

REGULATING A REVOLUTION: FROM REGULATORY SANDBOXES TO SMART REGULATION

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ABSTRACT

Prior to the global financial crisis, financial innovation was viewed very positively, resulting in a laissez-faire, deregulatory approach to financial regulation. Since the crisis the regulatory pendulum has swung to the other extreme. Post-crisis regulation, plus rapid technological change, have spurred the development of financial technology (FinTech). FinTech firms and data-driven financial service providers profoundly challenge the current regulatory paradigm. Financial regulators increasingly seek to balance the traditional regulatory objectives of financial stability and consumer protection with promoting growth and innovation. The resulting regulatory innovations include RegTech, regulatory sandboxes, and

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special charters. This Article analyzes possible new regulatory approaches, ranging from doing nothing (which spans being permissive to highly restrictive, depending on context), cautious permissiveness (on a case-by-case basis, or through special charters), structured experimentalism (such as sandboxes or piloting), and development of specific new regulatory frameworks. Building on this framework, we argue for a new regulatory approach, which incorporates these rebalanced objectives, and which we term ‘smart regulation.’ Our new automated and proportionate regime builds on shared principles from a range of jurisdictions and supports innovation in financial markets. The fragmentation of market participants and the increased use of technology requires regulators to adopt a sequential reform process, starting with digitization, before building digitally-smart regulation. This Article provides a roadmap for this process.

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INTRODUCTION

Technology is transforming finance around the world at an unprecedented rate, generating new opportunities and new risks. Financial regulators must develop new approaches to regulation, including the use of technology, to balance the benefits of innovation and economic development with the need for financial stability and consumer protection.

Prior to the Global Financial Crisis of 2008 (the Crisis), financial innovation was generally viewed very positively. This led to laissez-faire, deregulatory approaches to regulation particularly in global institutional markets. Post-Crisis financial regulatory reforms have seen a reversal of this approach with the regulatory pendulum arguably swinging to the other extreme.¹ Post-Crisis regulatory changes combined with increasingly rapid technological change have spurred the development of financial technology (FinTech).² FinTech embraces new startups (FinTechs), established technological and e-commerce companies (which we call TechFins)³ as well as incumbent financial firms. FinTech promises innovation and economic growth through disruption of traditional finance, yet it also poses a major challenge to the post-Crisis regulatory paradigm.

In the past two years, financial regulators have started to seek to balance the traditional regulatory objectives of financial stability and consumer protection—the focus of post-Crisis regulatory changes—with the objectives of promoting growth and innovation. The result has been a process of regulatory innovation including technology (RegTech)⁴ and

1. See John C. Coffee, Jr., *The Political Economy of Dodd-Frank: Why Financial Reform Tends to be Frustrated and Systemic Risk Perpetuated*, 97 CORNELL L. REV. 1019, 1029 (2012).

2. See Douglas W. Arner et al., *The Evolution of FinTech: A New Post-Crisis Paradigm?*, 47 GEO. J. INT'L L. 1271, 1272–73 (2016); Chris Brummer, *Disruptive Technology and Securities Regulation*, 84 FORDHAM L. REV. 977, 1037 (2015); Iris H-Y Chiu, *Fintech and Disruptive Business Models in Financial Products, Intermediation and Markets—Policy Implications for Financial Regulators*, 21 J. TECH. L. & POL. 55, 56 (2016); Nathan Cortez, *Regulating Disruptive Innovation*, 29 BERKELEY TECH. L.J. 175, 185–86 (2014).

3. Dirk A. Zetsche et al., *From FinTech to TechFin: The Regulatory Challenges of Data-Driven Finance*, N.Y.U. J.L. & BUS. (forthcoming 2017–2018).

4. Douglas W. Arner et al., *FinTech, RegTech, and the Reconceptualization of Financial Regulation*, 37 NW. J. INT'L L. & BUS. 371 (2017); Lawrence G. Baxter,

changes to existing frameworks such as the establishment of regulatory sandboxes.

By analyzing possible regulatory approaches to FinTech innovation, this Article seeks to redirect the ongoing global discussion on how to properly regulate FinTech,⁵ and whether regulatory sandboxes are desirable.⁶ We see four approaches and frame these as doing nothing (which could be a restrictive or a permissive approach, depending on context), cautious permissiveness through flexibility and forbearance (under which existing rules are relaxed in specific contexts), restricted experimentation (for example sandboxes or piloting), and regulatory development (in which new regulations are developed to cover new activities and entrants).

The Article proceeds, in Part I, to undertake a comparative study of these four possible approaches. Part II considers the traditional regulatory

Adaptive Financial Regulation and RegTech: A Concept Article on Realistic Protection for Victims of Bank Failures, 66 DUKE L.J. 567, 598 (2016).

5. See generally Cortez, *supra* note 2; Wulf A. Kaal & Erik P.M. Vermeulen, *How to Regulate Disruptive Innovation—From Facts to Data*, 57 JURIMETRICS (forthcoming 2017), <https://ssrn.com/abstract=2808044> [<https://perma.cc/B5LF-AVZF>].

6. For the United States, see Stan Higgins, *SEC Petition Calls for Blockchain Token Rules*, COINDESK (May 16, 2017), <https://www.coindesk.com/sec-petition-calls-for-blockchain-token-rules/> [<https://perma.cc/7M3W-9U7K>] (formally petitioning the SEC to adopt rules for FinTech, including a regulatory sandbox); Richard B. Levin, *Should the SEC Allow FinTech Firms to Play in a Sandbox?*, POLSINELLI (Mar. 2017), <http://sftp.polsinelli.com/publications/fintech/resources/upd0317-1fin.pdf> [<https://perma.cc/GXL8-J4CJ>] (promoting a regulatory sandbox for the United States); Michael S. Piwowar, Comm'r, U.S. Sec. & Exch. Comm'n, Statement at Financial Technology Forum (Nov. 14, 2016), <https://www.sec.gov/news/statement/piwowar-statement-financial-technology-forum-111416.html> [<https://perma.cc/PEA7-LSRK>] (encouraging the consideration of international approaches to regulate FinTech including the regulatory sandbox). For the European Union, see *Discussion Paper on the EBA's Approach to Financial Technology (FinTech)*, EUR. BANKING AUTHORITY (Aug. 4, 2017), <https://www.eba.europa.eu/documents/10180/1919160/EBA+Discussion+Paper+on+FinTech+%28EBA-DP-2017-02%29.pdf> [<https://perma.cc/UPC3-J743>] (inquiring into how to regulate FinTech); *Consultation Document, FinTech: A More Competitive and Innovative European Financial Sector*, EUR. COMMISSION (Mar. 25, 2017), https://ec.europa.eu/info/sites/info/files/2017-fintech-consultation-document_en_0.pdf [<https://perma.cc/8JWC-W6G9>] (inquiring into how to regulate FinTech). On the position of the European Banking Industry, see EUROPEAN BANKING FED'N, INNOVATE. COLLABORATE. DEPLOY. (NOV. 14, 2016) (petitioning for the set-up of a regulatory sandbox).

approaches of regulating or not regulating. Part III considers case-by-case approaches, Part IV addresses the new trend of regulatory sandboxes, and Part V looks beyond sandboxes to other forms of structured experimentalism. From this basis, Part VI then suggests possible elements of a new and better approach that transcends these boxed ways of thinking—a comprehensive review of existing regulatory approaches in light of today’s rebalanced objectives that we term “smart regulation.”

I. AN OVERVIEW OF THE CURRENT FRAMEWORK

A. POST-CRISIS BLUES

The Crisis challenged the dominant positive attitude towards innovation in finance. Yet innovation matters deeply, and regulators need to perform a balancing act between preserving stability, protecting consumers, and promoting innovation. On the one hand, innovation can enhance market efficiency by reducing transaction and financial intermediation costs.⁷ In particular, innovation can provide new solutions to old problems, including financial exclusion, the quality of consumer decision-making,⁸ agency costs, and compliance costs.⁹

On the other hand, financial innovation can bring new risks, as was seen with derivatives and securitization which, due to their risk-shifting characteristics, are indispensable to sophisticated risk transfer and financial management, yet played a major role in facilitating the Crisis.¹⁰ In particular, financial innovation (e.g. certain forms of securitization, such as collateralized debt obligations, and credit derivatives such as

7. See Arner et al., *supra* note 2.

8. On robo-advisory, *cf.* Marika Salo & Helena Haapio, *Robo-Advisors and Investors: Enhancing Human-Robot Interaction Through Information Design*, in TRENDS AND COMMUNITIES OF LEGAL INFORMATICS. PROCEEDINGS OF THE 20TH INTERNATIONAL LEGAL INFORMATICS SYMPOSIUM IRIS 2017. 441 (Erich Schweighofer et al. eds., 2017).

9. See Arner et al., *supra* note 2, at 1315–16.

10. See ROSS P. BUCKLEY & DOUGLAS W. ARNER, FROM CRISIS TO CRISIS: THE GLOBAL FINANCIAL SYSTEM AND REGULATORY FAILURE (2011).

credit default swaps¹¹) and deregulation¹² were significant contributors to the Crisis. While the risks of innovation were known prior to the Crisis, pre-Crisis research suggested that the benefits of innovation outweighed the costs of periodic crises over time.¹³ Since 2008—as illustrated by Paul Volcker who commented that he “found very little evidence that vast amounts of innovation in financial markets in recent years has had a visible effect on the productivity of the economy”¹⁴—this view has been subject to question.¹⁵

Among the main financial regulatory mandates, two were of key importance as the 2008 Crisis unfolded: first, consumer protection (particularly of retail clients, investors, and depositors);¹⁶ and second, financial stability more generally, particularly in the macroprudential context.¹⁷ While the *microprudential* dimension of regulation focuses on individual institutions, the systemic or *macroprudential* perspective looks at the impact of counterparty interrelationships and/or systemically

11. See Warren Buffett’s statement on credit default swaps as “financial weapons of mass destruction.” René M. Stulz, *Financial Derivatives: Lessons from the Subprime Crisis*, MILKEN INST. REV., First Quarter 2009, at 58, 59 (arguing that financial derivatives have not caused the housing bubble to burst). The academic discussion is more nuanced. *Id.*

12. See Lynn A. Stout, *Derivatives and the Legal Origin of the 2008 Credit Crisis*, 1 HARV. BUS. L. REV. 1, 37 (2011) (arguing that the removal of century-old restraints on speculative trading via over-the-counter derivatives by the Commodities Futures Modernization Act of 2000 (CFMA) was the root of the crisis).

13. See DOUGLAS W. ARNER, FINANCIAL STABILITY, ECONOMIC GROWTH, AND THE ROLE OF THE LAW (2007).

14. “The Only Thing Useful Banks Have Invented in 20 Years is the ATM”, N.Y. POST (Dec. 13, 2009, 6:27 AM), <http://nypost.com/2009/12/13/the-only-thing-useful-banks-have-invented-in-20-years-is-the-atm/> [<https://perma.cc/K8SP-DGQE>].

15. See, e.g., Coffee, Jr., *supra* note 1; James Crotty, *Structural Causes of the Financial Crisis: A Critical Assessment of the ‘New Financial Architecture’* (Univ. of Mass. Amherst Dep’t of Econ. Working Paper 2008–14, 2008).

16. Sumit Agarwal et al., *Predatory Lending and the Subprime Crisis*, 113 J. FIN. ECON. 29, 31 (2014).

17. ARNER, *supra* note 13; Dirk Zetzsche, *Investment Law as Financial Law: From Fund Governance over Market Governance to Stakeholder Governance?*, in THE EUROPEAN FINANCIAL MARKET IN TRANSITION 339, 343 (Hanne S. Birkmose et al. eds., 2011).

important financial institutions (SIFIs).¹⁸ In the wake of the Crisis, there has been a major process of reregulation, designed in particular to address what are now understood as pre-Crisis weaknesses in regulation.

B. THE CHALLENGE OF FINTECH

It is against this backdrop of post-Crisis regulatory change that FinTech emerged. Technology and finance have had a long relationship dating, with a particularly close connection over the past 150 years, with each responding to developments in the other over an extended evolutionary process.¹⁹ In the last ten years, however, the pace of change in both finance and technology has moved more rapidly than ever before, resulting in the emergence of a new term and era: FinTech.²⁰

This new era of FinTech is marked by the speed of technological change and the range of new entrants in the financial sector, including FinTech startups as well as information technology and e-commerce TechFins²¹ all competing with traditional financial institutions and across developing, emerging, and developed markets.²² In this context, there are new opportunities for innovation and growth and new challenges, particularly for regulation and regulators. Lately, the particular challenge for regulators has been the need to encourage and support disruptive innovation in order to enhance financial inclusion and support economic growth.

C. INSTITUTIONALIZED KNOWLEDGE EXCHANGE THROUGH INNOVATION HUBS

Extensive interaction between regulators and market participants provides the necessary background for cautious experimentation with, and regulation of, innovation.²³ Starting in 2015 (to our knowledge, with

18. Iman Anabtawai & Steven L. Schwarcz, *Regulating Systemic Risk: Towards an Analytical Framework*, 86 NOTRE DAME L. REV. 1349, 1403 (2011); Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 204 (2008).

19. See Arner et al., *supra* note 2.

20. *Id.* at 1286.

21. TechFins are data-rich firms entering financial services businesses, and include Amazon, Apple, Google, Microsoft, and Tencent. See Zetsche et al., *supra* note 3 (manuscript at 4–5).

22. See *id.* (manuscript at 7, 9).

23. See Kaal & Vermeulen, *supra* note 5.

the Luxembourg Commission de Surveillance du Secteur Financier (CSSF), the United Kingdom's Financial Conduct Authority (U.K. FCA), and the Australian Securities and Investments Commission (ASIC) functioning as first movers), communication between regulators and FinTechs has increasingly been institutionalized through the development of innovation departments within regulatory agencies.

Since 2015, institutional access points have been established in over twenty jurisdictions:

- **Australia:** The innovation hub launched in 2015 assists FinTech start-ups in navigating the Australian regulatory system: “[E]ligible businesses can request informal guidance from ASIC on the licensing process and key regulatory issues.”²⁴
- **Brunei Darussalam:** The Autoriti Monetari Brunei Darussalam (AMBD) established a FinTech unit in 2017.²⁵
- **Canada:** The Ontario Securities Commission (OSC) was the first of the Canadian securities regulators to introduce an innovation support unit, the OSC LaunchPad, aiming to both support innovative firms and learn from them.²⁶
- **China:** Regular outreach with the FinTech sector “is aided by the National Internet Finance Association (NIFA), which guides and supervises the implementation of national policies.”²⁷
- **Hong Kong:** The Hong Kong Money Authority (HKMA) and Hong Kong Applied Science and Technology Research Institute (ASTRI) Fintech Innovation Hub holds “dialogues between the industry and the HKMA on emerging technologies,” and tests solutions that may be adopted by the HKMA.²⁸ Further, the

24. *Information Hub*, AUSTL. SEC. & INV. COMMISSION, <http://asic.gov.au/for-business/your-business/innovation-hub/> [<https://perma.cc/5YW6-ZZL5>] (last visited Oct. 13, 2017).

25. *See About the FinTech Office*, AUTORITI MONETARI BRUNEI DARUSSALAM, <http://www.ambd.gov.bn/fintech-office> [<https://perma.cc/QEG6-P9KH>] (last visited Oct. 13, 2017).

26. *See OSC Launchpad: Our Approach*, ONT. SEC. COMMISSION, <https://www.osc.gov.on.ca/en/our-approach.htm> [<https://perma.cc/6846-D9VX>] (last visited Oct. 13, 2017).

27. *See* FIN. STABILITY BD., FINANCIAL STABILITY IMPLICATIONS FROM FINTECH: SUPERVISORY AND REGULATORY ISSUES THAT MERIT AUTHORITIES' ATTENTION 58 (2017).

28. Letter from Howard Lee, Senior Exec. Dir., H.K. Monetary Auth., to Chief Exec., All Stored Value Facility (SVF) Licensees (Sept. 6, 2016), <http://www.hkma>.

HKMA FinTech Facilitation Office, started in March 2016, functions as a platform for “exchanging ideas among key stakeholders and conducting outreach[.]”²⁹ Similar contact points have been established in the Hong Kong Securities and Futures Commission and the Hong Kong Insurance Authority.

- **Indonesia:** The Bank Indonesia established a dedicated FinTech Office in November 2016 that functions as an innovation hub.³⁰
- **Luxembourg:** CSSF has a special department for financial innovation, established in early 2015, which functions as CSSF’s innovation hub.³¹
- **Germany:** Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) offers close contact and advice to FinTech start-ups.³²
- **Japan:** The Japanese Financial Services Agency launched a FinTech Support Desk in December 2015.³³
- **France:** In June 2016, the Banque de France and French financial services regulator Autorité de Contrôle Prudentiel et de Résolution (ACPR) “created the ACPR Pole Fintech Innovation, and the Autorité des Marchés Financiers (AMF) launched the Fintech, Innovation et Compétitivité to assist [FinTech]

gov.hk/media/eng/doc/key-functions/financial-infrastructure/20160906e1-svf.pdf
[https://perma.cc/93AY-FDEY].

29. See *FinTech Facilitation Office*, H.K. MONETARY AUTHORITY, <http://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech-facilitation-office-ffo.shtml> [https://perma.cc/LRU8-TXVD] (last revised Sept. 29, 2017).

30. See *BI Launches Fintech Office, Eyes Teamwork with Industry Players*, JAKARTA POST (Nov. 14, 2016, 2:13 PM), <http://www.thejakartapost.com/news/2016/11/14/bi-launches-fintech-office-eyes-teamwork-with-industry-players.html> [https://perma.cc/48U5-T34X].

31. See *General Organisation*, COMMISSION DE SURVEILLANCE DU SECTEUR FINANCIER, <http://www.cssf.lu/en/about-the-cssf/general-organisation/> [https://perma.cc/NB38-8LNH] (last visited Oct. 13, 2017).

32. *Fintechs: Adressatengerechte Kommunikation – Umgang der BaFin mit innovativen Unternehmen*, BUNDESANSTALT FÜR FINANZDIENSTLEISTUNGS-AUFSICHT (Sept. 15, 2016), https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Fachartikel/2016/fa_bj_1609_fintechs.html [https://perma.cc/9X5D-AU66].

33. See *Japan FSA Launches FinTech Support Desk for Consultation and Exchange of Information*, JFTODAY (Dec. 15, 2015), <http://jftoday.com/Japan+FSA+launches+Fin+Tech+Support+Desk+for+consultation+and+exchange+of+information/> [https://perma.cc/PUT3-4V9M]; see also *FinTech サポートデスクについて*, FIN. SERVS. AGENCY (Dec. 14, 2013), <http://www.fsa.go.jp/news/27/sonota/20151214-2.html> [https://perma.cc/H357-7NWX].

entrepreneurs in regulatory issues.”³⁴ ACPR and AMF together have established a FinTech forum.³⁵

- **Malaysia:** Bank Negara established the Financial Technology Enabler Group in June 2016.³⁶
- **The Netherlands:** The Authority for the Financial Markets (AFM) and the De Nederlandsche Bank (DNB) have been working with an innovation hub where both established entities and tech start-ups can ask questions.³⁷
- **Singapore:** The Monetary Authority of Singapore (MAS) established a financial technology and innovation group with an innovation lab known as “Looking Glass @ MAS” as well as a FinTech Office.³⁸
- **Switzerland:** The Swiss Financial Market Supervisory Authority (FINMA) established a FinTech desk in 2016.³⁹
- **South Korea:** The Government established a FinTech Center in 2015.⁴⁰

34. Therese Torris, *French Finance Regulators Embrace Fintech*, CROWDFUND INSIDER (Feb. 1, 2017, 10:00 PM), <https://www.crowdfundinsider.com/2017/02/95508-french-finance-regulators-embrace-fintech/> [<https://perma.cc/3LCN-EKGW>].

35. *The AMF and ACPR Launch the FinTech Forum*, AUTORITÉ DES MARCHÉS FINANCIERS (July 19, 2016), http://www.amf-france.org/en_US/Actualites/Communiqués-de-presse/AMF/annee-2016.html?docId=workspace%3A%2F%2FSpacesStore%2Ffef66ab3-71de-4e2b-b707-d0ca87df1509 [<https://perma.cc/WM6T-ATC4>].

36. *See Financial Technology Enabler Group*, BANK NEGARA MALAY., http://www.bnm.gov.my/index.php?ch=idx_b&pg=idx_hghts&ac=46 [<https://perma.cc/SE7H-4KSK>] (last visited Oct. 13, 2017).

37. *AFM & DNB InnovationHub*, AFM, <https://www.afm.nl/en/professionals/onderwerpen/innovation-hub> [<https://perma.cc/LS84-ZUW6>] (last visited Oct. 13, 2017).

