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Regulating a Revolution
From Regulatory Sandboxes to Smart Regulation

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REGULATING A REVOLUTION: FROM REGULATORY SANDBOXES TO SMART REGULATION

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Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation

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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 companies (FinTechs). FinTechs and data-driven financial services providers profoundly challenge the current regulatory paradigm. Financial regulators are increasingly seeking to balance the traditional regulatory objectives of financial stability and consumer protection with promoting growth and innovation. The resulting regulatory innovations include technology (RegTech), regulatory sandboxes and special charters. This paper analyses 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. Our paper provides a roadmap for this process.

Keywords: FinTech, Innovation, Regulatory Sandbox, Restricted License, Special Charters, Piloting, Testing, RegTech, Insurtech.

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Contents

I. 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 (GFC), 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, 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.

Financial regulators have in the past two years 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 changes to existing frameworks such as the establishment of regulatory sandboxes.

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[1] *See* John C. Coffee, Jr., *The Political Economy of Dodd-Frank: Why Financial Reform Tends to be Frustrated and Systemic Risk Perpetuated*, *in* THE REGULATORY AFTERMATH OF THE GLOBAL FINANCIAL CRISIS 301, 312 (Ellis Ferran, et al., eds., 2012).

[2] Douglas W. Arner, Janos N. Barberis and Ross P. Buckley, *The Evolution of FinTech: A New Post-Crisis Paradigm?*, 47 GEORGETOWN J. INT'L. L. 1271 (2016); Chris Brummer, *Disruptive Technology and Securities Regulation*, 84 FORDHAM L. REV. 977, 1037 (2015); Iris H.-Y. Chiu, *The Disruptive Implications of FinTech - Policy Themes for Financial Regulators*, 21:1 J. TECH. L. & POL. 55 (2016); Nathan Cortez, *Regulating Disruptive Innovation*, 29 BERKELEY TECH. L. J. 175 (2014).

[3] Dirk A. Zetzsche, Ross. P. Buckley, Douglas W. Arner, and Janos N. Barberis, *From FinTech to TechFin: The Regulatory Challenges of Data-Driven Finance,* (Eur. Banking Inst. Working Paper Series 2017, No. 6, 2017), *available at* https://ssrn.com/abstract=2959925 (forthcoming N.Y. J. L. & BUS. 2017-2018).

[4] Douglas W. Arner, Janos N. Barberis, and Ross P. Buckley, *FinTech, RegTech and the Reconceptualization of Financial Regulatio*n, NW. J. INT'L. L. & BUS. (forthcoming 2017); Lawrence G. Baxter, *Adaptive Financial Regulation and RegTech: A Concept Article on Realistic Protection for Victims of Bank Failures*, 66 DUKE L. J. 567, 598 (2016).

This paper seeks to redirect the ongoing discussion around the world on how to properly regulate FinTech,[5] and whether regulatory sandboxes are desirable,[6] by analyzing possible regulatory approaches to FinTech innovation. We see four approaches and frame these as doing nothing (which could be a restrictive or a permissive approach, depending on context), 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 paper proceeds, in Part II, to undertake a comparative study of these four possible approaches. Part III considers the traditional regulatory approaches of regulating or not regulating. Part IV considers case-by-case approaches, Part V addresses the new trend of regulatory sandboxes, and Part VI looks beyond sandboxes to other forms of structured experimentalism. From this basis, Part VII 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".

II. An Overview of the Current Framework

A. Post-GFC Blues

The GFC challenged the dominant positive view of innovation in finance. Yet innovation matters deeply, and regulators need to perform a balancing act between preserving stability,

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[5] *See* Wulf A. Kaal and Erik P. M. Vermeulen, *How to Regulate Disruptive Innovation - From Facts to Data*, JURIMETRICS (forthcoming 2017), *available at* SSRN https://ssrn.com/abstract=2808044; Nathan Cortez, *Regulating Disruptive Innovation*, 29 BERKELEY TECH. L. J. 175 (2014).

[6] *See* for the US, the statement by SEC Commissioner Michael S. Piwowar: Public Statement, Statement at Financial Technology Forum (Nov. 14, 2016), *available at* https://www.sec.gov/news/statement/piwowar-statement-financial-technology-forum-111416.html (encouraging the consideration of international approaches to regulate FinTech including the regulatory sandbox); Richard B. Levin, *Should the SEC Allow FinTech Firms to Play in a Sandbox?*, POLSINELLI (March 2017), http://sftp.polsinelli.com/publications/fintech/resources/upd0317-1fin.pdf (last visited Aug. 6, 2017) (promoting a regulatory sandbox for the US); Stan Higgins, *SEC Petition Calls for Blockchain Token Rules*, CoinDesk (March 13, 2017), https://www.coindesk.com/sec-petition-calls-for-blockchain-token-rules/ (last visited Aug. 6, 2017) (formally petitioning the SEC to adopt rules for FinTech, including a regulatory sandbox). For the EU, *see Consultation Document FinTech: A More Competitive and Innovative European Financial Sector,* EUROPEAN COMMISSION (March 25, 2017), https://ec.europa.eu/info/sites/info/files/2017-fintech-consultation-document_en_0.pdf (inquiring into how regulate FinTech); *Discussion Paper on the EBA's approach to financial technology (FinTech),* EUROPEAN BANKING AUTHORITY (Aug. 4, 2017), https://www.eba.europa.eu/documents/10180/1919160/EBA+Discussion+Paper+on+Fintech+%28EBA-DP-2017-02%29.pdf (inquiring into how regulate FinTech); on the position of the European Banking Industry see *Innovate. Collaborate. Deploy,* EUROPEAN BANKING FEDERATION (NOV. 14, 2016), http://www.ebf-fbe.eu/wp-content/uploads/2016/11/EBF-vision-for-banking-in-the-Digital-Single-Market-October-2016.pdf (petitioning for the set-up of a regulatory sandbox).

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 GFC.[10] In particular, financial innovation (e.g. certain credit derivatives, such as Collateral Debt Obligations and Credit Default Swaps[11]) and deregulation[12] were significant contributors to the crisis. While the risks of innovation were known prior to the 2008 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's famous statement that he had '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]

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7 *See* Arner, Barberis and Buckley, *supra* note 2.

8 *Cf.* on robo-advisory, *see* Marika Salo & Helena Haapio, *Robo-Advisors and Investors: Enhancing Human-Robot Interaction Through Information Design*, *in* PROCEEDINGS OF THE 20TH INTERNATIONAL LEGAL INFORMATICS SYMPOSIUM IRIS 2017, 411, 441–448 (Erich Schweighofer, et al., eds., 2017).

9 *See* Arner, Barberis, and Buckley*, supra* note 2.

10 *See* ROSS P. BUCKLEY AND DOUGLAS W. ARNER, FROM CRISIS TO CRISIS: THE GLOBAL FINANCIAL SYSTEMS AND REGULATORY FAILURE (2011); *See* Press Release, Thomson Reuters, Thomson Reuters Annual Costs of Compliance Survey Shows Regulatory Fatigue, Resource Challenges and Personal Liability to Increase throughout 2015 (May 13, 2015), *available at* https://www.thomsonreuters.com/en/press-releases/2015/05/cost-of-compliance-survey-shows-regulatory-fatigue-resource-challenges-personal-liability-to-increase.html.

11 *See* Warren Buffet's famous statement on credit default swaps as "financial weapons of mass destruction." The academic discussion is more nuanced. *See* René M. Stulz, *Financial Derivatives – Lessons from the Subprime Crisis*, First Quarter, MILKEN INST. REV., 58-61 (2009) (arguing that financial derivatives have not caused the housing bubble to burst).

12 *See* Lynn A. Stout, *Derivatives and the Legal Origin of the 2008 Credit Crisis*, 1 HARV. BUS. L. REV. 1 (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 Speaking at the Wall Street Journal Future of Finance Initiative Conference, 8 Sep. 2009, *quoted in 'The Only Thing Useful Banks Have Invented in 20 Years is the ATM'*, NEW YORK POST (Dec. 13, 2009, 06:27:00), http://nypost.com/2009/12/13/the-only-thing-useful-banks-have-invented-in-20-years-is-the-atm/ (last visited Aug. 6, 2017).

15 *See*, for instance, James Crotty*, Structural Causes of the Financial Crisis: A Critical Assessment of the "New Financial Architecture"*, 33 CAMBRIDGE J. ECON. 563 (2009); Ferran, et al., *supra* note 1.

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 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 very long relationship dating back over the past 150 years, with each responding to developments in the other over an extended evolutionary process.[19] In the last 10 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 speed of technological change and the range of new entrants in the financial sector, including FinTech startups as well as IT and e-commerce TechFins[21] 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. The particular

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[16] Sumit Agarwal, et al., *Predatory Lending and the Subprime Crisis,* 113 J. FIN. ECON. 1 (2014).

[17] Dirk A. Zetzsche, *Investment Law as Financial Law: From Fund Governance over Market Governance to Stakeholder Governance?,* 339, 343*, in* THE EUROPEAN FINANCIAL MARKET IN TRANSITION (H.S. Birkmose, M. Neville & K.E Sørensen, eds., 2012); Douglas W. Arner, *Financial Stability, Economic Growth and the Role of the Law* (2007).

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

[19] *See* Arner, Barberis and Buckley, *supra* note 2.

[20] *Id.*

[21] TechFins are data-rich firms entering financial services businesses, and include Amazon, Apple, Google, Microsoft and Tencent. *See* Zetzsche, Buckley, Barberis & Arner, *supra* note 3.

[22] *See* Zetzsche, Buckley, Barberis & Arner, *supra* note 3.

challenge of late for regulators has been the need to encourage and support disruptive innovative in order to enhance financial inclusion and 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 the Luxembourg CSSF, the UK FCA and the Australian ASIC functioning as first movers), communication between regulators and FinTechs is today often institutionalized through the respective regulators' innovation departments.

Institutional access points have been established in a number of jurisdictions since 2015:

- **Australia**: The Innovation Hub launched in 2015 assists FinTech start-ups in navigating the Australian regulatory system. Eligible businesses can request informal guidance from ASIC on the licensing process and key regulatory issues.[24]
- **Brunei Darussalam**: The Autoriti Monetari Brunei Daarussalam (AMBD) established a FinTech unit.[25]
- **Canada**: The Ontario Securities Commission (OSC), was the first of the Canadian securities regulators to introduce an 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 HKMA–ASTRI Fintech Innovation Hub holds "dialogues between the industry and the HKMA on emerging technologies", and tests solutions that may

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[23] *See* Kaal &-Vermeulen, *supra* note 5.

[24] *Information Hub,* ASIC, http://asic.gov.au/for-business/your-business/innovation-hub/ (last visited Aug. 13, 2017).

[25] *See FinTech Office*, AUTORITI MONETARI BRUNEI DARUSSALAM, http://www.ambd.gov.bn/fintech-office (last visited Aug. 13, 2017).

[26] *See OSC Launchpad: Our Approach*, ONTARIO SECURITIES COMMISSION, https://www.osc.gov.on.ca/en/our-approach.htm (last visited Aug. 13, 2017).

[27] See FINANCIAL STABILITY BOARD, FINANCIAL STABILITY IMPLICATIONS FROM FINTECH: SUPERVISORY AND REGULATORY ISSUES THAT MERIT AUTHORITIES' ATTENTION 58 (June 27, 2017).

be adopted by the HKMA.[28] Further, the HKMA FinTech Facilitation Office, started in March 2016, functions as a platform for exchanging ideas among key stakeholders and conducting outreach.[29]

- **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**: 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 entrepreneurs in regulatory issues.[34] ACPR and AMF together have established a FinTech forum.[35]

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[28] *HKMA –ASTRI Fintech Innovation Hub, Circular*, HONG KONG MONETARY AUTHORITY (Sept. 6, 2016), http://www.hkma.gov.hk/media/eng/doc/key-functions/finanical-infrastructure/20160906e1-svf.pdf (last visited Aug. 13, 2017).

