University of New South Wales Law Research Series

BUILDING FINTECH ECOSYSTEMS: REGULATORY SANDBOXES, INNOVATION HUBS AND BEYOND

ROSS P BUCKLEY, DOUGLAS ARNER, ROBIN VEIDT AND DIRK ZETZSCHE

[2019] *UNSWLRS* 72

UNSW Law
UNSW Sydney NSW 2052 Australia

E: unswlrs@unsw.edu.au
W: http://www.law.unsw.edu.au/research/faculty-publications
AustLII: http://www.austlii.edu.au/au/journals/UNSWLRS/
SSRN: http://www.ssrn.com/link/UNSW-LEG.html

BUILDING FINTECH ECOSYSTEMS: REGULATORY SANDBOXES, INNOVATION HUBS AND BEYOND

*Ross P Buckley**
Douglas Arner[**]
*Robin Veidt****
*Dirk Zetzsche*****

September 2019

ABSTRACT – *Around the world, regulators and policymakers are working to support the development of financial technology (FinTech) ecosystems. As one example, over 50 jurisdictions have now established or announced "financial regulatory sandboxes". Others have announced or established "innovation hubs", sometimes incorporating a regulatory sandbox as one element. This article argues that innovation hubs provide all the benefits that the policy discussion associates with regulatory sandboxes, while avoiding most downsides of regulatory sandboxes, and that many benefits typically attributed to sandboxes are the result of inconsistent terminology, and actually accrue from the work of innovation hubs. The paper presents, as the first contribution of its kind, data on regulatory sandboxes and innovation hubs and argues that the data so far available on*

[*] KPMG Law and King & Wood Mallesons Chair of Disruptive Innovation, Scientia Professor, and Member, Centre for Law, Markets and Regulation, UNSW Sydney. Professor Buckley chairs the Digital Finance Advisory Panel of the Australian Securities and Investments Commission (ASIC) however the views expressed herein are strictly his own, not those of ASIC.

[**] Kerry Holdings Professor in Law and Director, Asian Institute of International Financial Law, Faculty of Law, University of Hong Kong.

[***] Research Associate, ADA Chair in Financial Law (Inclusive Finance), Faculty of Law, Economics and Finance, University of Luxembourg.

[****] Professor of Law, ADA Chair in Financial Law (Inclusive Finance), Faculty of Law, Economics and Finance, University of Luxembourg, and Director, Centre for Business and Corporate Law, Heinrich-Heine-University, Düsseldorf, Germany.

We would like to thank for support of this research the CPA Australia Global Research Perspectives Program grant entitled "A Comparative Analysis of Policy Approaches to Encourage FinTech", the Hong Kong Research Grants Council Research Impact Fund and the Qatar National Research Fund (NPRP 11S-1119-170016) as well as Zak Staub for his invaluable research assistance.

This article draws on a Regulatory Sandbox database set up at the ADA Chair in Financial Law (inclusive finance) at the University of Luxembourg. The authors thank Pamela Cela, Breeze van Eck and Emilija Pashoska for contributing to this database.

sandboxes does not justify the statement that regulatory sandboxes are the most effective approach to building FinTech ecosystems. Given that regulatory sandboxes require significant financial contributions, sometimes new legislation, and intense regulatory risk management, and that sandboxes do not work as well on a stand-alone basis (i.e. without an innovation hub), while innovation hubs alone can provide more significant benefits in supporting the development of a FinTech ecosystem, regulators should focus their resources on developing effective innovation hubs, including in appropriate cases a sandbox as one possible element.

KEYWORDS − FinTech, Innovation, Regulatory Sandbox, Restricted License, Special Charters, Piloting, Testing, RegTech, Insurtech.
JEL CLASSIFICATIONS: G23, G24, G28.

TABLE OF CONTENTS

INTRODUCTION

How to best support the development of an innovative financial technology ("FinTech") ecosystem? Since 2016, an increasing number of financial regulators have established "regulatory sandboxes" in order to encourage the development of their FinTech ecosystems. Regulatory sandboxes are safe spaces in which FinTech start-ups and other innovative enterprises can develop and test their innovations without being subject to the full extent of financial regulation.[1] Regulators typically seek to use a sandbox to bring more competition into their financial services sector through more diverse and affordable product offerings for consumers.

