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A Regulatory Roadmap for Financial Innovation

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4 A regulatory roadmap for financial innovation

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1 Challenging times

It is hard to imagine that there has been another time, or industry, in which regulators have been faced with a more challenging task than financial regulators face now, with respect to fintech. How do we 'future proof' ourselves, our regulations, this book?

Private sector innovation is tricky for regulators at the best of times. Whether we are speaking of cryptocurrencies, biotechnology, the platformisation of the economy or any number of other phenomena, the trajectory that innovation takes is unpredictable. It evolves in unexpected directions. Today's hot new technology may be tomorrow's dead letter. New technologies, new players and new effects seemingly emerge from nowhere, carrying unexpected and sometimes hard-to-recognise new risks with them. Regulators can be caught flat-footed, focusing on the wrong things as their assumptions and their jurisdiction prove to be out of sync with actual facts on the ground.

Moreover, financial innovation is especially tricky. Intangible products are essentially concepts, not physical objects. This makes them exceptionally fast-moving, mutable and almost infinitely variable. They also actually alter markets when they enter them, in ways that can be difficult to predict. Fintech – whether developed by venture capital-funded non-bank startups, or by global financial institutions with substantial resources and multijurisdictional options, or by global 'Bigtech' companies like Amazon or Facebook or Ant Financial – often crosses the increasingly arbitrary-looking regulatory boundaries that we drew in an earlier era around 'banking', or 'finance'. And fintech is evolving at such a pace that it is difficult even for experts in the field to keep up.

Responding to this challenge demands that regulators reorient their perspectives, to locate innovation at the center of their regulatory models. Regulators and scholars must come to terms with the extraordinary fluidity and contingency in which they are forced to operate. Rather than heroically trying to nail down clear boundaries and guidelines for fintech, which would be akin to trying to wallpaper over a moving object, regulators must recognise their and their systems' profound vulnerability to change, and then build regulatory responses that can manage it. This is not the same thing as simply celebrating private sector innovation through mechanisms such as the regulator-sponsored 'sandbox', and it is not the same thing as deregulation. Instead, it requires recognising that *private sector innovation is actually the single most profound challenge that regulators must confront.* Their first question in any decision-making environment should be, 'how is private sector innovation, in this case fintech, undermining my assumptions, changing relationships, denaturing products and markets, and seeping around regulatory definitions and boundaries, right now?'

2 What, about fintech, is genuinely new?

Fintech is sometimes described as the digitisation of the financial industry. It is the application of information technology, internet communications capacity, increased computing speed and programming capacity and sometimes 'big data' to traditional financial institutional functions, in areas as wide-ranging as corporate finance (eg, peer-to-peer lending and crowdfunding), personal finance and financial management, financial data analytics and investing (eg, algorithmic trading, index funds, robo-advising), mediums of exchange and record-keeping (eg, cryptocurrency, distributed ledger technology) and mobile payments and e-commerce. Fintech initiatives are developing new business models, products and services, thereby targeting traditional business models – particularly banking models – and the institutions that rely on them. For its proponents, fintech is promising because it stands to lower the barriers to entry to these sectors and to reduce costs within them, making banking more inclusive and efficient, including for those in the Global South. The decentralisation, de-institutionalisation and destabilisation that we have seen operating in other areas where technology has disrupted a sector are also present here, as, more recently, is the orientation towards making the consumer experience as frictionless as possible.

How should financial regulators approach fintech? Are there, for example, useful parallels between fintech and the financial engineering rage that preceded the financial crisis that reached its peak in 2008? Can we learn from that hard experience? In a broad sense, the answer is yes: both are examples of private sector innovation that fundamentally challenges existing regulatory structures. In its specifics, however, the answer may be no: financial engineering was about the creation of new financial products, which operated with an unexpected degree of interconnectedness and systemic significance, and thus posed underappreciated new risks. Certainly, those same concerns exist with respect to some fintech too – consider, especially, value tokens that are embedded into distributed ledger technology, as Ethereum and Bitcoin are embedded in their blockchains.

However, fintech also potentially undermines financial regulatory concepts in an additional, novel way. Much fintech comes down to the application of disintermediating and disruptive tech tools and business processes to finance, and this is new. The institutional structures and categorising assumptions that regulators have relied on, and that have shaped and defined the fundamental businesses of banking (deposits and lending), securities (investment and investment advising, and efficient capital allocation) and insurance (risk spreading), can no longer be taken for granted. Financial engineering before the financial crisis also undermined the traditional institution-oriented distinctions between banking, securities and insurance. This much we have seen before. However, fintech has the potential to generate entirely new ways of engaging with consumers, which burst the bounds of financial regulation entirely. Moreover, the techno-optimists that are building fintech products do not necessarily take as a given the idea that the financial markets are complex and should not be cavalierly 'disrupted'; that a reliable financial system requires intermediaries; that prudential regulation need be imposed on financial institutions; that there are natural boundaries around the 'business of banking'; or that the concept of a 'security' is internally coherent or even useful, in a digital world.

