substantial wasted effort.⁶³ A great example of this is E-banking, which was introduced in 1980 in the U.S., yet has not become successful until being reintroduced in 1995 in the U.K., mainly because the U.S. regulators rushed to regulate the innovation too quickly.⁶⁴ Thus, regulators, in addition to being tasked with translating financial regulation goals into specific requirements with which financial institutions must comply, need to also inquire when is the best time to regulate a specific issue, and monitor the compliance levels of all the players operating in the financial markets with existing laws, in order to ensure that the financial regulation goals are reached.

Regulatory monitoring of financial institutions, and particularly of banks, is conducted by government agencies and can be done through both on-site and off-site supervision. On-site examinations conclude in summary regulatory ratings, which constitute the main system of communicating regulatory opinion to banks. In some instances, regulatory examinations may result in informal actions including commitment letters, memoranda of understanding, and safety and soundness plans that are not publicly disclosed. In less common situations, the examinations may result in formal actions, which are acute in nature and publicly disclosed.⁶⁵

On-site or off-site, resulting in actions that are informal and private, or publicly disclosed, regulatory monitoring has proven to be important. Studies have shown that if regulatory monitoring provides financial institutions' boards new information and boards value such information, regulatory monitoring may improve managerial discipline.⁶⁶ Regulatory monitoring influences managerial discipline by encouraging financial institutions' boards to more seriously consider existing information.⁶⁷ Additionally, research has shown that regulatory monitoring provides new information and therefore serves to complement the role of bank boards.⁶⁸

63. *Id.* at 32.

64. *Id.* at 33.

65. *See id.*; Ajay A. Palvia, *Banks And Managerial Discipline: Does Regulatory Monitoring Play A Role?*, 51 Q. REV. ECON. & FIN. 56, 57 n.2. (2011).

66. *Id.* at 57–58.

67. *Id.*

68. *Id.* (“[A] growing body of evidence suggests that regulatory monitoring of banks, which operates largely through the bank examination process, does yield valuable information. Dahl et al. (1998) and Gunther and Moore (2003), for example, find evidence that regulatory actions lead to banks more fully reporting their loan losses. DeYoung et al. (2001b) find that bank regulatory examinations uncover valuable information and that such information is eventually incorporated into market prices. Further, Peek et al. (1998) show that regulatory ratings can improve forecasts for macroeconomic variables giving bank regulators an informational advantage. Finally, Wheelock and Wilson (2005) suggest that regulatory ratings contain important information and can be valuable in predicting bank

But despite the focus on regulatory monitoring, and the enhanced information technology tools in existence today, the financial institutions' information environment does still influence regulatory monitoring. For example, despite the fact that in many ways nowadays information and communication technology can overcome geographical barriers,⁶⁹ studies have shown that an increase in distance between financial institutions and their regulators reduces the quality of financial reporting.⁷⁰ Similarly, research shows that regulators make use of local informational advantages to enforce better quality financial reporting.⁷¹

Discussing the future of financial regulatory monitoring and information technology, Andy Haldane, Chief Economist of the Bank of England, shared his vision:

What more might be feasible? I have a dream. It is futuristic, but realistic. It involves a Star Trek chair and a bank of monitors. It would involve tracking the global flow of funds in close to real time (from a Star Trek chair using a bank of monitors), in much the same way as happens with global weather systems and global internet traffic Its centre piece would be a global map of financial flows, charting spill-overs and correlations.⁷²

failure. [And t]o the extent regulatory monitoring introduces information or re-enforces the importance of existing information, such information can be valuable in disciplining bank management.”)