38. *See FinTech Regulatory Sandbox*, MONETARY AUTHORITY SING., <http://www.mas.gov.sg/Singapore-Financial-Centre/Smart-Financial-Centre/FinTech-Regulatory-Sandbox.aspx> [<https://perma.cc/Z348-LCK6>] (last modified Jan. 9, 2017); *New FinTech Office: A One-Stop Platform to Promote Singapore as a FinTech Hub*, MONETARY AUTHORITY SING. (Apr. 1, 2016), <http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/New-FinTech-Office.aspx> [<https://perma.cc/EQT9-SVQ2>]; *MAS Establishes FinTech Innovation Lab*, MONETARY AUTHORITY SING. (Aug. 24, 2016), <http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/MAS-establishes-FinTech-Innovation-Lab.aspx> [<https://perma.cc/GQQ2-R7FA>].

39. FINMA, ANNUAL REPORT 2016 24 (Dec. 2016).

40. *See Press Release*, N. Kor., Plan to Support Convergence of Finance and Technology (Jan. 27, 2015), <http://www.korea.net/Government/Briefing-Room/Press-Releases/view?articleId=3022> [<https://perma.cc/ENL3-JZ48>].

- **Taiwan:** The Financial Supervisory Commission established a FinTech office in 2015 and implemented a FinTech Pilot Program.⁴¹
- **Thailand:** Bank of Thailand has set up a FinTech clinic.⁴²
- **Sweden:** Established a National Innovation Council “to provide support and advice to established and startup businesses alike on issues such as regulatory and permit requirements.”⁴³
- **United Kingdom:** Project Innovate included the establishment of an innovation hub in 2015.⁴⁴
- **United States:** The Office of the Comptroller of the Currency’s Office of Innovation serves as a central point of contact, facilitates responses to inquiries and requests, conducts outreach, and provides technical assistance. It will “[m]onitor the evolving financial services landscape” and “[c]ollaborate with domestic and international regulators.”⁴⁵ Similar activities have been

41. Taiwan intends to establish the Financial Information Sharing and Analysis Center (FISAC) by 2017. *The FSC Puts Forward the Financial Technology Development Promotion Plan*, FIN. SUPERVISORY COMMISSION CHINA (TAIWAN) (Nov. 10, 2016), https://www.fsc.gov.tw/en/home.jsp?id=74&parentpath=0,2&mcustomize=multimessage_view.jsp&dataserno=201611290001&aplistdn=ou=bulletin,ou=multisite,ou=english,ou=ap_root,o=fsc,c=tw&dtable=Bulletin [https://perma.cc/72LN-F9U6]; *Financial Industry Works with the Technology Industry on Fintech Upgrade*, FIN. SUPERVISORY COMMISSION CHINA (TAIWAN) (Oct. 17, 2016), http://www.fsc.gov.tw/en/home.jsp?id=74&parentpath=0,2&mcustomize=multimessage_view.jsp&dataserno=201610170001&aplistdn=ou=bulletin,ou=multisite,ou=english,ou=ap_root,o=fsc,c=tw&dtable=Bulletin [https://perma.cc/J5FG-RQ2J].

42. See Pawee Sirimai, *Four Fintech Firms Apply for Sandbox*, BANGKOK POST (May 9, 2017), <https://www.pressreader.com/thailand/bangkok-post/20170509/281947427763135> [https://perma.cc/W5B5-55Q3].

43. James Pearse, *The Swedish Financial Regulator Is Taking Giant Steps to Support Innovation*, STOCKHOLM FINTECH HUB (May 23, 2017), <https://stockholmfin.tech/blog/the-swedish-financial-regulator-is-taking-giant-steps-to-support-innovation/> [https://perma.cc/3922-HDC3].

44. See ERNST & YOUNG LLP, UK FINTECH: ON THE CUTTING EDGE: AN EVALUATION OF THE INTERNATIONAL FINTECH SECTOR 51 (2016), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/502995/UK_FinTech_-_On_the_cutting_edge_-_Full_Report.pdf [https://perma.cc/Y7TB-QU7B].

45. OFFICE OF THE COMPTROLLER OF THE CURRENCY, RECOMMENDATIONS AND DECISIONS FOR IMPLEMENTING A RESPONSIBLE INNOVATION FRAMEWORK 4 (Oct. 2016), <https://occ.gov/topics/bank-operations/innovation/comments/recommendations-decision>

initiated by the United States Commodity Futures Trading Commission (CFTC) through the LabCFTC.⁴⁶

These contact points and innovation support functions highlight the wide of regulators around the world driven to new approaches by FinTech.

D. THE REGULATORY PENDULUM SWINGS BACK: OLD AND NEW APPROACHES TO FINTECH INNOVATION

While one principal effect of the Crisis was a very cautious regulatory approach to innovation, the rapid evolution of FinTech in the past decade, increasing policy pressure to re-start economic growth (e.g. the Jumpstart Our Business Startups (JOBS) Act⁴⁷ in the United States), and an international agenda to foster financial inclusion,⁴⁸ have combined to bring pressure to bear on regulators to support innovation, particularly digital disruption. This requires regulators to balance support for innovation with their core regulatory mandates of financial stability and consumer protection. Four main approaches have so far emerged to meet this challenge.

The first approach involves doing nothing: either by intent or otherwise. Doing nothing can involve simply not regulating FinTech and the result can be either permissive or laissez-faire depending upon whether current banking regulation applies to the sector. China, especially before 2015, is often highlighted as the leading, and highly successful,

s-for-implementing-a-responsible-innovation-framework.pdf [https://perma.cc/8CVX-J72Y].

46. See Daniel Gorfine, Dir. of LabCFTC & Chief Innovation Officer, Keynote Address at the 33rd Annual FIA Futures & Options Expo (Oct. 19, 2017), <http://www.cftc.gov/PressRoom/SpeechesTestimony/opagorfine-1> [https://perma.cc/9TXX-WPR7].

47. Pub. L. No. 112-106, 126 Stat. 306 (2012) (codified in scattered sections of 15 U.S.C.).

48. Reflected in Goal 8 of the United Nations Sustainable Development Goals and in the 2014 G20 Financial Inclusion Action Plan. U.N. Secretary-General, Progress Towards the Sustainable Development Goals, at 10–11, U.N. Doc. E/2017/66 (May 11, 2017); GLOB. P'SHIP FOR FIN. INCLUSION, 2014 FINANCIAL INCLUSION ACTION PLAN 2 (2014), http://www.gpfi.org/sites/default/files/documents/2014_g20_financial_inclusion_action_plan.pdf [https://perma.cc/9F2T-SG6N].

example of the permissive approach.⁴⁹ While the relative inefficiencies of the Chinese financial system combined with the government's prioritization of growth and innovation largely explain the benefits of allowing development to take place largely without regulatory intervention,⁵⁰ innovation can also bring risks, as occurred in China, resulting since 2015 in a much more cautious regulatory approach.⁵¹ Doing nothing however can also simply involve requiring FinTechs to comply with existing financial regulatory requirements, often with highly restrictive results. This may well protect against risk but at the cost of stifling innovation; and this has been the approach of most jurisdictions to date.

Second, regulators can choose to allow certain amounts of flexibility on a case-by-case basis, in what could be classified as a cautiously permissive approach based on forbearance.⁵² Indeed, many regulators facing innovation, and equipped by the legislature with a mandate allowing growth and/or financial development to be considered along with their primary mandates of financial stability and consumer protection, have granted no-action letters, restricted licenses, special charters or partial exemptions for innovative firms, or established intermediaries testing new technologies, respectively. This approach also allows regulators to acquire sufficient data and experience with

49. See Arner et al., *supra* note 2, at 1298–99; Weihuan Zhou et al., *China's Regulation of Digital Financial Services: Some Recent Developments*, 90 AUSTL. L.J. 297 (2016); Sonia Barquin & Vinayak HV, *Capitalizing on Asia's Digital-Banking Boom*, MCKINSEY & COMPANY (Mar. 2015), www.mckinsey.com/industries/financial-services/our-insights/capitalizing-on-asias-digital-banking-boom [<https://perma.cc/ZK9T-XVTT>].

50. See Christian Haddad & Lars Hornuf, *The Emergence of the Global FinTech Market: Economic and Technical Determinants* 20 (CESifo Working Paper No. 6131, 2016) <https://ssrn.com/abstract=2830124> [<https://perma.cc/7LAB-TMBL>] (arguing that the soundness of the financial system has a negative effect on FinTech start-up dynamics, i.e. financial systems with many deficits provide a vibrant environment for start-ups).

51. Weihuan Zhou et al., *Regulation of Digital Financial Services in China: Last Mover Advantage?*, 8 TSINGHUA CHINA L. REV. 25, 27 (2015); MCKINSEY & CO., *DISRUPTION AND CONNECTION: CRACKING THE MYTHS OF CHINA INTERNET FINANCE INNOVATION* (2016), <https://www.mckinsey.com/~media/mckinsey/industries/financial%20services/our%20insights/whats%20next%20for%20chinas%20booming%20fintech%20sector/disruption-and-connection-cracking-the-myths-of-china-internet-finance-innovation.ashx> [<https://perma.cc/FW46-9T7F>].

52. The same approach is suggested by Arner et al., *supra* note 2, at 1307–10.

innovation, and has been followed by many regulators instead of following China's lead of initially not regulating innovations, and only stepping in once the evolutionary process reaches a certain size and significance.⁵³

Third, regulators can provide a structured context for experimentation, by instituting a regulatory sandbox or (as in China) structured piloting exercises. While a new term in financial services, the sandbox concept is by no means novel, with its origins in computer science and other applications beyond financial services.⁵⁴ In finance, a regulatory sandbox refers to a regulatory "safe space" for experimentation with new approaches involving the application of technology to finance. At the most basic level, the sandbox creates an environment for businesses to test products with less risk of being "punished" by the regulator.⁵⁵ In return, regulators require applicants to incorporate appropriate safeguards.⁵⁶ There are currently at least sixteen sandboxes announced or in operation.⁵⁷ Regulatory sandboxes seek to support competitive innovation in financial markets. Eligibility to enter a sandbox

53. Douglas W. Arner & Janos N. Barberis, *FinTech Regulations Recent Developments and Outlook*, ASIAN INST. INT'L. FIN. L. (2015); Brummer, *supra* note 2, at 1048; Chiu, *supra* note 2, at 65–70; Cortez, *supra* note 2, at 201.

54. For instance, the government of the Australian state of New South Wales has proposed, as part of its innovation strategy, a regulatory sandbox applying to all provincial rules and regulations, including those on data privacy, and other potential barriers to innovation. See N.S.W., BRINGING BIG IDEAS TO LIFE: NSW INNOVATION STRATEGY 7 (2015), https://www.innovation.nsw.gov.au/sites/default/files/NSW_Government_Innovation_Strategy_Document.pdf [<https://perma.cc/USU7-PDSW>].

55. DOUGLAS W. ARNER ET AL., CFA INST. RESEARCH FOUND., RESEARCH FOUNDATION BRIEFS: FINTECH AND REGTECH IN A NUTSHELL, AND THE FUTURE IN A SANDBOX (July 2017), <https://www.cfapubs.org/doi/pdf/10.2470/rfbr.v3.n4.1> [<https://perma.cc/MF49-Z559>].

56. For instance, see Letter from Howard Lee, Senior Exec. Dir., H.K. Monetary Auth., to Chief Exec., All Authorized Institutions (Sept. 6, 2016), <http://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2016/20160906e1.pdf> [<https://perma.cc/P578-LZV3>]; see also MONETARY AUTH. OF SING., FINTECH REGULATORY SANDBOX GUIDELINES §§ 2.2, 6.2(g) (Nov. 16, 2016), <http://www.mas.gov.sg/~media/Smart%20Financial%20Centre/Sandbox/FinTech%20Regulatory%20Sandbox%20Guidelines.pdf> [<https://perma.cc/2SGS-DELF>]; BANK NEGARA MALAY., FINANCIAL TECHNOLOGY REGULATORY SANDBOX FRAMEWORK §§ 6.1–6.3 (Oct. 18, 2016), <http://www.bnm.gov.my/index.php?ch=57&pg=137&ac=533&bb=file> [<https://perma.cc/9G8M-7R9E>].

57. See *infra* Part IV.

is standardized and publicized, thus requiring market participants to articulate their added-value in a pre-defined format.⁵⁸ This is cost-effective for participants and resource-effective for regulators, allowing easier comparison among potential entrants to the sandbox.

However, while providing transparency in entry criteria and processes, sandboxes are very much human-driven and analogue in their monitoring. Sandboxes, as currently conceived, are not scalable—the eighteen (cohort 1) or twenty-four (cohort 2) participants⁵⁹ in the U.K. FCA sandboxes are insignificant relative to the over 56,000 licensed market participants in the United Kingdom.⁶⁰ For this reason, sandboxes need to be made smarter and equipped to self-monitor activity within them, as opposed to just being a process-driven application method for entry, typically for a limited time, to a regulatory safe space, as they are currently.

Fourth, a formal approach could be adopted, in which existing regulations are reformed or new regulations are developed in order to provide a more appropriate and balanced framework for new entrants and new activities.

Support for competitive innovation in financial markets is certainly not the exclusive preserve of developed jurisdictions, such as the United States, the European Union and the United Kingdom. Financial innovation has been transformative in emerging markets such as China,⁶¹ India⁶² and Kenya,⁶³ all of which are taking a different approach to re-

58. This is particularly so in the leading example of the Financial Conduct Authority in the UK, *see, e.g.*, Arner et al., *supra* note 2, at 1316.

59. *See infra* Part IV.F.1.

60. *About the FCA*, FIN. CONDUCT AUTHORITY (Apr. 21, 2017), <https://www.fca.org.uk/about/the-fca> [<https://perma.cc/549F-5LSS>].

61. For example, Alibaba alone has fulfilled two main government policy objectives. It has created 2.87 million direct and indirect opportunities, and provided over 400,000 SMEs with loans ranging from \$3000 to \$5000. *See* Coffee, Jr., *supra* note 1, at 24.

62. The best example is “India Stack,” a number of initiatives which set the stage for a dramatic transformation and digitalization of the Indian financial system. *See* Abhijit Bose, *India’s FinTech Revolution is Primed to Put Banks Out of Business*, TECH CRUNCH (June 14, 2016), <https://techcrunch.com/2016/06/14/indias-fintech-revolution-is-primed-to-put-banks-out-of-business/> [<https://perma.cc/3FJS-MYHP>].

63. In particular, M-Pesa, the mobile money product under Safaricom. In under five years, payments made through the platform surpassed 43% of Kenya’s GDP. *See* Daniel Runde, *M-Pesa and the Rise of the Global Mobile Money Market*, FORBES (Aug. 12,

thinking their financial markets and none of which have announced a regulatory sandbox initiative.

This Article seeks to contribute to this current re-thinking and sketch a roadmap to achieve a “golden mean” between innovation and traditional regulatory objectives, which we term “smart regulation.”⁶⁴

II. TRADITIONAL APPROACHES: TO REGULATE OR NOT TO REGULATE?

Competition drives innovation. Regulators can create anti-competitive rules and restrict entry to banking and other financial services activities—a form of “financial repression” practiced by most economies up to the mid-1980s. Or, on the other hand, regulators can take a range of “light touch” approaches.⁶⁵ The strong deregulatory approach of the Trump administration in the United States highlights the contemporary importance and challenge of balancing financial stability, consumer protection, innovation, and economic growth.

A. THE PRE-CRISIS ANALYTICAL FRAMEWORK: PERMISSIVE VERSUS RESTRICTIVE, RULES VERSUS PRINCIPLES

Prior to the 2008 Crisis, regulatory approaches to financial innovation were typically framed in the context of “restrictive” or “permissive” legal systems.⁶⁶ Under this framework of analysis,

2015, 4:06 PM), <https://www.forbes.com/sites/danielrunde/2015/08/12/m-pesa-and-the-rise-of-the-global-mobile-money-market/#9c928ab5aecf> [<https://perma.cc/RJ6W-P932>].

64. We found the term “smart regulation” in the context of environmental regulation, referring to an appropriate order of enforcement measures imposed by regulators. See Neil Gunningham et al., *Introduction* to SMART REGULATION: DESIGNING ENVIRONMENTAL POLICY 4, 22 (1999). For a brief discussion, see Neil Gunningham & Darren Sinclair, *Smart Regulation*, in REGULATORY THEORY: FOUNDATIONS AND APPLICATIONS 133–48 (Peter Drahos ed., 2017). We are not aware of its previous use in the FinTech and RegTech context.

65. See Nigel Lawson, *Foreword* to BIG BANG 20 YEARS ON, at iv (2006). See also, as published on the eve of the GFC by the director of City of London’s Center of Policy Studies, Andrew Hilton, *All Regulation is Bad*, in BIG BANG 20 YEARS ON 24 (2006).

66. See Dan Awrey, *Regulating Financial Innovation: A More Principles-Based Alternative?*, 5 BROOK. J. CORP., FIN. & COM. L. 273 (2011); see also Roger Brownsword & Karen Yeung, *Introduction* to REGULATING TECHNOLOGIES: LEGAL FUTURES, REGULATORY FRAMES AND TECHNOLOGICAL FIXES (Roger Brownsword & Karen Yeung

jurisdictions were subjected to quantitative analysis focusing on the nature of their legal system, with common law systems generally framed as permissive and civil law systems as restrictive.⁶⁷ While this framework was certainly not without fault,⁶⁸ it provided the primary starting point for most analyses of the interaction of regulation and innovation. Further, financially repressive systems in many developing countries as well as centrally planned economies restricted innovation, financial development, and economic growth, resulting in lower levels of development.⁶⁹ Research suggested that while crises might be more common in more permissive systems, over the medium to long term the benefits in terms of growth and development outweighed the costs of periodic crises.⁷⁰

This analytical approach—with the Efficient Markets Hypothesis—became the guiding policy paradigm prior to the Crisis, with the focus in developed, emerging, and developing countries towards financial liberalization combined with development of appropriate systems of prudential regulation in order to prevent and address crises.⁷¹ The focus was thus one which favored financial innovation with (i) financial stability and consumer protection to be achieved through risk-based prudential regulation, (ii) disclosure to provide market discipline, and (iii) enforcement to protect consumers (though generally leaving wholesale institutional participants to protect their own interests, including through processes of private ordering such as in the context of the International Swaps and Derivative Association (ISDA), over-the-counter (OTC) derivatives, and the London Interbank Offer Rate (LIBOR)).⁷²

Within this broader context, the quest for the best balance between sufficient levels of regulation and permissiveness to support innovation

eds., 2008); Mark Fenwick et al., *Regulation Tomorrow: What Happens when Technology is Faster Than the Law* (Tilburg Law & Econ. Ctr. Discussion Paper 2016–04, Sep. 4, 2016), <https://ssrn.com/abstract=2834531> [<https://perma.cc/9FCJ-KA8L>].

67. For the seminal treatment, see Rafael La Porta et al., *The Economic Consequences of Legal Origins*, 46 J. ECON. LITERATURE 285 (2008).

68. See e.g., Katharina Pistor, *A Legal Theory of Finance*, 41 J. COMP. ECON. 315 (2013).

69. See ARNER, *supra* note 13.

70. See *id.*

71. *Id.*

72. For discussion of private orderings, see Dan Awrey, *The Limits of Private Ordering Within Modern Financial Markets*, 34 REV. BANKING & FIN. L. 183 (2015).

was often framed as the tension between rules and principles.⁷³ Under this framework, the question of how best to achieve the optimal balance was contrasted between systems based on highly specific rules designed to address all possible questions relating to particular products or services, with the United States usually posited as the leading example, and systems based on principles that provide guidance which could then be applied to a variety of situations, with the United Kingdom as the exemplar.