Fintech also implicates other areas of regulation in a way that pre-crisis financial engineering did not to the same degree. Certainly, the financial crisis taught us about the unexpected interplay between, for example, capital adequacy rules and US federal

bankruptcy provisions, among other relationships. We understand clearly now that financial products and markets do not operate in silos. However, fintech could have even broader implications. If adopted at scale, cryptocurrencies could actually limit sovereigns' ability to make and implement monetary policy. Even after having been scaled down following regulatory concerns, a complicated new product with the potential to be applied at scale, such as Facebook's Libra cryptocurrency (and its Colibra Novi digital wallet), could have effects on areas as disparate as monetary policy, money laundering, privacy, data ownership and security and securities regulation. Seemingly lightweight online consumer financial products, which help with personal finance tasks like budgeting, managing student loan payments or facilitating credit card transactions for small businesses (consider Revolut, Robinhood, Square and others), may in fact manage to capture profitable e-commerce functions. In the United States, through novel agreements with small state banks to provide the back-end depository and credit functions that support e-commerce, those lightweight 'apps' could become key money-movers within the economy, in the way that banks traditionally have been, without necessarily impinging on what American federal regulators would consider to be the regulated 'business of banking'. (Some, like Square and Varo, obtained FDIC licenses themselves in 2020.) Clayton Christensen's well-known description of the 'disruptive innovator', who starts with low-value marginal business lines and then incrementally creeps up the value chain and ultimately overthrows Goliath incumbents, may be instructive when it comes to these kinds of players.[1] Piecemeal regulatory responses miss that larger context. On the other end of the institutional continuum, global financial institutions, which sit on a treasure trove of data about their depositors, consumers and investors, could be poised to be significant players in an informational market which raises significant concerns about privacy, surveillance and even human dignity. These are not problems that financial regulators have typically had to confront.

Getting one's arms around this kind of challenge requires more robust and effective data-gathering and analytical capacities than many financial regulators have, even now, more than a decade after the financial crisis. It also requires that regulators recognise that they are dealing with genuinely epistemological questions on a daily basis; that is, they are continually confronted with the awkward fact that they do not know what they do not know. Fortunately, as uncomfortable as this may be, at least this recognition means that regulators are oriented towards the most difficult challenge they face.

In spite of the magnitude of this challenge, it is not insurmountable. What regulators need to do is to put financial innovation at the very center of their thinking – to systematically and continually inquire, as a first order question, into how fintech innovation is reshaping its environment, challenging regulatory jurisdiction and undermining assumptions. This is not to displace regulators' traditional responsibilities to, for example, ensure banks' safety and soundness, to protect investors and consumers or to foster fair and efficient capital markets. Rather, this innovation-ready orientation is the lens through which these regulatory responsibilities should be seen, in order to make regulation effective.

The sections below outline a roadmap through which regulators can begin to grapple with fintech, as a particularly challenging form of private sector innovation. It offers a

1 See generally Clayton M Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Boston: Harvard Business School Press, 1997).

systematic way of thinking about how innovation could be transforming their industries, and how they might respond.[2] It is based on four basic questions, each of which is discussed further below:

- What does the regulator know about the fintech that is emerging in its sector, and how does it know it? What does it not know?
- How is regulation structured with regard to fintech, and what flows from these structural choices?
- What mechanisms are in place within the regulator to make it adaptable, resilient and capable of learning through monitoring and experience?
- What strategic choices are available to the regulator in thinking about how to frame and interpret a particular fintech innovation?

3 What does the regulator know and how does it know it? What does it not know?

Regulators and regulatory scholars are not, generally, experts in how innovation develops. Even innovative private actors – who may focus considerable energy on fostering an innovative corporate culture, or creating a novel product – are not generally experts in how private sector innovation operates at a larger scale, thereby influencing the economy and altering social behaviour. And yet, understanding some of the basics of how innovation moves as a phenomenon is an essential starting point for regulators, who are continually required to retrofit their structures, institutions and interpretations in order to recognise and adapt to new innovation-related challenges. For this we must turn to organisational sociologists, financial geographers and other relatively unfamiliar disciplines. Below is some of what they can tell us.[3]

3.1 *Networks and nodes*

Innovation scholars will tell us that innovation is a social, not an individual, phenomenon. It clusters in particular locations, within which particular actors emerge as 'nodes' within a network. Scholars have mapped networks of institutional relationships with a view to understanding how risk and contagion spread. New computer modelling has demonstrated how networks can be based on institutional connections, products, and markets. A network approach is newly being applied to financial regulation.[4] What is sometimes missed, however, is the degree to which networks for the transmission and diffusion of ideas and innovation can be, in consequential ways, intensely interpersonal, contingent and *social*.

Whether or not their innovations are the best innovations, nodes are especially influential in transmitting ideas. This is both because they are connected to a greater proportion of the other actors in the network, and because simply being recognised as a node generates a level of social capital that causes other actors to accord their ideas greater respect and

2 The roadmap is based on Chapter 9 of Cristie Ford, *Innovation and the State: Finance, Regulation, and Justice* (New York: Cambridge University Press, 2017).

