Preliminary Draft: June 2018

Financial Innovation and Financial Regulation: the Disruptive Promises and Perils of Technological Change

Caroline Bradley*

Introduction

Technological change is disruptive in good and in bad ways: it can force us to rethink the basis for existing ways of doing things, including the basis for legal rules and may provide citizens with improved opportunities and services at a lower cost. Legal rules ought not to impede the socially beneficial developments that technology provides,[1] but excessive enthusiasm for innovation as such should not be invoked to jettison necessary rules. Technological change is often characterized in polarized discourses: as the enabler of a utopian future or as a source of risk and danger.[2] In the context of financial markets and financial services technological change may improve efficiency and transparency, and allow new entities to compete with established businesses in ways that promote consumer welfare. Alternatively technological

---

* Professor of Law, University of Miami School of Law, PO Box 248087, Coral Gables, FL, 33124, cbradley@law.miami.edu; http://blenderlaw.com.

[1] *See, e.g.*, Caroline Bradley, *Information Society Challenges to Financial Regulation* 37 U. TOLEDO L. REV. 307, 307 (2006) (arguing that regulatory distinctions based on implicit understandings of technological conditions should be revised as the technology changes).

[2] *See, e.g.*, Caroline Bradley, *Disorderly Conduct: Day Traders and the Ideology of "Fair and Orderly Markets,"* 26 J. CORP. L 63 (2000).

developments may harm social welfare, for example by facilitating frauds,[3] or otherwise as sources of risk and instability for the financial markets. But there is a middle ground in which policy-makers should be wary of succumbing to either of the extremes of thinking of technological innovations as glamorous and necessarily positive or as an inherent source of danger and necessarily negative.

As financial firms adopt new financial technologies,[4] and accept that cryptocurrency trading is part of the current financial environment,[5] policy-makers around the world are addressing the promises and perils of Fintech.[6] Policy-makers are setting up Fintech Bridges[7] and sandboxes[8] and acknowledging the advantages of

---

[3] The mining of cryptocurrencies also has implications for the electricity market. *See, e.g.*, Paul Roberts, *Bitcoin Backlash as 'Miners' Suck up Electricity, Stress Power Grids in Central Washington*, The Seattle Times (May 26, 2018) at https://www.seattletimes.com/business/bitcoin-backlash-as-miners-suck-up-electricity-stress-power-grids-in-central-washington/.

[4] *See, e.g.*, ASX, CHESS Replacement: New Scope and Implementation Plan Consultation (Apr. 2018) at https://www.asx.com.au/documents/public-consultations/chess-replacement-new-scope-and-implementation-plan.pdf (proposing changes to the clearing, settlement and other post-trade services for the Australian equity market involving the use of distributed ledger technology); ICE Press Release, Intercontinental Exchange and Blockstream Launch Consolidated Data Feed for Cryptocurrencies (Jan. 18, 2018).

[5] *See, e.g.*, Financial Conduct Authority, FCA Statement on the Requirement for Firms Offering Cryptocurrency Derivatives to Be Authorised (Apr. 6, 2018) ("We are aware of a growing number of UK firms offering so-called cryptocurrencies and cryptocurrency-related assets.")

[6] *See, e.g.*, General Accounting Office, Financial Technology: Additional Steps by Regulators Could Better Protect Consumers and Aid Regulatory Oversight, GAO-18-254 (Mar. 2018) (GAO Fintech Report"); Dong He, Ross B Leckow, Vikram Haksar, Tommaso Mancini Griffoli, Nigel Jenkinson, Mikari Kashima, Tanai Khiaonarong, Celine Rochon & Hervé Tourpe, Fintech and Financial Services : Initial Considerations, IMF Staff Discussion Note SDN/17/05 (Jun. 19, 2017).

[7] See, e.g., HM Treasury, Fintech Sector Strategy: Securing the Future of UK Fintech (Mar. 2018) at 5 (noting that the UK has established Fintech Bridges with Hong Kong, South Korea, Singapore, and China. The document states that "These are detailed agreements that seek to build links between governments regulators, and the

blockchain technology, but also warning that Initial Coin Offerings may be merely vehicles for fraud,[9] launching investigations into the activities and governance of cryptocurrency exchanges,[10] and raising concerns that cryptocurrencies may involve risks to financial stability.[11]

There is a tension here between different regulatory imperatives. With respect to consumer protection regulators must seek a balance between encouraging innovation and competition as sources of consumer benefit on one hand,[12] and protecting

---

private sector in order to open up international markets.")

[8] *Id*. at 5 ("Key steps that have been taken to support competition and remove barriers to entry and growth include: • Giving the Financial Conduct Authority (FCA) a strong competition objective, resulting in the FCA establishing the Innovation Hub and Regulatory Sandbox to support Fintech firms, both of which are held up as global examples of best practice.") *Cf.* Consumer Finance Protection Bureau, Project Catalyst Report: Promoting Consumer-Friendly Innovation (Oct. 2016).