In the wake of the 2008 Crisis, this dominant paradigm has of necessity been subject to reconsideration, with the regulatory pendulum going from one extreme to the other. From 2008 up to approximately 2016, regulatory considerations at the international level as well as in major jurisdictions, such as the United States and the European Union (with the United Kingdom a part of its harmonized system of financial regulation and supervision), were dominated by the necessity to reregulate the financial system, so as to prevent future financial crises or at least to put in place new regulatory frameworks which would have prevented or ameliorated the 2008 Crisis.⁷⁴

During this period of almost a decade following the Crisis, regulatory discussions shifted from the pre-Crisis framework of restrictive versus permissive and rules versus principles to comprehensive macro and micro prudential frameworks combined with much broader consumer protection efforts, with regulation moving beyond market failures and the efficient markets hypotheses, yet with a new paradigm of understanding yet to fully emerge.⁷⁵ In the language of the G20, all aspects of the financial sector should be subject to appropriate levels of regulation, with efforts directed not only towards the largest too-big-to-fail financial institutions at the heart of the Crisis (in the context comprehensive regulation of “globally systemically important financial institutions” or G-SIFIs) but also to all aspects of the financial system which were previously unregulated or perceived to be under-regulated (mainly under the rubric of “shadow banking”).⁷⁶

73. See Robert Baldwin & Julia Black, *Really Responsive Regulation*, 71 MOD. L. REV. 59 (2008).

74. See BUCKLEY & ARNER, *supra* note 10.

75. See RECONCEPTUALISING GLOBAL FINANCE AND ITS REGULATION (Ross P. Buckley et al. eds. 2016).

76. See Douglas W. Arner, *Adaptation and Resilience in Global Financial Regulation*, 89 N.C. L. REV. 1579 (2011).

In this post-Crisis regulatory environment, FinTech posed a significant challenge; a challenge for which the pre-Crisis approaches were no longer viewed as suitable. Nonetheless, the basic options available in the context of regulation remained the same: to regulate or not to regulate? In the pre-Crisis environment, the latter would have been seen as the more appropriate approach. In the post-Crisis environment, however, the choice is no longer so clear.

B. THE ZEN APPROACH: REGULATING A REVOLUTION BY DOING NOTHING

Outside of the financial sector context, debates regarding the best approaches to address innovation—particularly technological innovation—typically center around questions of whether to regulate in advance of innovation or whether to allow innovation to develop and then, if necessary, regulate post development.⁷⁷

China is often applauded for adopting a *laissez-faire* approach before designing a comprehensive regulatory system approach for the new environment.⁷⁸ The approach allowed market participants to test without immediate repercussions from the regulator. In practice, this meant that China's need for regulatory sandboxes was limited, as China itself represented a sandbox on a national level. However, China did not persist with its entirely *laissez-faire* approach. After Alibaba Group issued new pooled products, regulators woke one morning to discover the world's fourth largest (USD 90 billion) money market fund had grown within only nine months and is now the world's largest money market fund at over USD 225 billion.⁷⁹ This lack of initial visibility and regulatory market comprehension has pushed China to pursue a comprehensive new

77. See Ross P. Buckley et al., *Financial Innovation in East Asia*, 37 SEATTLE L. REV. 307 (2014).

78. See Zhou et al., *supra* note 49, at 297–300.

79. Cf. TJUN TANG ET AL., BOS. CONSULTING GRP., THE RISE OF DIGITAL FINANCE IN CHINA: NEW DRIVERS, NEW GAME, NEW STRATEGY 4 (Oct. 2014), http://image-src.bcg.com/Images/BCG_The_Rise_of_Digital_Finance_in_China_Oct_2014_tcm52-129223.pdf [<https://perma.cc/DLL8-77AN>]; Shaohui Tian, *Alibaba's Yu'e Bao Becomes Largest Money Market Fund Globally*, XINHUA.NET (Apr. 28, 2017, 5:30:35 PM), http://news.xinhuanet.com/english/2017-04/28/c_136243985.htm [<https://perma.cc/T9CA-JG65>].

regulatory approach, one that is stricter than before but still more balanced and pro-innovation than in many other countries.⁸⁰

It comes as no surprise that innovation is less restricted in less regulated parts of the world.⁸¹ Even in the absence of prescriptive rules, regulation can weaken innovative forces as the establishment of new, solution-driven, potentially innovative firms is more expensive in a strictly regulated environment than in an accommodative one.

If regulation is a barrier to entry for competition, the more regulation, the less serious the competitive threats posed by non-regulated technology firms to regulated financial institutions. Abolishing legislation is an efficient way to even the playing field between these two competing groups.⁸² However, markets, especially post-Crisis, operate in a highly regulated environment. In practice, this means regulations need to be abolished or repealed first. This is a gradual process which may take significant time and lead to uncertain outcomes.

Most financial rules have their origin in crises or scandals. The principle underlying a rule may be sound, while its crisis-driven extreme variant may not. For instance, the core of the Volcker Rule⁸³ in the United

80. Cf. Weihuan Zhou et al., *Regulating FinTech in China: From Permissive to Balance*, in HANDBOOK OF DIGITAL FINANCE AND FINANCIAL INCLUSION: CRYPTOCURRENCY, FINTECH, INSURTECH AND REGULATION (II), at 46 (David Lee & Robert Deng eds., 2017).

81. For instance, in India, Kenya, and Uganda biometric data based on iris scan and fingerprints taken via smart phones after birth provide the newborn's initial identification and functions as basis for issuing the birth certificate. See GSMA, REGULATORY AND POLICY TRENDS IMPACTING DIGITAL IDENTITY AND THE ROLE OF MOBILE 4, 10, 16 (Oct. 2016), <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/10/Regulatory-and-policy-trends-impacting-Digital-Identity-and-the-role-of-mobile.pdf> [<https://perma.cc/U2HX-CXAQ>].

82. See Zetzsche et al., *supra* note 3 (manuscript at 27) (arguing that an uneven regulatory playing field between regulated and unregulated entities may increase systemic risk given that regulated entities have higher costs and less entrepreneurial space for experiments which will weaken their competitiveness over time).

83. See John C. Coates IV, *The Volcker Rule as Structural Law: Implications for Cost-Benefit Analysis and Administrative Law*, 10 CAP. MKTS. L.J. 447 (2015); Julie A.D. Manasfi, *Systemic Risk and Dodd-Frank's Volcker Rule*, 4 WM. & MARY BUS. L. REV. 181, 185–86 (2013); Charles K. Whitehead, *The Volcker Rule and Evolving Financial Markets*, 1 HARV. BUS. L. REV. 39 (2011); Darrell Duffie, *Market Making Under the Proposed Volcker Rule 2–3* (Rock Ctr. for Corp. Governance, Working Paper Series No. 106, 2012), <https://ssrn.com/abstract=1990472> [<https://perma.cc/WA9B-9LLX>].

States is that a bank's own speculative trading should not put the safety of clients' deposits at risk. Similar approaches have been taken around the globe to insulate state-backed deposits from shareholder-backed trading activity.⁸⁴ While there may be some elements which should be improved, the underlying rationale may well be sound. Take the example above: trading activity backed by state-guaranteed deposits increases bank managements' moral hazard due to the implicit bail-out guarantee. Similarly, inadequate sales practices regarding financial services put consumers' funds at risk and render efficient decision-making even more difficult than with proper information disclosed. In turn, solicitation of clients is regulated around the world. Removing these laws would unlock innovation by financial entrepreneurs—but not all of this innovation would necessarily benefit society.

The proponents of free markets often characterize regulation as simply an unnecessary cost to business. Yet, regulations bring two important benefits, in addition to their traditional objectives of protecting consumers and preventing financial crises: standardization and reduction of transaction costs.

Standardization delivers economies of scale benefits and as such is appealing in large markets (e.g. the European Union), but to a lesser degree for regulators of smaller markets (e.g. Singapore). Harmonization is coordinated by regulators across the world who interact through bodies such as the Financial Stability Board (FSB), the Basel Committee on Banking Supervision (BCBS), the International Organization of Securities Commissions (IOSCO) and the International Association of Insurance Supervisors (IAIS).⁸⁵ Any large-scale move away from harmonized regulatory approaches will cast doubt on whether a jurisdiction's legal system is equivalent in form and substance to those in other jurisdictions, potentially hindering global access and certainly raising compliance costs for providers in addressing differing frameworks across markets. The equivalence assessment allows the avoidance of

84. See generally FIN. STABILITY BD., STRUCTURAL BANKING REFORMS: CROSS-BORDER CONSISTENCIES AND GLOBAL FINANCIAL STABILITY IMPLICATIONS (Oct. 27, 2014), http://www.fsb.org/wp-content/uploads/r_141027.pdf [<https://perma.cc/6UMN-27YX>].

85. See ARNER, *supra* note 13.

costly target markets' rules when foreign firms offer financial services,⁸⁶ a practice often referred to as substituted compliance.⁸⁷

An example of regulation reducing costs is mandatory disclosure. With the issuer or originator of a financial product being the entity that has access to the information at the lowest cost (cheapest cost avoider), any solution other than requiring disclosure by the issuer or originator would require multiple market participants to gather the information, or negotiate for it, separately. These transaction costs are removed by mandated disclosure.⁸⁸ Thus, even in the context of the Efficient Markets Hypothesis, regulations requiring disclosure often play an important role.

For these reasons, plus the business certainty afforded by regulation, the complete disengagement of regulators in financial markets is highly unlikely, not least given the very recent memory of the Crisis in the minds of many regulators.

C. SPECIFIC REGULATORY FRAMEWORKS

At the other extreme is the traditional regulatory approach of developing new regulations to address specific forms of new products and/or institutions.

An increasing number of jurisdictions have developed and implemented new legislative and/or regulatory frameworks to address specific forms of FinTech innovation. According to the FSB:

86. See Dirk Zetsche, *Competitiveness of Financial Centers in Light of Financial and Tax Law Equivalence Requirements*, in RECONCEPTUALIZING GLOBAL FINANCE AND ITS REGULATION 391 (Ross P. Buckley et al. eds., 2016).

87. The United States Commodity Futures Trading Commission (CFTC) relies on substituted compliance to determine eligibility of swap counterparties. See Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, §§ 701–74, 124 Stat. 1376, 1641–1802 (2010); Cross-Border Application of Certain Swaps Provisions of the Commodity Exchange Act, 77 Fed. Reg. 41,214 (July 17, 2012) (codified at 17 C.F.R. ch. 1). See also Steven M. Davidoff, *Rhetoric and Reality: A Historical Perspective on the Regulation of Foreign Private Issuers*, 79 U. CIN. L. REV. 619, 633 (2010); Sean J. Griffith, *Substituted Compliance and Systemic Risk: How to Make a Global Market in Derivatives Regulation*, 98 MINN. L. REV. 1291, 1293–94 (2014); Howell E. Jackson, *Substituted Compliance: The Emergence, Challenges, and Evolution of a New Regulatory Paradigm*, 1 J. FIN. REG. 169 (2015).

88. On mandatory disclosure, see Christian Leuz & Peter Wysocki, *The Economics of Disclosure and Financial Reporting Regulation: Evidence and Suggestions for Future Research*, 54 J. ACCT. RES. 525, 555, 560 (2016).

[w]hile many FinTech activities are covered within existing regulatory frameworks, the FSB stocktake of regulatory approaches to FinTech finds that a majority of jurisdictions (20 of 26) have already taken or plan to take regulatory measures to respond to FinTech[,] but the scope and scale of changes or planned changes vary substantially.⁸⁹

To date, the largest number of these measures have focused on new alternative financing techniques, such as equity crowdfunding and peer-to-peer (P2P) lending.⁹⁰ In particular, the JOBS Act⁹¹ with its Securities and Exchange Commission (SEC) regulation of crowdfunding,⁹² is an important example of legislation designed to liberalize the existing framework.⁹³ Following the United States' lead and IOSCO's

89. See FIN. STABILITY BD., *supra* note 27, at 24.

90. From an economic perspective, see Ajay Agrawal et al., *Some Simple Economics of Crowdfunding*, 14 INNOVATION POL'Y & ECON. 63, 74 (2014); Ricarda B. Bouncken et al., *Crowdfunding: The Current State of Research*, 14 INT'L. BUS. & ECON. RES. J. 407 (2015); A. Christine Hurt, 2015 U. ILL. L. REV. 217, 224 (2015); Darian M. Ibrahim, *Equity Crowdfunding: A Market for Lemons?*, 100 MINN. L. REV. 561, 569 (2015); Gmeleen Faye Tomboc, *The Lemons Problem in Crowdfunding*, 30 J. INFO. TECH. & PRIVACY L. 253, 256 (2013). From a legal perspective, see Andrew C. Fink, *Protecting the Crowd and Raising Capital through the CROWDFUND Act*, 90 U. DET. MERCY L. REV. 1, 8, 31 (2012); Thomas Lee Hazen, *Crowdfunding or Fraudfunding? Social Networks and the Securities Laws—Why the Specially Tailored Exemption Must Be Conditioned on Meaningful Disclosure*, 90 N.C. L. REV. 1735 (2012); Joan MacLeod Heminway, *Investor and Market Protection in the Crowdfunding Era: Disclosing to and for the "Crowd"*, 38 VT. L. REV. 827, 831 (2014); Jorge Pesok, *Crowdfunding: A New Form of Investing Requires a New Form of Investor Protection*, 12 DARTMOUTH L.J. 146, 149 (2014).

91. Jumpstart Our Business Startups Act, Pub. L. No. 112-106, 126 Stat. 306 (2012). Title III, also known as the CROWDFUND Act, created a way for companies to use crowdfunding to issue securities. *Id.* §§ 301–05, 126 Stat. at 315–23.

92. See Crowdfunding, 80 Fed. Reg. 71,388 (Nov. 16, 2015) (codified at 17 C.F.R. pts. 200, 227, 232).

93. In many ways this is an example of the cautious permissiveness through relaxation of existing requirements, discussed in the following Part. See C. Steven Bradford, *The New Federal Crowdfunding Exemption: Promise Unfulfilled*, 40 SEC. REG. L.J. 195, 196 (2012); Jason W. Parsont, *Crowdfunding: The Real and the Illusory Exemption*, 4 HARV. BUS. L. REV. 281, 283 (2014).

recommendations,⁹⁴ at least thirteen of twenty-six jurisdictions consulted by the FSB legislated regarding crowdfunding or P2P finance.⁹⁵

The other major area where new frameworks are being developed is payment and settlement with thirteen of the twenty-six jurisdictions consulted by the FSB reviewing their legislation on payments.⁹⁶ With United States regulators focused on implementing the provisions of the Dodd-Frank-Act⁹⁷ (which in part relates to payment, clearing, and settlement),⁹⁸ the most significant legislative response to new technologies in this field has been the new European Union payments framework known as the Payment Service Directive (PSD2).⁹⁹ Other jurisdictions that have developed new legal frameworks in the payment area include Hong Kong, Bahrain,¹⁰⁰ Indonesia,¹⁰¹ and Australia where

94. BD. OF INT'L ORG. OF SEC. COMM'NS, CROWDFUNDING 2015 SURVEY RESPONSES REPORT (Dec. 2015), <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD520.pdf> [<https://perma.cc/62P7-KV25>] [hereinafter IOSCO REPORT]; *Statement on Addressing Regulation of Crowdfunding*, INT'L ORG. SEC. COMMISSIONS (Dec. 2015), <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD521.pdf> [<https://perma.cc/MY7K-LGQV>] [hereinafter *IOSCO Statement*].

95. FIN. STABILITY BD., *supra* note 27, at 57. For an overview on European crowdfunding legislation, see *Commission Staff Working Document: Crowdfunding in the EU Capital Markets Union*, SWD (2016) 154 final (May 3, 2016); Dirk A. Zetzsche & Christina D. Preiner, *Cross-Border Crowdfunding—Towards a Single Crowdfunding Market for Europe* 3–4 (European Banking Inst. Working Paper Series, No. 8, 2017), <https://ssrn.com/abstract=2991610> [<https://perma.cc/2N2G-63EH>].

96. See FIN. STABILITY BD., *supra* note 27, at 58.

97. Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Pub. L. No. 111-203, 124 Stat. 1376 (2010).

98. For details, see COMM. ON PAYMENTS & MKT. INFRASTRUCTURES, BANK FOR INT'L SETTLEMENTS, PAYMENT, CLEARING AND SETTLEMENT SYSTEMS IN THE UNITED STATES, 480 (2012), https://www.bis.org/cpmi/publ/d105_us.pdf [<https://perma.cc/DM9Z-SE2A>].

99. The core of the new payments framework is the *Payment Services (PSD 2) - Directive*. Council Directive 2015/2366, 2015 O.J. (L 337) 35, 53–54 (EU).

100. In 2014, the Central Bank of Bahrain initiated two new license types—payment services and card processing services—allowing non-banks to provide banking services. *Central Bank of Bahrain Announces Landmark Regulatory Sandbox for Fintech Startups*, CENT. BANK BAHR. (June 14, 2017), http://www.cbb.gov.bh/page-p-central_bank_of_bahrain_announces_landmark_regulatory_sandbox_for_fintech_startups.htm [<https://perma.cc/9M4P-82TA>].

101. Implementation of Payment Transactions Processing, Bank Indonesia Regulation No. 18/40/PBI/2016.

providers of certain (low volume) non-cash payment facilities were exempted from registration requirements.¹⁰²

In the European Union, PSD2 aims to remove the monopoly of credit institutions and banks on their customer's account information and payment services.¹⁰³ PSD2 enables bank customers to use third-party providers to manage their finances. Banks are required to provide these third-party providers access to their customers' accounts through open Application Program Interfaces (APIs).¹⁰⁴ In turn, third-party providers could offer financial services using bank data and infrastructure as either an Account Information Service Provider (AISP) using the account information of bank customers, or as a Payment Initiation Service Provider (PISP) by initiating a payment or P2P transfer on behalf of the customer.¹⁰⁵ These third-party providers could include telecommunication companies, social media, shopping platforms, or value-added service providers, offering, for instance, facilitated transfers, an aggregate overview of a user's account information from several banks, or financial analysis and advice, while the customers' money remains safely stored in the current bank account. PSD2 is expected to fundamentally change the payments value chain, business profitability, and customer expectations.¹⁰⁶ PSD2 is important because it goes beyond merely adding new elements to an existing framework but rather attempts to transform the sector through technology—an example of the sort of smart regulation we address in Part VI.

Beyond these grand projects we find small adjustments facilitating FinTech in many jurisdictions. For instance, South Korea and Japan have eased their regulations to support FinTech firms by allowing licensed financial institutions to buy and hold large stakes in FinTech firms; Korean industrial companies with high-end banking technology are

102. See Australian Securities and Investments Commission (Cth), *ASIC Corporations (Non-Cash Payment Facilities)*, 2016/211, 18 Mar. 2016, s 9 (Austl.).

103. Council Directive 2015/2366, 2015 O.J. (L 337) 35 (EU).

104. *Id.*

105. *Id.*

106. See, e.g., Viola Hellström, *PSD2—The Directive That Will Change Banking As We Know It*, EVRY, <https://www.evry.com/en/news/articles/psd2-the-directive-that-will-change-banking-as-we-know-it/> [<https://perma.cc/4WMQ-2EHH>] (last visited Dec. 4, 2017).

allowed to own online-only banks.¹⁰⁷ Although applicable to both innovative and traditional businesses Australia's exemptions for low volume transactions¹⁰⁸ are another example of how to free small, innovative firms from regulatory burdens. Another example is the United Kingdom crown dependency of Jersey which implemented a class exemption in relation to digital currencies. According to that class exemption, which has been inadequately labeled a Digital Currency Sandbox,¹⁰⁹ operators of digital currency exchanges are exempt from registration requirements if their annual turnover is less than GBP 150,000, following an application to the Jersey Financial Services Commission.¹¹⁰

Finally, the United Kingdom provides an example of a jurisdiction which has altered the mandate of its regulator to require considerations of innovation and economic competitiveness in regulatory decisions.¹¹¹ This has forced the U.K. FCA to consider competitiveness issues in regulatory decisions, moving beyond the approach common in a number of major jurisdictions to consider only economic impact. In other jurisdictions, such as Luxembourg, furthering innovation is treated as one aspect of

107. Kim Boram, *Regulator Set to Allow Banks to Fund Fintech Firms*, YONHAP NEWS AGENCY (May 6, 2015, 2:00 PM), <http://english.yonhapnews.co.kr/business/2015/05/06/77/0503000000AEN20150506002900320F.html> [<https://perma.cc/TG5D-AWEP>]; Adit Vaddi, *Japan's Financial Industry Is Now Finally Embracing Fintech*, CROWD VALLEY (Mar. 16, 2017), <https://news.crowdvalley.com/news/japans-financial-industry-is-now-finally-embracing-fintech> [<https://perma.cc/964S-HDTQ>].

108. See Minister for Revenue and Financial Services (Cth), *Corporations (Low Volume Financial Markets)*, 2016/888, 22 Sept. 2016, s 5 (Austl.) (exempting certain low volume financial markets from *Corporations Act 2001* (Cth) pt 7.4 (Austl.)). A range of early stage FinTech applications could benefit from this exemption, including digital currencies and peer-to-peer-financing platforms.

109. See Sara Johns & Steven Meacher, *Jersey Lawmakers Create 'Regulatory Sandbox' for Digital Currency Industry*, INT'L INV. (Dec. 20, 2016), <http://www.internationalinvestment.net/products/investments/jersey-lawmakers-create-regulatory-sandbox-digital-currency-industry/> [<https://perma.cc/654F-9C92>].