Sandboxes have proven very popular with regulators, world-wide, since the first was introduced in the UK by the Financial Conduct Authority (FCA) in 2016. Regulators in other jurisdictions quickly followed, including Australia, Hong Kong, Abu Dhabi, Canada, Denmark, Malaysia and Singapore. Many other countries have now joined the club. In total, we have tracked more than 50 countries around the globe[2] that have introduced regulatory sandboxes (see Appendix A).

Yet, for all the interest the FCA's regulatory sandbox has generated, with less than 120 sandboxed firms since its inception,[3] it has reached only a truly tiny portion of the total number of financial services firms in the UK and significantly fewer firms than it has assisted through its innovation hub.[4] More importantly, a significant share of young firms previously in the regulatory sandbox are now either insolvent or in liquidation.[5] In other

---

[1] Dirk Zetzsche, Ross Buckley, Douglas Arner & Janos Barberis, *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, 23 FORDHAM J. CORP. FINANC. LAW 31–103 (2017), https://ir.lawnet.fordham.edu/jcfl/vol23/iss1/2.

[2] We list regulatory sandboxes in the Appendix A only where we could verify the regulatory sandbox based on primary sources of law (i.e. legislation, financial regulation) accessible to us. Based on press releases, we estimate that at least another 15 regulatory sandboxes exist or are about to be set up at the time of writing.

[3] According to the ADA Chair Sandbox database, since the first cohort of the FCA sandbox started in 117 firms received sandbox treatment in the five cohorts of the FCA's sandbox so far. Compare this with the more than 60,000 licensed UK financial institutions.

[4] More than 500 requests for support over the 18 months period to April 2018 according to the FCA, *see* Lev Bromberg, Andrew Godwin & Ian Ramsay, *Fintech sandboxes: Achieving a balance between regulation and innovation*, 28 J. BANK. FINANC. LAW PRACT. 314–336 (2017), at n. 25.

[5] According to the ADA Chair Sandbox database (excluding firms of the 5th cohort), at the time of writing 24 % of the 72 sandboxed firms incorporated in or after 2010 that provide sufficient financial information for an analysis to the UK Companies House are firms in liquidation or with negative equity, respectively. *See also* FIN. CONDUCT

jurisdictions, like Australia, a sandbox has proven unattractive for innovative firms.[6] At the same time, some important financial systems, including most regulatory agencies in the United States,[7] Germany and Luxembourg have refrained from introducing regulatory sandboxes. These experiences highlight the fact that a regulatory sandbox is only one of many ways a regulator can approach promoting and supporting a FinTech ecosystem. Such approaches can include a range of efforts, focusing on research and development, human capital development, marketing, establishment of regulatory contact points, various forms of investment promotion including establishment of investment funds and matching schemes, creation of incubators and accelerators, and legal and regulatory reform. Together, these elements make up the central elements of a supportive FinTech ecosystem.

In addition to regulatory sandboxes, an increasing number of jurisdictions are developing "innovation hubs" in order to support the development of their FinTech ecosystems. This article compares and contrasts sandboxes to innovation hubs, arguing that in many cases innovation hubs are likely to be more effective in building a FinTech ecosystem.[8]

A financial regulatory sandbox is most commonly a tightly defined safe space which automatically grants relief from some regulatory requirements for those entities that meet the entry tests.[9] An innovation hub, in contrast, is simply a portal, a means by which industry can readily access regulators: to discuss their proposed FinTech innovation, gain some guidance on navigating regulatory requirements, and potentially seek dispensations or adjustments in the specific regulations to which they will be subject.[10]

AUTHORITY, THE IMPACT AND EFFECTIVENESS OF INNOVATE 5 (2019), https://www.fca.org.uk/publication/research/the-impact-and-effectiveness-of-innovate.pdf (stating that approx. "80% of firms that successfully tested in the Sandbox are still operational", but including many well-established firms such as HSBCm Barclays, etc.). 21 of 93 UK firms wich provide sufficient data in the ADA Chair Sandbox database were established prior to 2010.

[6] The ADA Chair Sandbox database lists 6 firms that have received sandbox treatment in Australia.

[7] *See* on the U.S. *infra*, at II.A.

[8] For a definition of innovation hubs, *see* Dirk Zetzsche, Ross Buckley, Douglas Arner & Janos Barberis, *supra* note 1, at 38-39.