3 For more, see *supra* Cristie Ford, Chapters 6–8.

4 See eg, Luca Enriques, 'Network-Sensitive Financial Regulation' (2020) 45 J Corp L 351–398.

gravitas – to question less, and to accept on faith more. This was the case in the financial crisis, for example, when buyers as far away from high finance as northern Norwegian municipalities purchased complex financial products like CDOs from financial institutions on Wall Street and in the City of London. As financial geographer Roger Lee notes,

> At that distance, decisions appear to have been made on the 'reputations' of offering banks, the claimed superior innovativeness of Anglo-American markets and the rumour-mill of actions taken by competing banks in other jurisdictions. Whereas institutions involved in currency trading have had to develop rigorous checks […] on a 24/7/365 basis, this type of discipline was apparently not applied to participation in exotic products.[5]

Regulators should therefore ask themselves, with a view to understanding innovation and its diffusion: what do both the institutional and social fintech networks look like, in my jurisdiction and beyond? Where are the nodes? Crucially, financial innovation is salient even when it is not officially labelled 'fintech' by, for example, a government-sponsored sandbox or an investor. Fintech is also operating across the classic institutional divisions of banking, securities and insurance. It is operating across jurisdictions. It is developing organically, with more energy directed towards some areas of finance – e-commerce Application Programming Interfaces (better known as APIs), cross-border remittances, distributed ledger technology. Fintech is also bursting the bounds of financial regulation altogether, as when it deploys financial institutions' deep data sources to, for example, kick off AI-fueled new ventures. Regulators must make decisions about what kind of fintech to concentrate on, and at what scale. A regulator approaching a fintech problem must make some clear choices about who its regulated community is, and then must map the relevant network's typology and determine where the institutional and social nodes are. This information will help identify how the most disruptive phenomena will develop and diffuse, allowing the regulator to concentrate its efforts in a risk-based regulatory fashion.

That said, one analytical starting point is geography: a great deal of fintech activity takes place in London, New York, Silicon Valley and Singapore. (To repeat, whether the geographic approach is optimal for any particular regulatory strategy is something that the regulator in question must decide, not just assume.) Fintech in London and Singapore in particular is supported by official 'sandboxes', within which fintech innovators can experiment, unfettered by the usual regulatory restrictions, with new ideas. These are potential fonts of innovation and insight. Regulators should also not overlook the expanding set of private 'fintech sandboxes' offered by venture capital-funded non-profits, management consultants, self-regulatory organisations and others. If they are succeeding, many of these sandboxes should be generating innovative networks. An especially active sandbox like the one operated by the United Kingdom's Financial Conduct Authority is likely generating multiple interlocking networks. The sandboxes themselves, including the leading private actors operating within them, are likely to be network nodes. The ideas they test out within a fintech sandbox are likely to have effects – including potentially subtle or indirect ones – that could pop up in unexpected places.

5 Roger Lee et al, 'The Remit of Financial Geography – Before and After the crisis' (2009) 9 J Econ Geog 723–747.

Venture capital funds (and their new competitors, corporate venture capital funds – a form of venture capital where the corporate funds of large public companies like Intel, GlaxoSmithKline, Citigroup and GE are directly invested in external private companies in their sectors) are also potential nodes. These investors could be sector-specific nodes, and others could be more geographically localised nodes. Regulators will want to work out whether these VCs and CVCs can be leverage points to manage information flow or regulatory compliance from the fintechs in which they invest. Potentially, given appropriate incentives, some of them could even potentially serve as what Neil Gunningham and his coauthors have described as 'regulatory intermediaries'.[6] These are private parties (or insurers, industry associations or others similarly situated) that have the necessary relationships and their own endogenous reasons to want to ensure that the smaller parties with whom they interact, in this case fintech startups, comply with regulation. If investors are not operating as nodes for whatever reason, are there other potential nodes, or can other (perhaps government-sponsored) nodes be established?

Innovation scholarship indicates that focusing on network nodes can do disproportionate work in gathering information, and in influencing non-node actors as well. Put another way, it better reflects the risk, including systemic risk, that those actors present as a function of their nodal position. If sufficiently granular, well-calibrated network-sensitive regulation can be put in place, it can help alleviate potential concerns about arbitrage by, or disproportionate impact upon those nodes.[7] The approach is not infallible, since innovation is unpredictable. In a world of unlimited resources, regulators could be engaging in sweeping environmental scans across all areas where potentially influential fintech innovations may arise. Yet real-life regulators faced with resource constraints would do well to concentrate their resources towards network nodes, because of the disproportionate influence that those nodes are likely to have. Understanding the fintech networks that are operating will also allow regulators to better predict and track potential fintech diffusions, which are also important. By closely tracking the kinds of innovations that are occurring and diffusing from the nodes in particular, a resource-constrained real-life regulator will be in a relatively good position to recognise the innovations that are more likely to have broad influence.