[9] *See, e.g.*, Jay Clayton, Securities & Exchange Commission Chairman, Statement on Cryptocurrencies and Initial Coin Offerings (Dec. 11, 2017) ("A number of concerns have been raised regarding the cryptocurrency and ICO markets, including that, as they are currently operating, there is substantially less investor protection than in our traditional securities markets, with correspondingly greater opportunities for fraud and manipulation.")

[10] A.G. Schneiderman Launches Inquiry Into Cryptocurrency "Exchanges" (Apr. 17, 2018) at https://ag.ny.gov/press-release/ag-schneiderman-launches-inquiry-cryptocurrency-exchanges

[11] *See, e.g.*, Joint Committee Report on Risks and Vulnerabilities in the EU Financial System, 1 (Apr. 2018) ("risks related to virtual currencies have recently materialized, inter alia driven by extraordinary high levels of volatility and associated price falls.")

[12] *See, e.g.*, European Banking Authority, Discussion Paper on the EBA's Approach to Financial Technology (FinTech), EBA/DP/2017/02 (Aug. 4, 2017) at p. 4 ("Article 1(5) of the Regulation establishing the EBA (Regulation (EU) No 1093/2010) requires the EBA to contribute to enhancing consumer protection, promoting a sound, effective and consistent level of regulation and supervision, ensuring the integrity, transparency, efficiency and orderly functioning of financial markets, preventing regulatory arbitrage and promoting equal competition. In addition, Article 9(2) requires the EBA to monitor new and existing financial activities.")

consumers from fraud on the other.[13] With respect to the financial markets regulators must seek a balance between encouraging innovations that enhance the efficient operation of the financial markets, and guarding against innovations that threaten financial stability. How regulators conceive of their role, based in part on how their regulatory mandates are defined in legislation, may influence whether they emphasize promoting competition, protecting consumers,[14] or ensuring financial stability.

It makes sense for governments to use the term Fintech to signal support for a regulatory environment which accommodates the development of new ways of providing financial services, as a way of engaging in competition with other jurisdictions. But addressing Fintech generally, rather than individual implementations of Fintech, as a subject of regulatory policy is complicated. Fintech applications range across a variety of different financial services sectors, involving insurance, banking, securities, and payment services which may be regulated by differnt regulators. Fintech implementations may have inherent vulnerabilities, or not. They may be more or less susceptible to hacking.[15] And they may be targeted at a wide range of different profit-oriented and non-profit uses and for good and bad motives. There can be no one-size - fits-all policy for such a complex reality.

---

[13] *See, e.g.*, European Banking Authority, The EBA's Fintech Roadmap Conclusions from the Consultation on the EBA's Approach to Financial Technology (Fintech), 15 March 2018 at 7 ("there is a challenge for regulators and supervisors, namely to keep pace with technological developments in order to ensure that regulation and supervisory practices allow opportunities presented by FinTech to be fully and properly realised without undermining consumer protection, the level playing field, the integrity of the financial markets and the stability of the financial system taken as a whole.")

[14] *See, e.g.*, Project Catalyst Report, *supra* note 8, at 8 ("Regulators have historically been charged with overseeing financial markets through many fast-paced changes, weighing predicted risks to markets and consumers against expected benefits... A regulatory approach that is able to protect consumers and at the same time support consumer-friendly developments is critical.")

[15] *See, e.g.*, World Economic Forum Press Release, World Economic Forum Convenes New Consortium to Address Fintech Cybersecurity (Mar. 6, 2018); World Economic Forum White Paper, Innovation-Driven Cyber-Risk to Customer Data in Financial Services (in collaboration with Oliver Wyman) (2017).

Messaging is also complicated: public statements by financial firms and policy-makers about technology and finance often focus on the extremes of approval or concern. Financial firms want to be known for innovation. Countries compete to be seen as centers for Fintech,[16] just as they compete to be centres of other types of economic activity. Governmental authorities marketing the advantages of their jurisdictions as places to do business are likely to focus on the positives, and unlikely to focus on the complicated details. Regulators seek to satisfy industry groups that their interests are being taken seriously, or to encourage them in the right direction with respect to compliance, but also to alert investors and scammers that the regulators are serious about fraud. And whereas regulators must be attuned to the fine details of how particular activity fits within a detailed regulatory regime, these details do not necessarily fit in the sort of public speeches that regulators make about their work. Whereas central bankers and economists at central banks may present their work at academic conferences, regulators are often invited to speak at industry conferences. Even where policy-makers engage in a more moderate and nuanced balancing of costs and benefits this sort of approach risks not being newsworthy, and therefore not being noticed by traditional news media.[17] And many people now obtain news and information from sources other than traditional news media. Fintech is clearly not the only area in which public perception of policy issues is affected by the current information environment, but consideration of public policy in general is affected by public perception. Regulators can and do seek to influence that perception, but doing so is ot a simple matter.

The competing invocations of two polarized regulatory discourses (utopian and dystopian) with respect to a single term (Fintech) used to describe a constellation of

---

[16] *See, e.g.*, EY, UK FinTech: On the Cutting Edge. An Evaluation of the International FinTech Sector, Report Commissioned by HM Treasury (2016); HM Treasury, Fintech Sector Strategy, *supra* note 7.