[9] *See ibid*, at 45.

[10] *See* COMMISSION DE SURVEILLANCE DU SECTEUR FINANCIER [hereinafter CSSF], ANNUAL REPORT 39 (2017), https://www.cssf.lu/fileadmin/files/Publications/Rapports_annuels/Rapport_2017/RA_2017_eng.pdf (stating that an innovation hub includes a "constructive and open dialogue with

Our thesis is that while sandboxes tend to attract the headlines and attention, the real work of promoting and facilitating innovation in financial services tends to be done in virtually all jurisdictions where it does occur by some form of innovation hub.

Yet, of course, regulatory resources are always tightly constrained, which is especially true for most emerging and developing countries seeking to bolster innovation. So it is the promise of facilitating real innovation in financial services without imposing real demands on these resources which accounts for the remarkable popularity with regulators, globally, of sandboxes. This is entirely understandable. However, we bear bad news – regulators who wish to genuinely promote innovation, need to make available the staff to interact with industry, and where necessary, issue bespoke waivers or other forms of dispensation of some regulatory requirements, and assist with advice and guidance to FinTech start-ups seeking to navigate the regulatory maze.

The reason the numbers of entities in sandboxes is so limited, is because if the access regime is sufficiently broad to enable the participation of a wide array and number of participants, the likely result will be lax consumer protection. For this reason, sandbox entry conditions tend to be tight. Genuinely innovative regulation can only, it seems in most cases, occur on a case-by-case basis (as most financial regulators around the world have done with no-action letters, tailored dispensations and other such measures for many decades).

This is not to say regulatory sandboxes serve no purpose. For the relatively small number of entities that qualify, sandboxes do assist. And more importantly, because it is sandboxes that have been attracting the attention, having a sandbox sends a clear message to industry that a regulator is flexible and open to innovation in a way that having an innovation hub does not – in part because hubs are called different things in different places – they lack the catchy descriptor that sandboxes carry. In

---

the FinTech industry by making [CSSF staff] available for all entities wishing to present an innovative project. During these meetings, the CSSF provides the entities with advice and guidelines on the applicable regulatory framework in order to ensure that the project is developed in compliance with the regulations in force."); EUROPEAN SUPERVISORY AUTHORITIES, *JOINT ESA REPORT ON REGULATORY SANDBOXES AND INNOVATION HUBS* (2018), at 5, https://www.esma.europa.eu/sites/default/files/library/jc_2018_74_joint_report_on_regulatory_sandboxes_and_innovation_hubs.pdf (defining an innovation hub as "a dedicated point of contact for firms to raise enquiries with competent authorities on FinTech-related issues and to seek non-binding guidance on the conformity of innovative financial products, financial services or business models with licensing or registration requirements and regulatory and supervisory expectations.").

our view, the most important function of any sandbox for a regulator is the strong message that having it sends to the market.

The FCA sandbox grew out of its innovation hub, which is termed Project Innovate. Likewise in Australia, the Australian Securities and Investments Commission's (ASIC's) sandbox grew out of its innovation hub, which long preceded the sandbox. However, many other countries attracted by the lower regulatory resources needed to operate a sandbox have implemented a sandbox without a broader hub. Our thesis is that this is unlikely to do much substantively to promote innovation.

This article begins by analysing the typical entry conditions and elements of a sandbox in Part I. In Part II it outlines their potential benefits and, in Part II, considers some of their risks and ways to address them. Part IV concludes with a series of policy lessons to be drawn from this analysis for regulators seeking to support the development of innovation and innovation ecosystems in their own jurisdictions. Appendix A then sets out a detailed descriptive table of proposed or implemented sandboxes, and seeks to characterize each as either narrow or broad.

I. REGULATORY SANDBOXES – ENTRY CONDITIONS AND ELEMENTS

A. Entry Test

Regulators around the world generally set up an entry test to determine whether a firm is qualified to "play in the sandbox". This test often has three elements.