[29] *See FinTech Facilitation Office*, HONG KONG MONETARY AUTHORITY, http://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech-facilitation-office-ffo.shtml (last visited Aug. 6, 2017).

[30] *See BI Launches Fintech Office, Eyes Teamwork with Industry Players,* THE JAKARTA POST (Nov. 14, 2016), http://www.thejakartapost.com/news/2016/11/14/bi-launches-fintech-office-eyes-teamwork-with-industry-players.html (last visited Aug. 6, 2017).

[31] *See General Organisation,* COMMISSION DE SURVEILLANCE DU SECTEUR FINANCIER, http://www.cssf.lu/en/about-the-cssf/general-organisation/ (last visited March 28, 2017).

[32] *Fintechs: Adressatengerechte Kommunikation – Umgang der BaFin mit innovativen Unternehmen,* BUNDESANSTALT FÜR FINANZDIENSTLEISTUNGSAUFISCHT, (Sept. 15, 2016), https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Fachartikel/2016/fa_bj_1609_fintechs.html (last visited March 23, 2017)

[33] *See* JF Today, *Japan FSA Launches FinTech Support Desk for Consultation and Exchange of Information,* JF TODAY (Dec. 15, 2015), http://jftoday.com/Japan+FSA+launches+FinTech+Support+Desk+for+consultation+and+exchange+of+information/ (last visited Aug. 8, 2017); see also *FinTech*サポートデスクについて, FINANCIAL SERVICES AGENCY, http://www.fsa.go.jp/news/27/sonota/20151214-2.html (last visited Aug. 13, 2017).

[34] Therese Torris, *French Finance Regulators Embrace Fintech*, CROWDFUND INSIDER (Feb. 1, 2017), https://www.crowdfundinsider.com/2017/02/95508-french-finance-regulators-embrace-fintech/ (last visited Aug. 6, 2017).

[35] Press Release, AMF, The AMF and ACPR Launch the FinTech Forum (July 19, 2016), *available at* http://www.amf-france.org/en_US/Actualites/Communiques-de-presse/AMF/annee-2016.html?docId=workspace%3A%2F%2FSpacesStore%2Ffef66ab3-71de-4e2b-b707-d0ca87df1509 (last visited March 23, 2017).

- **Malaysia**: Bank Negara established the Financial Technology Enabler Group in June 2016.[36]
- **Netherlands**: The AFM and the DNB have been working with an Innovation Hub where both established entities and tech start-ups can ask questions.[37]
- **Singapore:** MAS established a Financial Technology & Innovation Group with an innovation lab known as 'Looking Glass@MAS' as well as a FinTech Office.[38]
- **Switzerland**: Swiss regulator FINMA established a FinTech Desk in 2016.[39]
- **South Korea** established a FinTech Centre in 2016.[40]
- **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]
- **The Netherlands**: The AFM and the DNB have been working with an Innovation Hub for both established entities and tech start-ups.[43]

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[36] *See Financial Technology Enabler Group*, BANK NEGARA MALAYSIA, http://www.bnm.gov.my/index.php?ch=idx_b&pg=idx_hghts&ac=46 (last visited Aug. 8, 2017).

[37] *AFM & DNB Innovation Hub*, AFM, https://www.afm.nl/en/professionals/onderwerpen/innovation-hub (last visited March 23, 2017).

[38] *See FinTech Regulatory Sandbox*, MONETARY AUTHORITY OF SINGAPORE, http://www.mas.gov.sg/Singapore-Financial-Centre/Smart-Financial-Centre/FinTech-Regulatory-Sandbox.aspx (last visited Aug. 8, 2017); Press Release, Monetary Authority of Singapore, New FinTech Office: A One-Stop Platform to Promote Singapore as a FinTech Hub (April 1, 2016), *available at* http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/New-FinTech-Office.aspx; Press Release, Monetary Authority of Singapore, MAS Establishes FinTech Innovation Lab known as Looking Glass @ MAS (Aug. 24, 2016), *available at* http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/MAS-establishes-FinTech-Innovation-Lab.aspx.

[39] FINMA, ANNUAL REPORT 2016 28 (Dec. 2016).

[40] See http://www.fsc.go.kr/search/search.jsp?menu=7700000; and http://english.fss.or.kr/fss/konan/en/search/search.jsp.

[41] Taiwan intends to establish the Financial Information Sharing and Analysis Center (F-ISAC) by 2017, *see The FSC Puts Forward the Financial Technology Development Promotion Plan*, Financial Supervisory Commission Republic of China (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 (last visited Aug. 8, 2017); *Financial Industry Works with the Technology Industry on Fintech Upgrade,* Financial Supervisory Commission Republic of China (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 (last visited Aug. 8, 2017).

[42] *See* Pawee Sirimai, *Four Fintech Firms Apply for Sandbox,* BANGKOK POST (May 9, 2017), https://www.pressreader.com/thailand/bangkok-post/20170509/281947427763135 (last visited Aug. 8, 2017).

[43] AFM, *supra* note 37.

- **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.[44]
- **UK**: Project Innovate includes the establishment of an innovation hub in 2015.[45]
- **US:** The OCC'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 "monitor the evolving financial services landscape" and "collaborate with domestic and international regulators".[46]

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 JOBS Act in the United States)[47], 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

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[44] 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/ (last visited Aug. 6, 2017).

[45] *See UK FinTech on the Cutting Edge: An Evaluation of the International FinTech Sector,* UK GOVERNMENT, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/502995/UK_FinTech_-_On_the_cutting_edge_-_Full_Report.pdf (last visited Aug. 8, 2017).

[46] *Recommendations and Decisions for Implementing a Responsible Innovation Framework,* OFFICE OF THE COMPTROLLER OF THE CURRENCY 4 (Oct. 2016), https://occ.gov/topics/bank-operations/innovation/comments/recommendations-decisions-for-implementing-a-responsible-innovation-framework.pdf (last visited March 23, 2017).

[47] Start Our Business Startups Act, H.R. 3606, 112th Cong. (2012).

[48] Reflected in Goal 8 of the UN Sustainable Development Goals and in the 2014 G20 Financial Inclusion Action Plan. United Nations, *Sustainable Development Goals*, SUSTAINABLE DEVELOPMENT KNOWLEDGE PLATFORM, https://sustainabledevelopment.un.org/?menu=1300 (last visited June 16, 2017); *Financial Inclusion Action Plan*, GLOBAL PARTNERSHIP FOR FINANCIAL INCLUSION (GPFI), http://www.gpfi.org/publications/financial-inclusion-action-plan (last visited June 16, 2017).

depending upon whether current banking regulation applies to the sector. China, especially before 2015, is often highlighted as the leading, and highly successful, example of the permissive approach.[49] While the soundness level of the Chinese financial system prior to the FinTech boom may explain the benefits of doing nothing for innovation and development in this particular case,[50] innovation can also bring risks, as occurred in China, resulting since 2015 in a much more cautious regulatory approach. Doing nothing however can also simply involve requiring FinTechs to comply with traditional financial regulation, 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.[51] Indeed, many regulators facing innovation, and equipped by the legislature with a mandate allowing growth and/or financial development to be considered along with 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 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 reachs a certain size and significance.[52]

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

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[49] *See* Weihuan Zhou, Douglas W. Arner and Ross P. Buckley, *China's Regulation of Digital Financial Services: Some Recent Developments*, 90 AUSTRALIAN L. J. 297 (2016); Arner, Barberis and Buckley, *supra* note 2, at 26; Sonia Barquin & Vinayak HV, *Capitalising on Asia's Digital-Banking Boom*, MCKINSEY & COMPANY (March 11, 2009), www.mckinsey.com/industries/financial-services/our-insights/capitalizing-on-asias-digital-banking-boom (last visited June 17, 2017).

[50] *See* Christian Haddad & Lars Hornuf, *The Emergence of the Global FinTech Market: Economic and Technical Determinants* (CESIFO Working Paper No 6131, 2016), *available at* https://ssrn.com/abstract=2830124 (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] The same approach is suggested by Arner, Barberis and Buckley, *supra* note 2, at 27.

[52] Douglas W. Arner & Janos N. Barberis, *FinTech Regulations Recent Developments and Outlook*, April 1 ASIAN INST. INT'L. FIN. L. (2015); Chris Brummer, *Disruptive Technology and Securities Regulation*, 84 FORDHAM L. REV. 977 (2015); Iris H.-Y. Chiu, *The Disruptive Implications of FinTech: Policy Themes for Financial Regulators*, 21:1 J. TECH. L. & POL. 55 (2016); Nathan Cortez, *Regulating Disruptive Innovation*, 29 BERKELEY TECH. L. J. 175 (2014).

financial services, the sandbox concept is by no means novel, with its origins in computer science and other applications beyond financial services.[53] 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. In return, regulators require applicants to incorporate appropriate safeguards.[54] There are currently 15 sandboxes announced or in operation.[55] Regulatory sandboxes seek to support competitive innovation in financial markets. Eligibility to enter a sandbox is standardized and publicized, thus requiring market participants to articulate their added-value in a pre-defined format.[56] This is cost-effective for participants and resource-effective for regulators, allowing easier comparison among potential entrants to the sandbox.

However, sandboxes, while providing transparency in entry criteria and processes, are very much human-driven and analogue in their monitoring. Sandboxes as currently conceived are not scalable – the 18 (cohort 1) or 24 (cohort 2) participants[57] in the UK Financial Conduct Authority sandboxes are insignificant relative to the over 56,000 licenced market participants in the UK.[58] 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.

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[53] 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 Bringing Big Ideas to Life: NSW Innovation Strategy*, NSW GOVERNMENT, https://www.innovation.nsw.gov.au/sites/default/files/NSW_Government_Innovation_Strategy_Document.pdf (last visited Aug. 8, 2017).

[54] For instance, *see FinTech Supervisory Sandbox (FSS),* HONG KONG MONETARY AUTHORITY 2 (Sep. 6, 2016), http://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2016/20160906e1.pdf (last visited June 16, 2017); *See also* Monetary Authority of Singapore, *MAS FinTech Regulatory Sandbox Guidelines*, marginal nos 2.2, 6.2, 6.2.g (Nov. 16, 2016), *available at* http://www.mas.gov.sg/~/media/Smart%20Financial%20Centre/Sandbox/FinTech%20Regulatory%20Sandbox%20Guidelines.pdf (last visited June 17, 2017); *See also* Bank Negara Malaysia, *Financial Technology Regulatory Sandbox Framework,* marginal no 6.1 *et seq* (Oct. 18, 2016), *available at* http://www.bnm.gov.my/index.php?ch=57&pg=137&ac=533&bb=file.

[55] *See infra*, at V.

[56] This is particularly so in the leading example of the Financial Conduct Authority in the UK, *see* Arner, Barberis and Buckley, *supra* note 2, at 46.

[57] *See infra*, at V.F.1.

[58] *About Us*, FINANCIAL CONDUCT AUTHORITY, https://www.fca.org.uk/about/the-fca (last visited June 15, 2017).

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 US, the EU and the UK. Financial innovation has been transformative in emerging markets such as China,[59] India[60] and Kenya,[61] all of which are taking a different approach to re-thinking their financial markets and none of which has announced a regulatory sandbox initiative.

This paper 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".[62]

III. 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" practised by most economies up to the mid-1980s. Or, on the other hand, regulators can take a range of light touch approaches.[63] The strongly deregulatory approach of the Trump administration in

[59] 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* Ferran, et al. (eds.), *supra* note 1, at 24.

[60] 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/ (last visited June 17, 2017).

[61] 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, 2015), https://www.forbes.com/sites/danielrunde/2015/08/12/m-pesa-and-the-rise-of-the-global-mobile-money-market/#9c928ab5aecf (last visited June 17, 2017).