3.2 *Who is innovating?*

In addition to understanding innovators' positions within a network, regulators should pay attention to those innovators' characteristics. Who, exactly, are the main fintech innovators in this space? What do regulators know about them, and how do they know it?

For example, large incumbent financial institutions will be players in fintech, and the particular way in which they engage with it will be a function of who they, organisationally and historically, are. In general, innovation scholarship tells us that their innovations are more likely to reflect the incumbent's own worldview, if that is not too grand a word, and its understanding of its business and its industry. The story of Xerox's Palo Alto Research Center (PARC) is probably familiar to many, as an example of an incumbent being hobbled by internal hierarchy and a narrow understanding of its own business. By the late 1970s, researchers

6 Neil Gunningham and Darren Sinclair, *Leaders and Laggards: Next-Generation Environmental Regulation* (Sheffield: Greenleaf, 2002).

7 See *supra* note 4.

at PARC had developed several new technologies including a personal computer, email, a graphic user interface (with pull-down menus and icons), and an improved computer mouse. Xerox failed to capitalise on any of these advances, in part simply because it understood itself as a printing-on-paper business that would be threatened by the arrival of a paperless office. PARC may be an extreme example, and one from which other incumbents have learned, but the inevitable conceptual torque imposed by an existing business does not ever entirely go away. (Some large financial institutions, notably in London, try to get around the limitations of their legacy culture by creating their own spinoff fintech 'startups'.)

Incumbents are also more likely to be influenced by long familiarity with the rules that govern their industries, and to have ongoing institutional and interpersonal relationships with their regulators and with other key players. These are valuable assets. At the same time, this embeddedness in the existing order suggests that incumbents are perhaps less likely to be profoundly, epistemologically disruptive. Incumbents also generally possess substantial resources and, in many cases, have the market power to absorb or destroy newcomers. It seems that even startups that operate in an incumbent-dominated ecosystem are more likely to try to 'change the system from within': this is a commonly remarked upon difference between Silicon Alley fintechs in New York, who (stereotypically) want to work with and sell to existing big banks, and Silicon Valley fintechs, who (stereotypically) want to eliminate them.

Neither incumbent players nor their regulators are necessarily in an ideal position to register the significance of other, more disruptive, genuinely 'outsider' innovators in their space. In fintech, these are many. In the United States, with its fractured regulatory structure, multiple fast-growing companies in the personal finance and e-commerce spaces are shattering the atom of the traditional banking function, and seizing some client-facing aspects of financial intermediation, all without being subject to banking (or much other) regulation. Does the relevant financial regulator know who these players are, how they operate, and what drives their innovations? Does it have a strategy for identifying new ones as they emerge? How does the regulator gather such information? Are its information-gathering resources appropriate and effective? (Particular regulatory structures and their implications are discussed in the next section, below.)

In fintech, the third and potentially most destabilising set of players are American Bigtech companies such as Facebook, Amazon, Apple and Google (as well as enormous Chinese companies like Tencent, which operates WeChat; and Alibaba Group, which operates Ant Financial/Alipay). Large financial institutions regularly identify Bigtechs, not small fintech startups, as their most significant potential competitors. Like the proverbial iceberg, most of the work that Bigtechs do is outside any financial regulator's jurisdiction. Yet, the influence and resources that fuel Bigtechs also influence their salience and potential for success inside the financial regulator's jurisdictional bubble.[8] Their connection to the purchasing, searching, and other online behaviour that consumers already engage in is an asset. Financial regulators should not assume that innovations such as Alipay, Google Pay and the like will be the end of those Bigtechs' desires to operate in the financial arena. These companies' priorities and worldviews will govern their behaviour; understanding those priorities and worldviews will therefore be important to

8 Bank for International Settlements Annual Economic Report, 'Big Tech in Finance: Opportunities and Risks' (*BIS*, 23 June 2019) <https://www.bis.org/publ/arpdf/ar2019e3.pdf> accessed 10 March 2020.

regulators as they seek to understand what is happening to traditional financial business models. Regulators may need significant new resources to track the Bigtechs' movements within regulated space.

One of the large priorities for regulators is identifying gaps in their knowledge, and limits to their sources of information. For example, if the regulator is getting most of its information from people with whom it has a relationship, meaning the larger incumbent players, it may be missing the important effects of fintech startups nibbling at the edges of those incumbents' businesses. Operating based on information from incumbents also potentially discounts concerns about actors that seem to be of a very different nature, like a Bigtech company, which does not 'look' like a familiar financial institution. Regulators should be conscious of the limits of their own vision. As well, they should scrutinise their own processes. For example, is information flow within a regulatory organisation hierarchical and centralised, or do its institutional structures allow information to flow from more junior staffers, or those who were hired for their unique expertise, and whose perspectives may not be so constrained by familiarity and history?