First, the test will ask whether the intended product or service is appropriate for the sandbox. For example, proposed products or services often must: (i) support the financial services industry,[11] (ii) provide genuine

[11] *See* FIN. CONDUCT AUTHORITY, REGULATORY SANDBOX [hereinafter FCA Regulatory Sandbox], marginal no. 3.4 (2015), https://www.fca.org.uk/publication/research/regulatory-sandbox.pdf; CENTRAL BANK OF MALAYSIA, FIN. TECHNOLOGY REGULATORY SANDBOX FRAMEWORK [hereinafter Bank Negara Malaysia Framework], marginal no. 5.1 (2016), http://www.bnm.gov.my/index.php?ch=57&pg=137&ac=533&bb=file; the broader objective in AUTHORITY FOR THE FIN. MARKETS (AFM) & DENEDERLANDSCHEBANK (DNB), MORE ROOM FOR INNOVATION IN THE FIN. SECTOR [hereinafter DNB/AMF Next Steps], at sections 1.1, 1.3.i (2016), https://www.dnb.nl/en/binaries/Discussion document AFM-DNB More room for innovation in the financial sector_tcm47-345198.pdf. ; BAKER & MCKENZIE, CLIENT ALERT, FINTECH UPDATE: THAILAND'S FINTECH REGULATORY SANDBOX [hereinafter Bank of Thailand Sandbox] section A.3 (2016), http://www.bakermckenzie.com/-/media/files/insight/publications/2016/10/fintech-

innovation, i.e. new solutions to existing or new problems, [12] and (iii)

update/al_bangkok_fintechsandbox_oct16.pdf?la=en; FIN. SUPERVISORY COMMISSION R.O.C. (TAIWAN), FINANCIAL INDUSTRY WORKS WITH THE TECHNOLOGY INDUSTRY ON FINTECH UPGRADE (2016), https://www.feb.gov.tw/en/home.jsp?id=47&parentpath=0,7&mcustomize=multimessage_view.jsp&dataserno=201610170001&aplistdn=ou=bulletin,ou=multisite,ou=english,ou=ap_root,o=fsc,c=tw&dtable=Bulletin (last visited June 22, 2019). 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 BANK INDONESIA, OPTIMIZING POTENTIAL, STRENGHTENING RESILIENCE - ANNUAL REPORT 108–110 (2016), www.bi.go.id/id/publikasi/laporan-tahunan/bi/Documents/LKTBI2016.pdf; *see also* Press Release, Gubernur BI Resmikan Bank Indonesia Fintech Office (Nov. 14, 2016), http://www.bi.go.id/id/ruang-media/siaran-pers/Pages/sp_189216.aspx (stating the four objectives of the FinTech office establishment); ABU DHABI GLOBAL MARKET, CONSULTATION PAPER NO. 2 OF 2016 - POLICY CONSULTATION ON A REGULATORY FRAMEWORK TO SUPPORT PARTICIPANTS DEPLOYING INNOVATIVE TECHNOLOGY WITHIN THE FINANCIAL SERVICES SECTOR [hereinafter ADGM Guidance] (2016), at 13 (points 16.b.(i), (ii)), http://adgm.complinet.com/net_file_store/new_rulebooks/a/d/ADGM_Consult_Paper_No_2_of_2016_Reg_Framewk_for_Fin_Tech_Final.pdf; ECONOMIC DEVELOMPENT BOARD MAURITIUS, REGULATORY SANDBOX LICENCE - GUIDELINES FOR FINTECH PROJECTS [hereinafter Mauritius Guidelines] 5, http://www.edbmauritius.org/media/1995/fintech-rsl-application-guidelines.pdf (last visited June 23, 2019).