[62] 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, PETER GRABOSKY & DARREN SINCLAIR, SMART REGULATION: DESIGNING ENVIRONMENTAL POLICY (1998). For a brief discussion *see* Neil Gunningham & Darren Sinclair, *in* REGULATORY THEORY – FOUNDATIONS AND APPLICATIONS 133-148 (Drahos, ed., 2017). We are not aware of its previous use in the FinTech and RegTech context.

[63] *See* Nigel Lawson, *Foreword*, *in* BIG BANG 20 YEARS ON I-v. (Lord Lawson, et al., eds., 2006). *See also*, as published on the eve of the GFC by the director of City of London's Centre of Policy Studies, Andrew Hilton, *All Regulation is Bad, in* BIG BANG 20 YEARS ON 24 (Lord Lawson, et.al., eds., 2006).

the US highlights the contemporary importance and challenge of balancing financial stability, consumer protection, innovation and economic growth.

A. 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 centre around questions of whether to seek to regulate in advance of innovations or whether to allow innovation to develop then to regulate once development has occurred if necessary.[64]

China is often applauded for adopting a laissez-faire approach before proceeding to design a comprehensive regulatory system approach for the new environment.[65] 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 new pooled products were issued by Alibaba Group, regulators woke one morning to discover the world's fourth largest (US$90 billion) money market fund had grown within only nine months. (It is now the world's largest money market fund at US$ 165 billion[66]). This lack of initial visibility and regulatory market comprehension has pushed China to pursue a comprehensive new regulatory approach, one that is stricter than before but still more balanced and pro-innovation than in many other countries.[67]

It comes as no surprise that innovation is less restricted in less regulated parts of the world.[68] Even in the absence of prescriptive rules, regulation can weaken innovative forces, as the

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[64] *See* ROGER BROWNSWORD & KAREN YOUNG, REGULATING TECHNOLOGIES: LEGAL FUTURES, REGULATORY FRAMES AND TECHNOLOGICAL FIXES (2008); Erik P.M. Vermeulen, Mark Fenwick & Wulf A. Kaal, *Regulation Tomorrow: What Happens when Technology is Faster Than the Law* 16 (U. St Thomas (Minnesota) Legal Stud. Res. Paper, Sep. 4, 2016) *available at* https://ssrn.com/abstract=2834531.

[65] *See* Zhou, Arner & Buckley, *China's Regulation*, *supra* note 50, at 297-300.

[66] *Cf.* Tjun Tang, Yue Zhang & David He, *The Rise of Digital Finance in China – New Drivers, New Game, New Strategy*, THE BOSTON CONSULTING GROUP 4 (2014), http://www.bcg.com.cn/en/files/publications/reports_pdf/BCG_The_Rise_of_Digital_Finance_in_China_Oct_2014.pdf (last visited April 6, 2017); Shaohui Tian, *Alibaba's Yu'e Bao Becomes Largest Money Market Fund Globally*, XINHUA NET (April 28, 2017), http://news.xinhuanet.com/english/2017-04/28/c_136243985.htm (last visited June 16, 2017).

[67] *Cf.* Weihuan Zhou, Douglas W. Arner & Ross P. Buckley, *Regulating FinTech in China: From Permissive to Balance, in* HANDBOOK OF DIGITAL FINANCE AND FINANCIAL INCLUSION: CRYPTOCURRENCY, FINTECH, INSURTECH AND REGULATION (II) (David Lee & Robert Deng, eds., 2017).

[68] For instance, in Uganda and Kenya 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

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.[69] However, markets, especially post-GFC, 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 with uncertain outcomes.

Most financial rules have their origin in crises or scandals. The principle underlying a rule may well be sound, while its crisis-driven extreme variant may not. For instance, the core of the US Volcker Rule[70] 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.[71] While there may be some inadequate rules in place which should be fixed, the underlying rationale may well be sound. Take the above example: 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.

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certificate, *See Regulatory and Policy Trends Impacting Digital Identity and the Role of Mobile,* GSMA (Oct. 26, 2016), http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/10/Regulatory-and-policy-trends-impacting-Digital-Identity-and-the-role-of-mobile.pdf (last visited June 17, 2017).

[69] *See* Zetzsche, Buckley, Barberis & Arner, *supra* note 3 (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).

[70] *See* John C. Coates, IV, *The Volcker Rule as Structural Law: Implications for Cost–Benefit Analysis and Administrative Law*, 10 CAPITAL MARKETS L. J. 447 (2015); Darrell Duffie, *Market Making Under the Proposed Volcker Rule* 106 (Stanford U. Working Paper, Jan. 16, 2012), *available at* https://ssrn.com/abstract=1990472; Charles K. Whitehead, *The Volcker Rule and Evolving Financial Markets*, (Cornell L. Fac. Publications Paper, 2011); Julie A.D. Manasfi, *Systemic Risk and Dodd-Frank's Volcker Rule*, 4 WM. & MARY BUS. L. REV. 181 (2013).

[71] *See Structural Banking Reforms - Cross-Border Consistencies and Global Financial Stability Implications - Report to G20 Leaders for the November 2014 Summit*, FSB (Oct. 27, 2014), http://www.fsb.org/wp-content/uploads/r_141027.pdf (last visited Aug. 7, 2017).

The proponents of free markets often characterise regulation as simply an unnecessary cost to business. Yet, regulations bring two important benefits: standardization and reduction of transaction costs.

Standardization delivers economies of scale benefits and as such is appealing in large home markets (i.e. Europe), but to a lesser degree for regulators of smaller markets (i.e. Taiwan). Harmonization is co-ordinated 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). Any large-scale move away from harmonised regulatory approaches will cast doubt on whether a country's legal system is equivalent in form and substance to those in other countries, potentially hindering global access and certainly raising compliance costs for providers in addressing differing frameworks across jurisdictions. The equivalence assessment allows the avoidance of costly target markets' rules when foreign firms offer financial services,[72] a practice US lawyers refer to as substituted compliance.[73]

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.[74] For these reasons, plus the business certainty afforded by regulation, the complete disengagement of regulators in financial markets is highly unlikely.

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[72] *See* Dirk A. Zetzsche, *Competitiveness of Financial Centers in Light of Financial and Tax Law Equivalence Requirements*, *in* RECONCEPTUALIZING GLOBAL FINANCE AND ITS REGULATION 391 (Buckley, Arner & Avgouleas, eds., 2016).

[73] The US Commodity Futures Trading Commission ('CFTC') relies on substituted compliance to determine eligibility of SWAP counterparties, *see* Title VII of the Dodd-Frank Act; *Cross-Border Guidance*, CFTC (July 2013), http://www.cftc.gov/LawRegulation/DoddFrankAct/Rulemakings/Cross-BorderApplicationofSwapsProvisions/index.htm. *See also* Howell E. Jackson, *Substituted Compliance: The Emergence, Challenges, and Evolution of a New Regulatory Paradigm*, 1:1 J. FIN. REG. 169 (2015); Sean J. Griffith, *Substituted Compliance and Systemic Risk: How to Make a Global Market in Derivatives Regulation*, 98 U. MINN. L. REV. 1291, 1293-1294 (2014); Steven M. Davidoff Solomon, *Rhetoric and Reality: A Historical Perspective on the Regulation of Foreign Private Issuers*, 79 U. CIN. L. REV. 619, 633 (2010).

[74] *See*, on mandatory disclosure, Christian Leuz & Peter Wysocki, *The Economics of Disclosure and Financial Reporting Regulation: Evidence and Suggestions for Future Research*, 54:2 J. ACC. RES. 525 (2016).

B. 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 been developing and implementing new legislative and/or regulatory frameworks to address specific forms of FinTech innovation. According to the Financial Stability Board,

> "While 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." [75]

To date, the largest number of these have focused on new alternative financing techniques, such as equity crowdfunding and P2P lending.[76] In particular, the JOBS Act[77] with its SEC regulation of crowdfunding[78], is an important example of legislation designed to liberalise the

[75] *See* Financial Stability Board, *supra* note 27, at 24.

[76] *See*, from an economic perspective, 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. MARSHALL J. INFO. TECH. & PRIVACY L. 253, 256 (2013); A. Christine Hurt, *Pricing Disintermediation: Crowdfunding and Online Auction IPOS*, U. ILL. L. REV. 217, 224 (2015); Ajay Agrawal, Christian Catalini & Avi Goldfarb, *Some Simple Economics of Crowdfunding*, 14 INNOV. POL'Y & ECON. 63, 74 (2014); Ricarda B. Bouncken, Malvine Komorek & Sascha Kraus, *Crowdfunding: The Current State Of Research*, INT'L. BUS. & ECON. RES. J. 407 (2015). From a legal perspective, *see* Joan MacLeod Heminway, *Investor and Market Protection in the Crowdfunding Era: Disclosing to and for the Crowd*, 38 VT. L. REV. 827, 831 (2014); Thomas Lee Hazen, *Crowdfunding or Fraudfunding - Social Networks and the Securities Laws - Why the Specially Tailored Exemption Must Be Conditioned on Meaningful Disclosure Social Networks and the Law*, 90 N.C. L. REV. 1735 (2012); Jorge Pesok, *Crowdfunding: A New Form of Investing Requires a New Form of Investor Protection*, 12 DARTMOUTH L.J. 146, 149 *et seq* (2014); Andrew C. Fink, *Protecting the Crowd and Raising Capital through the Crowdfund Act*, 90 U. DET. MERCY L. REV. 1, 8, 31 (2012).

[77] Jumpstart Our Business Startups Act, H. R. 3606. Title III, also known as the CROWDFUND Act, created a way for companies to use crowdfunding to issue securities.

[78] *See* SEC Regulation CF, 80 FR 71387.

existing framework.[79] Following the US lead and IOSCO recommendations,[80] at least 14 of 27 jurisdictions consulted by the FSB legislated regarding crowdfunding or peer-to-peer finance.[81]

The other major area where new frameworks are being developed is payment and settlement with 13 of the 27 jurisdictions consulted by the FSB reviewing their legislation on payments.[82] With US regulators focused on implementing the provisions of the Dodd-Frank-Act[83] (which in part relate to payment, clearing and settlement),[84] the most significant legislative response to new technologies in this field has been the new EU payments framework known as PSD2.[85] Other jurisdictions to have developed new legal frameworks in the payment area include Hong Kong, Bahrain[86], Indonesia[87] and Australia where providers of certain (low volume) non-cash payment facilities were exempted from registration requirements.[88]

PSD2 aims at removing the monopoly of credit institutions and banks on their customer's account information and payment services. PSD2 enables bank customers to use third-party providers to manage their finances. Banks are required to provide these third-party providers

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[79] 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*. 40:3 SECURITIES REG. L. J. 1 (2012); Jason W. Parsont, *Crowdfunding: The Real and the Illusory Exemption*, 4 HARV. BUS. L. REV. 281 (2014).

[80] *Statement on Addressing Regulation of Crowdfunding* ('IOSCO Statement'), IOSCO (Dec. 2015), http://www.iosco.org/library/pubdocs/pdf/IOSCOPD521.pdf (last visited March 11, 2017); and *Crowdfunding 2015 Survey Responses Report* ('IOSCO Report'), IOSCO (Dec. 2015), http://www.iosco.org/library/pubdocs/pdf/IOSCOPD520.pdf (last visited March 11, 2017).

[81] *See* Financial Stability Board, *supra* note 27, at 65. For an overview on European crowdfunding legislation, *see Crowdfunding in the EU Capital Markets Union*, EUROPEAN COMMISSION (May 3, 2016), https://ec.europa.eu/info/publications/crowdfunding-eu-capital-markets-union_en; Dirk A. Zetzsche & Christina Preiner, *Cross-Border Crowdfunding – Towards a Single Crowdfunding Market for Europe* 8 (Eur. Banking Inst. Working Paper Series, 2017), *available at* https://ssrn.com/abstract=2991610.