69. See, e.g., Sonam Tobgay & Kencho Wangmo, *Can ICT (Internet) Overcome The Natural Geographical Barriers Of Bhutan In Developing The Nation?*, 4 INT'L J. OF EDUC. & DEV. USING INFO. & COMM. TECH. 148, 156 (2008); Cezar L. Mihalcescu & Ionel Iacob, *Computer Banking System Under the Context of the New Information Technologies* (Jan. 17, 2008) (unpublished manuscript), <https://ssrn.com/abstract=1084797> [<https://perma.cc/K9R9-QQ6A>] (discussing certain financial services, such as electronic trade that knows no geographical barriers, by their very nature); Sherubste Vinit Parida et al., *Barriers to Information and Communication Technology Adoption in Small Firms Past Experiences* 5 (Swedish Entrepreneurship Forum, Working Paper No. 2010:3, 2010), http://entreprenorskapsforum.se/wp-content/uploads/2013/03/WP_03.pdf [<https://perma.cc/D6BW-D5RV>] (stating that “technological communication setups can eliminate geographical barriers”); 8 *Ways Modern Technology Can Help Change the World*, TECHDIGG (July 23, 2017), <https://techdigg.com/2017/07/23/8-ways-modern-technology-can-help-change-the-world/> [<https://perma.cc/H333-S9TL>]; Akhil Saklecha, *Technology Is Finally Eliminating Geography as a Barrier to Real Estate Investing*, TECHCRUNCH (Apr. 23, 2016), <https://techcrunch.com/2016/04/23/technology-is-finally-eliminating-geography-as-a-barrier-to-real-estate-investing/> [<https://perma.cc/DZV7-VGT3>].

70. See generally Ivan Lim et al., *Does Distance Impede Regulatory Monitoring? Evidence from the Banking Industry* (Oct. 12, 2016) (unpublished manuscript), <https://ssrn.com/abstract=2807421> [<https://perma.cc/6NUG-3VCW>].

71. *Id.*

72. Andrew G. Haldane, Chief Economist, Bank of Eng., *Managing Global Finance as a System*, Address at the Maxwell Fry Annual Global Finance Lecture, Birmingham University (Oct. 29, 2014) (citations omitted), <http://www.bankofengland.co.uk/publications/Documents/speeches/2014/speech772.pdf> [<https://perma.cc/RR3Q-M7F2>].

B. Enhancing Corporate Governance

RegTech promotes good corporate practice in compliance management and enhances desired regulatory compliance outcomes. In particular, RegTech does this by enabling businesses to automate ordinary compliance tasks, reduce operational risks associated with compliance obligations and everyday tasks, such as auditing, enable compliance functions to make informed risk choices based on data provided insight, and create cost-effective solutions to problems. These solutions ensure that companies are up to date with the latest regulatory changes using technologies, minimize the likelihood of human errors, and increase the overall governance process. Similarly, RegTech can also be a vital revenue source, especially in connection with lending or money transmission services.

Additionally, RegTech can prove valuable especially in identity management, risk management and security, including from a corporate governance perspective, such as cyber whistleblowers, which are known to be helpful in changing corporate cultures,⁷³ or Bug Bounty programs.⁷⁴ And, as mentioned, there are several new technologies, such as machine learning, artificial intelligence, and data storage cell level security—an application of cryptography to information sharing, which enables only relevant and specific data to be made available to people, based on their access authorization—that are promising in tackling compliance challenges.⁷⁵

III. A PANACEA FOR CORPORATE GOVERNANCE CHALLENGES?

A. Barriers to the Adoption and Development of RegTech

Despite its many advantages, there are five main barriers to the adoption of RegTech that might make it less likely for it to be developed and be available or commonly used as a panacea for corporate governance chal-

73. See generally Nizan Geslevich Packin & Benjamin P. Edwards, *Regulating Culture: Improving Corporate Governance with Anti-Arbitration Provisions for Whistleblowers*, 58 WM. & MARY L. REV. ONLINE 41 (2016), <http://wmlawreview.org/sites/default/files/Packin%20%26%20Edwards-Final.pdf> [<https://perma.cc/Q9Q5-3RU3>].

74. Amit Elazari Bar On, *Bug Bounty Programs as a Corporate Governance “Best Practice” Mechanism*, BERKELEY TECH. L.J. BLOG (Mar. 23, 2017), <http://btlj.org/2017/03/bug-bounty-programs-as-a-corporate-governance-best-practice-mechanism/> [<https://perma.cc/NG5Q-FLA2>].