[12] *See* FCA Regulatory Sandbox, *supra* note 11, at marginal no. 3.4; CENTRAL BANK OF BAHRAIN (CBB), FINTECH & INNOVATION - REGULATORY SANDBOX FRAMEWORK [hereinafter CBB Guidelines] RS-B.1.1 lit. a, https://www.cbb.gov.bh/fintech/ (last visited June 23, 2019); MONETARY AUTHORITY OF SINGAPORE, FINTECH REGULATORY SANDBOX GUIDELINES [hereinafter MAS Guidelines] marginal no. 6.2.a (2016), http://www.mas.gov.sg/~/media/Smart Financial Centre/Sandbox/FinTech Regulatory Sandbox Guidelines 19Feb2018.pdf; AUTORITI MONETARI BRUNEI DARUSSALAM (AMBD), FINTECH REGULATORY SANDBOX GUIDELINES [hereinafter AMBD Guidelines] marginal 7.2.(a) (2017), https://www.ambd.gov.bn/SiteAssets/fintech-office/FTSG v1_final.pdf; AUSTRALIAN SECURITIES & INVESTMENTS COMMISSION (ASIC), REGULATORY GUIDE 257 - TESTING FINTECH PRODUCTS AND SERVICES WITHOUT HOLDING AN AFS OR CREDIT LICENCE [hereinafter ASIC RG 257] marginal no. 45 (2017), https://download.asic.gov.au/media/4420907/rg257-published-23-august-2017.pdf;
Heading "Innovationsförderung" of Art. 1b, Swiss Bank Vernehmlassungsvorlage, with an explanation in EIDGENÖSSISCHES FINANZDEPARTEMENT EFD, ÄNDERUNG DES BANKENGESETZES UND DER BANKENVERORDNUNG (FINTECH) - ERLÄUTERNDER BERICHT ZUR VERNEHMLASSUNGSVORLAGE [hereinafter EFD Erläuternder Bericht] (2017), at 33, https://www.newsd.admin.ch/newsd/message/attachments/47046.pdf.; Bank Negara Malaysia Framework, *supra* 11, at marginal no. 5.1; DNB/AMF Next Steps, *supra* note 11, at section 1.1; Bank of Thailand Sandbox, *supra* note 11, at section A.3; Bank Sentral Republik Indonesia, BANK INDONESIA DETERMINES FINTECH OPERATOR IN REGULATORY SANDBOX (2018), https://www.bi.go.id/en/ruang-media/info-terbaru/Pages/BI-Menetapkan-Penyelenggara-TekFin-dalam-Regulatory-Sanbox.aspx (last visited June 23, 2019); For Taiwan *see* DIGITAL INNOVATION & GOVERNANCE INITIATIVE COMMITTEE

benefit consumers.[13]

The innovation requirement is debatable, given it requires regulators to assess an innovation.[14] This task is arguably beyond their skill set, and one that Australia's ASIC expressly chose not to undertake. Sandbox rules will also often require regulators to assess whether the product or service enhances market stability, transparency and consumer protection, or otherwise serves the broader financial system.[15] Again this is a non-simple task for regulators.

Second, regulators often are required to assess whether there is a

---

(DIGI), TAIWANESE FINTECH REGULATORY SANDBOX TO LAUNCH IN APRIL - DETAILS OF THE TAIWANESE SANDBOX (2018), https://www.digi.ey.gov.tw/en/News_Content.aspx?n=2CD8150D3764A46D&sms=9FA66FA17135CFC2&s=036200688CAEE5CD (last visited Jun 23, 2019); ADGM Guidance, *supra* note 11, at 13 point 16.a.; Mauritius Guidelines, *supra* note 11, at 8.

[13] *See* FCA, *supra* note 11,, at marginal no. 3.4; CBB Guidelines, *supra* note 12, at RS-B.1.1 lit. b; MAS Guidelines, *supra* note 12, at marginal no. 6.2.b; AMBD Guidelines, *supra* note 12, at 7.2.(a) (iii); Bank of Thailand Sandbox, *supra* note 11, at section A.3; Bank Indonesia, *supra* note 11, at 110; Press Release, Otoritas Jasa Keuangan (OJK), Press Release: OJK Drafts Regulations on Fintech Development (2016) [hereinafter OJK Press Release], 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), https://www.ojk.go.id/en/berita-dan-kegiatan/siaran-pers/Pages/Press-Release-OJK-Drafts-Regulations-on-Fintech-Development1.aspx (last visited Jun 24, 2019); ADGM Guidance, *supra* note 11, at 13 point 16.b.(iii); Mauritius Guidelines, *supra* note 11, at 8.

[14] *See* Bromberg, Godwin, & Ramsay, *supra* note 4, at 15.