[82] *See* Financial Stability Board, *supra* note 27, at 65.

[83] Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, H.R. 4173, 111th Cong.

[84] For details, *see* BANK FOR INTERNATIONAL SETTLEMENTS, PAYMENT, CLEARING AND SETTLEMENT SYSTEMS IN THE UNITED STATES – RED BOOK 478-480 (2012), *available at* https://www.bis.org/cpmi/publ/d105_us.pdf.

[85] The core of the new payments framework is the *Payment Services (PSD 2) - Directive* (EU) 2015/2366.

[86] 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.

[87] *Bank Indonesia Regulation No. 18/40/PBI/2016 on Implementation of Payment Transactions Processing* ('Regulation No. 18').

[88] *See ASIC Corporations (Non-Cash Payment Facilities) Instrument 2016/211.*

access to their customers' accounts through open APIs (Application Program Interfaces). 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. 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. PSD2 is important because it goes beyond merely adding new elements to an existing framework but rather attempts to transform the sector by technology – an example of the sort of smart regulation we return to in Part VII.

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 allowed to own online-only banks.[89] Although applicable to both innovative and traditional businesses Australia's exemptions for low volume transactions[90] is another example of how to free small, innovative firms from regulatory burdens. Another example is the UK crown dependency of Jersey which implemented a class exemption in relation to digital currencies. According to that class exemption, which has been inadequately labelled a Digital Currency Sandbox, operators of digital currency exchanges are exempt from registration requirements if their annual turnover is less than BPD 150,000, following an application to the Jersey Financial Services Commission.[91]

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[89] Kim Boram, *Regulator Set to Allow Banks to Fund Fintech Firms*, YONHAP NEWS AGENCY (May 6, 2015), http://english.yonhapnews.co.kr/business/2015/05/06/77/0503000000AEN20150506002900320F.html (last visited Aug. 6, 2017); *Japan's Financial Industry Is Now Finally Embracing Fintech*, CROWD VALLEY (March 16, 2017), https://news.crowdvalley.com/news/japans-financial-industry-is-now-finally-embracing-fintech (last visited Aug. 6, 2017).

[90] *See Corporations (Low Volume Financial Markets) Instrument 2016/888* (exempting certain low volume financial markets from Part 7.2 of the *Corporations Act 2001* (Cth). A range of early stage FinTech applications could benefit from this exemption, including digital currencies and peer-to-peer-financing platforms.

[91] *See* Proceeds of Crime (Supervisory Bodies) (Virtual Currency Exchange Business) (Exemption) (Jersey) Order, *available at* http://www.statesassembly.gov.je/AssemblyPropositions/2016/P.44-2016.pdf.

Finally, the UK 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. This has forced the Financial Conduct Authority (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 maintaining financial system stability. 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.[92] A similar issue arises in the conflict between federal and state regulators in the US. In April, 2017, US states represented by the Conference of State Bank Supervisors, challenged a FinTech special charter issued by the Office of Comptroller of the Currency (OCC) on the grounds that the Office lacks a mandate to further innovation. 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.[93]

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.

IV. 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

[92] *See* Bundesanstalt für Finanzdienstleistungsaufsicht, *Annual Report 2015* (2015), https://www.bafin.de/SharedDocs/Downloads/EN/Jahresbericht/dl_jb_2015_en.pdf?__blob=publicationFile&v=2 (last visited Aug. 7, 2017) (arguing that a regulatory sandbox requires a broader mandate than granted by Parliament to the BaFin).

[93] V. Gerard Comizio, Nathan S. Brownback, Fried, Frank, Harris, Shriver & Jacobson LLP, *State Bank Regulators Challenge OCC's Authority to Issue FinTech Charters*, HARV. L. SCH. (June 4, 2017), https://corpgov.law.harvard.edu/2017/06/04/state-bank-regulators-challenge-occs-authority-to-issue-fintech-charters/ (last visited June 16, 2017).

forbearance (such as "no-action" letters in the US) or from restricted licenses or special charters (such as the US OCC's for banks[94]). 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. [95]

B. Regulators' Discretion

The extent to which regulators can make use of forbearance through no-action letters or restricted licensing depends on their specific legislative context. While some type of 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 legislative

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[94] *See* Press Release, Office of the Comptroller of the Currency, *Comptroller's Licensing Manual Draft Supplement: Evaluating Charter Applications From Financial Technology Companies* (March 15, 2017), *available at* https://www.occ.gov/news-issuances/news-releases/2017/nr-occ-2017-31.html.

[95] *See More Room for Innovation in the Financial Sector: Market Access, Authorisations and Supervision: Next Steps AFM – DNB*, DNB/AFM 4 (Dec. 21, 2016), https://www.afm.nl/en/professionals/nieuws/2016/dec/maatwerk-innovatie (last visited March 23, 2017) (hereinafter 'DNB/AFM Next Steps').

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,[96] 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 EU rules in a way that enabled fund managers and investment firms to allow video authentication[97] - and thereby expand the benefits of internet authentication to their core constituency.

While some legislation allows for no-action letters and/or restricted licensing,[98] 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.[99] Major regulators such as in the US, Luxembourg, Hong Kong or Germany, with

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[96] *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 (last visited Aug. 13, 2017).

[97] Commission de Surveillance du Secteur Financier, *Identification/Verification through Video Chat* (April 8, 2016), http://www.cssf.lu/fileadmin/files/LBC_FT/FAQ_LBCFT_VIDEO_IDENTIFICATION_080416.pdf (last visited Aug. 7, 2017).

[98] *See* for Europe, the dispensation from capital requirements granted to certain banks and investment firms meeting the conditions of Article 4 of the *Capital Requirements Regulation* (EU) No. 575/2013, O.J. L176/3; and the license for 'small' Managers of Alternative Investment Funds pursuant to Article 3 of Directive 2011/61/EU of the European Parliament and of the Council of June 8 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010, O.J. L174/1 ('AIFMD'). For details, *see* Dirk A. Zetzsche & Christina Preiner, *Scope of the AIFMD*, *in* THE ALTERNATIVE INVESTMENT FUND MANAGERS DIRECTIVE (Zetzsche, ed., 2nd ed., 2015).

[99] *See*, for instance, for the U.S. Office of the Comptroller of the Currency: *Exploring Special Purpose National Bank Charters for FinTech Companies,* OFFICE OF THE COMPTROLLER OF THE CURRENCY 3 (Dec. 2, 2016), https://www.occ.gov/topics/responsible-innovation/comments/special-purpose-national-bank-charters-for-fintech.pdf (last visited March 30, 2017) (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 Article 8(4) of Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010, O.J. L174/1 ('AIFMD') (stating: "The 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 Zetzsche & David Eckner, *Appointment, Authorization and Organization of the AIFM*, *in* THE ALTERNATIVE INVESTMENT FUND MANAGERS DIRECTIVE (Zetzsche, ed., 2nd ed., 2015). The same power is granted to competent authorities of EU Member States under national administrative law. The German regulator BaFin explicitly refers to this option, *see* BaFin, Annual Report 2015, *supra* note 106 (stating that in the context of regulatory sandbox one "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. Some rules cannot be changed, but wherever the legislators have only specified

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.[100] 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 hubs (supra, II.B.) 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 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 centres 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 US OCC's special national bank charter comes with the right to pursue the licensed activities across the US. Similarly, the license granted by a regulator of the EU/EEA

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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").

[100] *See* Bureau of Consumer Financial Protection, *Policy on No-Action Letters* (Feb. 18, 2016), http://files.consumerfinance.gov/f/201602_cfpb_no-action-letter-policy.pdf; Office of the Comptroller of the Currency [in charge of national banks and federal savings banks], *Whitepaper 3/16: Supporting Responsible Innovation in the Federal Banking System: An OCC Perspective* (March 2016), https://www.occ.gov/publications/publications-by-type/other-publications-reports/pub-responsible-innovation-banking-system-occ-perspective.pdf. Implementing the strategy, the OCC published draft guidelines in March 2017, *see* OCC, *Comptroller's Licensing Manual Draft Supplement: Evaluating Charter Applications From Financial Technology Companies* (March 15, 2017), https://www.occ.gov/news-issuances/news-releases/2017/nr-occ-2017-31.html (last visited March 31, 2017). 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), http://www.crowdfundinsider.com/2016/11/92769-sec-commissioner-piwowar-great-potential-fintech-not-hindered-current-regulatory-structure/.

Member States, or in some instances even an EU regulator, comes with the right to offer services cross-border in all EU/EEA 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

But this advantage comes with a limitation, in terms of scalability and accuracy. While small or highly specialized (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, or 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 sub-optimal 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 state[101] 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/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

[101] For the distinction between production and distribution countries with respect to financial services, *see* Dirk A. Zetzsche, *supra* note 89, at 391; Dirk A. Zetzsche & Douglas W. Arner, *The Case for Cross-Border Financial Services*, J. FIN. RES. (forthcoming 2017/18) – the example of collective investment schemes.

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 sub-optimal 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 licences, 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 isn't suitable for market-wide use given its case-by-case nature, and fails to provide long-term legal certainty for business development and is not a an international standardization tool. These downsides have led to experiments with more structured approaches in an increasing range of jurisdictions, such as regulatory sandboxes.

V. 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.[102]

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.

[102] *See* for instance HKMA FSS, at 2; MAS Guidelines, marginal no. 2.2, 6.2.f, 6.2.g.; Bank Negara Malaysia Framework, marginal no. 6.1 ff.

To our knowledge as of 1 August 2017, there are currently 14 sandboxes in operation, with at least another two announced, with draft bills in the legislative process:

Table 1: Regulatory Sandboxes in Operation sorted by Country and Start Date

UK (4/2016)[i]	Hong Kong (9/2016)[ii]	Malaysia (10/2016)[iii]	Singapore (11/2016)[iv]
Abu Dhabi (11/2016)[v]	Australia (12/2016)[vi]	Mauritius (1/2017)[vii]	Netherlands (1/2017)[viii]
Indonesia (1+7/2017)[ix]	Brunei-Darussalam (2/2017)[x]	Canada (2/2017)[xi]	Thailand (3/2017)[xii]
Bahrain (6/2017)[xiii]	Switzerland (8/2017)[xiv]		

[i] *See* for instance HKMA, Fintech Supervisory Sandbox (FSS), Circular B1/15C B9/29C, 6 September 2016, at 2, *available at* http://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2016/20160906e1.pdf (last visited March 23, 2017) (hereinafter HKMA FSS); MAS Guidelines, marginal no. 2.2, 6.2.f, 6.2.g.; Bank Negara Malaysia Framework, marginal no. 6.1 *et seq*.

[ii] *See* HKMA FSS.

[iii] *See* Bank Negara Malaysia, Financial Technology Regulatory Sandbox Framework, BNM/RH/PD 030-1 (Oct. 18, 2016), *available at* http://www.bnm.gov.my/index.php?ch=57&pg=137&ac=533&bb=file (last visited March 23, 2017) (hereinafter 'Bank Negara Malaysia Framework').

[iv] *See* MAS, *Fintech Regulatory Sandbox Guidelines* (Nov. 16, 2016), http://www.mas.gov.sg/~/media/Smart%20Financial%20Centre/Sandbox/FinTech%20Regulatory%20Sandbox%20Guidelines.pdf (last visited March 23, 2017) (hereinafter 'MAS Guidelines').

[v] *See* Abu Dhabi Global Markets (ADGM), *FinTech Regulatory Laboratory Guidance*, https://www.adgm.com/media/85833/fintech-reglab-guidance.pdf, and the respective overview at https://www.adgm.com/media/125942/adgm-fintech-reglab-brochure.pdf (last visited Aug. 6, 2017).