110. See Draft Proceeds of Crime (Miscellaneous Amendments) (Jersey) Regulations 201-, P.44/2016, 4 May 2016.

111. See Elena Carletti & Agnieszka Smolenska, *10 Years on from the Financial Crisis: Co-operation Between Competition Agencies and Regulators in the Financial Sector* 27 (Organisation for Econ. Co-operation & Dev., Paper No. DAF/COMP/WP2(2017)8), <http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/WP2%282017%298&docLanguage=En> [<https://perma.cc/UN4V-T454>].

maintaining financial system stability, which can be seen not only from the standpoint of preventing financial crises but also from enhancing the functioning of the financial system. With Europe's PSD2, a mandate to promote innovation is implicit in the legislation, but regardless some jurisdictions, such as Germany, construe their mandate narrowly and require an explicit mandate to further innovation as a precondition for extensive waivers.¹¹² A similar issue arises in the conflict between federal and state regulators in the United States. In April, 2017, states represented by the Conference of State Bank Supervisors, challenged a FinTech special charter issued by the OCC on the grounds that the Office lacks a mandate to further innovation.¹¹³ The capacity of the OCC's plans to charter FinTech companies as "special national banks" was challenged, *inter alia*, on the grounds that to do so exceeds the OCC's statutory authority.¹¹⁴

Beyond these traditional approaches of doing nothing and crafting new regulations lie a range of other alternatives to addressing innovation, the first of which is the cautiously permissive case-by-case approach.

III. THE CASE-BY-CASE APPROACH: FORBEARANCE, RESTRICTED LICENSES, AND SPECIAL CHARTERS

A. PARTIAL EXEMPTION OR DISPENSATION

In between the traditional choices of doing nothing and developing completely new regulatory frameworks, regulators can carve out pockets of activities (i.e. defined by product, scope, or scale) where participants can benefit on a case-by-case basis from regulatory forbearance (such as "no-action" letters in the United States) or from restricted licenses or

112. See BUNDESANSTALT FÜR FINANZDIENSTLEISTUNGSAUFSICHT (BaFin) (FED. FIN. SUPERVISORY AUTH.), ANNUAL REPORT 40–41 (2015), https://www.bafin.de/SharedDocs/Downloads/EN/Jahresbericht/dl_jb_2015_en.pdf?__blob=publicationFile&v=2 [<https://perma.cc/F4XM-MLQ4>] (arguing that a regulatory sandbox requires a broader mandate than granted by Parliament to the BaFin).

113. V. Gerard Comizio & Nathan S. Brownback, *State Bank Regulators Challenge OCC's Authority to Issue FinTech Charters*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (June 4, 2017), <https://corpgov.law.harvard.edu/2017/06/04/state-bank-regulators-challenge-occs-authority-to-issue-fintech-charters/> [<https://perma.cc/2AWP-H842>].

114. *Id.*

special charters (such as the OCC's for banks¹¹⁵). In return for the regulator's "clarification" that the FinTech firm's activity is outside the scope of certain rules which are viewed as unnecessary or inappropriate under the circumstances or in the specific context, the no-action letter or restricted license may be supplemented with conditions seeking to ensure that even if certain rules do not apply, the principles underlying the regulation are still upheld. The practical effect of forbearance through no-action letters, restricted licensing, or special charters is that of *partial exemptions* or *dispensation* within a broader regulatory framework.

The Dutch regulators DNB/AMF give the following example of how they would conclude that some dispensation from mandatory law governing client on-boarding is in order:

An innovative type of asset management enables customers to gradually build their wealth through incremental accounts, with the investment company conducting a step-by-step inventory of each customer's financial position, knowledge, experience, objectives and risk appetite as time goes on. If supervisors find the investment company to be acting in the spirit of the law, i.e. to be scrupulously observing its duty of care, they may judge that it is unreasonable to demand the same thorough initial intake process as is customary in asset management where initial outlays are substantially steeper and a full profile is drawn up at a first meeting.¹¹⁶

B. REGULATORS' DISCRETION

The extent regulators can make use of forbearance through no-action letters or restricted licensing depends on their specific legislative context. While some discretion is available in most jurisdictions, the relation between the generic and specific provisions, as established in the country's legal framework (particularly administrative case law in many instances), determines the extent to which regulators may require

115. See Press Release, Office of the Comptroller of the Currency, OCC Issues Draft Licensing Manual Supplement for Evaluating Charter Applications from Financial Technology Companies, Will Accept Comments Through April 14 (Mar. 15, 2017), <https://www.occ.gov/news-issuances/news-releases/2017/nr-occ-2017-31.html> [<https://perma.cc/S2CU-W4AD>].

116. See AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, MORE ROOM FOR INNOVATION IN THE FINANCIAL SECTOR 4 (Dec. 2016), https://www.afm.nl/~/_profimedia/files/onderwerpen/innovation-hub/publicaties/2016/room-for-innovation-in-financial-sector.ashx [<https://perma.cc/CT94-B9F3>].

legislative action (such as amendment of laws) prior to granting exemptions. For instance, the German regulator BaFin re-read the German banking act in a way to enable video chat identification of bank clients,¹¹⁷ but could not re-read the German investment fund act, applying to fund management companies and depositories, in a similar way. At the same time, the Luxembourg CSSF read basically the same European Union rules in a way that enabled fund managers and investment firms to allow video authentication¹¹⁸—and thereby expand the benefits of internet authentication to their core constituency.

While some legislation allows for no-action letters and/or restricted licensing,¹¹⁹ even in the absence of explicit legislation, special charters are an established feature of administrative law used to provide regulatory dispensation on a case-by-case basis by regulators worldwide.¹²⁰ Major

117. See *Videoidentifizierungsverfahren (Rundschreiben 04/2016): Übergangsfrist*, BUNDESANSTALT FÜR FINANZDIENSTLEISTUNGSAUFSICHT (July 11, 2016), https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Meldung/2016/meldung_160711_videoident.html [<https://perma.cc/E3YF-THRZ>].

118. See *Identification/Verification Through Video Chat*, Commission de Surveillance du Secteur Financier (2016), http://www.cssf.lu/fileadmin/files/LBC_FT/FAQ_LBCFT_VIDEO_IDENTIFICATION_080416.pdf [<https://perma.cc/62V5-33YR>].

119. For Europe, the dispensation from capital requirements granted to certain banks and investment firms meeting the conditions of the Capital Requirements Regulation, Council Directive 575/2013, art. 4, 2013 O.J. (L 176) 3 (EU), and the license for “small” Managers of Alternative Investment Funds pursuant to Council Directive 2011/61, art. 3, 2011 O.J. (L 174) 1 (EU). For details, see Dirk A. Zetsche & Christina D. Preiner, *Scope of the AIFMD*, in *THE ALTERNATIVE INVESTMENT FUND MANAGERS DIRECTIVE* 49, 50 (2d ed. 2015).

120. See, e.g., OFFICE OF THE COMPTROLLER OF THE CURRENCY, *EXPLORING SPECIAL PURPOSE NATIONAL BANK CHARTERS FOR FINTECH COMPANIES* 3–4 (Dec. 2016), <https://www.occ.gov/topics/responsible-innovation/comments/special-purpose-national-bank-charters-for-fintech.pdf> [<https://perma.cc/Y96W-PEHG>] (stating that the OCC has a long standing practice of granting special national bank charters for banks limiting their activities to fiduciary services, including trust banks and credit card banks). See for Europe, the right to grant restricted licenses under the Council Directive 2011/61, art. 8(4), 2011 O.J. (L 174) 21 (EU), stating “[t]he competent authorities of the home Member State of the AIFM may restrict the scope of the authorisation, in particular as regards the investment strategies of AIFs the AIFM is allowed to manage.” For details, see Dirk Zetsche & David Eckner, *Appointment, Authorization and Organization of the AIFM*, in *THE ALTERNATIVE INVESTMENT FUND MANAGERS DIRECTIVE* 193–242 (2d ed. 2015). The same power is granted to competent authorities of European Union Member States under national administrative law. The German regulator BaFin explicitly refers to this option. See BAFIN, *supra* note 112, at 41 (In the context of regulatory sandbox one

regulators such as in the United States, Luxembourg, Hong Kong, or Germany, with hundreds of banks and insurance undertakings under their respective supervision, gather experience with conduct that imposes risks on clients and the system from many sources.¹²¹ This means they are well-equipped to identify conduct that only represents minor risks, or that may be good market practice, and can then reduce the regulatory burden by measures such as no-action letters, conditional dispensations (restricted licensing), or an official special charter policy.

C. UPSIDES

The institutionalized communication between regulators and FinTechs through innovation hubs¹²² provides the background for partial exemptions on a case-by-case basis and means regulators retain access to high levels of information—they remain connected to a fast-changing

“aspect is often left out of account: regulatory requirements can be scaled down – including in German supervisory laws: the Banking Act (Kreditwesengesetz), for example, does not require every business model to have a full banking licence. BaFin can also grant authorisations for selected banking activities and financial services. Although a company holding this type of licence is then restricted in terms of its business activity, the list of requirements it has to meet is also scaled down accordingly. . . . [S]ome rules cannot be changed, but wherever the legislators have only specified an outline, BaFin makes its requirements on companies dependent on risk and the complexity of their business in order to reflect the principle of proportionality.”).

121. See Policy on No-Action Letters; Information Collection, CFPB No. 2014-0025 (Feb. 2, 2016); OFFICE OF THE COMPTROLLER OF THE CURRENCY, SUPPORTING RESPONSIBLE INNOVATION IN THE FEDERAL BANKING SYSTEM: AN OCC PERSPECTIVE (Mar. 2016), <https://www.occ.gov/publications/publications-by-type/other-publications-reports/pub-responsible-innovation-banking-system-occ-perspective.pdf> [<https://perma.cc/6434-AG3E>]. Implementing the strategy, the OCC published draft guidelines in March 2017, see OFFICE OF THE COMPTROLLER OF THE CURRENCY, COMPTROLLER’S LICENSING MANUAL DRAFT SUPPLEMENT: EVALUATING CHARTER APPLICATIONS FROM FINANCIAL TECHNOLOGY COMPANIES (Mar. 2017), <https://www.occ.gov/publications/publications-by-type/licensing-manuals/file-pub-lm-fintech-licensing-manual-supplement.pdf> [<https://perma.cc/8UZJ-MQBP>]. In addition to the CFPB and the OCC, the SEC seeks a key role in furthering innovation, see JD Alois, *SEC Commissioner Piwowar: “The Great Potential of Fintech Should Not Be Hindered by Our Current Regulatory Structure”*, CROWDFUND INSIDER (Nov. 20, 2016, 5:19 PM), <http://www.crowdfundinsider.com/2016/11/92769-sec-commissioner-piowar-great-potential-fintech-not-hindered-current-regulatory-structure/> [<https://perma.cc/AJC7-V97R>].

122. See *supra* Part I.B.

innovative marketplace and can adjust their approaches and policies on a case-by-case basis accordingly.

Another upside of case-by-case assessment is risk control. Instead of exemptions which end the flow of information from licensed entities, regulators see the business models and are entitled to request clarifications and risk assessments in firms' business plans.

Financial centers find themselves increasingly in competition for innovative start-ups. A partial exemption approach is hard to copy, given that few other regulators have the necessary expertise upon which to make sound judgements. Moreover, the restricted licenses may come with cross-border recognition, i.e. the license may grant market access. For instance, the OCC's special national bank charter comes with the right to pursue the licensed activities across the United States. Similarly, the license granted by a regulator of the European Union and European Economic Area Member States, or in some instances even an European Union regulator, comes with the right to offer services cross-border in all European Union and European Economic Area states, i.e. in markets currently comprising 510 million consumers. For these reasons, case-by-case flexibility and dispensations comprise a comparative advantage of the major regulators.

D. RISKS

However, this advantage comes with a limitation, in terms of scalability and accuracy. While small or highly specialized (e.g. payments or investment funds only) FinTech ecosystems are well-suited for such a bespoke model, as the number and variety of potential actors requesting exemptions increases, the strain on regulatory capacity to process these requests mounts. In addition to the costs of the case-by-case assessments, ensuring the equal treatment of participants is difficult. Case-by-case assessment comes with the risks of errors, which could distort competition and lead to suboptimal production of financial services. Alternatively the permitted conduct may prove harmful to clients or the financial system at large, or the service may turn out to have broader effects on the financial system than previously assumed by regulators. This may not only harm the regulators' reputation, but could also lead to liability.

If judges hold the no-action letter, restricted license, special charter, or other forbearance approach to violate mandatory law, the regulators' conduct may be found to be negligent if not backed up by the legislature.

This prospect of potential liability may lead to suboptimal levels of dispensation practice.

Moreover, the benchmarks for a regulator's dispensation practice may be called into question: should consumer protection and systemic risk prevention dominate, or should the focus be on competitiveness and innovation? For instance, should the regulator of a financial product generating state¹²³ focus on job creation, while that of a distribution state seek to shield local market participants from foreign competition?

All in all, forbearance-based case-by-case experimentation through no-action letters, special charters, and restricted licenses comes with downsides for regulators, FinTechs, and society. For regulators one downside is the risk of liability for decisions. For FinTechs, the process of obtaining such forbearance through a no-action letter, restricted license, or special charter application is often costly. Firms will require lawyers to help communicate with regulators, and assemble and file applications and reports. Given that determination will be on a case-by-case basis, each application will require in-depth development and will not be a standardized off-the-shelf solution. In some cases, FinTechs will find themselves, from the outset, falling within existing laws or regulations, and may need to develop detailed arguments regarding justification for special treatment of their specific application. The associated costs raise the minimum capital necessary to start an innovative firm, and increase entrepreneurs' funding difficulties. For society, the principal costs may arise either from a suboptimal level of dispensation, or from excessive dispensation leading to unacceptable risks and consumer losses.

E. OVERALL ASSESSMENT

On balance, cautious experimentation on a case-by-case basis through forbearance via no-action letters, restricted licenses, special charters, and the like provides a useful tool for regulators to perform market discovery (i.e. acquire knowledge of start-ups, develop understanding of business models, and identify regulatory perimeters of modern technologies). However, this should only be a temporary tool as it is not suitable for market-wide use given its case-by-case nature. Further, it fails to provide long-term legal certainty for business

123. For the distinction between production and distribution countries with respect to financial services, *see* Zetzsche, *supra* note 86, at 391.

development and is not an international standardization tool. These downsides have led to experiments with more structured approaches in an increasing range of jurisdictions, such as regulatory sandboxes.

IV. STRUCTURED EXPERIMENTALISM: REGULATORY SANDBOXES

In finance, a regulatory sandbox refers to a regulatory “safe space” for innovative financial institutions and activities underpinned by technology. At the most basic level, the sandbox creates an environment for businesses to test products with less risk of being “punished” by the regulator for non-compliance. In return, regulators require applicants to incorporate appropriate safeguards to insulate the market from risks of their innovative business.¹²⁴

Regulatory sandboxes can avoid some of the downsides just outlined. Sandboxes’ pre-defined entry (and exit) criteria provide greater transparency and replicability than prior approaches.

To our knowledge, as of August 1, 2017, there are currently fourteen sandboxes in operation, and at least two others announced, with draft bills in the legislative process:

Table 1: Regulatory Sandboxes in Operation Sorted by Location and Start Date

United Kingdom (4/2016) ¹²⁵	Hong Kong (9/2016) ¹²⁶	Malaysia (10/2016) ¹²⁷	Singapore (11/2016) ¹²⁸
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124. See, e.g., Letter from Arthur Yuen, Deputy Chief Exec., H.K. Monetary Auth., to Chief Exec., All Authorized Institutions (Sept. 6, 2016), <http://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2016/20160906e1.pdf> [https://perma.cc/L2GE-Q6WF] [hereinafter HKMA FSS]; MONETARY AUTH. OF SING., *supra* note 56, at §§ 2.2, 6.2.f, 6.2.g; BANK NEGARA MALAY., *supra* note 56, § 6.1.

125. See, e.g., MONETARY AUTH. OF SING., *supra* note 56, at §§ 2.2, 6.2.f, 6.2.g; BANK NEGARA MALAY., *supra* note 56, § 6.1; HKMA FSS, *supra* note 124, at 2.

126. See HKMA FSS, *supra* note 124, at 1.

127. See BANK NEGARA MALAY., *supra* note 56.

128. See MONETARY AUTH. OF SING., *supra* note 56.

Abu Dhabi (11/2016) ¹²⁹	Australia (12/2016) ¹³⁰	Mauritius (1/2017) ¹³¹	Netherlands (1/2017) ¹³²
Indonesia (9/2016) ¹³³	Brunei Darussalam (2/2017) ¹³⁴	Canada (2/2017) ¹³⁵	Thailand (3/2017) ¹³⁶

129. See ABU DHABI GLOB. MKT. FIN. SERVS. REGULATORY AUTH., *FinTech Regulatory Laboratory Guidance* (2016), <https://www.adgm.com/media/85833/fin-tech-reglab-guidance.pdf> [<https://perma.cc/SJ6U-2HSK>].

130. See AUSTRALIAN SEC. & INVS. COMM'N, *REGULATORY GUIDE NO. 257: TESTING FINTECH PRODUCTS AND SERVICES WITHOUT HOLDING AN AFS OR CREDIT LICENCE* (2017), <http://download.asic.gov.au/media/4160999/rg257-published-24-february-2017.pdf> [<https://perma.cc/G8DT-8E4W>].

131. See MAURITIUS BD. OF INV., *REGULATORY SANDBOX LICENSE: GUIDELINES*, <http://www.investmauritius.com/media/389644/Guidelines-RSL.pdf> [<https://perma.cc/S56V-MYAD>] (last visited Dec. 7, 2017).

132. See AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116.

133. See Press Release, Bank Indon., *Five Bank Indonesia Initiatives for the Payment System* (Sept. 2, 2016) (on file with the Fordham Journal of Corporate & Financial Law); Press Release, Otoritas Jasa Keuangan, *OJK Drafts Regulations on Fintech Development* (Oct. 6, 2016), <http://www.ojk.go.id/en/berita-dan-kegiatan/siaran-pers/Documents/Page%20Press-Release-OJK-Drafts-Regulations-on-Fintech-Development1/SIARAN%20PER%20FINTECH-ENGLISH.pdf> [<https://perma.cc/B2L6-XJYN>].

134. See AUTORITI MONETARI BRUNEI DARUSSALEM, *GUIDELINES NO. FTU/G-1/2017/1: FINTECH REGULATORY SANDBOX GUIDELINES* (2017).

135. See Press Release, Canadian Sec. Adm'rs, *The Canadian Securities Regulators Launches a Regulatory Sandbox Initiative* (Feb. 23, 2013), <https://www.securities-administrators.ca/aboutcsa.aspx?id=1555> [<https://perma.cc/3YVU-K2VT>]. The Ontario Securities Commission opened the door for a sandbox with a no-action letter dated 24 October 2016. See *Sec. Legislation of Ont. v. Angellist, LLC* (2016), 39 O.S.C. Bull. 8903, 8903 (Can. Ont. Sec. Com.). To our knowledge, besides the announcement of a sandbox, there is no formal document summarizing sandbox conditions so far.

136. See *FinTech Update: Thailand's FinTech Regulatory Sandbox*, BAKER MCKENZIE (Oct. 2016), http://www.bakermckenzie.com/-/media/files/insight/publications/2016/10/fintech-update/al_bangkok_fintechsandbox_oct16.pdf?la=en [hereinafter *Bank of Thailand Sandbox*] (for the sandbox of the Bank of Thailand); see also, Komkrit Kietduriyakul, *Thailand: Fintech 2016 Highlights and Beyond*, BAKER MCKENZIE (Dec. 29, 2016), <http://www.bakermckenzie.com/en/insight/publications/2016/12/fintech-2016-highlights-and-beyond> [hereinafter *Thai SEC Sandbox*] (for the sandbox of the Thai Securities and Exchange Commission); Pawee Sirimai Darana Chudasri, *SEC Readies Sandbox for Fintech Firms*, BANGKOK POST (Feb. 21, 2017), <https://www.pressreader.com/thailand/bangkok-post/20170221/281947427615137>.

Bahrain (6/2017) ¹³⁷	Switzerland (8/2017) ¹³⁸		
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Table 2: Regulatory Sandboxes Announced

Taiwan ¹³⁹	Japan ¹⁴⁰		
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In a range of jurisdictions, sandbox proposals have been widely discussed and considered by regulators, but neither rejected nor officially adopted (see Table 3).

137. See CENTRAL BANK OF BAHR., REGULATORY SANDBOX CONSULTATION PAPER (Mar. 28, 2017), <http://www.cbb.gov.bh/assets/Consultations/Consultation-Regulatory%20Sandbox-%2028March%202017.pdf> [https://perma.cc/8PW5-KVEG]; CENTRAL BANK OF BAHR., REGULATORY SANDBOX FRAMEWORK (Aug. 28, 2017), <http://www.cbb.gov.bh/assets/Regulatory%20Sandbox/Regulatory%20Sandbox%20Framework-Amended28Aug2017.pdf> [https://perma.cc/8Y86-CAXH] [hereinafter BAHRAIN SANDBOX RULES].