[17] For an example of a complex discussion of various policy issues implicated by FinTech, *see, e.g.*, EU Commission Communication, FinTech Action Plan: for a More Competitive and Innovative European Financial Sector, COM(2018) 109 final (Mar. 8, 2018).

different phenomena,[18] used by different people and entities for fundamentally different purposes and with divergent motivations risks the application of simplistic regulatory "solutions" to a complex set of realities in ways that may harm consumers of financial services and financial stability.

Uses of Fintech

The term Fintech describes a range of different uses of technology with respect to finance.[19] Technological change has been an aspect of finance for a long time, and each innovation changes the behavior of market participants.[20] Legal rules and regulation need to adapt to these changed circumstances, but at each stage of technological development legal rules and regulation are more complex. Increased regulatory complexity means that analyzing how existing rules apply to new circumstances and how they should apply becomes more complicated over time.[21]

---

[18] *Cf*. Henner Gimpel, Daniel Rau & Maximilian Röglinger, Understanding FinTech Start-ups – A Taxonomy of Consumer-oriented Service Offerings, Electronic Markets (2017). https://doi.org/10.1007/s12525-017-0275-0 (suggesting that rather than focusing on functional characteristics of Fintech it is useful to adopt a taxonomy which characterizes Fintech by reference to interaction, data and monetization).

[19] *See, e.g.*, Reserve Bank of India, Report of the Working Group on FinTech and Digital Banking (Feb. 8, 2018).

[20] *See, e.g.*, Mark Carney, The Promise of FinTech –Something New Under the Sun?, Speech at Deutsche Bundesbank G20 conference on "Digitising finance, financial inclusion and financial literacy," Wiesbaden (Jan. 25, 2017) ("Of course, technological innovation has long been twinned with finance. Today's system is the product of past advances, beginning with the simple ledger in the fifteenth century. Building on this foundation, a range of innovations –from the telegraph in the 1860s to the digitalisation of the ledger a century later–have created the plumbing of modern payments, clearing and settlement infrastructure necessary for global financial institutions and cross-border, wholesale markets.")

[21] On the problem of complexity in financial regulation, *see, e.g.*, Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. 235, 239 (2012) ("Together, complexity and innovation thus give rise to a host of regulatory challenges, the full implications of which we are only just now beginning to understand.") Awrey identifies six "sources of complexity: technology, opacity, interconnectedness, fragmentation, regulation and reflexivity." *Id.* at 246

When financial regulators began to wrestle with the implications of the internet for the dissemination of information about investments,[22] and issues of distinguishing between regulated investment advice and news in the early stages of the development of the internet they did not worry about "fake news" and the ways in which social media might be used to manipulate opinion. And whereas much of the focus in the early internet era was on the idea of disintermediation,[23] which would disrupt the financial markets and threaten established actors in those markets, we now know that financial intermediaries are adept at protecting their position.[24] Established market participants can acquire start-up challenger firms or invest in developing new products and services in-house.

Identifying some current developments in Fintech is a useful starting point, although Fintech generally is evolving all the time. Fintech may refer to the use of mobile or online services to facilitate payments, loans, or financial advice, and to the use of distributed ledger technology.[25] Fintech includes everything from the use of smartphones to make payments,[26] to trading in securities,[27] or cryptocurrencies directly

---

[22] *See, e.g.*, Brad M. Barber and Terrance Odean, *The Internet and the Investor*, 15 Journal of Economic Perspectives 41 (2001).

[23] *See, e.g.*, Andrew D. Klein, WALLSTREET.COM: FAT CAT INVESTING AT THE CLICK OF A MOUSE (1998); Donald C Langevoort, *Angels on the Internet: The Elusive Promise of Technological Disintermediation for Unregistered Offerings of Securities*, 2 J. SMALL & EMERGING BUS. L. 1 (1998).

[24] *See, e.g.*, Stijn Claessens, Thomas Glaessner & Daniela Klingebiel, *Electronic Finance: Reshaping the Financial Landscape Around the World*, 22 Journal of Financial Services Research 29, 35 (2002) ("Partly in response to the entry of new competitors and to reap the benefits of new technology, incumbents (banks, large insurance companies) are consolidating around recognized brand names to position themselves in an environment of increased commoditization and electronic delivery.")

[25] *See, e.g.*, GAO Fintech Report, supra note 6, at 3.

[26] *Id*. at 3.

[27] *See, e.g.*, Robin Hood, an app and web-based brokerage with zero commission trading, at https://robinhood.com/.

or indirectly,[28] to Regtech, the use of technology to manage regulatory compliance.[29] Technological solutions can, for example, help financial firms to comply with anti-moneylaundering regulations.[30] The idea of disintermediation remains part of the picture: crowdfunding via online platforms became attractive after the onset of the Global Financial Crisis when banks were reluctant or unable to meet the demand for financing.[31] Financial firms are using Big Data to improve their decision-making, for example as to credit allocation.[32]

Users of Fintech may be consumers who want to make payments more

---

[28] *See, e.g.*, Nathaniel Popper, *Goldman Sachs to Open a Bitcoin Trading Operation*, New York Times (May 2, 2018); Nathaniel Popper, *Bitcoin Sees Wall Street Warm to Trading Virtual Currency*, New York Times (May 8, 2018).