[15] *See* FCA Regulatory Sandbox, *supra* note 11, at marginal no. 3.4; MAS Guidelines, *supra* note 12, at marginal no. 6.2.a; ADGM Guidance, *supra* note 11, at 6 *et seq*; AMBD Guidelines, *supra* note 12, 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, *supra* note 12, at marginal no. RG 257.45; Heading "Innovationsförderung" of Art. 1b of the Swiss Bank Vernehmlassungsvorlage with an explanation in EFD Erläuternder Bericht, *supra* note 12, at 33; Bank Negara Malaysia Framework, *supra* 11, at marginal no. 5.1; DNB/AMF Next Steps, *supra* note 11, at section 1.1; Bank of Thailand Sandbox, *supra* note 11, at section A.3; OTORITAS JASA KEUANGAN (OJK), RUANG UJI COBA TERBATAS (REGULATORY SANDBOX) TEKNOLOGI FINANSIAL (SPACE FOR LIMITED TRIAL (REGULATORY SANDBOX) OF FINANCIAL TECHNOLOGY) (2017), https://www.bi.go.id/elicensing/helps/PADG REGSAND.pdf (Indon., for an English summary of the requirements see DELOITTE, NEW FIN. SERVICES AUTHORITY (OJK) & BANKING REGULATIONS at marginal 4 (2017), https://www2.deloitte.com/content/dam/Deloitte/id/Documents/audit/id-aud-ojk-banking-regulations-dec2017.pdf); OJK Press Release, *supra* note 13, 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"); FIN. SUPERVISORY COMMISSION R.O.C. (TAIWAN), *supra* note 11.

need for the sandbox, or whether the technology, service or activity is already appropriately covered by existing law and regulation.[16]

Third, regulators typically require adequate preparation for participants to enter the sandbox.[17] Specifically, participants usually need to have entered the development stage (and have graduated from the project stage); understand laws and regulations governing their conduct; and engage in appropriate risk management.

Other sandboxes – for instance that of the Hong Kong Monetary Authority – are much less formal in operation, illustrating that – despite commonalities – the differences between sandboxes in different markets can be very great indeed.

B. Scope

The scope of coverage of individual sandboxes varies considerably.

1. Sectoral restrictions

While Australia, the UK, Singapore, Malaysia and the Netherlands do not limit the sandbox's scope to certain sectors,[18] Switzerland and Hong-Kong restrict it to authorized financial institutions working with or without FinTech firms.[19] Arizona limits its scope to the three categories of money

---

[16] *See* DNB/AMF Next Steps, *supra* note 11, at section 1.2, 1.3.ii; Bank Negara Malaysia Framework, *supra* 11, at marginal no. 5.1.e; FCA Regulatory Sandbox, *supra* note 11, at marginal no. 3.4; Mauritius Guidelines, *supra* note 11, at 8.

[17] *See* Bank Negara Malaysia Framework, *supra* 11, at marginal no. 5.1.b; MAS Guidelines, *supra* note 12, at marginal no. 6.2.d ff; AMBD Guidelines, *supra* note 12, at 10; Letter from Arthur Yuen, Deputy Chief Executive, H.K. Monetary Authority [hereinafter HKMA FSS] (Sept. 6, 2016), at 2, http://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2016/20160906e1.pdf; DNB/AMF Next Steps, *supra* note 11, at section 1.3.iii; FCA Regulatory Sandbox, *supra* note 11, at marginal no. 3.4; Mauritius Guidelines, *supra* note 11, at 8.

[18] 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, *supra* note 12, at marginal no. 4.1; AMBD Guidelines, *supra* note 12, at 5; Bank Negara Malaysia Framework, *supra* 11, at marginal no. 2.1.; DNB/AMF Next Steps, *supra* note 11, at step 1.1.

[19] The Swiss approach concerns deposits from the public ("Publikumseinlage") which licensed banks tend to hold, *see* EFD, Erläuternder Bericht, *supra* note 12, at 2; the Hong Kong approach is available for authorized institutions which wish to try out new technologies ("banking services"): HKMA FSS, *supra* note 17, at 1 f. For the Thai approach, s*ee* Bank of Thailand Sandbox, as described in Speech, Dr Veerathai

transmission, consumer lending, and investment advice, thereby excluding InsurTech firms from participation.[20]

Sectoral restrictions do little for FinTechs and innovation, and should, if possible, be avoided. Such restrictions may only be appropriate for highly specialized sandboxes being operated to address shortcomings of the regulatory framework with regards to certain innovations, e.g. robo advice.[21] Restrictions entrench existing regulatory borders. In many cases, for example in risk management, technology initially developed for banks may be of more use for insurance; hence, allowing expansion into InsurTech is crucial. Sectoral restrictions are also counter-productive in that they reduce economies of scale and thus the value of an innovation.