138. See *Federal Council Put New FinTech Rules Into Force*, FED. COUNCIL (July 5, 2017), <https://www.admin.ch/gov/en/start/documentation/media-releases/media-release-s-federal-council.msg-id-67436.html> [https://perma.cc/DS7Z-NTW9]; see Bundesrat/EFD, *Änderung der Bankenverordnung durch die Vernehmlassungsvorlage* (Feb. 1, 2017), <https://www.newsd.admin.ch/newsd/message/attachments/47043.pdf> [https://perma.cc/RR63-5NL6] [hereinafter “Vernehmlassungsvorlage”]; EIDGENÖSSISCHES FINANZDEPARTEMENT, REGULIERUNGSFOLGENABSCHÄTZUNG: ÄNDERUNG DER BANKENVERORDNUNG (FINTECH) (July 5, 2017), <https://www.newsd.admin.ch/newsd/message/attachments/49030.pdf> [https://perma.cc/HW8A-89QT].

139. See Ted Chen, *FSC Finalizes ‘Regulatory Sandbox’ Bill*, TAIPEI TIMES (Feb. 11, 2017), <http://www.taipeitimes.com/News/biz/archives/2017/02/11/2003664741> [https://perma.cc/CS9F-XAXH] (reviewing government plan to introduce sandbox program); Formosa Transnational, Amendments to Eight Financial Laws for Regulatory Sandbox (Jan. 9, 2017) (on file with the Fordham Journal of Corporate & Financial Law).

140. See *Japan Seeks Deregulated ‘Sandbox’ to Free Up Innovation*, NIKKEI ASIAN REVIEW (May 12, 2017, 4:25 AM), <https://asia.nikkei.com/Politics-Economy/Policy-Politics/Japan-Seeks-deregulated-sandbox-to-free-up-innovation> [https://perma.cc/M8LE-82FL] (citing a government plan to adopt a deregulated sandbox as part of the Abenomics growth strategy).

Table 3: Regulatory Sandboxes Considered

United States ¹⁴¹	European Union ¹⁴²	Ireland ¹⁴³	Norway ¹⁴⁴
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141. See Financial Services Innovation Act of 2016, H.R. 6118, 114th Cong. (2d Sess. 2016). The agency in charge may modify or waive the application of a federal statute if it determines the regulation is “burdensome” to the petitioner. *Id.* § 4(d).

142. See EUROPEAN BANKING FED’N, EUROPEAN BANKING FEDERATION (EBF)’S RESPONSE TO THE EUROPEAN COMMISSION’S CONSULTATION ON FINTECH: A MORE COMPETITIVE AND INNOVATIVE EUROPEAN FINANCIAL SECTOR 48, 52 (June 15, 2017), http://www.ebf.eu/wp-content/uploads/2017/06/EBF_026943-Fintech-consultation_EBF-response_15.06.2017.pdf [<https://perma.cc/DWE4-7SSU>] (promoting a sandbox); EUROPEAN BANKING FED’N, *supra* note 6, at 28–29; EUROPEAN SEC. & MKTS. AUTH., ESMA RESPONSE TO THE EUROPEAN COMMISSION’S CONSULTATION ON FINTECH: A MORE COMPETITIVE AND INNOVATIVE EUROPEAN FINANCIAL SECTOR 7 (June 7, 2017), https://www.esma.europa.eu/sites/default/files/library/esma50-158-457_response_to_the_ec_consultation_on_fintech.pdf [<https://perma.cc/9JE4-C4ZD>] (stating that Fintech start-ups might need more advice or help from supervisors “to navigate the applicable legal framework. In that sense, innovation hubs or other dedicated structures recently created in some national competent authorities and that are aimed at guiding and advising Fintech start-ups are interesting and should be encouraged.”); EUR. BANKING AUTHORITY, *supra* note 6, at 9, 32–33 (announcing further inquiry into regulatory sandboxes); EUR. COMMISSION, *supra* note 6, at 17.

143. See Brian Hayes, Member of the European Parliament, Address to the Banking and Payments Federation Ireland Conference on Digital Transformation in Financial Services (Mar. 9, 2017) (transcript available at <https://brianhayesdublin.wordpress.com/2017/03/09/its-time-for-the-central-bank-and-dept-finance-to-develop-a-regulatory-sandbox-for-new-financial-firms-hayes/>) [<https://perma.cc/EHY5-99SL>].

144. Randi Jørum Sulland & Tore Mydske, *Norway Prepares for the Implementation of PSD2*, THOMMESSEN (Apr. 2017), <https://www.thommessen.no/globalassets/nyheter/firmanytt/pfl-april-2017—8-11.pdf> [<https://perma.cc/6XUV-8M9W>].

Denmark	China ¹⁴⁵	Spain ¹⁴⁶	Sweden ¹⁴⁷
Mexico ¹⁴⁸	Turkey ¹⁴⁹	Saudi Arabia ¹⁵⁰	Luxembourg

Although approaches differ with regard to definitions, features, and practical importance, some common characteristics of sandboxes can be identified.

A. OBJECTIVE

Regulators implementing sandboxes generally define their objectives in the context of support for innovation,¹⁵¹ market development and enhanced competition,¹⁵² and/or economic growth,¹⁵³ with exact objectives varying with the particular regulator's statutory mandate.

Justifications often seek to draw from experiences in other contexts, such as those relating to pharmaceuticals or other industries involving human testing of products prior to approval. As an example, the U.K. FCA, in an analogy with the "Clinical Trial Period" for pharmaceuticals,

145. See *The PBOC Suggests Digital Financial Services Experiment in Regulated Innovation Sandbox*, 8BTC (July 22, 2017), <http://news.8btc.com/the-pboc-suggests-digital-financial-services-experiment-in-regulated-innovation-sandbox> [<https://perma.cc/365Y-ZKPU>] (citing an official of the PBOC's Monetary Policy Committee saying that China can either adopt a sandbox or "set up an innovation center where FinTech startups are allowed to conduct certain financial services under the terms of a conditional or restricted license. If the test succeeds, they will be able to get a full branch license to perform wider services. If failed, then the license will be revoked.").

146. See ASOCIACIÓN ESPAÑOLA DE FINTECH E INSURTECH, *LIBRO BLANCO DE LA REGULACIÓN FINTECH EN ESPAÑA* (2017), <https://asociacionfintech.es/download/libro-blanco-fintech-e-insurtech/?wpdmdl=837> [<https://perma.cc/V52L-WEJC>].

147. See Pearse, *supra* note 43, at 2.

148. See FIN. STABILITY BD., *supra* note 27, at 58.

149. *Id.*

150. *Id.*

151. See MONETARY AUTH. OF SING., *supra* note 56, §§ 2.1, 2.2; see also Press Release, Bank Indon., *supra* note 133.

152. See MONETARY AUTH. OF SING., *supra* note 56, § 6.2(a)–(b) (detailing the proposal to support the sandbox evaluation criteria); Press Release, Bank Indon., *supra* note 133; see also FIN. CONDUCT AUTH., *REGULATORY SANDBOX* (Nov. 2015), <https://www.fca.org.uk/publication/research/regulatory-sandbox.pdf> [<https://perma.cc/Z5K5-3DFF>].

153. See BANK NEGARA MALAY., *supra* note 56, § 5.1(a); FIN. CONDUCT AUTH., *supra* note 152, at 1.

expects the sandbox to reduce the time to market by thirty-three percent (equivalent to eight percent of a product's lifetime revenue) and to facilitate the FinTech's access to finance, thereby raising its valuation by fifteen percent, and for both these reasons, to enable more innovations to reach the market.¹⁵⁴

B. SANDBOX CONDITIONS

1. Entry Test

As both a legal and economic precondition, regulators around the world generally establish some sort of entry test to determine whether a firm is qualified to "play in the sandbox."

First, the test determines whether the intended technology, service, or activity is appropriate for the sandbox. For example, for entry into the sandbox, the proposed entrant must:

- support the financial services industry;¹⁵⁵
- provide genuine innovation, i.e. new solutions to existing or new problems;¹⁵⁶ and

154. FIN. CONDUCT AUTH., *supra* note 152, at 5 (referring to medical and biopharmaceutical research).

155. See AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 3–4; BANK NEGARA MALAY., *supra* note 56, § 5.1; FIN. CONDUCT AUTH., *supra* note 152, § 3.4; FIN. SUPERVISORY COMMISSION CHINA (TAIWAN), *supra* note 41; *Bank of Thailand Sandbox*, *supra* note 136, § A.3. Bank Indonesia has not defined a rigid regulatory screening for the entrant to enter into the sandbox yet, however, it has a clear goal to support the financial services industry. LAPORAN TAHUNAN BANK INDON., ANNUAL REPORT 108–10 (2016), <http://www.bi.go.id/id/publikasi/laporan-tahunan/bi/Documents/LKTBI2016.pdf> [https://perma.cc/J573-SLG8]; see also ABU DHABI GLOB. MKT., POLICY CONSULTATION ON A REGULATORY FRAMEWORK TO SUPPORT PARTICIPANTS DEPLOYING INNOVATIVE TECHNOLOGY WITHIN THE FINANCIAL SERVICES SECTOR 4 (May 10, 2016), https://adgm.com/media/70182/adgm-consult-paper-no-2-of-2016_reg-framework-for-fintech-final.pdf [https://perma.cc/F59J-RN9W]; MAURITIUS BD. OF INV., *supra* note 131, at 8; Press Release, Gubernur BI Resmikan Bank Indon. Fintech Office (Nov. 14, 2016) (on file with the Fordham Journal of Corporate & Financial Law) (stating the four objectives of the FinTech office establishment).

156. See ABU DHABI GLOB. MKT, *supra* note 155, at 13; AUSTRALIAN SEC. & INVS. COMM'N, *supra* note 130, § RG 257.45; AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 3; AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, § 7.2(a); (section 3.4); BANK NEGARA MALAY., *supra* note 56, § 5.1; EIDGENÖSSISCHES FINANZDEPARTEMENT, ÄNDERUNG DES BANKENGESETZES

- benefit consumers.¹⁵⁷

The first *innovation test* is debatable, given that it asks regulators to assess an innovation, a task arguably far beyond their skill set. It is no surprise therefore that some regulators, such as Australia's ASIC, decline to undertake a full review of the business model and focus principally on risk considerations.

As to risk, sandbox rules¹⁵⁸ ask regulators to look at whether the product or service enhances:

- market stability;
- market transparency; or

UND DER BANKENVERORDNUNG (FINTECH): ERLÄUTERNDER BERICHT ZUR VERNEHMLASSUNGSVORLAGE 33 (Feb. 1, 2017), <https://www.newsadmin.ch/news/message/attachments/47046.pdf> [<https://perma.cc/J3S8-JRQD>]; FIN. CONDUCT AUTH., *supra* note 152, § 3.4; LAPORAN TAHUNAN BANK INDON., *supra* note 155, at 108–110; MAURITIUS BD. OF INV., *supra* note 131, at 8; MONETARY AUTH. OF SING., *supra* note 56, § 6.2.(a); TAIWAN FIN. SUPERVISORY COMM'N, FINANCIAL OUTLOOK MONTHLY NO. 147, at 5–6 (Feb. 2017); *Bank of Thailand Sandbox*, *supra* note 136, §A.3; Press Release, Gubernur BI Resmikan Bank Indon. Fintech Office, *supra* note 155.

157. See ABU DHABI GLOB. MKT., *supra* note 155, at 13–14; AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, § 7.2.(a)(iii); FIN. CONDUCT AUTH., *supra* note 152, § 3.4; LAPORAN TAHUNAN BANK INDON., *supra* note 155, at 110; MAURITIUS BD. OF INV., *supra* note 131, at 8; MONETARY AUTH. OF SING., *supra* note 56, at § 6.2(b); *Bank of Thailand Sandbox*, *supra* note 136 § A.3; Press Release, Otoritas Jasa Keuangan, *supra* note 133 (stating that regulations concerning the sandbox “specify the minimum requirements that need to be satisfied, so the industry’s development will be supported by the legal grounds essential for attracting investments and protecting consumer interests towards efficient and sustainable growth”).

158. See ABU DHABI GLOB. MKT., *supra* note 155, at 6; AUSTRALIAN SEC. & INVS. COMM'N, *supra* note 130, § RG 257.3; AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 3; AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, at §§ 3.3, 7.2(a)(ii), 7.2(e), 8.4, 9.4(c), 10.3; BANK NEGARA MALAY., *supra* note 56, § 5.1(a); EIDGENÖSSISCHES FINANZDEPARTEMENT, *supra* note 156, at 33; FIN. CONDUCT AUTH., *supra* note 152, §3.4; MONETARY AUTH. OF SING., *supra* note 56, §6.2; FIN. SUPERVISORY COMMISSION CHINA (TAIWAN), *supra* note 41; *Bank of Thailand Sandbox*, *supra* note 136, § A.3. Bank Indonesia has not launched the detailed regulatory sandbox. The FinTech office shall function as a unit tasked with evaluating, assessing, and mitigating risk: Press Release, Bank Indon., *supra* note 133; Press Release, Otoritas Jasa Keuangan, *supra* note 133 (stating that “[i]n terms of the scope of the Fintech draft regulations, the OJK is preparing rules about capital, business models, consumer protection and minimum risk management that Fintech companies should satisfy”).

- a company's processes to protect clients, consumers, counterparties, and the broader financial system.

Second, in terms of legal characteristics, regulators typically assess whether there is a *need* for the sandbox, or whether the technology, service or activity is already appropriately covered by existing law and regulation.¹⁵⁹ A positive assessment requires a finding that the provision of the tech-based service faces an *unnecessary* regulatory burden.

Third, regulators require adequate preparation for the sandbox.¹⁶⁰ Specifically, participants:

- need to have entered the development stage (and have left behind the project stage) of the new solution;
- understand laws and regulations governing their conduct; and
- engage in appropriate risk management.

Once an entrant has been approved for participation, questions of scope of coverage of the sandbox arise.

2. *Scope*

The scope of coverage of individual sandboxes varies considerably.

Sectorial Restrictions

While Australia, the United Kingdom, Singapore, Malaysia, and the Netherlands do not limit the sandbox's scope to certain sectors,¹⁶¹ the Swiss and Hong Kong approach restricts it to authorized financial

159. See AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 3–4; BANK NEGARA MALAY., *supra* note 56, § 5.1.e; FIN. CONDUCT AUTH., *supra* note 152, § 3.4; MAURITIUS BD. OF INV., *supra* note 131, at 8.

160. See AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 4; AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, §10; BANK NEGARA MALAY., *supra* note 56, § 5.1(b); FIN. CONDUCT AUTH., *supra* note 152, § 3.4; MAURITIUS BD. OF INV., *supra* note 131, at 8–9; MONETARY AUTH. OF SING., *supra* note 56, §§ 6.2(d), 6.2(f); Letter from Howard Lee to Chief Exec., *supra* note 56.

161. Australian law instead limits the scope to testing of services providing financial product advice in relation to eligible products and dealing in eligible products, see Australian Securities and Investments Commission (Cth), *ASIC Corporations (Concept Validation Licensing Exemption)*, 2016/1175, 15 Dec. 2016, s 5(1) (Austl.). See also AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 3; AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, at 5; BANK NEGARA MALAY., *supra* note 56, § 2.1; MONETARY AUTH. OF SING., *supra* note 56, §4.

institutions working with or without FinTech firms (with Swiss small FinTech benefitting from a class waiver, *infra* V.E.1),¹⁶² while the Thai sandbox approach is restricted to the scope of each of the two respective Thai authorities that govern financial services, the Bank of Thailand for banking and the Thailand Security and Exchange Commission for securities and investments.¹⁶³

For three reasons, this Article argues that sectoral restrictions provide little help for both FinTechs and innovation, and should, if possible, be removed. First, these restrictions entrench existing regulatory borders, whereas FinTech often has the potential to abolish borders altogether. In many cases, for example risk management, technology initially developed for banks may be of greater use for insurance; hence, allowing the expansion into InsurTech is crucial. Second, sectoral restrictions are counter-productive to the sandbox's objective in that they reduce economies of scale and thus the value of an innovation. Third, sectoral restrictions are superfluous. If a regulator seeks to gather experience within one sector before allowing wider use in all sectors, it may impose sectoral limitations on a case-by-case basis.

In some cases, a regulator-sponsored sandbox is limited to the respective regulators' jurisdiction, for instance in the Hong Kong example (where the HKMA only has regulatory authority over banks and banking activities). In such a case, the cooperation between the Dutch DNB and AMF, which under the Dutch Twin Peaks model together supervise all financial legislation, shows how regulators can address the issue in practice.

162. With Swiss small FinTech benefitting from a class waiver, *see infra* Part IV.E.1. The Swiss approach concerns deposits from the public (Publikumseinlage) which licensed banks tend to hold, *see* EIDGENÖSSISCHES FINANZDEPARTEMENT, *supra* note 156, at 2. The Hong Kong approach is available for authorized institutions which wish to try out new technologies (banking services), *see* Letter from Howard Lee to Chief Exec., *supra* note 56.

163. *See* Dr. Veerathai Santiprabhob, Governor, Bank of Thai., Japanese Chamber of Commerce Thailand Dinner Talk 6 (March 13, 2017) (transcript available at https://www.bot.or.th/English/PressandSpeeches/Speeches/Gov/SpeechGov_13Mar2017.pdf [<https://perma.cc/KDB6-S6PK>]); Press Release, Thailand SEC, http://www.sec.or.th/th/Pages/News/Detail_News.aspx?tg=NEWS&lg=th&news_no=19&news_yy=2560 [<https://perma.cc/3QZQ-39N8>].

Existing Regulated Entities?

We observed some variety regarding the treatment of existing regulated entities. While some regulators do not support licensed entities in their innovative efforts,¹⁶⁴ others do. For instance, while the HKMA only opens participation to authorized institutions (though potentially in conjunction with FinTech firms),¹⁶⁵ Australia, the United Kingdom, Singapore, the Netherlands, and Mauritius,¹⁶⁶ permit new firms to be exempted or granted a restricted license, while authorized firms may benefit from no-action letters,¹⁶⁷ informal individual guidance on how to read the law, and waivers from certain mandatory requirements.

Target Customers

There are often limits with regard to the customers the sandbox participant is allowed to target. With the exception of the Australian class waivers, these limits vest discretion in regulators. For instance, the

164. This is particularly true for the Australian, Brunei Darussalam and Swiss sandbox approaches that open unregulated space for unregulated entities only. However, the long-standing Australian practice of no-action letters for licensed entities may have lessened the need for further leniency for these entities.

165. See Letter from Howard Lee to Chief Exec., *supra* note 56, at 1.

166. See ABU DHABI GLOB. MKT., *supra* note 155, at 13; AUSTRALIAN SEC. & INVS. COMM'N, *supra* note 130, § RG 257.20; AUSTRALIAN SEC. & INVS. COMM'N, REGULATORY GUIDE NO. 51: APPLICATIONS FOR RELIEF (Dec. 2009) §§ RG 51.67–76, <http://download.asic.gov.au/media/1238972/rg51.pdf> [<https://perma.cc/QF2C-WZAB>]; AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 5, 7–8; AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, § 5.1; FIN. CONDUCT AUTH., *supra* note 152, § 3.8, app.1; MAURITIUS BD. OF INV., *supra* note 131, at 8; MONETARY AUTH. OF SING., *supra* note 56, § 2.3, annex.A.

167. *Regulatory Sandbox*, FIN. CONDUCT AUTHORITY, <https://www.fca.org.uk/firms/regulatory-sandbox> (last visited June 27, 2016) (emphasis added) (“No enforcement action letters: this letter would give firms some comfort that as long as they dealt with us openly, kept to the agreed testing parameters and treated customers fairly, we accept that unexpected issues may arise and we would not expect to take disciplinary action. We would only use this tool for cases where we are not able to issue individual guidance or waivers but we believe it is justified in light of the particular circumstances and characteristics of different sandbox tests. The letter would only apply for the duration of the sandbox test, only to our disciplinary action and will not seek to limit any liabilities to consumers. *We have not used this tool before, so we do not have examples of particular circumstances where these letters may be appropriate.*”).