75. See VAN LIEBERGEN ET AL., *supra* note 59, at 12 (“Cell-level security capabilities help organizations overcome data security issues even for big data sets by applying access controls to every data object ingested into a common platform architecture. These labels are integrated with internal information security policies, user attributes, and enterprise authentication and authorization systems. The language or framework used to construct the security labels is expressive enough to handle complex visibility requirements without adding an excessive burden on existing authorization systems, and allows users to encode Boolean or natural readable language expressions and attributes.”).

lenges. First, the motive for market participants to assist with the formation of a common solution is, for different reasons, unclear. Most financial companies that must comply with regulatory obligations, go through a cost/benefit analyses to understand what is the most effective way to handle their compliance requirements. But the scope of such analysis is partial as it only covers a specific entity's individual operational response rather than the entire industry.⁷⁶ This limits financial companies' aptitude to conceptualize a common solution that would reduce costs for all regulated companies, and makes them focus on more than just short-term responses.⁷⁷ Second, there is a missing mandate to speak about the common solutions or even have an established set of standards in the RegTech sector, since technology providers, financial companies and lawmakers are all reluctant to set up the dialogue around common approaches and solutions.⁷⁸ Uncertainty makes it harder for financial companies to choose a specific compliance solution. As a result, industry participants would benefit from a coordinated industry-wide design and collaboration effort to set clear standards for RegTech in the product development phase, with all lawmakers providing clear guidelines on the product requirements, as well as how compliance with specific regulations is required.⁷⁹ Overcoming this barrier of uncertainty regarding what good solutions look like might necessitate coming up with a neutral organization to enable the dialogue and manage the crowdsourcing of the knowledge essential for RegTech growth.⁸⁰ Third, the complexity of the connection and interaction of the various regulatory initiatives make it difficult to adopt common industry solutions,⁸¹ and information technology and data regulations, such as data protection or localization rules, can also be an obstacle to efficient information sharing across financial groups and result in ineffective parallel "silos" of information in financial groups.⁸² Forth, some regulators still use outdated re-

76. See, e.g., *id.* at 5 (“[A]nti-money laundering and anti-terrorist financing (AML/ATF) surveillance would benefit from coordination and centralization, but is currently on a per-institution basis.”).

77. Mark Robinson, *The Regtech Barriers: In Depth Analysis (Part 2 of 3)*, REGTECHFS (Mar. 7, 2016), <https://regtechfs.com/the-regtech-barriers-in-depth-analysis-part-2-of-3/> [<https://perma.cc/2EEX-GDAU>].

78. See VAN LIEBERGEN ET AL., *supra* note 59, at 4 (“[A] lack of data harmonization or insufficient detail of definition makes it hard to aggregate risk data across financial groups and jurisdictions on an automated basis. Many financial institutions still lack an integrated data dictionary and taxonomy . . .”).

79. See *id.* at 5.

80. See Robinson, *supra* note 77.

81. *Id.*

82. See VAN LIEBERGEN ET AL., *supra* note 59, at 4 (“For example, while Basel 239 requires centralization of IT systems, recovery and resolution plans require different parts of the system to be self-functioning in the event of resolution, thus requiring a decentralized system. Tight regulatory deadlines for IT updates amplify this problem by requiring financial institutions to tinker around the

porting portals and errors, creating inefficiencies and increasing the likelihood of introducing mistakes in reporting.⁸³ Updating online reporting portals and secure data transfer mechanisms would drastically improve efficiency in the process.⁸⁴ Lastly, uneven, overlapping regulatory time-scales and regulatory demands make it harder for technology providers, companies and regulators to successfully team up in order to build an efficient, automated compliance system.⁸⁵

B. Corporate Culture and Anti-RegTech

It is naïve to assume that RegTech could, by itself, change financial institutions' behavioral culture, ethical approach towards business making and attitude regarding the law and complying with it. RegTech is a tool that enables companies to automate ordinary compliance tasks, reduce operational risks associated with compliance obligations, permit compliance functions to make informed risk choices based on data provided insight, and create cost-effective solutions to problems. But RegTech is typically created to do all of this in accordance with one basic assumption—to make sure a company does what it is supposed to do. Yet who decides what the company is supposed to do, the company or the government? One is dictated by culture, the tone at the top,⁸⁶ and the other is dictated by massive amounts of constantly changing and not-uniformly enforced laws and regulations imposed upon businesses by the administration and governmental agencies.⁸⁷ Ethics is concerned with doing what is right, because as we

edges of existing infrastructures rather than allowing for a more fundamental overhaul of systems. Regulations can also complicate applying innovation other aspects of compliance, such as through requiring in-person identification instead of allowing digital identity verification methods.”).

83. *See id.* at 5.