[29] *See, e.g.*, Deloitte, *RegTech Is the New Fintech: How Agile Regulatory Technology Is Helping Firms Better Understand and Manage Their Risks* (2016) at https://www2.deloitte.com/content/dam/Deloitte/ie/Documents/FinancialServices/IE_2016_FS_RegTech_is_the_new_FinTech.pdf .

[30] *See, e.g.*, Joint Committee of the European Supervisory Authorities, Opinion on the Use of Innovative Solutions by Credit and Financial Insitutions in the Customer Due Diligence Process (Jan. 23, 2018). The Joint Committee set out a common approach to " prevent regulatory arbitrage, create a level playing field and strengthen Europe's AML/CFT defences , while at the same time fostering the use of those innovations to make AML/CFT systems and controls more effective and efficient" because of the " risk that innovation in this field, if ill understood or badly applied, may weaken firm s' ML/TF safeguards and subsequently, undermine the integrity of the markets in which they operate." *Id*. at 2. See also, e.g., Christopher Woolard, Technology and Global Ties: Turning the Tide on Financial Crime, Speech at the Anti-Money Laundering TechSprint, London (May 24, 2018).

[31] *See, e.g.*, EU Commission Communication, Unleashing the Potential of Crowdfunding in the European Union, COM (2014) 172 final (Mar 17, 2014) at 2 ("Crowdfunding has real potential to finance different types of projects, such as innovative, creative and cultural projects, or activities of social entrepreneurs, that have difficulties in accessing other forms of financing.")

[32] *See, e.g.*, EU FinTech Action Plan, *supra* note 17, at 2 ("While innovation in finance is not new, investment in technology and the pace of innovation have increased considerably. FinTech solutions using digital identification, mobile applications, cloud computing, big data analytics, artificial intelligence, blockchain and distributed ledger technologies are being rolled out.")

conveniently,[33] or who are attracted by the convenience and lower cost of Robo-advice compared to financial advice provided directly by human advisers.[34] But, even where governments act to encourage competition in the payments market, reducing one aspect of cost to the consumer,[35] this convenience may involve other costs. For example, cashless payments work well when networks are operating properly, but hurricanes and other extreme weather events, which are proliferating, threaten to disrupt the networks on which payment systems rely.[36] As people rely more on cashless payments it is easier to monitor what they do,[37] both for purposes of customer due diligence, and for the value that information about them can generate in future. Older and poorer people rely on cash more than those who are younger and wealthier.[38] And the distinction between older and younger people extends to other Fintech applications:

---

[33] See, e.g., Visa, Innovations for a Cashless World (2017) at https://usa.visa.com/dam/VCOM/global/visa-everywhere/documents/visa-innovations-for-a-cashless-world-2017-report.pdf.

[34] *See, e.g.*, OECD, Robo-Advice for Pensions (2017).

[35] *See, e.g.*, HM Treasury, Cash and Digital Payments in the New Economy: Call for Evidence, 5-6 (Mar. 2018).

[36] *See, e.g.*, Federal Reserve Bank of New York, Statement Regarding Cash Operations in Puerto Rico (Sep. 27, 2017) ("Demand for cash is extraordinarily high right now, and will evolve as depository institutions regain power, armored car services are able to reach branches, and ATMs are once again active.") *Cf.* David Crouch, *'Being Cash-free Puts Us at Risk of Attack': Swedes Turn Against Cashlessness*, The Guardian (Apr. 3, 2018).

[37] *" See, e.g.*, Cash and Digital Payments in the New Economy, *supra* note 35, at 2. ("Digital payments can offer consumers and businesses convenient, tailored, and flexible ways of making purchases. Increasingly, they can also offer additional services, such as ways to help budget, or keep a record of transactions. They also reduce the opportunities for the minority who use the anonymity of cash to evade tax and launder money.")

[38] *See, e.g.*, Cash and Digital Payments in the New Economy, *supra* note 35, at 8 ("The government recognises the continued importance of cash, especially for more vulnerable members of society and the elderly. Over half of all consumers who relied predominantly on cash during 2016 had total household incomes of less than £15,000 per year.")

smartphone use and engagement with social media is more prevalent among younger than older people, so applications that require the use of smartphones will reach some, but not all, customers. The level of openness to non-cash payment mechanisms or to payments via cellphone app rather than credit and debit cards varies across jurisdictions and cultures as well as by age. A number of organizations focus on promoting financial inclusion, which involves trying to bring more people into the organized financial sector, particularly in developing countries, and these groups see advantages in new technologies, including digital lending.[39] Access to financial services may help people to develop their human capital, or it may lead to problems of over-indebtedness. Real financial inclusion requires financial capability.