HKMA's sandbox¹⁶⁸ is open for services targeting "staff members or focus groups of selected customers,"¹⁶⁹ while MAS allows the applicant to choose the type of customer,¹⁷⁰ and the ASIC¹⁷¹ and the Mauritius Investment Board¹⁷² deem services offered to retail and wholesale clients eligible, in principle. This is, however, only one side of the story, as all regulators retain the right to impose restrictions. The more that retail clients comprise the focus of FinTech, the more restrictions regulators will typically impose, even if they do not prevent sandbox access altogether. This aspect is emphasized by the U.K. FCA which requires that the "type of customers should be appropriate for the type of innovation and the intended market, but also to the type of risks they are exposed to,"¹⁷³ while the Malaysian central bank, Bank Negara Malaysia, may restrict "the participation of customers to a certain segment or profile of customers" if warranted by the business model.¹⁷⁴

The proportionality principle underlies the sandbox approach. If wholesale clients are sufficiently sophisticated and skilled to understand the risks they take,¹⁷⁵ it may suffice if FinTechs serving those clients are simply required to disclose their prenatal regulatory status. However, FinTechs targeting retail clients must accept a higher degree of regulation.¹⁷⁶

The client type does not obviate systemic risk concerns, however, and we may expect those concerns to be aired more often when FinTechs target large, typically wholesale, clients. For instance, a FinTech

168. See Letter from Howard Lee to Chief Exec., *supra* note 56.

169. See *id.*

170. See MONETARY AUTH. OF SING., *supra* note 56, annex.B at 15. See also AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, §§ 1.3, 10.3.

171. See AUSTRALIAN SEC. & INVS. COMM'N, *supra* note 130, §§ RG 257.82, 257.84.

172. MAURITIUS BD. OF INV., *supra* note 131, at 8–10.

173. See *Default Standards for Sandbox Testing Parameters*, FIN. CONDUCT AUTHORITY (Feb. 1, 2017), <https://www.fca.org.uk/publication/policy/default-standards-for-sandbox-testing-parameters.pdf> [<https://perma.cc/6LDF-9EPG>] [hereinafter *FCA Default Standards*].

174. See BANK NEGARA MALAY., *supra* note 56, § 6.3(c).

175. We take no position on the achievability of this proviso.

176. This case is made by Australian consumer protection activists. See *Year Long Holiday for Financial Firms Leaves Consumers At Risk*, FIN. RTS. LEGAL CTR. (Dec. 15, 2016), <http://financialrights.org.au/year-long-holiday-for-financial-firms-leaves-consumers-at-risk/> [<https://perma.cc/PQ24-3N2K>].

delivering an entirely new risk calculation to most of the banks which together dominate a market could well give rise to systemic concerns.

Time and Size

The period a FinTech is allowed to play in the sandbox is typically limited, either by a rule or on a case-by-case basis.¹⁷⁷ Periods range, in the first instance, from six months (United Kingdom, Brunei¹⁷⁸), to twelve months (Australia, Thailand, Malaysia¹⁷⁹), or twenty-four months (Ontario, Abu Dhabi¹⁸⁰). Generally, extensions are available.

The more certain the sandbox conditions, the more likely they will suffice as a risk mitigating device, thereby reducing the importance of the time limit. For instance, the Swiss sandbox proposal (Innovationsraum) is not limited timewise. For as long as the FinTech remains below the determined threshold of CHF1 million in deposits from the public, it will not be subject to a licensing requirement. If the FinTech has between CHF1 million and CHF100 million in deposits from the public, it will be subject to a restricted license scheme with a lower regulatory burden that follows the lines outlined above in Part III.¹⁸¹

Size and time limits, however, may not suit the specific risks and opportunities. For instance, the above CHF100 million limit may be appropriate for deposits, but would be extremely lenient for providers that do not hold cash or assets on their balance sheet. Instead, we recommend that regulators also impose other thresholds depending on the business

177. See AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 5; MONETARY AUTH. OF SING., *supra* note 56, § 5.3. In addition, the HKMA seem to practice a case-by-case assessment.

178. See AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, app.B; FCA *Default Standards*, *supra* note 173.

179. See Australian Securities and Investments Commission (Cth), *ASIC Corporations (Concept Validation Licensing Exemption)*, 2016/1175, 15 Dec. 2016, s 6(2) (Austl.); Australian Securities and Investments Commission (Cth), *ASIC Corporations (Concept Validation Licensing Exemption)*, 2016/1176, 14 Dec. 2016, s 6(2) (Austl.); AUSTRALIAN SEC. & INVS. COMM'N, *supra* note 130, § RG 257.71; BANK NEGARA MALAY., *supra* note 56, § 9.2; *Bank of Thailand Sandbox*, *supra* note 136, § A.4; *Thai SEC Sandbox*, *supra* note 136, § A.

180. See Sec. Legislation of Ont. v. Angellist, LLC (2016), 39 O.S.C. Bull. 8903, 8903 (Can. Ont. Sec. Com.); ABU DHABI GLOB. MKT., *supra* note 155, at 10.

181. EIDGENÖSSISCHES FINANZDEPARTEMENT, *supra* note 156, at 18 (referring to the modification of Article 6 II (a) of the Swiss Bank Ordinance).

model, for instance, number and type of clients, or data points processed,¹⁸² which can then be paired with traditional measures such as assets under management or deposit size.

3. *Mandatory Provisions Subject to Waiver*

Most sandbox rules do not specify which mandatory provisions may be lifted,¹⁸³ but some regulators do disclose the minimum level of compliance inside the sandbox. For instance, Singapore's MAS¹⁸⁴ is flexible with regard to its licensing fees, an entity's capital requirements, leadership requirements, credit rating, relative size, the organization of the entity relating to supervisory standards of financial soundness, risk management, and outsourcing. MAS rules, however, are strict on:

- confidentiality of customer information;
- management's fitness (in particular honesty and integrity);
- handling of customers' monies and assets by intermediaries; and
- anti-money laundering and counter-terrorism financing measures.

The OSC,¹⁸⁵ upon conditions that certain investors access only certain services, has granted relief in respect of:

- audit requirement regarding financial statements;
- know-your-client requirements;
- suitability requirements;
- dispute resolution requirements;
- certain disclosure and reporting requirements; and
- the requirement to issue and distribute a prospectus.

The HKMA requirements that may be waived in the sandbox scheme are "security-related requirements for electronic banking services, and the timing of independent assessment prior to launching new technology services."¹⁸⁶

182. Zetzsche et al., *supra* note 3 (manuscript at 33).

183. See BANK NEGARA MALAY., *supra* note 56, § 7.3(a); *Bank of Thailand Sandbox*, *supra* note 136, § A.1 (FinTech products can be offered under "somewhat lenient rules") FIN. CONDUCT AUTH., *supra* note 152, § 3.8; Letter from Howard Lee to Chief Exec., *supra* note 56, at 2 (concerning how HKMA does not want to provide "an exhaustive list of the supervisory requirements that may potentially be relaxed").

184. See MONETARY AUTH. OF SING., *supra* note 56, § 2.3, annex.A.

185. *Angellist, LLC*, 39 O.S.C. Bull. 8904, 8913–14.

186. Letter from Howard Lee to Chief Exec., *supra* note 56, at 2.

The Dutch DNB/AMF commits “to make the best possible use of any (legal) scope for the sandbox,” but acknowledges that not all situations allow for sandbox arrangements.¹⁸⁷ It notes that supervisors have the most flexibility in terms of their own policies, some flexibility with regard to interpreting national laws and rules, and virtually no flexibility when it comes to interpreting and applying European-wide laws and regulations.¹⁸⁸ Preferring instead to retain flexibility, most authorities refrain from stipulating an exhaustive list of requirements that may potentially be relaxed within the regulatory sandbox.

4. Removing the Privilege

Sandbox rules typically specify grounds upon which to withdraw the privilege.¹⁸⁹ Reasons for forced exit from the sandbox include:

- risks exceeding the benefits;
- non-compliance with laws or regulatory impositions; and
- the purpose of being in the sandbox not being achieved.

The first reason reflects the objectives of the sandbox. The regulatory sandbox is made available as the regulator expects benefits to outweigh risks. The privilege should be removed as soon as it is established that the risks outweigh the benefits. Regulatory risks may come from the FinTech’s conduct, so that non-compliance is a natural reason to reconsider regulatory leniency. Likewise, if the regulator believes that granting privileges has not furthered innovation, it should “pull the privilege.” Finally, of course, firms should have the right to opt-out by either shutting down the business or moving into the regulated sphere.

187. AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 6.

188. *Id.* at 6–7.

189. See ABU DHABI GLOB. MKT., *supra* note 155, at 10, 12; AUSTRALIAN SEC. & INVS. COMM’N, *supra* note 130, § RG 257.54; AUTHORITY FOR THE FIN. MKT. & DE NEDERLANDSCHE BANK, *supra* note 116, at 5; AUTORITI MONETARI BRUNEI DARUSSALEM, *supra* note 134, § 9; BANK NEGARA MALAY., *supra* note 56, § 10.1; MONETARY AUTH. OF SING., *supra* note 56, § 7.4.

C. UPSIDES

1. Enhanced Communication

In a regulatory sandbox, regulators learn from the FinTech startups due to their freedom to operate and communicate openly. This allows entrepreneurs to freely discuss their concerns without fear for their license conditions, and allows regulators to learn before major risks materialize on the horizon. At the same time, within the sandbox, dispensation efficiency is not curtailed by the anti-dispensation incentive on regulators provided by liability. In particular, in the rare cases where the conditions of the sandbox are specified clearly, entrepreneurs are assisted in arguing for dispensations.

2. Kick-starting Innovation and Competition

A regulatory sandbox signals a regulator's propensity to support innovation. By limiting liability as a potential concern for regulators, the sandbox promotes a balanced practice of dispensation, rather than one focused on potential liability. The sandbox therefore may assist in achieving an *optimal level of openness for innovation*, i.e. the level from which societies benefit the most while limiting the risks.

These benefits are "internal" in that they promote innovation within a financial ecosystem. However, a sandbox should also promote positive external effects. First, it should incentivize traditional licensed entities to *accelerate their digital transformation*. Second, it has already added to the *competition among financial centers* as to which will become the world's pre-eminent FinTech hub. The sandbox as an institution challenges reluctant regulators without sandboxes and pushes them to publish, and possibly review, their dispensation policies.

While sandbox conditions could lead to a race-to-the-bottom style competition, we contend that, on balance, the more likely outcomes from sandboxes will be beneficial. If there is a very substantial lowering of conditions—and some tendency in this direction can be observed as the move for longer sandbox periods indicates—a reassessment of our view in time may be warranted.

3. Assessing Innovation ... and Its Risks

While the sandbox concept itself is easy to copy (as the increasing numbers of regulatory sandboxes around the world now demonstrate), its true value lies in the substance of the sandbox, which is the extent to which it can promote beneficial innovation based upon an in-depth knowledge exchange between innovator and regulator.

In this regard, the sandbox signal is, generally speaking, less credible for regulators with little experience in a given service area, as these regulators have little insight into the risks they enable by adopting a sandbox. Such regulators may either make promises of liberal treatment they cannot live up to and need to renege upon later, or they may allow unacceptable levels of risk to arise. Truly smart regulation will pair the sandbox with a strong, fact-based, research-driven dispensation, and licensing practice that furthers innovation while minimizing risk. However, in markets where *experienced* regulators decide their cases, regulated entities already enjoy, for the most part, the benefits of a responsible dispensation practice, while avoiding the risks and uneven competition a sandbox creates. Thus, it comes as no surprise that some large and experienced regulators have hesitated to adopt the sandbox approach and seek an efficient level of forbearance or dispensation by way of no-action letters, restricted licensing, piloting, and other tools.

D. DOWNSIDES

1. Negative Signal to Market

Some downsides should be noted. Sandboxed activity is not fully regulated. Risks for consumers and the financial system could materialize. Clients, for this reason, may refrain from entering into business with firms in the sandbox and this may slow the FinTech's growth. This is particularly true where regulation requires the outsourcing provider to be regulated (including, for instance, portfolio management and core banking functions such as deposit taking).

2. Lack of Standardization and Cost Reduction

In addition, the regulatory sandbox fails to capture both the standardization and cost reduction functions of law. The latter is not a concern as innovation will occur where technology reduces costs in the

absence of the cost-reducing function of law. But the fact that the service lacks the standardization associated with regulation makes the sandboxed activity unfit for cross-border provision of services. This is particularly true for smaller financial markets that lack, on a stand-alone-basis, the market size necessary to exploit substantial economies of scale. In places like Australia, Singapore, Hong Kong, and Luxembourg, however, we see significant financial innovation, given that financial and technological skills combine with a shortage of inexpensive labor. For these jurisdictions, a licensed sandbox umbrella¹⁹⁰ could add to the benefits provided by the regulatory sandbox.¹⁹¹

3. Lack of Transparency

Transparency in sandbox conditions can support regulated entities to apply for dispensation on the same terms as unregulated entities, thereby leveling the playing field between regulated and unregulated firms, and assuring other jurisdictions that regulators are not concealing a race-to-the-bottom within the sandbox.

Our comparative research suggests transparency is the issue with perhaps the greatest room for improvement. A key principle of Smart Regulation is that details of sandbox relief, as well as all innovation-inspired relief orders for regulated entities, should be disclosed clearly and swiftly on the regulator's website. These disclosures will address the level playing field concerns of regulated entities and competing financial centers confronted with sandbox treatment as well as consumer and systemic risk concerns. Further, over time, such disclosures will enhance legal certainty.

4. Regulated versus Unregulated

In designing a regulatory sandbox, maintaining a level playing field between regulated and unregulated entities is a core issue. Otherwise, banks, insurers, and asset managers may suffer from a shortage of human and financial capital *and* innovation. Regulators must strike a balance

190. See *infra* Part IV.E.3.

191. GREGOR DORFLEITNER & LARS HORNUF, BUNDESFINANZMINISTERIUM DER FINANZEN, THE FINTECH MARKET IN GERMANY 8 (Oct. 17, 2016), http://www.bundesfinanzministerium.de/Content/EN/Standardartikel/Topics/International_affairs/Articles/2016-12-13-study-fintech-market-in-germany.pdf?__blob=publicationFile&v=2 [<https://perma.cc/Y3AG-PHQ8>].

between encouraging innovation and protecting clients and the financial system. *Regulated* financial institutions must be supported to innovate and put to use their advantageous data sets, expertise, and experience. Existing institutions should enjoy the supervisory free space to support the development of innovative products and services that is extended to Fintech startups.

Regulation is a mere tool. Where helpful for society, it must be used, where not it is best removed. Size and importance are not the only characteristics that warrant regulation.¹⁹² For a defrauded individual, it matters not whether the fraudsters managed \$10 million or \$10 billion of assets.

Accordingly, technical innovation calls for *regulatory innovation*. Regulators are well advised to pair a regulatory sandbox with an appropriate approach to testing and piloting plus adequate dispensation and no-action policies for regulated institutions. Sandbox rules should enable licensed and unlicensed institutions to benefit equally if they seek to develop innovative products or services and innovations such as the sandbox umbrella should be open to both licensed and unlicensed entities.

E. OUT OF THE BOX THINKING: SANDBOXES AND BEYOND

The above analysis suggests no single regulator has a monopoly on the best framework for innovation, and regulatory sandboxes are not always the best addition to their toolkits. A sandbox approach may nevertheless be helpful in two respects. First, an official sandbox policy with legislative endorsement reduces the risk of litigation for breach of a regulator's supervisory duties. The sandbox thus assists regulators in achieving *an efficient level of dispensation*, enabling them to better weigh benefits and downsides for society rather than solely for themselves. Second, the sandbox signals a *friendly regulatory view of innovation* in general, even in areas beyond the sandbox's limits. Anticipating friendly treatment "outside the box," financial entrepreneurs and established institutions may decide to locate their innovations and new jobs in these jurisdictions. This will enhance the cluster development necessary for innovation by providing a comparative advantage among competing financial centers.

Our considerations so far highlight, however, that sandboxes are not necessarily appropriate in all circumstances. While sandboxes are one

192. See Arner et al., *supra* note 2, at 1312–13.

way to enhance communication between regulators and innovative firms, other approaches of structured experimentation include class waivers, piloting, and sandbox umbrellas.

1. Traditional Approach Cloaked as a Sandbox: Class Waivers for FinTech Testing

The Australian approach is unique in granting a class waiver for FinTech testing if certain eligibility criteria are met.¹⁹³ ASIC ties its hands to a greater extent than any other regulator, thereby providing a high degree of regulatory certainty. As a general condition, the service or product may not be offered to more than one hundred retail clients, while the number of wholesale clients is not restricted. The test is limited to a period of twelve months and a total customer exposure of AUD 5 million. The testing firm must have adequate compensation arrangements for losses (e.g., professional indemnity insurance) and dispute resolution processes in place, and must meet predetermined disclosure and conduct requirements.

The testing environment is limited to the provision of financial advice and the dealing in or distribution of financial products¹⁹⁴ and other regulatory instruments.¹⁹⁵ The Australian class waiver does not extend to issuance of a product developed by the FinTech, the lending of money to consumers, or the operation of a managed investment scheme (including marketplace lending platforms).¹⁹⁶ The class waiver also only extends to eligible products, which are defined to include:

- Deposit products, with a maximum AUD 10,000 balance;
- Payment products, if issued by Authorized Deposit-taking Institutions and with a maximum AUD 10,000 balance;

193. See Australian Securities and Investments Commission (Cth), *ASIC Corporations (Concept Validation Licensing Exemption)*, 2016/1175, 15 Dec. 2016, ss 5–7 (Austl.); Australian Securities and Investments Commission (Cth), *ASIC Corporations (Concept Validation Licensing Exemption)*, 2016/1176, 14 Dec. 2016, ss 5–7 (Austl.); AUSTRALIAN SEC. & INVS. COMM’N, *supra* note 130, § RG 257.39.

194. As defined in *Australian Securities and Investments Commission Act 2001* (Cth) s 12BAB.

195. See *National Consumer Credit Protection Act 2009* (Cth) ss 7, 29 (Austl.); Australian Securities and Investments Commission (Cth), *ASIC Corporations (Concept Validation Licensing Exemption)*, 2016/1175, 15 Dec. 2016, s 5(1) (Austl.).

196. Cf. AUSTRALIAN SEC. & INVS. COMM’N, *supra* note 130, §§ RG 257.56–257.108).

- General insurance, for personal property and home contents up to AUD 50,000 insured;
- Liquid investments, for listed Australian securities or simple schemes up to AUD 10,000 exposure; and
- Consumer credit contracts with certain features, and a loan size between AUD 2,001 and AUD 25,000.

While the class waiver provides notable certainty, it creates limited experimental space. Any successful FinTech operation will outgrow these limits quite quickly, which raises the question of whether ASIC may grant an *additional* sandbox arrangement beyond these limits or grant a restricted license to class-waiver beneficiaries that exceeds the waiver limits following a case-by-case assessment. So as to retain the pro-competitive effects of the class-waiver, the law would be best applied in this way.

A closer look reveals how different the class waiver is from a regulatory sandbox. ASIC does not engage with innovative firms prior to granting the privilege—the waiver is granted as a matter of law, rather than upon application. Innovation is not a prerequisite, nor does a knowledge exchange take place between privileged firms and ASIC. In fact, the Australian class waiver is the traditional approach of specific regulation cloaked in Fintech-friendly terminology. ASIC has moved in this direction in part because of quite sensible doubts as to its expertise in assessing a business model’s innovation. Similar approaches are likely to be adopted in other countries where regulators have similar concerns.¹⁹⁷

2. Testing and Piloting

The international popularity of sandboxes does not make these silver bullet solutions. Indeed the OCC and SEC, the German BaFin, the Luxembourg CSSF as well as both French regulators APRI and AMF have declined to create regulatory sandboxes. Instead they favor granting

197. Notably, the Swiss regulatory sandbox proposal exhibits characteristics similar to the Australian class waiver, exempting all banking business up to CHF 1 million in deposits, without requiring notice or application to Swiss regulator FINMA, and easing conditions for FinTech institutions up to CHF 100 million in deposits.

leniency for testing and piloting.¹⁹⁸ Other regulators use extensive piloting programs to substitute for a regulatory sandbox.¹⁹⁹

An exemption for testing and piloting is particularly useful for authorized financial institutions. They can test new technology and business models without filing for regulatory approval. From a legal perspective, we cannot say with certainty where testing and piloting ends and regular activity begins. One definitional feature, however, is the intention to continue a certain activity.²⁰⁰ A test lacks this feature, as it is a one-time event, and whether the process is continued depends on the outcome, which is entirely open. A pilot is a test where the organizational and financial resources have been devoted to the continuance of business and only some data for the decision are missing, which the pilot is designed to provide.

Where the features of a definition of a regulated activity are met, it cannot be justified on testing and piloting grounds, unless (1) the clients are not selected on actual market criteria—we refer to this category as “fake clients”; (2) the test participants are aware of their guineapig function; (3) the use is limited to a certain number of occasions, a specific time, or certain clients; and (4) the testing environment is insulated from the licensed entities’ or FinTechs’ “real” business activity.