3.3 *What are the innovations?*

In addition to asking who is innovating, regulators should ask *what* they know about potentially innovative products in their spaces: cross-border remittances and e-commerce APIs, for example, are different even while both are retail customer-facing. As of this writing, there is a great deal of fintech activity taking place around payment processing, an area that will have implications for banking, money laundering, e-commerce, and potentially antitrust regulation. Are regulators equipped to consider the potential impact of this innovation in these areas? How do regulators plan to learn about the next 'big thing' in fintech? (Regulatory sandboxes, as a strategy for obtaining good information about new developments, are among the regulatory structures discussed in the next section, below.)

3.4 *What is the context?*

Background environmental factors influence the nature and trajectory of innovative products. Knowledge about industry context and market matters. For example, is there in this area of fintech development, as there is in finance, a strong first mover advantage? In the run up to the financial crisis, this caused the pace of innovation to accelerate. Combined with a deep market thirst for any product that could generate a better-than-average return, it produced scores of 'innovative' financial products that did little to actually perfect markets or generate actual value.

What contexts operate in fintech? Do so-called network effects ('I'm on this social media platform because everyone else is on this social media platform') incentivise particular fintech platforms to scale up as quickly as possible? Or, is there a volume of unbanked and underbanked individuals who can constitute a new market for more accessible fintech products? Are there (rent-seeking) intermediaries whose work can easily be replicated or circumvented, in the way that index funds are reducing employment opportunities for stock-pickers? Lawyers, real estate agents, mortgage lenders and others similarly situated may fall into this category for some fintechs' purposes. Are traditional financial institutions operating in a mature market where there is little room for growth, thereby prompting

moves into new business lines? (This may be the case among the Big Four banks in Australia, which are moving aggressively into other areas of technology where their deep data banks can be an asset.) Are any of the players involved in fintech focusing their efforts on owning the platform on which other actors' financial transactions must take place?[9]

The fintech market will be different in different jurisdictional and business environments. It is also different on the consumer-facing side, and the logistical back-end – where there are significant prizes to be gained in providing systems and interfaces between players. It is different at the retail level, and at the wholesale level. Each of these unique environments needs to be understood if regulators wish to be able to recognise, and ideally anticipate, the ways in which fintech innovation could proceed.

4 Regulatory structure and implications

Regulatory design matters. Whether a regulatory regime operates on, for example, an *ex ante* compliance-oriented model or an *ex post* enforcement-oriented model will influence its engagement with industry in myriad ways. Whether it is principles-based and risk-oriented, whether it anticipates a cooperative relationship with most industry players, whether it is disclosure-oriented or tightly prescriptive, whether and how it relies on thresholds and licensing mechanisms – all of these considerations will affect how regulation operates within its space. In thinking about a private sector innovation-related challenge like fintech, however, two aspects of regulatory design are especially relevant: the boundaries of regulatory jurisdiction, and the assumptions that are built into the regulatory regime.

4.1 *Regulatory boundaries*

The jurisdictional boundaries of a particular regulator mean that it only has authority over a particular region and subject matter. Influences from outside its regulatory boundaries can have a considerable effect within them, even while those outside forces are not amenable to the regulator's control. In the United States, the dual banking system and the fractured regulatory environment cause problems for visibility and responsiveness, which ought to demand a more coordinated set of responses. In fintech globally, cooperative efforts across jurisdictions, like the Global Financial Innovation Network (GFIN), can help to mitigate this challenge. But even if all of this were in place, there are deeper, cognitive and epistemological, challenges associated with boundaries that a fintech-oriented regulator should be aware of.

Regulatory boundaries quite literally affect what a regulator can see, and not see. Every regulator operates from a particular set of assumptions, and with a particular 'focal object' in mind.[10] Regulatory jurisdiction is established with those focal objects in mind so that, for example, securities regulation operates most cleanly when it is dealing with the straightforward corporate share for which it was initially designed. Its application to other kinds of financial instruments, such as derivatives or crypto tokens, operates by analogy to that central, focal object. (Consider the way in which the United States Securities and

9 Lina M Khan, 'Amazon's Antitrust Paradox' (2017) 126 Yale L J 710–805.

10 See Boaventura de Sousa Santos, 'Law: A Map of Misreading. Toward a Post-Modern Conception of Law' (1987) 14 JL & Soc'y 279–302.

Exchange Commission (SEC) asserted jurisdiction over digital assets distributed through an Initial Coin Offering, based – reasonably – on Supreme Court caselaw from the 1940s, which described the nature of a particular kind of security called an 'investment contract'.[11]) However, the further away from its archetypal product we stray, the more difficult it is for securities regulation to 'see' the new object clearly, and to understand how to apply its provisions appropriately.

Thriving on the boundaries of different regulatory zones may be products that seem to be neither fish nor fowl, and therefore that raise challenges around comprehensibility and regulatability. Importantly, these products may be perfectly 'legible' to the market, and could grow in use and significance, even while they remain illegible to the regulatory structures that should be overseeing them. Swaps were in this liminal place once. Even as the market for interest rate and foreign exchange swaps exploded in the United States, those swaps remained virtually unregulated for years because the relevant regulators, the US SEC and the US Commodity Futures Trading Commission, could not easily slot them into the pre-existing regulatory categories of security, future or loan.[12] Which other fintech products could be seeping between regulatory categories in this way?