Robo-advice, for pension and other investments, may make investment advice more accessible to more investors, but the OECD has suggested that regulators should be alert to risks, including the risk that investors may not understand the advice they are given, and that the advice algorithms are "accurate and robust."[40] And regulators should ensure that existing rules that regulate financial advice also apply to robo-advice.[41] To some extent the regulatory compliance costs the OECD's recommendations envisage may have implications for the cost-effectiveness of robo-advice, although from a policy perspective such advice is only beneficial if it is useful for the consumers it is supposed to serve.

Cryptocurrencies raise more complex issues for consumers. Earlier expansions in the availability of information and trading opportunities with respect to investments in securities created risks for investors that they might not understand.[42] Research

---

[39] *See, e.g.*, Alliance for Financial Inclusion, Digitally Delivered Credit: Consumer Protection Issues and Policy Responses to New Models of Digital Lending (Nov 2017). *Cf.* Peterson K.Ozili, Impact of Digital Finance on Financial Inclusion and Stability, Borsa Istanbul Review (forthcoming) https://doi.org/10.1016/j.bir.2017.12.003 .

[40] Robo-Advice for Pensions, *supra* note 34, at 6.

[41] *Id.*

[42] *See, e.g.*, Barber & Odean, *supra* note 22, at 42 ("the new investment environment also may have a dark side. Many of today's investors are new to the market. Placing trades directly, rather than through a broker, can give such investors an exaggerated sense of control over the outcome of their trades. The vast amount of

suggested that the most confident investors may be most at risk.[43] Financial regulators regularly warn against investment opportunities that are too good to be true, but consumers fall into these traps over and over again.[44] Cryptocurrencies are an example of the sort of investment opportunity that may be too good to be true.[45] The Justice Department in the US has opened an investigation into the manipulation of cryptocurrenceis,[46] and the UK's Financial Conduct Authority is investigating whether a number of unauthorized businesses in fact require authorization to carry on their business.[47] Some countries, including Algeria and Bangladesh, have banned cryptocurrencies, and the Reserve Bank of India is separating cryptocurrencies from the formal financial sector.[48] These differences in approach illustrate a range of views among policy-makers about how to address Fintech-related issues, and also that the contexts in which Fintech is being developed and deployed are very varied.

Fintech affects established financial firms, which, faced with the idea that Fintech

---

on-line investment data available will enable investors to confirm their prior beliefs and may lead them to become overconfident in their ability to pick stocks and other securities.")

[43] *See, e.g.*, Brad M. Barber & Terrance Odean, *Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment*, Quarterly Journal of Economics, 261 (2001); Brad M. Barber & Terrance Odean, *Online Investors: Do the Slow Die First?*, 15: 2 The Review of Financial Studies 455–487 (2002).

[44] *See, e.g.*, CFTC, Foreign Currency Trading, at https://www.cftc.gov/ConsumerProtection/FraudAwarenessPrevention/ForeignCurrencyTrading/cftcnasaaforexalert.html.

[45] *See, e.g.*, Consumer Financial Protection Bureau, Consumer Advisory: Risks to Consumers Posed by Virtual Currencies (Aug. 2014) at https://files.consumerfinance.gov/f/201408_cfpb_consumer-advisory_virtual-currencies.pdf.

[46] Chloe Cornish, *Bitcoin Slips Again on Reports of US DoJ Investigation*, Financial Times (May 24, 2018).

[47] Chloe Cornish & Hannah Murphy, FCA Probes Dozens of Cryptocurrency Businesses, Financial Times (May 25, 2018).

[48] *See, e.g.*, Simon Mundy, India's Cryptocurrency Traders Scramble after RBI Crackdown, Financial Times (Apr. 19, 2018).

provides new opportunities for challenger firms to compete with them to attract customers, must respond by finding their own new ways to serve customer needs or to develop other sources of income. Technology also provides opportunities for cost reduction for these firms, for example allowing some firms to relocate some of their activities away from expensive financial centres.[49] Firms can use alternative data to develop new trading strategies.[50]

It is clear that new financial technologies offer advantages to consumers of financial services, in terms of increasing the range of services that are available and at a reduced cost. The new financial technologies can also benefit financial firms in terms of managing regulatory compliance. Whether Fintech applications in fact provide these benefits depends on how well they are constructed,[51] including how vulnerable they may be to cyber attacks. Cybersecurity concerns regulators and businesses: the more dependent we are on services provided over the internet and via cellphones the more vulnerable we are to hacking and service outages. Risks embedded in the technology are hard for most consumers to assess for themselves.

The early stages of internet provided and facilitated financial services seemed to create new cross-border risks for consumers. To a large extent regulators managed to control these risks through policing the regulatory perimeter, or, as in the EU through harmonizing regulations so that cross-border activity would be subject to the same level of regulation. Cross-border frauds were addressed through co-operation agreements among regulators. The new Fintech developments are occurring in this environment in which regulators are already co-operating across borders with respect to enforcement. And, in addition some regulators have entered into new Fintech co-operation agreements with other regulators. The EU is accommodating Fintech within its

---

[49] *See, e.g.*, Gillian Tett, AllianceBernstein's Nashville move threatens New York and London, Financial Times, (May 3, 2018) at https://www.ft.com/content/e483a6ea-4e23-11e8-9471-a083af05aea7.