The former criteria are hard for regulators to establish. Where clients consent, the FinTech could justify testing and piloting for some time. We

198. OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC SUMMARY OF COMMENTS AND EXPLANATORY STATEMENT: SPECIAL PURPOSE NATIONAL BANK CHARTERS FOR FINANCIAL TECHNOLOGY COMPANIES 10 (Mar. 2017), <https://www.occ.gov/topics/responsible-innovation/summary-explanatory-statement-fintech-charters.pdf> [<https://perma.cc/ZFE6-WF32>]; BAFIN, *supra* note 112, at 40–41.

199. For instance, the Taiwanese Financial Supervisory Commission (FSC) used to run a FinTech Pilot Program that features many characteristics of a regulatory sandbox. See Press Release, Fin. Supervisory Comm., 金融與科技攜手, Fintech升級 [jīn róng yǔ kē jì xī shǒu shēng jí] (Sept. 9, 2016), http://www.fsc.gov.tw/ch/home.jsp?id=2&parentpath=0&mcustomize=news_view.jsp&dataserno=201609090002&aplistdn=ou=news,ou=multisite,ou=chinese,ou=ap_root,o=fsc,c=tw&dtable=News [<https://perma.cc/Z8MM-VQZZ>]. Now the country is implementing a regulatory sandbox through legislation. The FSC-proposed FinTech Innovation Experimentation Bill is now being reviewed by the country’s Legislative Yuan. For an overview and critique of the proposed sandbox regime, see Jin-Lung Peng & Cheng-Yun Tsang, *Reviewing and Redesigning the Post-Experimentation Phase of Taiwan’s Financial Regulatory Sandbox Regime*, 266 TAIWAN L. REV. 35 (2017).

200. This requirement is the basis of various legal licensing tests, such as professionalism, commercial activity, pursuing an activity as a business, and so on.

thus speculate that there is an inherent connection between a regulatory sandbox on the one side, and testing and piloting on the other. Those jurisdictions with a sandbox approach put certain piloting and testing activities inside the sandbox since this is more convenient for both the FinTech and the regulators (with regulatory liability shielded and the testing and piloting transparent). Meanwhile jurisdictions without a regulatory sandbox are forced to implement a more generous approach to testing and piloting, including often that “real” clients may substitute for “fake” clients for limited periods.

3. The Sandbox Umbrella: Licensed Development Platforms

Rather than focusing on the regulated entity, as the regulatory sandbox suggests, regulators could provide a specific testing environment for activities which are—under the provisions of mandatory law—regulated activities. For instance, the FCA has called for a “sandbox umbrella,” run as a separate non-profit company authorized and supervised by the regulator, which would allow unauthorized innovators to operate under its aegis.²⁰¹ The FCA has asked the market to set up the “umbrella.”²⁰² A similar development platform has also been discussed in Luxembourg. For instance, a public sector body supported by all stakeholder groups could assist in setting up a fully licensed development platform, run in the public interest, so as to further innovation. We hereafter refer to such a platform as a sandbox umbrella.

The sandbox umbrella is expected to respond and behave in all respects as a regulated entity, but with the absence of a market-based response (discontinuation) in case of failure. A sandbox umbrella could be open for applications developed by unregulated and regulated entities. Regulated entities could deliver services so as to test them under the sandbox umbrella, or could acquire and test processes supplied by unregulated FinTechs. The sandbox umbrella provides a trial environment not available to the FinTechs inside the regulated entities or otherwise.

201. FIN. CONDUCT AUTH., *supra* note 152, § 4.7.

202. *Id.* § 4.10.

Opportunities

If many retail clients might be exposed to a new service, the sandbox umbrella, rather than the (sandboxed) FinTech, could offer the service; thus allowing for experiments with a greater number of clients under real circumstances, and with better client protection than in the sandbox. FinTechs that want to engage in real-time trials would not need their own license but can use the umbrella's license instead, following professional informational technology due diligence provided by the sandbox umbrella operator. Regulated entities willing to try an innovation do not need to give access to their client data and systems. Rather, they can run FinTech-based processes in the sandbox umbrella with dummy data generated from supervisory metadata first and observe the effects in that enclosed environment. Further, the sandbox umbrella would grant room to experiment with regard to a regulated entity's head office function, such as compliance and risk management, where we expect many RegTech solutions²⁰³ in years to come. In the absence of a sandbox umbrella, we may see fewer entities try out these innovations—as who wants to outsource crucial risk management and compliance functions to lowly capitalized, unregulated firms?

The fact that the sandbox umbrella is fully compliant and risk managed gives some assurance as to the stability of entities in it. At the same time, the trial period could be set up (the sandbox umbrella already holds the license), and would benefit from the cross-border availability important for financial conglomerates and cross-border qualifications, such as equivalence/substituted compliance and the European Passport.²⁰⁴ Close engagement with the regulator could ensure a speedy licensing process if the FinTech seeks a license after having generated sufficient clients to cover the additional costs. The sandbox umbrella would provide an experimental space when multiple regulated competitors need to cooperate to achieve the full benefits of innovation, such as in establishing digital identity management and authentication systems,²⁰⁵ settlement

203. Arner et al., *supra* note 4.

204. See *supra* notes 74–75 and accompanying text.

205. Stewart Bond, *It was Only a Matter of Time—Digital Identity on Blockchain*, INT'L DATA CORP. (Mar. 29, 2009), <https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GIL12346USEN> [<https://perma.cc/R9UK-DUBH>]. See *Blockchain for Digital Identity*, IBM, <https://www.ibm.com/blockchain/identity/> [<https://perma.cc/T>

chains,²⁰⁶ or RegTech solutions²⁰⁷ (such as automated compliance, risk management, and anti-money laundering, and client suitability checks) on a blockchain.²⁰⁸ The equal access of all innovators to the sandbox umbrella could help in mutualizing the benefits.

Challenges

The challenges of the sandbox umbrella are obvious and serious. First, liability does not vanish in a sandbox umbrella: it simply shifts from the regulator to the umbrella operator as the party that needs to decide which businesses are too risky to support. Second, financial centers would need to focus on a handful of core activities for which a sandbox umbrella

S84-W7YP] (last visited Oct. 14, 2017); *see also* WORLD ECONOMIC FORUM, A BLUEPRINT FOR DIGITAL IDENTITY—THE ROLE OF FINANCIAL INSTITUTIONS IN BUILDING DIGITAL IDENTITY 60 (Aug. 2016), http://www3.weforum.org/docs/WEF_A_Blueprint_f_or_Digital_Identity.pdf [<https://perma.cc/CJ2L-5CNG>] (stressing the need for a more secure digital identity system, relying on blockchain characteristics).

206. *See* WORLD ECONOMIC FORUM, REALIZING THE POTENTIAL OF BLOCKCHAIN: A MULTISTAKEHOLDER APPROACH TO THE STEWARDSHIP OF BLOCKCHAIN AND CRYPTOCURRENCIES 10 (June 2017), http://www3.weforum.org/docs/WEF_Realizing_Potential_Blockchain.pdf [<https://perma.cc/Z2VP-2X2Z>]; Eva Micheler & Luke von der Heyde, *Holding, Clearing and Settling Securities Through Blockchain Technology Creating an Efficient System by Empowering Asset Owners*, 11 J. INT'L BANKING & FIN. L. 652 (2016); Philipp Paech, *Securities, Intermediation and the Blockchain—An Inevitable Choice between Liquidity and Legal Certainty?*, 21 UNIFORM L. REV. 612 (2016).

207. *See* WORLD ECONOMIC FORUM, *supra* note 205, at 92 (exploring the potential of blockchain automated compliance).

208. Lewis Rinaudo Cohen & David Contreiras Tyler, *Blockchain's Three Capital Markets Innovations Explained*, INT'L FIN. L. REV., July–Aug. 2016; Trevor I. Kiviat, *Beyond Bitcoin: Issues in Regulating Blockchain Transactions*, 65 DUKE L.J. 569 (2015–16); Wessel Reijers et al., *Governance in Blockchain Technologies & Social Contract Theories*, 1 LEDGER J. 134 REP 232 (2016); Carla L. Reyes, *Moving Beyond Bitcoin to an Endogenous Theory of Decentralized Ledger Technology Regulation: An Initial Proposal*, 61 VILL. L. REV. 191 (2016); Lawrence J. Trautman, *Is Disruptive Blockchain Technology the Future of Financial Services?*, 69 CONSUMER FIN. L. Q. REP. 232 (2016). On blockchain technology, with a focus on law and governance, *see* Dirk A. Zetsche et al., *The Distributed Liability of Distributed Ledgers: Legal Risks of Blockchain*, U. ILL. L. REV. (forthcoming 2017–2018).

can be set up and effectively operate.²⁰⁹ Third, there is regulatory complexity: the set-up will require certain capital, substance and head office functions. Responsibilities and risk openness must be designed and carefully adjusted. To be sustainable the sandbox umbrella may require support by leading experts, yet it is uncertain whether those experts will be available for pro-bono engagement, or at all, due to conflicts or liability risk. Fourth, financing and ongoing governance will be difficult with multiple entities interested in gaining access. Finally, there is a limit to the extent that a market will benefit from a sandbox umbrella. If the sandbox umbrella enjoys privileges, newly-introduced business models will need to be viable without those benefits, i.e. in the real market. If the sandbox umbrella eats some of the lunch of licensed intermediaries it will lose their support, but, without it, the success of the umbrella is less likely.

These difficulties may explain why we have not seen a publicly sponsored sandbox umbrella working efficiently in the long-term, while private entities' incubator subsidiaries have taken on the role, albeit *without* additional regulatory leniency.

4. A License for All: FinTech Licensing Schemes

Some FinTech licensing schemes are less than they appear. For instance, the Mauritius FinTech License²¹⁰ allows an entity to conduct an innovative FinTech business “for which there are no, or no adequate provisions under any enactment,”²¹¹ i.e. existing financial law. Once licensed, the entity can pursue its business as regulated entity. For the license, however, applicants must file a regular application, including an analysis of relevant laws at home and applicable licensing schemes abroad, and meet regular licensing requirements once licensed, including regular reports to the Mauritius Board of Investment.²¹² Rather than facilitating market entry by innovative firms the main function of this FinTech License appears to be to fill gaps in the respective regulatory environment.

209. For instance, Luxembourg would most likely focus on fund and depositary operations, Germany on banks and insurance undertakings, the United Kingdom on investment banks, and so on.

210. See MAURITIUS BD. OF INV., *supra* note 131, at 3.

211. *Id.* at 3.

212. *Id.* at 3–4.

F. SOME DATA ... AND WHAT THEY TELL US ABOUT THE REGULATORY
 SANDBOX

1. Number of Sandboxed Entities

Only some regulators have disclosed their data. In many jurisdictions, we can only speculate as to whether firms are using the experimental space provided by the sandbox, and thus whether it is helpful and needed.

The FCA announced in 2016, that twenty-four firms from sixty-nine applications were authorized for the first cohort of the sandbox until July 2016.²¹³ Eventually, eighteen firms formed this cohort starting FinTech testing in November 2016.²¹⁴ For the second cohort, the FCA reviewed seventy-seven applications of which thirty-one met the eligibility criteria, and twenty-four started testing in May 2017.²¹⁵

The HKMA disclosed in February 2017 that “nine pilot trials of new fintech solutions [had] been conducted by five banks using the Fintech Supervisory Sandbox.”²¹⁶ At the same time, the “Fintech Innovation Hub has commenced operation and more than ten banks and [Stored Value Facilities (SVF)] licensees have used the Hub.”²¹⁷ This number has risen to fourteen, as of March 2017.²¹⁸

The Abu Dhabi Global Market (ADGM) announced in May 2017 that its first batch of FinTech Reglab companies will comprise two United

213. See *Regulatory Sandbox - Cohort 1*, FIN. CONDUCT AUTHORITY (June 15, 2017), <https://www.fca.org.uk/firms/regulatory-sandbox/cohort-1> [https://perma.cc/D9E9-D4LH].

214. *Id.*

215. See *Regulatory Sandbox - Cohort 2*, FIN. CONDUCT AUTHORITY (June 15, 2017), <https://www.fca.org.uk/firms/regulatory-sandbox/cohort-2> [https://perma.cc/BK5A-LHP7].

216. H.K. MONETARY AUTH., BRIEFING TO THE LEGISLATIVE COUNCIL PANEL ON FINANCIAL AFFAIRS 25 (Feb. 6, 2017).

217. *Id.*

218. *Development of Financial Technologies 7* (H.K. Legislative Council Panel on Fin. Affairs, LC Paper No. CB(1)777/16-17(03), 2017), <http://www.legco.gov.hk/yr16-17/english/panels/fa/papers/fa20170418cb1-777-3-e.pdf> [https://perma.cc/MMQ8-2EJU].

Arab Emirates (UAE), two Indian, and one United States FinTech start-ups.²¹⁹

In Australia, in “April 2015, ASIC established an Innovation Hub to help FinTech start-ups navigate the regulatory laws it administers on a streamlined basis, including by providing informal guidance from senior regulatory advisers.”²²⁰ In the financial year 2014–15, “ASIC approved 1,473 relief applications”²²¹ as ASIC’s waiver powers allow it “to grant relief from Australian Financial Service [AFS] licensing requirements, provide exemptions from disclosure or reporting obligations, and issue no-action letters.”²²² These high numbers for 2014–15 refer to relief orders only. The ASIC sandbox opened in December 2016 and, we believe, is yet to be particularly attractive to FinTechs.²²³ This is unsurprising given ASIC’s long standing and highly accepted practice of relief orders, indicated by the above numbers, reduces the need for a sandbox.

2. Implications

The little data disclosed suggests that so far sandboxes have been used by very few firms, for which there could be several explanations. First, as regulators bear large reputational and other risks for any firm in their sandbox, they probably choose carefully before admitting firms. Second, alternatives such as testing and piloting²²⁴ serve many of the purposes of the sandbox. Third, few firms may qualify as genuinely innovative so as to warrant sandbox treatment. Fourth, the sandbox may be of little value for firms that intend to grow fast and have access to seed financing. Such firms may quickly outgrow the sandbox, and the sandbox’s downsides, including strict limits on size, activity and duration,

219. See Neil Ainger, *Abu Dhabi Global Market Admits First Five Fintech Start-ups Into Its Reglab Sandbox*, CNBC (May 17, 2017, 11:27 AM), <https://www.cnbc.com/2017/05/17/abu-dhabi-global-market-admits-first-five-fintech-start-ups-into-its-reglab-sandbox.html> [https://perma.cc/XAP8-WLFY].

220. AUSTRALIAN GOV’T, BACKING AUSTRALIAN FINTECH 21 (2016), <http://fintech.treasury.gov.au/files/2016/03/Fintech-March-2016-v3.pdf> [https://perma.cc/C6T9-GWYS].

221. *Id.*

222. *Id.*

223. Press Release, The Honorable Scott Morrison MP, Treasurer of the Commonwealth of Austl., (Dec. 15, 2016), <http://sjm.ministers.treasury.gov.au/media-release/133-2016/> [https://perma.cc/MW5H-Z8BP].

224. See *supra* Part IV.E.2.

may make it less attractive than applying for a restricted license or relief order. This is particularly true as the restricted license may provide enduring legal certainty for the supervised firm and fewer restrictions.

To date, the stringency of conditions imposed on regulatory sandbox participants, and the seemingly low numbers of them, fail to explain entrepreneurs' enthusiasm for countries with sandboxes. The regulatory sandbox alone, as presently structured, is typically too limited in scope and scale to promote further meaningful innovation. In particular, the key issue of FinTech entrepreneurs in the licensing process—their lack of expertise as a main obstacle to the fit and proper person test, which regulators apply to assess key people's ability to run a licensed financial intermediary—will not go away in the six to twelve months that the FinTech operates in the sandbox. Prior to and after sandbox treatment, most FinTech entrepreneurs need to bring experienced outsiders on board, and share potential future profits with them, as a precondition to getting a license.

For these reasons, a sandbox should be accompanied by an appropriately designed system of forbearance, dispensation, and restricted licensing, or other tools of smart regulation, such as a well-designed piloting framework or sandbox umbrella, both of which are considered in Part V.

V. TOWARD SMART REGULATION

From this framework, the Article argues for a comprehensive review of existing regulatory approaches in light of rebalanced objectives under the rubric of smart regulation. This new automated and proportionate regime would build on shared principles found in different jurisdictions and support the potential of innovation in financial markets. In our view, the fragmentation and de-homogenization of market participants and the increased use of technology will require regulators to adopt a sequential reform process, starting with digitization and then proceeding to build digitally-smart regulation.

A. FROM SMALL-ENOUGH-TO-FAIL TO TOO-BIG-TO-FAIL: BUILDING A REGULATORY STACK

An increasing number of regulators are beginning to experiment with novel approaches, seeking to unlock innovative potential while minimizing risks. There remain real questions as to the best model going

forward. The above analysis shows how regulators have so far applied various tools from their toolkit:

- Traditional approaches of regulating or not regulating;²²⁵
- Cautious experimentation through forbearance, special charters, or restricted licenses;²²⁶ and
- Structured, transparent experimentation through regulatory sandboxes or piloting.²²⁷

Each of these adjusts the “competition dial” by seeking to generate innovation while preserving consumer protection and market stability.

However, the evolution of FinTech in the last decade has pushed regulators to continually readjust their methodology towards supervision and licensing. This iterative process has gradually increased regulators’ sophistication in their understanding of FinTech innovations and business models. While it is a positive sign that regulators are progressively accepting competitive innovation, each of the tools previously discussed in Parts I to Part V lack the ambition of developing a new regulatory paradigm.

B. MUTUAL LEARNING

In the meantime, a positive, forward-looking regulatory momentum is building, in contrast to the pattern of the previous ten years. Regulators in global financial centers have increasingly realized the potential benefits of FinTech for consumers, RegTech for themselves, and the potentially harmful impact of excessive post-Crisis regulatory stringency. Over time, market participants are able to identify the signs of regulatory interest in promoting innovation. These messages are typically first conveyed by regulators establishing FinTech contact points²²⁸ or appointing FinTech officers.²²⁹ This is then often followed by the regulator initiating market

225. See *supra* Part II.

226. See *supra* Part III.

227. See *supra* Part IV.

228. *Welcome to the FinTech Contact Point*, SEC. & FUTURES COMMISSION, <http://www.sfc.hk/web/EN/sfc-fintech-contact-point/> [<https://perma.cc/GNY6-MBWN>] (last updated Sept. 29, 2017).

229. Angela Tan, *MAS Appoints ex-Citi Banker to Head New FinTech Innovation Group from Aug*, BUS. TIMES (July 27, 2015, 2:27 PM), <http://www.businesstimes.com.sg/banking-finance/mas-appoints-ex-citi-banker-to-head-new-fintech-innovation-group-from-aug> [<https://perma.cc/Q5PH-CRYR>].

meetings, discussions and consultations,²³⁰ and then sometimes establishing a sandbox. Indeed, the major contribution of a sandbox from a regulator's perspective may lie, not in the substance of what is often a highly restrictive safe space, but in its signaling function: communicating regulator flexibility towards innovative enterprises, and regulator desire to understand new technologies. Many regulators now understand that their doors need to stay open to facilitate knowledge transfer in an era of rapid technological change.

C. REGTECH

In addition to the challenges of regulating FinTech, technology is playing an ever-increasing role in financial regulation itself. This ever-growing use of technology in finance is gradually putting pressure on regulators to move from regulations designed to control human behavior to regulation that seeks to supervise automated processes.²³¹ In other words, FinTech's growth has elicited the need for RegTech,²³² the need to use technology, particularly information technology, in the context of regulation, monitoring, reporting, and compliance.²³³

RegTech not only offers financial institutions the potential for massive cost savings in meeting their compliance obligations, but more importantly offers the opportunity for regulators to perform their functions more effectively in close to real time.²³⁴ The combination of FinTech and RegTech offers the potential for the development of a very different financial system from that which exists today.

230. *ASIC Consults on a Regulatory Sandbox Licensing Exemption*, AUSTL. SEC. & INV. COMMISSION (June 8, 2016), <http://asic.gov.au/about-asic/media-centre/find-a-media-release/2016-releases/16-185mr-asic-consults-on-a-regulatory-sandbox-licensing-exemption> [https://perma.cc/DJM8-WMFW].

231. *See generally* DELOITTE & AEGIS, OPPORTUNITIES IN TELECOM SECTOR: ARISING FROM BIG DATA (Nov. 2015), <https://www2.deloitte.com/content/dam/Deloitte/in/Documents/technology-media-telecommunications/in-tmt-opportunities-in-telecom-sector-noexp.pdf> [https://perma.cc/CX2T-G5WU].