84. *See id.*

85. *See id.*

86. SEC Chairman Christopher Cox spoke about best practices in establishing an ethical culture in U.S. companies. He said that: “Without a doubt, the best practice of all in any company is to set the right tone at the top. Over and over again, commissioners and staff at the SEC observe that the tone at the top is a major factor in determining the effectiveness of internal controls to prevent fraud, in treating customers, employees, investors and other stakeholder fairly, and in contributing to the long-term success of the organization. Leadership by example, good communication, and ongoing ethics education and training are all vital.” Frank C. Bucaro, *Q&A with Christopher Cox*, SPEAKER MAG., Sept. 2007, at 22, <http://www.nsaspeaker-magazine.org/nsaspeaker/200709/?pg=1#pg1> [<https://perma.cc/A5EZ-W7UV>].

87. *See generally* Eric C. Chaffee, *Creating Compliance: Exploring a Maturing Industry*, 48 U. TOL. L. REV. 429 (2017) (also explaining that “business compliance is a field that focuses on prospectively ensuring adherence to laws and regulations through the use of monitoring, policies, and other internal controls,” and stating several events in the history of the modern corporation that have spurred the current period of rapid growth in the compliance field, including the passage of general incorporation statutes by state legislatures across the country that transformed corporations from quasi-governmental entities that were created and controlled by specific legislative acts into private business-

have a strong moral conviction to do so, not because someone tells an individual to, or because it will be “worth it” for that individual to do so.⁸⁸ In business, therefore, ethics is part of a company’s culture. Compliance is obeying the law, not because companies necessarily agree with it, but because they are required to do so, and that is very different from the concept of ethics.

Indeed, a business can have absolute and full compliance within its institution and still not be doing “the right thing.”⁸⁹ A company can constantly push the outer boundaries of the law hiring armies of advisers to help them do so while still be fully compliant,⁹⁰ and that does not mean anything in terms of doing “the right thing” as far as its employees, society, the environment or mankind is concerned.⁹¹ A business’ safety, privacy, environmental, accounting, and intellectual property policies often cover only the bare minimum that the law requires, rather than raise the bar.⁹² A good

es in need of additional regulation). See Todd Haugh, *The Criminalization of Compliance*, 92 NOTRE DAME L. REV. 1215, 1224–33 (2017) (discussing four eras of corporate compliance, culminating in its criminalized nature).

88. Character ethics is the branch of moral philosophy that deals with what defines one as a good person rather than conducting good deeds or keeping good states of affairs. *E.g.*, ROSALIND HURSTHOUSE, ON VIRTUE ETHICS 1 (1999) (“‘Virtue ethics’ is a term of art, initially introduced to distinguish an approach in normative ethics which emphasizes the virtues, or moral character, in contrast to an approach, which emphasizes duties or rules (deontology) or one which emphasizes the consequences of actions (utilitarianism).”).

89. This is because corporate compliance is becoming increasingly “criminalized,” which means that corporations are now approaching compliance primarily through a criminal law lens.

90. Sean J. Griffith, *Corporate Governance in an Era of Compliance*, 57 WM. & MARY L. REV. 2075, 2077 (2016) (explaining that companies can be hiring “hundreds, even thousands of compliance officers at a time”); Robert C. Bird & Stephen Kim Park, *The Domains of Corporate Counsel in an Era of Compliance*, 53 AM. BUS. L.J. 203, 217–18 (2016) (explaining how there is massive hiring of compliance officers in regulated industries).

91. See, *e.g.*, Michelle Chen, *Here Are All the Reasons Walmart’s Business Is Not Sustainable*, NATION (June 5, 2015), <https://www.thenation.com/article/here-are-all-reasons-walmarts-business-not-sustainable/> [<https://perma.cc/RV42-C7WR>] (discussing Walmart’s “unethically sourced profits,” and stating that “corporate benevolence thrives as a manufactured solution to a crisis engineered by corporations. Ethics is reduced to a matter of noblesse oblige, not human rights.”); Waqas Shabbir, *Would Consumers Stand by Market Ethics and Boycott Apple, a Proven Value Creator But a Blatant Tax Thief?*, NATION (Pak.) (Oct. 1, 2016, 9:29 PM), <http://nation.com.pk/blogs/01-Oct-2016/would-consumers-stand-by-market-ethics-and-boycott-apple-a-proven-value-creator-by-a-blatant-tax> [<https://perma.cc/JFM4-C5R6>] (“Apple . . . is hiding behind the rule that taxation takes place where value is created. It makes it exceedingly difficult for authorities to work out how much value is created in which country.”).