[50] *See, e.g.*, Robin Wigglesworth, Asset Management's Fight for 'Alternative Data' Analysts Heats Up, Financial Times (Jan. 29, 2018), Alexandra Scaggs, in Defence of Hedge-fund Data Mining, Financial Times (Sep. 13, 2016) .

[51]For example, recent problems customers of TSB encountered in accessing their accounts and making payments.

regulatory structures.[52]

These steps make sense in a context of regulated firms developing new financial products and services withing a regulatory perimeter. But some Fintech developments are designed precisely to operate outside regulatory perimeters. The promoters of some coins offered in initial coin offerings do not accept that their coins should be considered to be securities or within other defined terms that are subject to regulation. There is a significant variation in how accommodating different geographic locations are to the development and exploitation of blockchain-related products, from a high degree of scepticism through agnosticism to outright enthusiasm. For example, cryptocurrency exchanges have decided to move away from Japan and Hong Kong as regulation is strngthened. Malta and Switzerland are more welcoming. Cryptovalley in Switzerland has become one of these locations of enthusiasm. But those who develop blockchain products in Cryptovalley do not want only the residents of Cryptovalley to buy those products. Risks may be transmitted through these products to other jurisdictions, and to other blockchain products and even other financial products. Attempts to fend off these risks in other jurisdictions may not be appreciated by the Swiss authorities.

The term Fintech covers a wide range of different applications of technology. These differnt applications must be addressed by regulators under different regulatory regimes which characterize their scope of application differently. A multi-function regulator like the UK's Financial Conduct Authority must consider the implications of the rules it administers to a wide range of Fintech. Regulators in the US, with narrower remits, can be more focused on specific issues relating to the sectors and activities for which they are responsible. But although in some ways the term Fintech is over-broad (some regulatory issues relating to smartphone payments apps are very different from issues relating to ICOs) there are some issues that apply to all areas of Fintech, such as cybersecurity and privacy, and the access and understanding of potential customers to Fintech applications.

Public Policies for the Complex Realities of Fintech?

The technologies of finance are changing quickly which causes difficulties for

---

[52] See, e.g., EU FinTech Action Plan, *supra* note 17.

regulators, especially for regulators who are not technologically fluent. Thus one priority for financial regulators is to develop and improve their technical capacities so that they can effectively understand and regulate new developments. Just as financial regulators have added competence in economic analysis, they have added competence with respect to information technology, and they have identified ways to collaborate with other regulators and technical experts.[53] Regulators use technology in carrying out their regulatory functions. However, there are always issues as to whether governmental authorities can keep up with the technical expertise of the businesses they regulate.[54]

Beyond basic issues of technology capacity in government and questions about whether regulators may be too inclined to depend on private sector, or stakeholder, expertise in developing policies it makes sense to consider the various ways in which regulators are dealing with issues relating to Fintech.

Some of what regulators are doing with respect to Fintech is applying existing rules to new technologies and enforcing those rules. The questions here are questions of interpretation of existing rules as the context changes, and the difficulties of understanding how rules will be interpreted and applied to new technologies creates uncertainties for firms. Regulatory interpretations of statutes and existing regulations may be challenged. And the enforcement of existing rules in changed circumstances may give rise to political as well as legal issues. Independent regulators may have more leeway with respect to the exercise of their functions, but even independent regulators may be cautious in an environment dominated by deregulatory legislators.

The development of new rules is likely to be even more complicated than the application of existing rules. Again, legislators' views are relevant to how regulators act,

---

[53] The European Banking Authority announced plans to create a FinTech Knowledge Hub of banking supervisors and regulators in 2018. European Banking Authority, FinTech Roadmap (Mar. 15, 2018) at ¶ 90.

[54] There may also be insufficient technology competence in some financial services firms. See, e.g., Richard Lumb, Mauro Macchi & Juan Pedro Moreno, Accenture Strategy, Bridging the Technology Gap in Financial Services Boardrooms (2016).

and those legislators' views may be influenced by public opinion.[55] This raises the question of how public opinion relating to technology, and specifically Fintech, is formed.

There is significant variation in approaches to Fintech in different jurisdictions. But even in jurisdictions where regulators have sought to accommodate Fintech firms, problems have arisen. For example, New York established a licensing system for virtual currencies in 2015,[56] but only a small number of licenses have been issued since the rules came into operation,[57] and Fintech firms have argued that the rules impose excessively onerous requirements on technology companies.[58] New York State Assembly legislator Ron Kim has proposed legislation to address some of the problems and to establish a system for regulating cryptocurrency exchanges in place of the current rules.[59] In 2016 the OCC signalled that it proposed to issue charters for Fintech firms.[60] State financial regulators objected to the proposal,[61] and it is unclear whether

---

[55] Cf. Iksander De Bruycker, *Politicization and the Public Interest: When Do the Elites in Brussels Address Public Interests in Eu Policy Debates?*, 18 EUROPEAN UNION POLITICS 603, 605 (2017) ("elites predominantly address public interests when policy processes are salient to European citizens and crowded with civil society groups, while elites remain silent about public interests on policies that attract abundant business lobbying.")