Going further, fintech, almost by definition, straddles the realms of financial and non-financial business. The banking-commercial separation doctrine, which operates in the United States and other jurisdictions (though not in the United Kingdom or Australia), imposes a cognitive limitation. The fact that Bigtech companies are not regulated as banks or financial institutions means that we may not appreciate how much essentially financial business they are actually doing. It also arguably imposes a sense of complacency, about the possibility that even federally chartered American banks could be engaging in commercial activity, which is belied by the facts.[13]

On the other side of the coin, the limited scope of financial regulation makes it difficult to see financial institutions' businesses as implicating other, non-financial regulatory concerns. That is, financial regulators tend not to think a great deal about privacy policy, or about whether individuals' data ought to be an asset that financial institutions can exploit for their own gain. Again, this is especially the case in jurisdictions where the banking-commercial separation doctrine is in place. In jurisdictions where it is not – in the European Union, the United Kingdom and Australia – banks are now subject to some data-oriented requirements. In those jurisdictions, 'open banking' initiatives require all institutions that offer payment accounts to make their data accessible to regulated third-party providers, at their customers' request. Fostering competition and innovation in the financial services market is a central goal. The European Commission has recently tabled a proposal requiring Bigtech firms to open up their data to smaller rivals as well, with a view to reducing barriers to entry for new players.

However, in general, the normative framework around data is still somewhat underdeveloped: regardless of whether they share their data with other companies, should individuals be able to prevent financial institutions or Bigtechs from using their data for those

11 US Securities and Exchange Commission, 'Framework for "Investment Contact" Analysis of Digital Assets' (*US Securities and Exchange Commission,* 3 April 2019) <https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets> accessed 10 March 2020.

12 Russell J Funk and Daniel Hirschman, 'Derivatives and Deregulation: Financial Innovation and the Demise of Glass-Steagall' (2014) 59 Admin Sci Q 669–704.

13 United States, Office of the Comptroller of the Currency, *Controller's Licensing Manual: Subsidiaries and Equity Investments* (Washington, 2019).

companies' profit, either without permission or generally? Going deeper, is individual control over their own data, as contemplated under Open Banking and related initiatives, going to be adequate to control the associated risks to individuals? Or, should more proactive and protective regulatory arrangements be put in place? Are we confident that effectively downloading the responsibility for making decisions about personal data use to members of the public is likely to protect those members of the public? Securities regulation continues to operate in this way: it presumes that information disclosure to ostensibly rational self-interested individual investors will protect those investors and create efficient markets. Even if we accept that this works in the securities regulatory space, we should not assume that it will work in the online service provision space, which is replete with boilerplate contracts and consumers' time-constrained, click-through behaviour. It may instead be time for a comprehensive reconsideration of both financial regulation, and personal data privacy regulation, in a way that better protects the dignity and the interests of us imperfectly rational and inevitably time-constrained human beings.

4.2 *Regulatory assumptions*

Just as no analytical regime can operate without boundaries and priorities, no analytical regime can operate without assumptions. They are inevitable and necessary. However, like boundaries and focal objects, regulatory assumptions can also affect what we see, and do not see.

In the run-up to the financial crisis, regulators made a series of assumptions about the new products on offer at the time, which proved to be misplaced. With respect to commercial paper, for example, regulators assumed that the market would self-regulate because no one would purchase commercial paper unless it was supported by indicia of soundness. Poor-quality commercial paper would be effectively unsellable, and therefore not something that regulators needed to be concerned about. Regulators also assumed that financial institutions would operate in their own rational self-interest, and would not invest in poorly understood markets or products at such vast and unsafe levels that they risked destroying the entire international financial system. All of these assumptions were, of course, wrong. Much of financial regulation – especially securities regulation, but also prudential regulation – still rests on assumptions about transparency and rational self-interest, derived from economics, that we now know to be imperfect. As Elinor Ostrom observed in the context of common property regimes, when a particular concept – in her account, this concept was the famous 'prisoner's dilemma' – is the hammer that one has at hand, then everything starts to look like a nail.[14] In fact, as she empirically demonstrated, the prisoner's dilemma is not nearly so inevitable as game theory might have us believe. Regulatory assumptions are framing devices, and as such are very powerful.

Regulatory assumptions play a particularly prominent role in genuinely new contexts, where a regulator cannot rely on past experience, or analogy to comparable examples, to make sense of unfamiliar phenomena. Especially in those contexts, regulators will want to be alive to the assumptions underlying their regulatory regimes, and to the inevitable limits of those assumptions. A financial regulator trying to navigate through the stormy waters of rapid and heterogeneous fintech generation will want to regularly check that its

14 Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (New York: Cambridge University Press, 1990).

assumptions remain sound. It should check, in particular, that it is not overly swayed by self-serving industry perspectives, or by a sense that innovation will, somehow, inevitably turn out to be socially beneficial. Each of these assumptions was present among key regulators in the run-up to the financial crisis, and the result was that regulators functionally ceded the field to industry actors, with profoundly damaging effects on the global financial system. Are regulators making similar assumptions about fintech?