92. Businesses want to avoid government investigation and intervention into their matters—a “painful, time-consuming, and colossally expensive” process with no sure endpoint. Jayne W. Barnard, *Corporate Therapeutics at the Securities and Exchange Commission*, 2008 COLUM. BUS. L. REV. 793, 817 n.119 (referring to compliance consultants used during investigation and remediation); Scott Killingsworth, *Modeling the Message: Communicating Compliance Through Organizational Values and Culture*, 25 GEO. J. LEGAL ETHICS 961, 966 (2012) (“[C]ommand-and-control’ oriented [compliance] programs . . . [provide] [t]he explicit message [that] is the same as the message from law enforcement: follow the rules or pay the penalty.”).

example for hoping to cover more than the bare minimum is the recent Federal Sentencing Guidelines amendments that dictate that not only must institutions have a means to prevent and detect violations of law, but they must also foster an ethical culture.⁹³ Instituting policies in companies is great, and very much needed, but such policies are valueless if there is no culture to support them.

Monitoring a financial institution's internal culture and behavior, and complying with customer protection processes, normally demands the analysis of qualitative information describing and reflecting the company's culture and the behavior of individuals, such as e-mails and oral conversations. Creating RegTech that could automate the examination of these data sources would result in significant leaps in effectiveness, capability, and a faster pace in compliance. But being able to fully interpret these sources requires a very high level of technological capabilities, which might not be available yet. And, even if such technology is in existence, as with all technological innovations, RegTech can be used for both legitimate and illegitimate purposes. Thus, driven by the commercial incentive to manipulate that technology, or create other technologies to stick only to the bare minimum, or even when legally permitted, evade regulation, businesses have started developing technologies that are intended to help them frustrate regulators' goals—a phenomenon that can be referred to as “anti-RegTech.” Such technology is clearly not meant to increase ethical behavior at financial institutions, but merely pushes them and their compliance professionals to foster the very behaviors that the regulation created by lawmakers was intended to prevent. Moreover, while normally, there is no law against anti-RegTech, there are numerous ways in which anti-RegTech can breach local law and regulation, depending on the circumstances. “It is not enough to have one legitimate purpose, if the technology can (and is) being used for regulation-defeating purposes.”⁹⁴

Finally, unrelatedly, even if the technology that would be used to examine and interpret the data is successfully developed, and used for legitimate purposes only, technology alone cannot extirpate undesired and

93. Importantly, the Guidelines state that, to have an effective compliance and ethics program, an organization shall “promote an organizational culture that encourages ethical conduct and a commitment to compliance with the law.” U.S. SENTENCING GUIDELINES MANUAL § 8B2.1 (U.S. SENTENCING COMM’N 2016). While the Guidelines are based on criminal law, the Federal Sentencing Commission states that “an effective compliance and ethics program not only will prevent and detect criminal conduct, but also should facilitate compliance with all applicable laws.” *Id.* app. C, amend. 673.

94. Jack Nelson, *The Rise of Anti-Regtech?*, LEXOLOGY (Apr. 5, 2017), <https://www.lexology.com/library/detail.aspx?g=86320a8b-c385-4c29-b39c-c7dec328ce54> [<https://perma.cc/WN7Z-RMCM>].

unethical businesses practices, or resolve ethical issues resulting from corporate culture.

C. Technology Judgment Rule

Technology can hinder good judgment and human inputs in risk management and governance related decision processes, which operate based on their opaque programmed reasoning that is often biased and reflects altered interpretations of the law. This is because the complexities of large financial entities and financial regulation are such that risk management, as it is currently conducted, has become a zone of automation. Similarly, transnational systemic risk management is also prone to include automated systems.⁹⁵ But while regulators around the world had reluctantly accepted the financial industry's over-reliance on convoluted mathematical models for risk management—especially in the context of appropriate bank capital levels—the discussions around financial regulation typically lack references to the complexities of compliance that is conducted via various technologies.⁹⁶