[vi] *See* ASIC, *Testing Fintech Products and Services without Holding an AFS or Credit Licence* (Regulatory Guide No 257, Feb. 24, 2017), *available at* http://download.asic.gov.au/media/4160999/rg257-published-24-february-2017.pdf (last visited March 23, 2017) (hereinafter 'ASIC RG 257').

[vii] *See* Mauritius Board of Investment, *Regulatory Sandbox License – Guidelines*, http://www.investmauritius.com/media/389644/Guidelines-RSL.pdf (last visited Aug. 6, 2017) (hereinafter Mauritius Guidelines).

[viii] *See* DNB/AFM Next Steps, *supra* note 109.

[ix] *See* Press Release No. 18/73/DKom, Bank Indonesia section 4b(Sep. 2, 2016), *available at* http://www.bi.go.id/en/ruang-media/siaran-pers/ p.s/sp_187316.aspx (last visited March 23, 2017); Press Release SP 99/DKNS/OJK/10/2016, OJK Indonesia, OJK Drafts Regulations on Fintech Development, *available at* http://www.ojk.go.id/en/berita-dan-kegiatan/siaran-pers/Documents/Pages/Press-Release-OJK-

Drafts-Regulations-on-Fintech-Development1/SIARAN%20PERS%20FINTECH-ENGLISH.pdf (last visited Aug. 10, 2017) (hereinafter 'OJK Press Release').

[x] *See* AMBD, *FinTech Regulatory Sandbox Guidelines* (Feb. 27, 2017), http://www.ambd.gov.bn/SiteAssets/fintech-office/FTSG%20v1_final.pdf (last visited Aug. 6, 2017) (hereinafter AMBD Guidelines).

[xi] *See* CSA/ACVM, *The Canadian Securities Regulators Launches a Regulatory Sandbox Initiative* (Feb. 23, 2013), https://www.securities-administrators.ca/aboutcsa.aspx?id=1555 (last visited March 28, 2017). The Ontario Securities Commission opened the door for a sandbox with a no-action letter dated 24 October 2016 in re AngelList, LLC and AngelList Advisors, LLC. To our knowledge, besides the announcement of a sandbox, there is no formal document summarizing sandbox conditions so far.

[xii] *See* for the sandbox of the Bank of Thailand, Baker McKenzie, *FinTech Update: Thailand's FinTech Regulatory Sandbox* (Oct. 19, 2016), http://www.bakermckenzie.com/-/media/files/insight/publications/2016/10/fintech-update/al_bangkok_fintechsandbox_oct16.pdf?la=en (last visited March 23, 2017) (hereinafter 'Bank of Thailand Sandbox'); *See* for the sandbox of the Thai Securities and Exchange Commission: Baker McKenzie, *Thailand: Fintech 2016 Highlights and Beyond* section A (Dec. 29, 2016), http://www.bakermckenzie.com/en/insight/publications/2016/12/fintech-2016-highlights-and-beyond (last visited March 23, 2017) (hereinafter 'Thai SEC Sandbox'), as well as Pawee Sirimai Darana Chudasri, *SEC Readies Sandbox for Fintech Firms*, BANGKOK POST (Feb. 21, 2017), https://www.pressreader.com/thailand/bangkok-post/20170221/281947427615137.

[xiii] *See* Central Bank of Bahrain, *The Regulatory Sandbox Consultation Paper* (March 28, 2017), http://www.cbb.gov.bh/assets/Consultations/Consultation-Regulatory%20Sandbox-%2028March%202017.pdf, and http://www.cbb.gov.bh/page-p-regulatory_sandbox_en.htm (hereinafter 'Bahrain Sandbox Rules').

[xiv] *See* Bundesrat/EFD, *Änderung der Bankenverordnung durch die Vernehmlassungsvorlage* (Feb. 1, 2017), https://www.newsd.admin.ch/newsd/message/attachments/47043.pdf (last visited Aug. 6, 2017) (hereinafter 'Vernehmlassungsvorlage'); EFD, *Regulierungsfolgenabschätzung – Änderung der Bankenverordnung (FinTech)* (July 5, 2017), https://www.newsd.admin.ch/newsd/message/attachments/49030.pdf (last visited Aug. 6, 2017) (hereinafter 'Regulierungsfolgenabschätzung'); Bundesrat, *Bundesrat setzt neue FinTech Regeln in Kraft*, *available at* https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen/bundesrat.msg-id-67436.html (last visited Aug. 6, 2017).

Table 2: Regulatory Sandboxes Announced

Taiwan[xv]	Japan[xvi]		

[xv] *See* Formosa Transnational, *Amendments to Eight Financial Laws for Regulatory Sandbox,* TAIWAN LAW (Jan. 9, 2017), http://www.taiwanlaw.com/en/news_detail.php?serial=2093; Ted Chen, *FSC Finalizes 'Regulatory Sandbox' Bill*, TAIPEI TIMES (Feb. 11, 2017), http://www.taipeitimes.com/News/biz/archives/2017/02/11/2003664741 (last visited Aug. 6, 2017).

[xvi] *See Japan Seeks Deregulated 'Sandbox' to Free Up Innovation*, NIKKEI ASIAN REVIEW (May 12, 2017), https://asia.nikkei.com/Politics-Economy/Policy-Politics/Japan-Seeks-deregulated-sandbox-to-free-up-innovation (last visited Aug. 6, 2017) (citing a government plan to adopt a deregulated sandbox as part of the Abenomics growth strategy).

In a range of countries sandbox proposals have been widely discussed and considered by regulators but either rejected or not yet officially adopted (see Table 3).

Table 3: Regulatory Sandboxes Considered

US[xvii]	EU[xviii]	Ireland[xix]	Norway
Denmark	China[xx]	Spain[xxi]	Sweden[xxii]
Mexico[xxiii]	Turkey[xxiv]	Saudi Arabia[xxv]	Luxembourg

[xvii] *See* draft Financial Services Innovation Act of 2016 ('FSIA') [McHenry Bill]: the agency in charge may modify or waive the application of a federal statute if it determines the regulation is "burdensome" (!) to the petitioner.
[xviii] *See* EUROPEAN COMMISSION, supra note 6; EUROPEAN BANKING AUTHORITY, supra note 6, at 33-34 (announcing further inquiry into regulatory sandboxes); EUROPEAN BANKING FEDERATION, supra note 6; and *see* EUROPEAN SECURITIES AND MARKETS AUTHORITY, *Response to the European Commission's Consultation on FinTech: A More Competitive and Innovative European Financial Sector* 7 (Jun. 7, 2017) (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.') and *Response to the European Commission's Consultation on FinTech: A More Competitive and Innovative European Financial Sector* 48, EUROPEAN BANKING FEDERATION, (Jun. 15, 2017), http://www.ebf.eu/wp-content/uploads/2017/06/EBF_026943-Fintech-consultation_EBF-response_15.06.2017.pdf (promoting a sandbox).
[xix] *See* Speech, MEP Brian Hayes, It's Time for the Central Bank and Dept. Finance to Develop a 'Regulatory Sandbox' for New Financial Firms, *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/.
[xx] *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 (last visited Aug. 6, 2017) (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.")
[xxi] *See* the White Paper by the Asociación Española de FinTech e InsurTech (AEFI), *available at* https://asociacionfintech.es (last visited Aug. 6, 2017).
[xxii] Pearse, *supra* note 44.
[xxiii] Financial Stability Board, *supra* note 27, at 58.
[xxiv] *Id*.
[xxv] *Id.*

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,[103] market development and enhanced competition,[104] and/or economic growth,[105] 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 UK FCA, in an analogy with the "Clinical Trial Period" for pharmaceuticals,[106] expects the sandbox to reduce the time to market by 33 percent (equivalent to 8 percent of a product's lifetime revenue) and to facilitate the FinTech's access to finance thereby raising its valuation by 15 percent, and for both these reasons to enable more innovations to reach the market.

B. Sandbox Conditions

1. Entry Test

As both a legal and economic precondition, regulators around the world generally set up 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; [107]

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[103] *See* MAS Guidelines, marginal 2.1 and 2.2, at 4; see also Bank Indonesia, *Five Bank Indonesia Initiatives for the Payment System* (Sep. 2, 2016), http://www.bi.go.id/en/ruang-media/siaran-pers/Pages/sp_187316.aspx (last visited Aug. 9, 2017) (Point 4 about Financial Technology).

[104] *See* MAS Guidelines, paras 6.2a, 6.2b (details of the proposal to support the sandbox evaluation criteria); Bank Indonesia, *Five Bank Indonesia Initiatives for the Payment System*, *supra* note 103, marginal 4; *see also* FCA, *Regulatory Sandbox*, at 1 (Nov. 2015), https://www.fca.org.uk/publication/research/regulatory-sandbox.pdf.

[105] *See* FCA, *Regulatory Sandbox*, *supra* note 143, at 1; Bank Negara Malaysia, *Financial Technology Regulatory Sandbox Framework* (Oct. 18, 2016), http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press&ac=4273&lang=en (last visited Aug. 9, 2017).

[106] FCA, Regulatory Sandbox, *supra* note 143, at 5, referring to medical and biopharmaceutical research.

[107] *See* FCA Regulatory Sandbox, marginal no. 3.4; Bank Negara Malaysia Framework, marginal no. 5.1; the broader objective in DNB/AMF Nest Steps, sections 1.1, 1.3.i.; Bank of Thailand Sandbox, section A.3; Taiwan Financial Supervisory Commission, *Financial Industry Works with the Technology Industry on Fintech Upgrade* (Oct. 17, 2016), http://www.fsc.gov.tw/en/home.jsp?id=74&parentpath=0,2&mcustomize=multimessage_view.jsp&aplistdn=ou=Bulletin,ou=multisite,ou=english,ou=ap_root,o=fsc,c=tw&dataserno=201610170001&dtable=Bulletin (last visited Aug. 9, 2017); 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, as stated in Laporan Tahunan Bank Indonesia, *Annual Report 2016*, at 108-110 (2016), http://www.bi.go.id/id/publikasi/laporan-

- provide genuine innovation, i.e. new solutions to existing or new problems; [108] and
- benefit consumers. [109]

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 rules[110] ask regulators to look at whether the product or service enhances:

- market stability;

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tahunan/bi/Documents/LKTBI2016.pdf (last visited Aug. 9, 2017); see also Press Release, Gubernur BI Resmikan Bank Indonesia Fintech Office (Nov. 14, 2016), *available at* http://www.bi.go.id/id/ruang-media/siaran-pers/Pages/sp_189216.aspx (last visited Aug. 9, 2017) (stating the four objectives of the FinTech office establishment); ADGM Guidance, *Consultation Paper No. 2 of 2016*, at 13 points 16.b.(i), (ii) (May 10, 2016), https://adgm.com/media/70182/adgm-consult-paper-no-2-of-2016_reg-framewk-for-fintech-final.pdf (last visited Aug. 9, 2017); Mauritius Guidelines, at 8.

[108] *See* FCA Regulatory Sandbox, marginal no. 3.4; MAS Guidelines, marginal no. 6.2.a; AMBD Guidelines, marginal 7.2.(a); ASIC RG 257, marginal no. RG 257.45; Heading "Innovationsförderung" of Art. 1b, Swiss Bank Vernehmlassungsvorlage, with an explanation in EFD, *Änderung des Bankengesetzes und der Bankenverordnung (FinTech), Erläuternder Bericht zur Vernehmlassungsvorlage*, at 33 (Feb. 1, 2017), https://www.newsd.admin.ch/newsd/message/attachments/47046.pdf (last visited March 23, 2017) (hereinafter "EFD Erläuternder Bericht"); Bank Negara Malaysia Framework, marginal no. 5.1; DNB/AMF Next Steps, section 1.1; Bank of Thailand Sandbox, section A.3; Bank Indonesia, *Laporan Tahunan Bank Indonesia* and Gubernur BI Resmikan Bank Indonesia Fintech Office, *supra* note 146; Taiwan Financial Supervisory Commission, *Financial Outlook Monthly No. 147*, at 5-6 (Feb. 2017), www.fsc.gov.tw/uploaddowndoc?file=endownload/201703061115540.pdf (last visited Aug. 9, 2017); ADGM Guidance, *Consultation Paper No. 2 of 2016, supra* note 189 at 13 point 16.a.; Mauritius Guidelines, at 8.