[56] 23 NYCRR Part 200 Virtual currencies..

[57] *See, e.g.*, Jen Wieczner, Inside New York's BitLicense Bottleneck: An 'Absolute Failure?', Fortune (May 25, 2018).

[58] *See, e.g.*, Stan Higgins, New York Lawmakers Open to Revisiting the BitLicense (Feb. 23, 2018) at https://www.coindesk.com/bitcoin-crypto-ny-lawmaker-pledges-make-bitlicense-something-works/ .

[59] The New York Cryptocurrency Exchange Act, Assembly Bill A9899A, 2017-2018 Legislative Session, available at http://legislation.nysenate.gov/pdf/bills/2017/A9899A .

[60] Office of the Comptroller of the Currency, Exploring Special Purpose National Bank Charters for Fintech Companies (Dec. 2016).

[61] Conference of State Bank Supervisors v. Office of the Comptroller of the Currency, DDC 2018.

the OCC will move forward. Meanwhile, the Conference of State Banking Supervisors has announced an initiative named Vision 2020 for Fintech and Non-Bank Regulation.[62] In the context of banking, state and federal regulators are thus competing with each other to be attractive regulators for Fintech businesses.

The CFTC also set out to encourage Fintech, and established LabCFTC as "the focal point for the CFTC's efforts to promote responsible FinTech innovation and fair competition for the benefit of the American public."[63] As part of this project the CFTC has solicited public input on topics for possible prize competitions the agency could organize, and on how best to structure and administer the competitions.[64] The request for input makes clear that the CFTC is committed to encouraging Fintech developments as part of its "goal of evolving as a 21st century regulator and keeping pace with technological innovation."[65] The CFTC has entered into a co-operation agreement with the UK's Financial Conduct Authority.[66] But the CFTC has also responded to derivatives exchanges self-certifying bitcoin derivatives acknowledging that the CFTC has limited powers to require exchanges to change their approaches to contracts or to how contracts are cleared,[67] and a backgrounder on virtual currency futures markets

---

[62] https://www.csbs.org/vision2020 . The web page states "When speaking with fintech companies, state regulators heard some common challenges faced when looking when getting licensed. Fintech companies are looking for a more streamlined licensing process, more clarity on if and where they need licenses, and more freedom to try out new and innovative ideas. State regulators have taken notice."

[63] https://www.cftc.gov/LabCFTC/Overview/index.htm .

[64] Commodity Futures Trading Commission, Request for Input on LabCFTC Prize Competitions, 83 Fed. Reg. 18009 (Apr. 25, 2018).

[65] *Id.* at 18009.

[66] CFTC-FCA Arrangement on Financial Technology Innovation (Feb.19, 2018) at https://www.cftc.gov/idc/groups/public/@internationalaffairs/documents/file/cftc-fca-cooparrgt021918.pdf

[67] CFTC Backgrounder on Self-Certified Contracts for Bitcoin Products at https://www.cftc.gov/sites/default/files/idc/groups/public/@newsroom/documents/file/bitcoin_factsheet120117.pdf.

published in January 2018 notes enforcement action the agency has taken and states:

> The CFTC seeks to promote responsible innovation and development that is consistent with its statutory mission to foster open, transparent, competitive and financially sound derivative trading markets and to prohibit fraud, manipulation and abusive practices in connection with derivatives and other products subject to the CEA.[68]

In May 2018 the CFTC published guidance on Virtual Currency Derivative Product Listings, noting that virtual currencies are

> unlike any commodity that the CFTC has dealt with in the past. To date, virtual currencies have gained prominence as they are bought and sold for investment, speculative, or financial purposes. Those transactions greatly predominate over commercial uses of virtual currency – such as to purchase goods and services – which are still developing.[69]

Thus, in contrast to the activities LabCFTC imagines, which are described as being about developing Fintech to improve the functioning of the markets and compliance and surveillance and oversight,[70] and which are related to real world benefits, virtual currencies are about speculation. The CFTC has also issued advisories about bitcoin and virtual currencies,[71]

This last part of the CFTC's engagement with Fintech demonstrates that another significant aspect of regulatory actions relating to Fintech involves public

---

[68] CFTC Backgrounder on Oversight of and Approach to Virtual Currency Futures Markets at https://www.cftc.gov/sites/default/files/idc/groups/public/%40customerprotection/documents/file/backgrounder_virtualcurrency01.pdf

[69] CFTC, Advisory with Respect to Virtual Currency Derivative Product Listings (May 21, 2018) at https://www.cftc.gov/sites/default/files/idc/groups/public/%40lrlettergeneral/documents/letter/2018-05/18-14_0.pdf

[70] Request for Input, *supra* note 64, at 18009-18010.