Regulators should articulate in advance – before, for example, establishing a regulatory fintech sandbox – what exactly they believe to be in the public interest. Moreover, to be clear, people working in well-established financial regulators are not likely to share that many background convictions with private sector innovators coming out of a coding, 'tech' environment. This does not automatically delegitimate the regulatory perspective. Fintech innovators may not, for example, agree that it is in the public interest that chartered, traditional banks exist; that sovereign control over monetary policy is a good thing; that there may be reasons to shield individuals from unfettered market forces; or that regulation (by imperfect human regulators operating within imperfect human structures) brings more benefits than it does costs. Even more than in other contexts, regulators should not place too much faith in the possibility of what Julia Black once called the 'regulatory Utopia', within which capable and responsible firms share with regulators the goal of optimising all of efficiency, competition and *effective public regulation*.[15] Clear thinking about one's own assumptions, and clear and unromantic communication about others', will be crucial.

4.3 *Reflexivity: if you build it, they will come*[16]

Years ago, sociologist Donald McKenzie argued that financial modelling was 'an engine, not a camera' – meaning that models and assumptions that seemed to be merely descriptive were in fact influencing the markets for the things they were describing. He explained how a mathematical formula, the Black-Scholes option-pricing model, established a better basis for calculating the premium of an option, and thereby its present value. When it was incorporated into financial modelling, however, the Black-Scholes formula produced more than just an apparent improvement in pricing certainty. It gave options markets credibility and legitimacy. It actually transformed how people *saw* derivatives markets, from something akin to gambling, to a far more legitimate-seeming, even noble, method for allocating risk and perfecting markets.[17] In terms of its potential to be an 'engine', the same is at least as true of regulation.

Financial systems and markets are constructed, not naturally occurring. A reflexive relationship exists between regulatory structure and the corresponding creation of particular markets, the flourishing of particular products, and the creation of particular risks. In the run-up to the financial crisis, for example, the capital adequacy rules that were imposed on global financial institutions allowed the largest ones to use their own proprietary risk modelling software to determine how much capital they needed to keep on hand. This delegation of, essentially, regulatory judgment helped to produce internal systems that severely

15 Julia Black, 'Forms and Paradoxes of Principles-Based Regulation' (2008) 3 Cap Mark L J 425–430.

16 With apologies to the film *Field of Dreams,* produced by Phil Alden Robinson (Universal, 1989).

17 Donald MacKenzie, *An Engine, Not a Camera: How Financial Models Shape Markets* (Cambridge: MIT Press, 2006).

under-estimated risk and the need for capital. Moreover, within those capital adequacy rules, the fact that certain assets, notably home mortgages, were considered to be 'safe' for risk-weighting and capital reserve purposes provoked a massive rush by financial institutions into those assets, without any independent assessment of their actual safety.

Regulation changes behaviour, and it provokes innovation in both intentional and unintentional, ultimately prosocial and ultimately malign, ways. With regard to fintech, we should recognise that government-sponsored fintech sandboxes are intentionally innovation-fostering. If well designed, we should expect that they would produce *more* private sector fintech innovation. As potentially positive as this may be, it will also increase the burden on regulators to deal with that innovation.

So: does the presence of a fintech sandbox, which is designed to accelerate fintech innovation, also exacerbate the legibility and data problems that regulators face when it comes to genuinely new products and services? The answer will very likely come down to whether the sandbox has been designed in a way that forces fintech players to provide regulators with excellent, ongoing access to top quality, fine-grained, real-time information. It is also necessary that regulators have their own considerable and suitable material and human resources, and a considerable degree of independent-mindedness, to ensure that the regulator is able to keep up with that innovation and the disruption it produces. Regulators should not imagine that sandbox structures require them to be less inquisitive, less well-resourced or less independent-minded than more traditional regulatory rules and categories. On the contrary, sandboxes require more of each of these assets. There is hardly a more challenging regulatory task than trying to imagine how to apply a set of normative commitments and regulatory goals to entirely new kinds of business, in real time.

5 Can the regulator learn and adapt? What resources are in place to do that?

In the Welfare State era of top-down, detail-oriented, prescriptive regulatory regimes, drafting legislation and its associated regulations tended to be the most difficult part. Once drafted, compliance and enforcement personnel had clear marching orders, and the task was far simpler.