[109] *See* FCA Regulatory Sandbox, marginal no. 3.4; MAS Guidelines, marginal no. 6.2.b; AMBD Guidelines *supra* note 151 at 7.2.(a) (iii); Bank of Thailand Sandbox, section A.3; Bank Indonesia, *Laporan Tahunan Bank Indonesia*, Annual Report 2016, *available at* http://www.bi.go.id/id/publikasi/laporan-tahunan/bi/Documents/LKTBI2016.pdf (last visited Aug. 9, 2017), at 110; OJK Press Release, *supra* note **Fehler! Textmarke nicht definiert.**, at marginal 3 (stating that regulations concerning the RSB 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); ADGM Guidance, *Consultation Paper No. 2 of 2016*, *supra* note 146, at 13 point 16.b.(iii); Mauritius Guidelines, at 8.

[110] *See* FCA Regulatory Sandbox, marginal no. 3.4; MAS Guidelines, marginal no. 6.2.a; ADGM Guidance, at 6 *et seq*; AMBD Guidelines, at 3.3, 7.2.(a) (ii) and (e), 8.4, 9.4. (c), 10.3 and in the Requirement and Evaluation Criteria; ASIC RG 257, marginal no. RG 257.45; Heading "Innovationsförderung" of Art. 1b of the Swiss Bank Vernehmlassungsvorlage with an explanation in EFD Erläuternder Bericht, at 33; Bank Negara Malaysia Framework, marginal no. 5.1; DNB/AMF Next Steps, section 1.1; Bank of Thailand Sandbox, section 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: Bank Indonesia, *supra* note **Fehler! Textmarke nicht definiert.**; OJK Press Release, *supra* note **Fehler! Textmarke nicht definiert.**, at marginal 5 (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"); Financial Supervisory Commission of Taiwan, *Financial Industry Works with the Technology Industry on Fintech Upgrade, supra* note 107.

- market transparency; or
- 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.[111] 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.[112] 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 UK, Singapore, Malaysia and the Netherlands do not limit the sandbox's scope to certain sectors,[113] the Swiss and Hong-Kong approach restricts it to authorized financial institutions working with or without FinTech firms (with Swiss small FinTech

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111 *See* DNB/AMF Next Steps, section 1.2, 1.3.ii; Bank Negara Malaysia Framework, marginal no. 5.1.e; FCA Regulatory Sandbox, marginal no. 3.4; Mauritius Guidelines, at 8.

112 *See* Bank Negara Malaysia Framework, marginal no. 5.1.b; MAS Guidelines, marginal no. 6.2.d ff; AMBD Guidelines, at 10; HKMA FSS, p. 2; DNB/AMF Next Steps, section 1.3.iii; FCA Regulatory Sandbox, marginal no. 3.4; Mauritius Guidelines, at 8.

113 Australian law instead limits the scope to testing of services providing financial product advice in relation to eligible products and dealing in eligible products (*ASIC Corporations Instrument 2016/1175* sections 5(1)(a), (b)); *See also* MAS Guidelines, marginal no. 4.1; AMBD Guidelines, at 5; Bank Negara Malaysia Framework, marginal no. 2.1.; DNB/AMF Next Steps, step 1.1.

benefitting from a class waiver, *infra* V.E.1),[114] 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 Thai SEC for securities and investments.[115]

For three reasons, we argue that sectoral restrictions are of 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.

Existing regulated entities?

We observed some variety regarding the **treatment of existing regulated entities**. While the approach of some regulators is not to support licensed entities in their innovative efforts,[116] others do. For instance, while the HKMA[117] only opens participation to authorized institutions (though potentially in conjunction with FinTech firms), Australia, the UK,

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[114] The Swiss approach concerns deposits from the public ("Publikumseinlage") which licensed banks tend to hold, *see* EFD, Erläuternder Bericht, at 2; The Hong Kong approach is available for authorized institutions which wish to try out new technologies ("banking services"): HKMA FSS, at 1 f.

[115] *See* Bank of Thailand Sandbox, as described in the speech of the Governor of BOT: Speech, Dr Veerathai Santiprabhob, Japanese Chamber of Commerce Thailand Dinner Talk, at 6 (March 13, 2017) *available at* https://www.bot.or.th/English/PressandSpeeches/Speeches/Gov/SpeechGov_13Mar2017.pdf; Thai SEC Sandbox, as disclosed in Press Release, Thailand SEC, *available at* http://www.sec.or.th/th/Pages/News/Detail_News.aspx?tg=NEWS&lg=th&news_no=19&news_yy=2560.

[116] 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.

[117] *See* HKMA FSS, at 1.

Singapore, the Netherlands and Mauritius[118], permit new firms to be exempted or granted a restricted license, while authorized firms may benefit from no-action letters,[119] 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 Hong Kong Monetary Authority's sandbox[120] is open for services targeting "staff members or focus groups of selected customers",[121] while the Monetary Authority of Singapore (MAS)[122] allows the applicant to choose the type of customer, and the Australian Securities and Investments Commission (ASIC)[123] and the Mauritius Investment Board[124] 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 rights to impose restrictions. The more that retail clients comprise the focus of the FinTech, the more restrictions regulators will typically impose, even if they do not prevent sandbox access altogether. This aspect is emphasized by the UK FCA[125] which requires that the "type of customers has to be appropriate to the tested products and to the exposed risks", while the

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[118] *See* ASIC RG 257, marginal no. RG 257.19; ASIC, Applications for relief, Regulatory Guide 51, 18 December 2009, *available at* http://download.asic.gov.au/media/1238972/rg51.pdf (last visited March 23, 2017), marginal no. RG 51.67 *et seq*; FCA Regulatory Sandbox, marginal no. 3.8 *et seq*, appendix 1; MAS Guidelines, marginal no. 2.3, annex A; AMBD Guidelines, at 5.1; DNB/AMF Next Steps, section 1.4, 1.5, 2; ADGM Guidance, at 13-14; Mauritius Guidelines, at 8.

[119] FCA Regulatory Sandbox, subsection 'authorised businesses' states: "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 *see*k 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.*" (emphasis added by the authors).

[120] *See* HKMA FSS, at 1(b).

[121] *See* HKMA FSS, at 1.

[122] *See* MAS Guidelines, at 15. *See also* AMBD, Introduction 1.3 and 10.3.

[123] *See* ASIC RG 257, marginal nos. RG 257.82, RG 257.84.

[124] Mauritius Guidelines, at 8-10.

[125] *See* FCA, *Default Standards for Sandbox Testing Parameters* (last updated Feb. 1, 2017), https://www.fca.org.uk/publication/policy/default-standards-for-sandbox-testing-parameters.pdf (last visited March 23, 2017) (hereinafter "FCA Default Standards"), customer selection.

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".[126]

The proportionality principle underlies the sandbox approach. If wholesale clients are sufficiently sophisticated and skilled to understand the risks they take,[127] 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.[128]

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 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 on a case-by-case basis.[129] Periods range, in the first instance, from 6 months (UK, Brunei-Darussalam[130]), 12 months (Australia, Thailand, Malaysia[131]), or 24 months (Ontario, Abu Dhabi[132]). 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

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[126] *See* Bank Negara Malaysia Framework, marginal no. 6.3.(c).

[127] We take no position on the achievability of this proviso.

[128] This case is made by Australian consumer protection activists: *See* statement by Financial Rights Legal Centre, *Year Long Holiday for Financial Firms Leaves Consumers at Risk* (Jan. 30, 2017), http://financialrights.org.au/year-long-holiday-for-financial-firms-leaves-consumers-at-risk/ (last visited Aug. 8, 2017).

[129] *See* MAS Guidelines, marginal no. 5.3; DNB/AMF Next Steps, section 4. In addition, the HKMA seem to practice a case-by-case assessment.

[130] *See* FCA Default standards, section duration; AMBD Guidelines, Appendix B.

[131] *See ASIC Corporations Instrument 2016/1175* section 6(2); *ASIC Credit Instrument 1176/2016* section 6(2); ASIC RG 257, marginal no. RG 257.71; Bank Negara Malaysia Framework, marginal no. 9.2; Bank of Thailand Sandbox, section A.4; Thai SEC Sandbox, para 3.

[132] *See* OSC, Application for relief from certain registrant obligations contained in National Instrument 31-103, Registration Requirements, Exemptions and Ongoing Registrant Obligations (NI 31-103) and from the prospectus requirement set forth in Section 53 of the Securities Act (Ontario), October 24, 2016, decision IN THE MATTER OF THE SECURITIES LEGISLATION OF ONTARIO AND IN THE MATTER OF ANGELLIST, LLC and ANGELLIST ADVISORS, LLC; ADGM Guidance, *Consultation Paper No. 2 of 2016*, ADGM 10 (May 10, 2016), https://adgm.com/media/70182/adgm-consult-paper-no-2-of-2016_reg-framewk-for-fintech-final.pdf (last visited Aug. 9, 2017).

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 IV above.[133]

Size and time limits however may not suit the specific risks and opportunities. For instance, the above CHF100 million limit may be fit 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 model, for instance number and type of clients, or data points processed[134] (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 don't specify which mandatory provisions may be lifted,[135] but some regulators do disclose the minimum level of compliance inside the sandbox. For instance, Singapore's MAS[136] is flexible with regard to its licensing fees, an entity's capital requirements, leadership requirements, credit rating and relative size, and 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;
- AML/CTF measures.

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[133] EFD Erläuternder Bericht, at 18, referring to the modification of Article 6 II (a) of the Swiss Bank Ordinance.

[134] Dirk A. Zetzsche, Ross. P. Buckley, Douglas W. Arner & Janos Nathan Barberis, *From FinTech to TechFin: The Regulatory Challenges of Data-Driven Finance* (Eur. Banking Inst. Working Paper Series 6, 2017), *available at* https://ssrn.com/abstract=2959925 (*forthcoming* N.Y. J. L. & BUS. 2017-2018).

[135] *See* Bank Negara Malaysia Framework, marginal no. 7.3(a); FCA Regulatory Sandbox, marginal no. 3.8 *et seq*; HKMA does not want to provide "an exhaustive list of the supervisory requirements that may potentially be relaxed" in HKMA FSS, at 2; "somewhat lenient rules" in the Bank of Thailand Sandbox, section A.1.

[136] *See* MAS Guidelines, marginal no. 2.3, annex A.

The Ontario Securities Commission,[137] 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.[138]

The Dutch DNB/AMF commits "to make the best possible use of any (legal) scope for the sandbox,"[139] but acknowledges that not all situations allow for sandbox arrangements. 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.[140] Most authorities refrain from stipulating an exhaustive list of requirements that may potentially be relaxed within the regulatory sandbox, preferring to retain flexibility.

4. Removing the privilege

Sandbox rules typically specify grounds upon which to withdraw the privilege.[141] Reasons for forced exit from the sandbox include:

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[137] *See* OSC, Application for relief from certain registrant obligations contained in National Instrument 31-103, Registration Requirements, Exemptions and Ongoing Registrant Obligations (NI 31-103) and from the prospectus requirement set forth in Section 53 of the Securities Act (Ontario), October 24, 2016, decision IN THE MATTER OF THE SECURITIES LEGISLATION OF ONTARIO AND IN THE MATTER OF ANGELLIST, LLC and ANGELLIST ADVISORS, LLC.