Writing about the design and nature of technologies, political scientist Langdon Winner's controversial thesis, that technologies have politics embodying social relations, has inspired significant debate.⁹⁷ Winner argued that technology both emerges from and creates social foundations. Under Winner's thesis, technologies have politics in two ways. Either (i) "the invention, design, or arrangement of a specific technical device or system becomes a way of settling an issue in the affairs of a particular community"; or (ii) the systems are "inherently political technologies," which "appear to require or to be strongly compatible with particular kinds of political relationships," technical arrangements and social order. This is hardly surprising. As people adapt to technologies, their everyday practices, feelings, and even identities may change, sometimes in unpredictable ways. Winner argues that "to recognize the political dimensions in the shapes of technology does not require that we look for conscious conspiracies or malicious intentions." There are many cases in which "the technological deck has been stacked in advance in favor of certain social

95. See generally Kenneth A. Bamberger, *Technologies of Compliance: Risk and Regulation in a Digital Age*, 88 TEX. L. REV. 669 (2009).

96. *Id.*

97. See LANGDON WINNER, *Do Artifacts Have Politics?*, in *THE WHALE AND THE REACTOR: A SEARCH FOR LIMITS IN AN AGE OF HIGH TECHNOLOGY* 19–39 (1986).

interests,”⁹⁸ although the stacking does not always necessarily must be consciously designed by anyone. One example Winner gives for such a situation is the failure to accommodate for disabled individuals that resulted more from a “long-standing neglect than from anyone’s active intention.” FinTech, and in particular RegTech, may offer new and contemporary dimensions to Winner’s paradigm. RegTech’s programs are likely to have an often-unintended yet somewhat biased design reflecting their programmers’ inherent biases and world-views.

Indeed, focusing on RegTech, Professor Kenneth Bamberger has argued that programmers who develop automated compliance systems de facto make decisions about how to best understand the law, and how to translate and convert it into code. Once this conversion is over, the law, as applied may be altered in significant ways from the law that lawmakers and regulators created — mainly because the regulators’ choice to focus on principles instead of rules is undermined by an implementation which transforms principles into rules. Not only is law adapted through the actions of managers of financial companies in applying it, but it is modified, probably in fashions that even financial institutions’ managements do not fully comprehend, by the programs that are used to apply the law.⁹⁹ Moreover, Bamberger argues that unlike public processes for the development of laws and regulations, the processes that are put in place to produce compliance systems are private and opaque.¹⁰⁰ So while current technologies used for compliance purposes are known and highly considered for their precision, this accuracy is bundled with opaqueness and a certain interpretive cost that made these technologies be commonly referred to as “black-box” systems.¹⁰¹ Opaqueness, because the RegTech code is often kept undis-

98. The most commonly cited example from Winner’s work involves the segregationist politics embodied in the height of the bridges over parkways in Long Island, New York. But Winner gives other examples of consciously political design, such as (1) “Baron Haussmann’s broad Parisian thoroughfares, engineered at Louis Napoleon’s direction to prevent any recurrence of street fighting of the kind that took place during the revolution of 1848,” (2) “concrete buildings and huge plazas constructed on university campuses in the United States during the late 1960s and early 1970s to defuse student demonstrations,” and (3) Cyrus McCormick’s introduction of pneumatic molding machines into his Chicago reaper manufacturing plant in the 1880s, in order to “weed out” the skilled workers who had organized a local union. *Id.* at 22–24.

99. Bamberger, *supra* note 95, at 696 (Bamberger explains the processes which leads to the creation of compliance systems as entailing interactions among different groups of professionals that communicate with each other in an imperfect way, leading to risk management systems that are eventually a source of risk.).

100. Bamberger asks: “[H]ow does the technological instantiation of law-elaboration through implementation fare in light of the public law norms of accountability, effectiveness and legitimacy that traditionally govern the exercise of delegated discretion?” *Id.* at 703.

101. See, e.g., Leo Breiman, *Statistical Modeling: The Two Cultures*, 16 *STAT. SCI.* 199, 199 (2001). On the importance of transparency and accountability in various technologies and in particular

closed, and also fundamentally difficult to understand; it is extremely difficult to comprehend the type of data that is gathered, the associations that are targeted, and the concerns that are factored into the algorithmic predictions. Those layers of opacity can disguise biased, discriminatory or otherwise undesirable results from supervision until negative results become visible and clear. The secrecy protects businesses and public entities against open disapproval,¹⁰² and makes it harder to recognize the importance of human judgment, and mandate it to be a part of the process in cases such judgment is needed.