This is no longer the case. The speed and complexity that characterise financial markets, and changes in the financial sector, cannot be responded to in such a static manner. International competition for global financial business also provides a clear incentive for regulators to develop flexible, context-sensitive, 'optimised' regulatory structures that impose the least possible regulatory burden on financial industry actors. In this environment, drafting general principles-based legislation and delegating decision-making authority (including to private actors) is actually the easier part. The far harder part is ensuring that such a flexible regime is nevertheless robust and meaningful; that is, that there is the back-end capacity needed to gather and digest information, to track and evaluate changes, and to learn from experience. This work can be tedious and it is never-ending, but it is indispensable. It requires tenacity, commitment and resources. In case after case in financial regulation, it is at this implementation stage that efforts fall short.

Implementing innovation-ready regulation in a meaningful way can be difficult for a few different reasons. We can underestimate the resources required, or provide the wrong kind of resources, or resourcing can dry up over time – something that is especially possible during times when things seem to be going well. We can become complacent as markets

rise, or as fintech innovations seem to deliver benefits. Regulatory judgment can be swayed by self-interested industry framing of issues, or even simply by the social and emotional appeal of being pro-innovation, forward-looking, plugged-in. We can fall back on heuristics, assumptions and default rules, for the sake of clarity and comfort, and those shortcuts can lead us astray.

With respect to fintech and other fast-moving environments, humans' cognitive limitations also play a role. As a species, along with the other pitfalls above, it turns out that we do not like uncertainty that much, and we are liable to underplay it. We are also not terribly good at registering or responding to change. This includes human-generated change. We are especially poor at registering incremental change, which by its nature never trips an alarm. Fintechs' incursion into the traditional business of banking may be an innovation of this variety. On the other hand, after a high salience disaster has occurred, we suffer from hindsight bias and tend to overreact, over-blame and behave reductively. One can imagine such a reaction in the event that a popular fintech product were to collapse and harm members of the public. We can also be heavily influenced by the hierarchy and strategic priorities of the organisations in which we operate. When it comes to fintech in particular, regulators should also recognise the interjurisdictional competitiveness that may be pushing them towards overeager acceptance of, and perhaps inadequate scepticism about new products. Pretending that these factors are not operating is not helpful. What is helpful is to develop mechanisms, including analytical roadmaps and better data, to compensate for the cognitive limitations and institutional pressures that are operating.

The question of how regulation should engage with fintech is not one that can be answered at one point in time, and so resolved. Regulators must continually gather data and roll it back into their own learning and analysis. Relevant data would include not only information gathered from within a government-sponsored fintech sandbox, if one is in place in the jurisdiction, but also from the broader environment. Regulators must ask themselves, continually, whether they still know who the main fintech actors in their space are, whether their assumptions still hold true, what might be happening beyond the borders of their vision and so on. This requires a substantially different frame of mind, and different training, than that which most financial regulators held across most of the last century. It also requires courage, independence and the ability to try to imagine how to apply regulation's underlying normative commitments and its goals to continually new contexts.

6 Strategic choices

Financial regulators are not passive actors when it comes to private sector financial innovation. While they are subject to a degree to political will, they are still the creators of worlds. Careful thinking on their parts about regulatory priorities and regulatory design can be profoundly influential.

A regulator will want to decide where its key challenges, in relation to recognising and tracking fintech, lie. Different regulatory challenges provoke different regulatory responses. For example, in trying to answer the questions above (who is innovating, what the innovations and context are, etc.), the regulator may decide that one of its main challenges is that it does not have sufficient data about a particular fast-moving fintech innovation. It could then consider regulatory responses designed to slow innovation down and force information upward. Licensing and permitting regimes, including for access to a government-sponsored fintech sandbox, are one such technique. Alternatively, the regulator may decide

that a key challenge is tracking incremental innovation around fintech, where change across time may prove to be consequential even if each incremental innovation is not. In that case, an appropriate response may be to improve its information-gathering capacity and to establish benchmarks for safety, investor protection and other regulatory goals that it can track across time. If the challenge is identifying fintech innovations at or outside its jurisdictional boundaries, a regulator could choose to engage with other regulators in adjacent spaces, and to map out the unregulated or under-regulated areas. Quite a bit can be accomplished under regulatory authority, through regulatory design choices, even when political will or attention is somewhat lacking.

These are subjective choices, which require judgment and expertise. Regulators across jurisdictions are already making many of these choices. This chapter seeks to help support those efforts, by making explicit the main questions that a regulator should ask when trying to regulate fintech. Approaching questions of regulatory design and regulatory priorities in a more systematic and intentional way, with the understanding that private sector innovation is the key challenge that regulators confront today, has the potential to produce more comprehensive and better regulatory outcomes.

Financial regulation matters. Regulation is at the operational front line when it comes to breathing life into our most cherished social commitments. Seemingly mundane regulatory decisions implicate questions of fairness, equality and justice, and thus directly influence peoples' lives and prospects. We see their effects in our politics, and our communities. Financial regulation in particular can be the site of some of the most pernicious effects of power and domination. In its best forms, however, it can also be the site of broadly distributed, almost democratic, opportunities for human flourishing. Fintech presents that potential as well as those risks, and financial regulators are uniquely positioned to manage and help direct it for the benefit of us all.

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