[138] HKMA FSS, at 2.

[139] DNB/AMF Next Steps, at 6-7.

[140] *Id.*

[141] *See* ASIC RG 257, marginal no. RG 257.54; Bank Negara Malaysia Framework, marginal no. 10.1; MAS Guidelines, marginal no. 7.4.c f.; AMBD Guidelines, marginal 9; ADGM Guidance, *Consultation Paper No. 2 of 2016* 12(May 10, 2016), https://adgm.com/media/70182/adgm-consult-paper-no-2-of-2016_reg-framewk-for-fintech-final.pdf (last visited Aug. 9, 2017) ; DNB/AMF Next Steps, section 4.

- 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'. And, finally, of course, firms should have the right to opt out, by either shutting down the business or moving into the regulated sphere.

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 regulators' 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 centres** 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 more than a dozen 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 latter, 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 can further innovation while minimising risks. However, regulated entities in markets where *experienced* regulators decide their cases 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 take place 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 which 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 a significant amount of financial innovation happening, given that financial and technological skills combine with a shortage of inexpensive labour. For these jurisdictions, a licensed sandbox umbrella (see infra V.E.3.) could add to the benefits provided by the regulatory sandbox.[142]

3. Lack of Transparency

Transparency in sandbox conditions can support regulated entities to apply for dispensation on the same terms as unregulated entities, thereby levelling 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 centres confronted with sandbox treatment as well as consumer and systemic risk concerns. Further, over time, such disclosures will enhance legal certainty.

[142] Georg Dorfleitner & Lars Hornuf, *The FinTech Market in Germany – Final Report*, BUNDESFINANZMINISTERIUM (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 (last visited March 30, 2017).

4. Regulated vs 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 between encouraging innovation and protecting clients and the financial system. *Regulated* financial institutions must be supported to innovate to 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.[143] 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 und 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

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143 *See* DW Arner, J Barberis and **RP Buckley,** "The Evolution of FinTech: A New Post-Crisis Paradigm?", (2016) 47 (4) *Georgetown Journal of International Law*, 1271-1319.

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 centres.

Our considerations so far highlight, however, that sandboxes are not necessarily appropriate in all circumstances. While sandboxes are one 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.[144] 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 100 retail clients, while the number of wholesale clients is not restricted. The test is limited to a period of 12 months and a total customer exposure of A$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 pre-determined disclosure and conduct requirements.

The testing environment is limited to the provision of financial advice and the dealing in or distribution of financial products[145] and other regulatory instruments.[146] 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).[147] The class waiver also only extends to eligible products, which are defined to include:

- Deposit products, with a maximum A$10,000 balance;
- Payment products, if issued by Authorised Deposit-taking Institutions and with a maximum A$10,000 balance;
- General insurance, for personal property and home contents up to A$50,000 insured;

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[144] *See ASIC Corporations Instrument 2016/1175* section 5 *et seq*; *ASIC Corporations Instrument 2016/1176* section 5 et seq; ASIC RG 257, marginal no. RG 257.39.f.

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

[146] *See ASIC Corporations Instrument 2016/1175* section 5(1); *National Consumer Credit Protection Act 2009* (Cth) sections 7, 29.

[147] *Cf.* ASIC RG 257, marginal no. RG 257.56 *et seq*.

- Liquid investments, for listed Australian securities or simple schemes up to A$10,000 exposure; and
- Consumer credit contracts with certain features, and a loan size between A$2,001 and A$25,000.

While the class waiver provides notable certainty, the experimental space it creates is limited. 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 doesn't 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 gone in this this direction in part because of quite sensible doubts as to its expertise in assessing how innovative is a business model. Similar approaches are likely to be adopted in other countries where regulators have similar concerns.[148]

2. Testing and Piloting

The international popularity of sandboxes does not make these silver bullet solutions. Indeed the US 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 favour granting leniency for testing and piloting.[149] Other regulators use extensive piloting programs to substitute for a regulatory sandbox .[150]

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[148] 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.

[149] OCC, *Summary of Comments and Explanatory Statement: Special Purpose National Bank Charters for Financial Technology Companies* (March 15, 2017), https://www.occ.gov/topics/responsible-innovation/summary-explanatory-statement-fintech-charters.pdf (last visited March 30, 2017); BaFin, Annual Report 2015, *supra* note 114.

[150] 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), *available at*

An exemption for testing and piloting is particularly useful for authorised 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 starts. One definitional feature, however, is the intention to continue a certain activity.[151] A test lacks this feature: a test 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 organisational 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 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), while 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.

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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. 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 and Cheng-Yun Tsang, *Reviewing and Redesigning the Post-Experimentation Phase of Taiwan's Financial Regulatory Sandbox Regime*, 266 TAIWAN L. REV. 35 (2017).

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

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 unauthorised innovators to operate under its aegis.[152] The FCA has asked the market to set up the 'umbrella'. 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 inside the regulated entities or otherwise to the FinTechs.

Opportunities

If many retail clients might be exposed to a new service, the sandbox umbrella, rather than the (sandboxed) FinTech, could offer the service, 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 IT 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 meta-data 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 solutions[153] in years to come. In the absence of a sandbox umbrella, we may see fewer entities try out these

[152] FCA, *Regulatory Sandbox* (Nov. 2015), https://www.fca.org.uk/publication/research/regulatory-sandbox.pdf (last visited Aug. 8, 2017).

[153] *Supra* note 4.

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.[154] 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 co-operate to achieve the full benefits of innovation, such as in establishing digital identity management and authentication systems,[155] settlement chains[156] or RegTech solutions[157] (such as automated compliance, risk management, and anti-money laundering and client suitability checks) on a blockchain.[158] The equal access of all innovators to the sandbox umbrella could help in mutualizing the benefits.

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[154] *See* text in *supra* notes 71 to 73 and accompanying text.

[155] *See* WORLD ECONOMIC FORUM ('WEF') (IN COLLABORATION WITH DELOITTE), A BLUEPRINT FOR DIGITAL IDENTITY – THE ROLE OF FINANCIAL INSTITUTIONS IN BUILDING DIGITAL IDENTITY 60 (Aug. 2016), *available at* http://www3.weforum.org/docs/WEF_A_Blueprint_for_Digital_Identity.pdf (stressing the need for a more secure digital identity system, relying on BC characteristics); WEF (with Deloitte), *supra* note 194, at 22; Stewart Bond, *It Was Only A Matter of Time – Digital Identity on Blockchain* (IDC Res. Paper, 24 March, 2017). *See* in particular, on IBM's 'Identity Management with Blockchain': *available at* IBM, *Blockchain for Digital Identity*, https://www.ibm.com/blockchain/identity/.

[156] *See* WEF (with Deloitte), *supra* note 194, at 119-128; Eva Micheler & Luke von der Heyde, *Holding, Clearing and Settling Securities through Blockchain/Distributed Ledger Technology: Creating an Efficient System by Empowering Investors*, 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 UNIF. L. REV. 612 (2016).

[157] *See* WEF (with Deloitte), *supra* note 194, at 92-109 (exploring the potential of BC automated compliance and proxy voting).

[158] *See* on Blockchain technology, with a focus on law and governance, Dirk A. Zetzsche, Ross P. Buckley & Douglas W. Arner, *The Distributed Liability of Distributed Ledgers: Legal Risks of Blockchain* (Unpublished working paper, 2017); Lawrence J. Trautman, *Is Disruptive Blockchain Technology the Future of Financial Services?*, 69 CONSUMER FIN. L. Q. 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); Wessel Reijers, Fiachra O'Brolcháin & Paul Haynes, *Governance in Blockchain Technologies & Social Contract Theories*, 1 LEDGER 134 (2016); Trevor I. Kiviat, *Beyond Bitcoin: Issues in Regulation Blockchain Transactions*, 65 DUKE L.J. 569 (2015-16); Lewis Rinaudo Cohen & David Contreiras Tyler, *Blockchain's Three Capital Markets Innovations Explained*, INT'L FIN. L. REV. (2016), *available at* http://www.iflr.com/Article/3563116/Blockchains-three-capital-markets-innovations-explained.html.

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 centres would need to focus on a handful of core activities for which a sandbox umbrella can be set up and effectively operate.[159] 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 License[160] allows an entity to conduct an innovative FinTech business "for which there are no, or no adequate provisions under any enactment,"[161] 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.[162] Rather than facilitating

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[159] For instance, Luxembourg would most likely focus on fund and depositary operations, Germany on banks and insurance undertakings, the UK on investment banks, and so on.

[160] *See* Mauritius Guidelines, at 3.

[161] Mauritius Guidelines, at 3.

[162] *See* Mauritius Guidelines, at 3-4.

market entry by innovative firms the main function of this FinTech License appears to be to fill gaps in the respective regulatory environment.

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 24 firms from 69 applications were authorised for the first cohort of the sandbox until July 2016. Eventually, 18 firms formed this cohort starting FinTech testing in November 2016.[163] For the second cohort, the FCA reviewed 77 applications of which 31 met the eligibility criteria, and 24 started testing in May 2017.[164]

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.[165] At the same time, the "Fintech Innovation Hub has commenced operation and more than ten banks and SVF (Stored Value Facilities) licensees have used the Hub".[166] This number has risen to 14, as of April 2017.

The Abu Dhabi Global Market (ADGM) announced in May 2017 that its first batch of FinTech Reglab companies will comprise two local United Arab Emirates (UAE), two Indian and one U.S. fintech start-up.[167]

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[163] *See* FCA, *Regulatory Sandbox - Cohort 1*, https://www.fca.org.uk/firms/regulatory-sandbox/cohort-1 (last visited Aug. 6, 2017).

[164] *See* FCA, *Regulatory Sandbox - Cohort 2*, https://www.fca.org.uk/firms/regulatory-sandbox/cohort-2 (last visited Aug. 6, 2017).

[165] Speech, Norman T.L. Chan, HKMA Fintech Day, marginal no. 9 (Nov. 11, 2016), *available at* http://www.hkma.gov.hk/eng/key-information/speech-speakers/ntlchan/20161111-1.shtml.

[166] HKMA, *Briefing to the Legislative Council Panel on Financial Affairs on 6 Feb 2017* 25, http://www.hkma.gov.hk/eng/about-the-hkma/legislative-council-issues/ (last visited March 23, 2017).

[167] *See* Neil Ainger, *Abu Dhabi Global Market Admits First Five Fintech Start-ups into its Reglab Sandbox*, CNBC (May 17, 2017), https://www.cnbc.com/2017/05/17/abu-dhabi-global-market-admits-first-five-fintech-start-ups-into-its-reglab-sandbox.html (last visited Aug. 6, 2017).

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".[168] In the financial year 2014–15, "ASIC approved 1,473 relief applications"[169] as ASIC's waiver powers allow it "to grant relief from Australian Financial Service licensing requirements, provide exemptions from disclosure or reporting obligations, and issue no-action letters".[170] 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. 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 suggest 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 piloting (discussed supra, V.E.2.) 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, 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

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[168] Australian Government Treasury, *Australia's FinTech Priorities*, http://fintech.treasury.gov.au/australias-fintech-priorities/.

[169] *Id.*

[170] *Id.*

licensed financial intermediary -- won't 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 VI.

VI. Toward Smart Regulation

From this framework, the paper 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-homogenisation 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 (Part III);
- Cautious experimentation through forbearance, special charters or restricted licences (Part IV); and
- Structured, transparent experimentation through regulatory sandboxes or piloting (Part V).