232. INST. OF INT'L FIN., REGTECH IN FINANCIAL SERVICES: TECHNOLOGY SOLUTIONS FOR COMPLIANCE AND REPORTING 5–8 (Mar. 2016), https://www.iif.com/system/files/reg_tech_in_financial_services_-_solutions_for_compliance_and_reporting.pdf [https://perma.cc/7ZA6-25LN].

233. *See* Arner et al., *supra* note 2.

234. *Id.* at 1317.

D. PROPORTIONALITY AND REGULATORY REFORM

Implementing a regulatory sandbox does not substitute for otherwise warranted regulatory reforms. In particular, the abolition of some Crisis-driven rules should be discussed openly as regulators and politicians may have overreacted to the crisis, and adopted, at least some, unwise rules.²³⁵ Crisis-inspired rules should not become a dogma. Legislators and regulators should be open for reforms where regulation is a hindrance, and deregulation creates little, if any, added risk.²³⁶

Even when the rationale of existing financial law is sound, mushrooming implementation rules or outdated traditions can lessen the openness for innovation. The post-Crisis wave of regulation has left little conduct unregulated, so regulators should reconsider whether and how they can reduce the burden of regulation while leaving essential protections intact. For instance, if regulators favor detailed regulation for Small and Medium-sized Enterprise (SME) financial institutions, this can reduce the openness for innovation where it is most needed. Regulations may need to be drafted with a light, responsive touch, as the ability to adapt in a disruptive environment is a recipe for survival. Proportionality in drafting and applying financial legislation²³⁷ is of utmost importance—and this is the direction in which the regulatory sandbox and the other tools of Smart Regulation lead regulators and regulation.

E. ELEMENTS OF SMART REGULATION

The increasing commoditization of core technologies such as machine learning and artificial intelligence is opening a Pandora's box of new FinTech and RegTech solutions.

235. See e.g., Stephen M. Bainbridge, *Dodd-Frank: Quack Federal Corporate Governance Round II*, 95 MINN. L. REV. 1779 (2011); Luca Enriques & Dirk A. Zetzsche, *Quack Corporate Governance, Round III? Bank Board Regulation Under the New European Capital Requirement Directive*, 16 THEORETICAL INQUIRIES L. 211 (2015); Roberta Romano, *The Sarbanes-Oxley Act and the Making of Quack Corporate Governance*, 114 YALE L.J. 1521 (2005).

236. We do not express a view on whether abolition of the Volcker Rule meets that test.

237. On the divergent meaning of proportionality across jurisdictions, see ANA PAULA CASTRO CARVALHO ET AL., FIN. STABILITY INST., BANK FOR INT'L SETTLEMENTS, PROPORTIONALITY IN BANKING REGULATION: A CROSS-COUNTRY COMPARISON (Aug. 2017), <https://www.bis.org/fsi/publ/insights1.pdf> [<https://perma.cc/P386-4QR3>].

In designing tomorrow's financial regulation three major market trends need to be considered. First, FinTech innovation is increasingly happening in diverging geographical clusters away from the traditional birthplaces of tech innovation such as Silicon Valley. This means that the monitoring of new technologies, or emerging risks as regulators may call them, is increasingly difficult. As a perspective, over 100 million start-ups are established each year²³⁸ representing both a logistical challenge for discovery and monitoring and the best avenue for future growth. Second, the role of technology is increasing as demonstrated in the rapid growth of FinTech and RegTech businesses since 2016.²³⁹ The self-learning nature of algorithms is rapidly transforming the scope and potential for automated regulation.²⁴⁰ Third, the increasing amount of data in the world²⁴¹ is fueling all tech industries, including RegTech, FinTech, and TechFin. The potential actionable insights derived from data processing often extend beyond our current imagination but are also associated with emerging risks.²⁴²

Fundamental to the future of FinTech is the regulatory context in which it operates. Innovation requires smart regulation. We see three elements that form the basis of such a smart regulatory framework.

238. *How Many Startups Are There in the World? (Infographic)*, INN.MIND.COM (Sept. 15, 2016), <http://innmind.com/articles/262> [<https://perma.cc/AC5T-DMLK>].

239. Lawrence Wintermeyer, *Global FinTech VC Investments Soars in 2016*, FORBES (Feb. 17, 2017, 7:07 AM), <https://www.forbes.com/sites/lawrencewintermeyer/2017/02/17/global-fintech-vc-investment-soars-in-2016/#527d936f2630> [<https://perma.cc/22PM-BYP4>]; *US\$656M Invested in Australia's FinTech Sector 2016*, KPMG (Feb. 22, 2017), <https://home.kpmg.com/au/en/home/media/press-releases/2017/02/fintech-pulse-q4-2016-23-feb-2017.html> [<https://perma.cc/49WT-9T2T>].

240. See Dave Gerschorn, *We Don't Understand How AI Make Most Decisions, So Now Algorithms Explaining Themselves*, QUARTZ (Dec. 20, 2016), <https://qz.com/865357/we-dont-understand-how-ai-make-most-decisions-so-now-algorithms-are-explaining-themselves/> [<https://perma.cc/6DHH-QJJP>].

241. See Jack Loechner, *90% of Today's Data Created in Two Year*, MEDIAPOST (Dec. 22, 2016), <https://www.mediapost.com/publications/article/291358/90-of-todays-data-created-in-two-years.html> [<https://perma.cc/G2BQ-FKAN>].

242. For a first assessment, see Zetzsche et al., *supra* note 3. For an outline of systematic risks, see Elaine Ou, *Can't Stream Netflix: The Cloud May Be to Blame*, BLOOMBERG VIEW (Mar. 2, 2017, 8:00 AM), <https://www.bloomberg.com/view/articles/2017-03-02/can-t-stream-netflix-the-cloud-may-be-to-blame> [<https://perma.cc/EUP8-B2AG>].

1. Focus on (Risk) Fundamentals

First, the new automated and proportionate “smart” regime should be built on shared fundamentals of financial regulation. As an example, while all regulators agree on the importance of combatting money laundering and financing of terrorism (AML/CFT) and international bodies are set up to ensure minimum standards set by the Financial Action Task Force,²⁴³ implementation of these recommendations varies among countries which renders problematic the efficient international coordination of AML/CFT rules.²⁴⁴ Lack of innovation in this area may be the result of insufficient harmonization²⁴⁵ or regulatory stringency. To resolve this tension, regulators will need to focus on their broader mandates as defined by applicable legislation (i.e. consumer protection, financial stability, competition and prudential regulation) as opposed to attempting to apply overly rules-based approaches which will inevitably trail the velocity of innovation and overly stretch regulatory resources. In other words, being “technologically neutral” should not be used as an argument that excuses regulators from the need to understand the impact of new technologies on processes (e.g. biometric identification for payments) or business models (e.g. alternative data credit scoring). Instead “technological neutrality” should mean that regulators do not seek to “regulate” technological innovations, but instead focus on the financial processes and activities that technology enables and that ought to be subject to regulation (e.g. it is not automated investment advice that is the problem, but the risk of fraud or improper advice).²⁴⁶

2. Towards Lower Entry Barriers

Second, we believe the key is not the regulation of innovative processes and activities, but instead the regulation of competition in

243. FIN. ACTION TASK FORCE, INTERNATIONAL STANDARDS ON COMBINING MONEY LAUNDERING AND THE FINANCING OF TERRORISM & PROLIFERATION (updated June 2017), <http://www.fatf-gafi.org/media/fatf/documents/recommendations/pdfs/FATF%20Recommendations%202012.pdf> [https://perma.cc/7AF9-TJKR].

244. Caroline Binham, *Anti-Money Laundering Rules Need to Be Toughened Up, Warns FSB*, FIN. TIMES (Dec. 19, 2016), <https://www.ft.com/content/99d0f7f7-a9cb-3096-99d6-1c4469f45fca> [https://perma.cc/H99V-5XY7].

245. See INST. OF INT’L FIN., *supra* note 232.

246. See Arner et al., *supra* note 2, at 1307–08.

financial markets. Defining the boundaries of competition and innovation is a challenge for regulators.²⁴⁷ Regulatory sandboxes are an example of innovation in financial regulation in the context of seeking to balance these competing objectives. Of course, a close look reveals that both are two sides of the same coin: innovation enables competition, and competition drives innovation in that one competitor seeks to distinguish itself from the others. So competition *on the merits* (i.e. where all participants follow the same rules and bear the same costs) is, generally speaking, a good thing for financial markets. In the context of FinTechs, however, it is difficult to determine whether a new entrant is a competitor or collaborator.²⁴⁸ Some FinTechs may follow disruptive strategies, while others support licensed entities in mastering the digital revolution. Both approaches are healthy and support the financial ecosystem. On balance, at least for jurisdictions that wish to compete by signaling regulatory flexibility to the market, the express provision of the promotion of innovation in their mandate could be most useful.

In addition, the fact that competition spurs the arrival of new participants is facilitating regulatory capacity to experiment with new supervisory and reporting models. The bargaining power of start-ups with regulators is disproportionality low compared to that of large incumbent licensed enterprises. In practice, this provides regulators with the opportunity to engage in a sequenced reform process. On the one hand, incumbent financial institutions and supervised entities will have increasingly to face digitized monitoring and reporting. On the other hand, new market participants may try digital regulation from the onset. This allows experimentation at the margin (as supported by the low numbers of firms in sandboxes) while the bulk of the industry is gradually brought to new standards via the digitization of regulatory requirements themselves, in short: RegTech. Risks incurred by unregulated, yet sandboxed, firms may be accepted—for the very reason that they can kickstart innovation while traditional regulation sets higher-than-desired barriers to innovation.

All in all we argue for the development of a Smart Regulatory approach that seeks to lower the *entry barriers* to financial markets for

247. See source cited *supra* note 2.

248. See ACCENTURE, FINTECH AND THE EVOLVING LANDSCAPE: LANDING POINTS FOR THE INDUSTRY 5–6 (2016), <https://www.accenture.com/us-en/insight-fintech-evolving-landscape> (follow “Download”) [<https://perma.cc/ES4Z-9BVJ>] (arguing that FinTechs are either disruptors or collaborators).

both FinTech, RegTech and TechFin, while keeping the sentries at the *entry gates*.

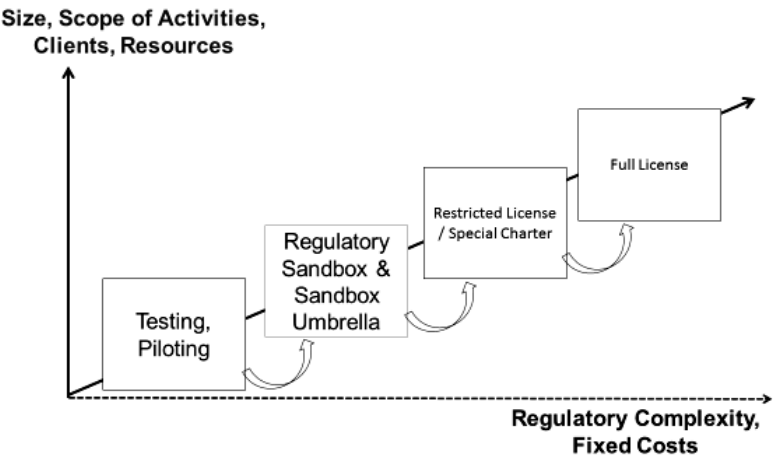
3. Four Stages of Smart Regulation

From this basis, a reasonable regulatory approach could comprise four sequenced stages:

- (1) A testing and piloting environment.
- (2) A regulatory sandbox, which widens the scope of testing and piloting, is transparent, and removes the regulators' disincentive to grant dispensations (and depending on the ecosystem and the importance of cross-border recognition the sandbox may take the form of a sandbox umbrella).
- (3) A restricted licensing / special charter scheme, under which innovative firms can further develop their client base and financial and operational resources.
- (4) When size and income permits, the move to operating under a full license.

From one stage to the next, regulatory complexity and fixed costs of regulation increase, as does the FinTech's operational space in terms of clients, resources, and scope. This should lead to a desirable lowering of the entry barriers to financial markets. Figure 1 shows the resulting four stages of Smart Regulation.

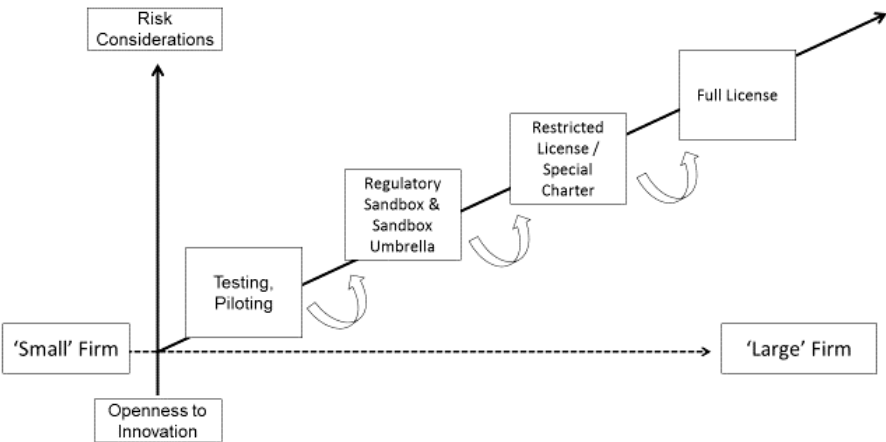
Figure 1: The Progressive Approach of Smart Regulation



With every stage, the Smart Regulator considers risk considerations bearing in mind the firm’s ability to cover costs, and seeking to maintain a similar regulatory burden for licensed entities.

Figure 2 outlines the correlation between “openness to innovation” and “risk consideration.”

Figure 2: Relationship of Firm Size and Regulatory Priorities



We note that in Figure 2, “small” and “large” are indicators referring to firm development and maturity, as measured by a combination of organization and financial resources, and income and client base. In a

FinTech environment, one factor alone is insufficient to signal the firm's maturity and readiness to progress to the next stage.

CONCLUSION

This Article highlights how financial regulation must seek to balance the competing objectives of promoting innovation, financial stability, and consumer protection. This is a particular challenge ten years after the Crisis, which prompted a massive refocusing of regulatory attention on financial stability and consumer protection. Yet, nonetheless, the great promise of FinTech has begun to alter regulatory attitudes and approaches.

An increasing number of jurisdictions are considering how to best balance support for FinTech with the major objectives of financial stability and consumer protection. Some jurisdictions have done nothing; the consequence of which spans from being *laissez-faire*—like in the case of China prior to mid-2015—to being very restrictive in jurisdictions which require new entrants and activities to comply fully with existing regulation. Others, on a case-by-case basis, relax existing rules for FinTech, while yet others are developing more structured sandbox approaches or other more comprehensive efforts to develop regulatory systems appropriate to FinTech.

Regulatory texts about regulatory sandboxes are often characterized by a certain level of unclarity. The unclarity can thwart a FinTech's claim for admission to the sandbox, reflect regulator's rule of law and risk control concerns, and make the substance of the regulatory sandbox harder to define. The fuzziness brings about not only rule of law concerns, but also puts regulated entities in an uncomfortable position: as they do not know the conditions under which their competitors operate. The success of a regulatory sandbox is hard to measure. Small numbers can indicate careful selection by regulators of sandbox participants, or the lack of a need for, or interest in, this innovation. This is particularly true since the sandbox, in many cases, does not go further than the exemptions and no-action letters granted under the traditional restricted licensing regime.

The stricter the regulation in the pre-sandbox state, the greater the need for the tools this Article refers to as smart regulation and the greater the potential of a regulatory sandbox. In fact, the regulatory sandbox is one way to achieve proportionality of regulation where abolishing or amending rules is not politically feasible.

When the conditions imposed on sandbox beneficiaries are too stringent, the sandbox may fail to promote meaningful innovation. Certainly, the regulatory sandbox should be open enough to create a level playing field between licensed and unlicensed innovators. For these reasons, a sandbox should be accompanied by other tools of smart regulation, in particular no-action letters, restricted licensing, and special charter policy provisions.

A sandbox approach may be particularly helpful in three respects. First, an official sandbox policy with legislative endorsement reduces the risk of litigation for breach of a regulator's supervisory duties. The sandbox assists regulators, whose hands are tied by the rule of law, in achieving *an efficient level of dispensation*. It allows regulators to weigh the benefits and downsides for society rather than acting primarily in their own interest. The regulatory sandbox may remove regulators' disincentive to set aside certain rules, thereby furthering an optimal level of dispensation. Second, a regulatory sandbox often facilitates a level of *knowledge exchange* in both directions that goes well beyond the level of information supervised entities typically like to share with their regulator. This encompasses knowledge that may assist regulators to enforce existing rules more efficiently, or design better rules. Third, the regulatory sandbox may signal to innovative businesses a *friendly general regulatory approach to innovation*. Anticipating friendly treatment "outside the (sand)box," financial entrepreneurs and established institutions may decide to locate their innovation (and new jobs) in countries that have communicated their openness to innovation in this way. This signaling function may explain entrepreneurs' enthusiasm for countries with a regulatory sandbox, even when the actual rules of the sandbox are very strict, or do not, in substance, go beyond existing dispensation practices. The co-location of businesses inspired by these sandbox signals can add to the cluster development necessary for speedy innovation, thereby providing a comparative advantage in competition among financial centers.

For the same reason, we see regulators seeking to open markets for their firms by entering into supervisory agreements with other innovation-friendly regulators.²⁴⁹ This is regardless of equivalent regulation and

249. See *British and Australian Financial Regulators Sign Agreement to Support Innovative Businesses*, AUSTL. SEC. & INV. COMMISSION (Mar. 23, 2016), <http://asic.gov.au/about-asic/media-centre/find-a-media-release/2016-releases/16-088m>

supervision of sandboxed entities as a standard precondition for cross-border recognition of the entity's regulatory status not being usual.

While the *sandbox signal itself is easy to copy* (as more than a dozen regulatory sandboxes today demonstrate), its strength lies in the substance of the sandbox, and its ability to support beneficial innovation. In this regard, the sandbox signal is, generally speaking, less credible for regulators with less expertise. These regulators may either make promises they cannot keep, or allow an irresponsible degree of risk to arise. True Smart Regulation pairs the sandbox with a strong, fact-based, research driven piloting, and restricted licensing practice that grants proportionate regulation to innovative firms in each of their development stages while keeping risks at an adequate, although not minimum, level.

How this happy state can be achieved for each and every financial business model is, as of now, uncertain. To a large extent, not only the FinTech, but also the regulator, plays in the sandbox. We may accept this as a necessity created by the combination of overbearing post-Crisis regulation and immensely rapid technological change. However, that FinTechs and regulators together play with individuals', and the broader social, well-being leaves us with a certain uneasiness. This may be cured by transparency of the practices within sandboxes and dispensation practices coupled to close scrutiny and guidance by legislators and regulators. This uneasiness may also explain why some large and experienced regulators, such as those of the United States, Germany, France, and Luxembourg, grant sandbox-like benefits in the form of no-action letters, special charters, and restricted licensing practices, but have not adopted a regulatory sandbox.

Finally, we note that regulatory flexibility cannot substitute for demand. In the absence of market demand (for whatever reason) a

r-british-and-australian-financial-regulators-sign-agreement-to-support-innovative-businesses/ [https://perma.cc/9HYV-G8F4] (stating that “[a]s a result of the agreement signed today, the [U.K. FCA] and the [ASIC] will refer to one another those innovative businesses seeking to enter the others’ market. The regulators will provide support to innovative businesses before, during and after authorisation to help reduce regulatory uncertainty and time to market. The agreement follows the creation of Innovation Hubs at the FCA and ASIC in October 2014 and April 2015, respectively. The Hubs were set up to help businesses with innovative ideas navigate financial regulation, support them through the authorisation process and engage with the regulator. To date the FCA’s Innovation Hub has supported over 200 businesses and the authorisation of 18 businesses. Likewise, ASIC has dealt with over 75 innovative start-ups including the granting of 10 licences.”).

regulatory sandbox will not assist. Sandboxes cannot substitute for a sound business model. Sandboxes can only function properly where a solid foundation of financial and technical expertise meets regulatory openness and market demand.

As this Article demonstrates, the tools of innovation-supportive Smart Regulation include (1) deregulation / non-regulation, (2) restricted licensing / special charters, (3) leniency for testing and piloting, (4) regulatory sandboxes, and (5) sandbox umbrellas. A regulatory sandbox and traditional restricted licensing differ, for the most part, in terms of the official policy approach, and marketing. Where regulators are deeply experienced, their expertise can facilitate a pro-innovative approach even in the absence of a regulatory sandbox. As for testing and piloting, conduct previously treated in a generous manner may today find itself in the regulatory sandbox, given that the sandbox creates advantages for FinTechs and regulators alike.

Going forward, regulatory sandboxes are but one early step in a process that will over time embrace new smart—digitized and datafied—regulatory systems.