D. Partnering with Third Parties and Cyber Risks

Given the high stakes, financial institutions must be careful when partnering with a third party RegTech firm, and get some input from regulators about such partnerships before entering into such partnerships. This is especially true nowadays when cyber risks are constantly increasing,¹⁰³ and businesses across different industries are so interconnected and interdependent that hackers attack the advanced cybersecurity systems of bigger businesses by turning to smaller companies without vigorous protection.¹⁰⁴ These smaller businesses are often contractors or third party vendors or directly responsible for critical infrastructure, or may hold data that could be valuable to hackers.¹⁰⁵

E. Automation and Efficiency Gains vs. Expanded Regulatory Costs

While RegTech has serves as an efficient regulatory-related costs reducing tool, many of the FinTech's automation and efficiency gains have been offset by resources required to meet expanded regulatory requirements, such as the increasing number of information requests from regula-

algorithms of digital intermediaries, see Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149, 1159 (2008).

102. Nizan Geslevich Packin & Yafit Lev-Aretz, *Learning Algorithms and Discrimination*, in RESEARCH HANDBOOK OF ARTIFICIAL INTELLIGENCE AND LAW (Woodrow Barfield & Ugo Pagallo eds.) (forthcoming 2018) (on file with the Chicago-Kent Law Review).

103. See, e.g., Nizan Geslevich Packin, *Too-Big-To-Fail 2.0: Cybersecurity & Digital Service Providers*, 93 IND. LAW JOURNAL (forthcoming 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2988284 [<https://perma.cc/EXD9-FY5Q>].

104. *Cybersecurity*, U.S. SMALL BUS. ADMIN. (Jan. 2, 2017), <https://www.sba.gov/managing-business/cybersecurity> [<https://perma.cc/P25E-C6YN>].

105. For example, the hack into OPM was the result of IT system access through a third party. See Chris Laughlin, Note, *Cybersecurity in Critical Infrastructure Sectors: A Proactive Approach to Ensure Inevitable Laws and Regulations Are Effective*, 14 COLO. TECH. L.J. 345, 361 (2016).

tors. Therefore, it is not clear if overall, the automation and efficiency gains end up being higher than the expanded regulatory costs.¹⁰⁶

CONCLUSION

Despite the many promising and positive aspects of RegTech, its growth is not a panacea for many of the existing corporate governance challenges. While RegTech helps efficiently reduce costs, creates additional revenue to businesses that use it wisely, and even promotes good corporate practice and enhances desired regulatory outcomes, RegTech systems still pose some challenges. This article identifies considerable risks and challenges of RegTech solutions, which include high costs, certain barriers to the adoption and development of RegTech systems, RegTech's unclear impact on risk management and corporate governance procedures of financial companies, the problematic side-effects of "dehumanization," and the problematic issue of anti-RegTech.

As RegTech seems to be one of the very few answers to the compliance challenge, it appears that the solution to both the risk management and the corporate governance RegTech challenges must include, *inter alia*, increasing transparency, enhancing the technical expertise of lawmakers, and creating and a dynamic partnership between lawmakers and private sector entities, while acknowledging the importance of human judgment in RegTech operations. In addition, there is probably a way for companies to get out of the anti-RegTech catch-22, but it requires a fundamental shift in corporate thinking.¹⁰⁷ Companies must be sincere in their intentions to build effective RegTech programs that, *inter alia*, take advantage of behavioral human insights.

106. See, e.g., Lucy McNulty, *Compliance Costs to More Than Double by 2022*, FIN. NEWS (Apr. 27, 2017 3:15 PM), <https://www.fn.london.com/articles/compliance-costs-to-more-than-double-by-2022-survey-finds-20170427> [<https://perma.cc/EM3U-A32E>] (stating that "financial institutions' regulatory costs could more than double over the next five years" and "finance professionals expect the costs of keeping the watchdogs at bay could creep up to 10% of firm revenues").

107. Todd Haugh, "Cadillac Compliance" Breakdown, 69 STAN. L. REV. ONLINE 198, 203–04 (2017), <https://review.law.stanford.edu/wp-content/uploads/sites/3/2017/04/69-Stan.-L.-Rev.-198-Haugh-.pdf> [<https://perma.cc/L7PV-TX7R>].