[71] *See, e.g.*, CFTC Customer Advisory: Beware Virtual Currency Pump-and-Dump Schemes , CFTC Customer Advisory: Understand the Risks of Virtual Currency Trading.

communication, especially with respect to the risks of Fintech. The CFTC is one of a number of regulators that have issued warnings about cryptocurrencies and ICOs. The SEC is another. Jay Clayton, the SEC Chairman, warned that many ICOs are transnational and US investors' money could be moved outside the US and, in addition:

> As with any other type of potential investment, if a promoter guarantees returns, if an opportunity sounds too good to be true, or if you are pressured to act quickly, please exercise extreme caution and be aware of the risk that your investment may be lost.[72]

The SEC has not been nearly as enthusiastic as the CFTC about Fintech, although Chairman Clayton did in Congressional testimony recognise the benefits of Fintech as well as the dangers that investors would be defrauded.[73] In a speech in January 2018 Chairman Clayton criticised lawyers for their involvement in ICOs in ways that undermined the protections investors should expect from the securities laws.[74] He also

---

[72] SEC Chairman Jay Clayton, Statement on Cryptocurrencies and Initial Coin Offerings (Dec. 11, 2017).

[73] Chairman Jay Clayton, Chairman's Testimony on Virtual Currencies: The Roles of the SEC and CFTC, Testimony Before the Committee on Banking, Housing, and Urban Affairs, United States Senate (Feb. 6, 2018) (""To be clear, I am very optimistic that developments in financial technology will help facilitate capital formation, providing promising investment opportunities for institutional and Main Street investors alike. From a financial regulatory perspective, these developments may enable us to better monitor transactions, holdings and obligations (including credit exposures) and other activities and characteristics of our markets, thereby facilitating our regulatory mission, including, importantly, investor protection. At the same time, regardless of the promise of this technology, those who invest their hard-earned money in opportunities that fall within the scope of the federal securities laws deserve the full protections afforded under those laws. This ever-present need comes into focus when enthusiasm for obtaining a profitable piece of a new technology "before it's too late" is strong and broad. Fraudsters and other bad actors prey on this enthusiasm.")

[74] Chairman Jay Clayton, Opening Remarks at the Securities Regulation Institute, Washington D.C. (Jan. 22, 2018) ("First, and most disturbing to me, there are ICOs where the lawyers involved appear to be, on the one hand, assisting promoters in structuring offerings of products that have many of the key features of a securities offering, but call it an "ICO," which sounds pretty close to an "IPO." On the other hand, those lawyers claim the products are not securities, and the promoters proceed without compliance with the securities laws, which deprives investors of the substantive and

warned public companies to be careful about presenting themselves as blockchain companies to take advantage of investor enthusiasm.[75]

The Federal Trade Commission takes enforcement action relating to non-bank financial activity, and has recently taken action with respect to marketplace lending.[76] And the FTC has organized I a number of events focused on Fintech.[77]

Even in the US different regulators are approaching Fintech differently and with differing levels of enthusiasm. Some of what these regulators are doing, such as fighting fraud, is really just business as usual, subject to technical complexities and with an international component. But identifying a regulatory regime which is appropriate for Fintech operations, working out how to take advantage of the benefits of Fintech while avoiding the disadvantages is clearly complicated. For example it makes sense to focus on what characteristics of Fintech firms suggest the need for a licensing regime.

---

procedural investor protection requirements of our securities laws.
Second are ICOs where the lawyers appear to have taken a step back from the key issues – including whether the "coin" is a security and whether the offering qualifies for an exemption from registration – even in circumstances where registration would likely be warranted. These lawyers appear to provide the "it depends" equivocal advice, rather than counseling their clients that the product they are promoting likely is a security. Their clients then proceed with the ICO without complying with the securities laws because those clients are willing to take the risk.")

[75] *Id.* (""I doubt anyone in this audience thinks it would be acceptable for a public company with no meaningful track record in pursuing the commercialization of distributed ledger or blockchain technology to (1) start to dabble in blockchain activities, (2) change its name to something like "Blockchain-R-Us," and (3) immediately offer securities, without providing adequate disclosure to Main Street investors about those changes and the risks involved. The SEC is looking closely at the disclosures of public companies that shift their business models to capitalize on the perceived promise of distributed ledger technology and whether the disclosures comply with the securities laws, particularly in the case of an offering.")

[76] *See, e.g.*, Federal Trade Commission Press Release, PayPal Settles FTC Charges that Venmo Failed to Disclose Information to Consumers About the Ability to Transfer Funds and Privacy Settings; Violated Gramm-Leach-Bliley Act (Feb. 27, 2018).

[77] *See* https://www.ftc.gov/news-events/media-resources/consumer-finance/financial-technology

Beyond this, developing an appropriate regime for Fintech applications involves co-ordinating not only between different financial sector regulators (where regulatory systems are designed with sectoral separations as in the US) but also with regulators responsible for consumer protection more broadly, and with cybersecurity and privacy. And in order to protect consumers, regulators need to develop advice that is more useful than “if it looks too good to be true it probably is.”