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

However, the evolution of FinTech companies in the last decade has pushed regulators to continually re-adjust their methodology towards firm supervision and licensing. This iterative process has gradually increased regulators' sophistication in their understanding of FinTech business models. While it is a positive sign that regulators are progressively accepting competitive innovation, each of the tools previously discussed in Parts II to Part VI 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 centres 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 points[171] or appointing FinTech officers.[172] This is then often followed by the regulator initiating market meetings, discussions and consultations,[173] 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 signalling 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 behaviour

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[171] Securities and Futures Commission (Hong Kong), *Welcome to the FinTech Contact Point* (last updated May 23, 2017), http://www.sfc.hk/web/EN/sfc-fintech-contact-point/ (last visited June 17, 2017).

[172] Angela Tan, *MAS Appoints Ex-Citi Banker to Head New FinTech Innovation Group from Aug*, BUSINESS TIMES (July 27, 2015), http://www.businesstimes.com.sg/banking-finance/mas-appoints-ex-citi-banker-to-head-new-fintech-innovation-group-from-aug (last visited June 17, 2017).

[173] Australian Securities & Investments Commission, *ASIC Consults on a Regulatory Sandbox Licensing Exemption* (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/ (last visited June 17, 2017).

to regulation that seeks to supervise automated processes.[174] In other words, FinTech's growth has elicited the need for RegTech,[175] the need to use technology, particularly information technology, in the context of regulation, monitoring, reporting and compliance.[176]

RegTech not only offers banks 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.[177] The combination of FinTech and RegTech offers the potential for the development of a very different financial system from that which exists today.

D. Proportionality and Regulatory Reform

Implementing a regulatory sandbox does not substitute for otherwise warranted regulatory reforms. In particular, the abolition of some GFC-driven rules should be discussed openly as regulators and politicians may have over-reacted to the crisis, and adopted, at least some, unwise rules.[178] Crisis-inspired rules should not become a dogma. Parliament and regulators should be open for reforms where regulation is a hindrance, and de-regulation creates little, if any, added risk.[179]

Even when the rationale of existing financial law is sound, mushrooming implementation rules or outdated traditions can lessen the openness for innovation. The post-GFC wave 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

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[174] *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 (last visited June 16, 2017).

[175] Institute of International Finance, *RegTech in Financial Services: Solutions for Compliance and Reporting* 5-8 (March 22, 2016), https://www.iif.com/publication/research-note/regtech-financial-services-solutions-compliance-and-reporting (last visited June 16, 2017).

[176] *See* Arner, Barberis and Buckley, *supra* note 2.

[177] *Id.*

[178] For examples, *see* Roberta Romano, *The Sarbanes-Oxley Act and the Making of Quack Corporate Governance*, 114 YALE L.J. 1521 (2005); 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*, 16:1 THEORETICAL INQUIRIES IN L. 211 (2015).

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

regulators favour detailed regulation for 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 legislation[180] 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.

In designing tomorrow's financial regulation three major market trends need to be considered. Firstly, 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 year[181] representing both a logistical challenge for discovery and monitoring and the best avenue for future growth. Secondly, the role of technology is increasing as demonstrated in the rapid growth of FinTech and RegTech businesses since 2016.[182] The self-learning nature of algorithms is rapidly transforming the scope and potential for automated regulation.[183] Thirdly, the increasing amount of data in the world[184] is fueling all tech industries, including RegTech, FinTech and TechFin. The potential actionable insights

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[180] *See*, on the divergent meaning of proportionality across jurisdictions, Bank for International Settlements, *Proportionality in Banking Regulation: A Cross-Country Comparison* (Aug. 2017), https://www.bis.org/fsi/publ/insights1.htm (last visited Aug. 6, 2017).

[181] *How Many Startups Are There in the World? (Infographic),* INNMIND (Sep. 15, 2016), http://innmind.com/articles/262 (last visited June 17, 2017).

[182] Lawrence Wintermeyer, *Global FinTech VC Investments Soars in 2016*, FORBES (Feb. 17, 2017), https://www.forbes.com/sites/lawrencewintermeyer/2017/02/17/global-fintech-vc-investment-soars-in-2016/#527d936f2630 (last visited June 16, 2017); KPMG Australia, *US$656m Invested in Australia's FinTech Sector 2016* (Feb. 23, 2017), https://home.kpmg.com/au/en/home/media/press-releases/2017/02/fintech-pulse-q4-2016-23-feb-2017.html (last visited June 17, 2017).

[183] Dave Gerschgorn, *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/ (last visited June 16, 2017).

[184] 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 (last visited June 16, 2017).

derived from data processing often extend beyond our current imagination but are also associated with emerging risks.[185]

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.

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,[186] implementation of these recommendations varies among countries which renders problematic the efficient international coordination of AML/CFT rules.[187] Lack of innovation in this area may be the result of insufficient harmonization[188] 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 that

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[185] For a first assessment, *see* Zetzsche, et al., *supra* note 2; for an outline of systematic risks, *see* Elaine Ou, *Can't Stream Netflix: The Cloud May Be to Blame*, BLOOMBERG VIEW (March 2, 2017), https://www.bloomberg.com/view/articles/2017-03-02/can-t-stream-netflix-the-cloud-may-be-to-blame (last visited April 6, 2017).

[186] FATF, *International Standards on Combining Money Laundering and the Financing of Terrorism & Proliferation* (updated Oct. 2016), http://www.fatf-gafi.org/publications/fatfrecommendations/documents/fatf-recommendations.html (last visited June 17, 2017).

[187] Caroline Binham, *Anti-Money Laundering Rules Need to Be Toughened Up, Warns FSB*, FINANCIAL TIMES (Dec. 19, 2016), https://www.ft.com/content/99d0f7f7-a9cb-3096-99d6-1c4469f45fca (last visited June 16, 2017).

[188] *See* Institute of International Finance, *supra* note 37.

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).[189]

2. Towards Lower Entry Barriers

Second, we believe the key is not the regulation of innovative processes, but instead the regulation of competition in financial markets. Defining the boundaries of competition and innovation is a challenge for regulators.[190] 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.[191] 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 signalling 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) whilst 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

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[189] *See* Arner, Barberis and Buckley, *supra* note 2, at 33.

[190] *See* references in *supra* note 2.

[191] *See* ACCENTURE, FINTECH AND THE EVOLVING LANDSCAPE: LANDING POINTS FOR THE INDUSTRY 6 (2016) (arguing that FinTechs are either disruptors or collaborators).

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

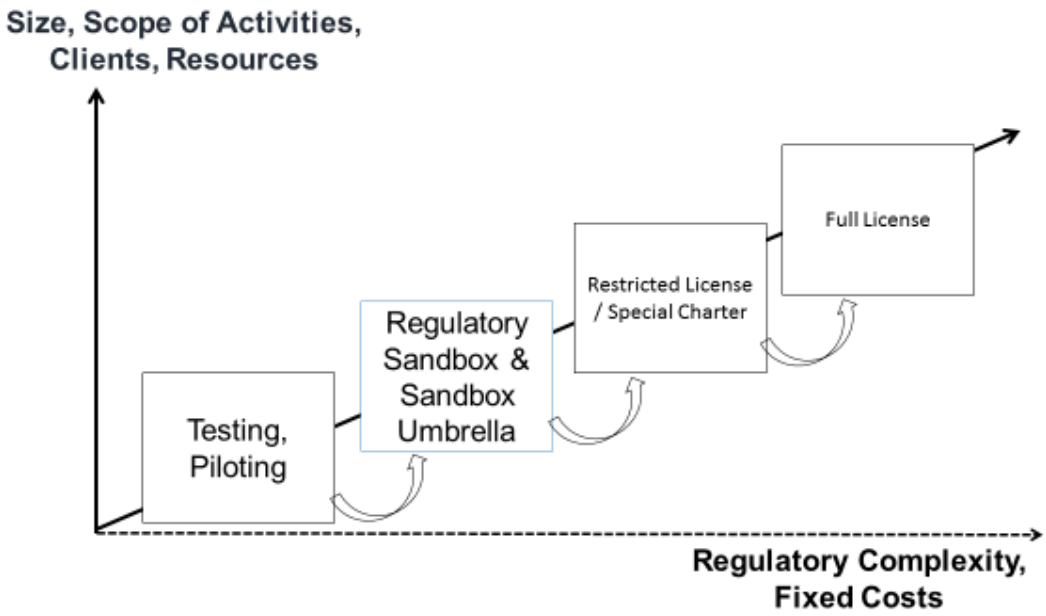
3. Four Stages of Smart Regulation

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.

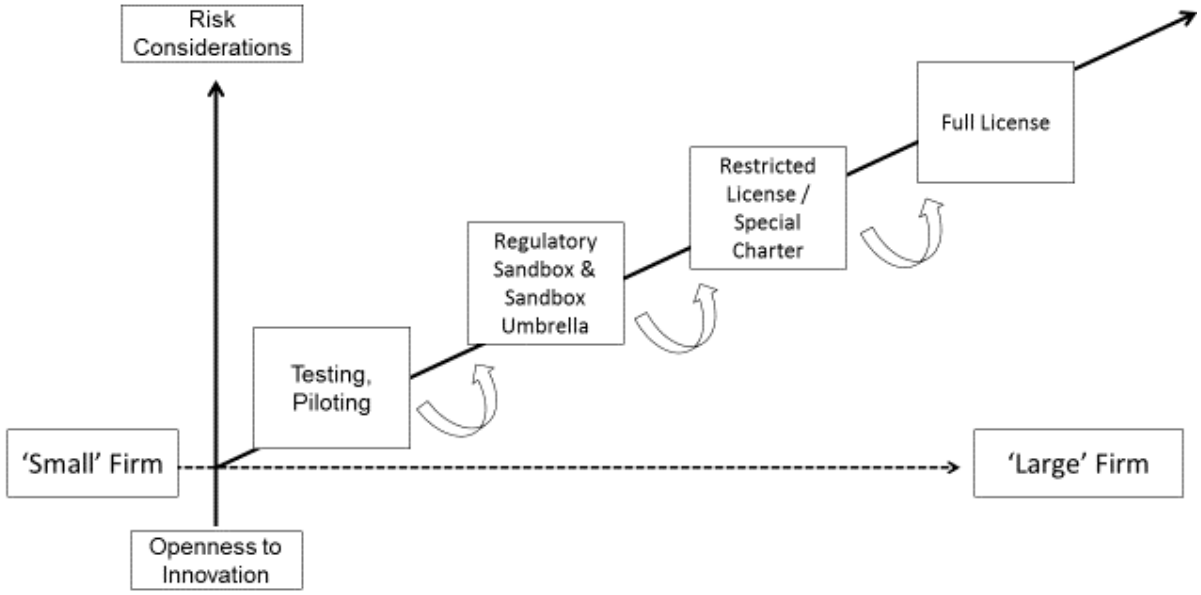
Figure 1: The Progressive Approach of Smart Regulation



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 organisation 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.

VII. Conclusion

This paper has highlighted 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 GFC, 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 being laissez-faire 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 grant case-by-case relaxations of 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 fuzziness. The fuzziness 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 we refer 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 signalling function may explain entrepreneurs' enthusiasm for countries with a regulatory sandbox, even when the actual rules of the sandbox are very strict, or don't, 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 centres.

For the same reason, we see regulators seeking to open markets for their firms by entering into supervisory agreements with other innovation-friendly regulators.[192] This is regardless of equivalent regulation and supervision of sandboxed entities as a standard pre-condition 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 and 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.

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[192] *See* Media Release, ASIC, British and Australian Financial Regulators Sign Agreement to Support Innovative Businesses (March 23, 2016), *available at* http://asic.gov.au/about-asic/media-centre/find-a-media-release/2016-releases/16-088mr-british-and-australian-financial-regulators-sign-agreement-to-support-innovative-businesses/ (stating that "[a]s a result of the agreement signed today, the UK's Financial Conduct Authority (FCA) and the Australian Securities and Investments Commission (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.")

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-GFC 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 Parliament. This uneasiness may also explain why some large and experienced regulators, such as those of the US, 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 regulatory sandbox won't 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 we have shown in this paper 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.

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

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