At the same time, while sectoral restrictions are undesirable, in some cases, a regulator-sponsored sandbox is, of necessity, limited by the respective regulators' jurisdiction, for instance, in Hong Kong, where the HKMA only has regulatory authority over banks and banking activities. In such a case, cooperation between say the banking and market conduct regulators, as in the Netherlands, may show the way forward. South Africa's sandbox announced in 2019 provides an example, where it expressly covers all sectors but can only do so by involving all the financial regulators (namely the Reserve Bank of South Africa, the Financial Services Conduct Authority, and the Treasury).

2. Regulated entity restrictions

Treatment of existing regulated entities varies. Some regulators do not allow elements of existing entities into the sandbox,[22] others do. For instance, the HKMA[23] only opens participation to authorized institutions (though potentially in conjunction with FinTech firms), whereas others (namely Abu Dhabi, Brunei, the Netherlands and Mauritius)[24] only permit

---

Santiprabhob, Governor of the Bank of Thailand, Japanese Chamber of Commerce Thailand Dinner Talk: The Thai Economy: The Current State and The Way Forward (Mar. 13, 2017), at 6, https://www.bot.or.th/English/PressandSpeeches/Speeches/Gov/SpeechGov_13Mar2017.pdf.

[20] Paul Watkins, Evan Daniels & Stuart Slayton, *First in the Nation: Arizona's Regulatory Sandbox*, 29 STANF. L. POL. REV. 1, 9 (2018).

[21] *See generally* Wolf-Georg Ringe & Christopher Ruof, *A Regulatory Sandbox for Robo Advice*, EBI Working Paper (2018), https://ssrn.com/abstract=3188828.

[22] 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.

[23] *See* HKMA FSS, *supra* note 17, at 1.

[24] *See* AMBD Guidelines, *supra* note 12, at 5.1; DNB/AMF Next Steps, *supra* note

newer firms to enter, while existing authorized firms may benefit from no-action letters (which are not standard practice in some other countries, notably the UK[25]), informal individual guidance on how to read the law, and waivers from certain mandatory requirements.

3. 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[26] is open for services targeting "staff members or focus groups of selected customers",[27] while the Monetary Authority of Singapore (MAS)[28] allows the applicant to choose the type of customer, and ASIC[29] and the Mauritius Investment Board[30] treat services offered to retail and wholesale clients as eligible, while Arizona[31] sets a hard cap of 10,000 Arizona customers. 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. This aspect is emphasized by the UK

11, at section 1.4, 1.5, 2; ADGM Guidance, *supra* note 11, at 13-14; Mauritius Guidelines, *supra* note 11, at 8.

[25] *See* FIN. CONDUCT AUTHORITY (FCA), REGULATORY SANDBOX ANNOUNCEMENT (2016), https://wiki.harvard.edu/confluence/download/attachments/204380235/FCA%20Regulatory%20Sandbox%20Announcement.pdf, at subsection 'authorised businesses' (stating with regard to no enforcement action letters that "[t]his 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).

[26] *See* HKMA FSS, *supra* note 17, at 1(b).

[27] *See* HKMA FSS, *supra* note 17, at 1.

[28] *See* MAS Guidelines, *supra* note 12, at 15. *See also* AMBD Guidelines, *supra* note 12, Introduction 1.3 and 10.3.

[29] *See* ASIC RG 257, *supra* note 12, at marginal nos. RG 257.82, RG 257.84.

[30] Mauritius Guidelines, *supra* note 11, at 8-10.

[31] *See* ARIZ. REV. STAT. ANN. § 41-5605(B) (2018) (up to 10,000 customers that must be residents of Arizona). See § 41-5605(C) for a possible extension to 17,500 customers.

FCA[32] which requires that the "type of customers has to be appropriate to the tested products and to the exposed risks", while Bank Negara Malaysia may restrict "the participation of customers to a certain segment or profile of customers if warranted by the business model".[33]

Proportionality should underlie the sandbox approach. If wholesale clients are sufficiently sophisticated and skilled to understand the risks they take,[34] it may suffice if FinTechs serving those clients are simply required to disclose their regulatory status. However, FinTechs targeting retail clients should typically incur a higher degree of regulation.[35]

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 major banks in a market could well give rise to systemic concerns.

4. Time and size

The period a FinTech is allowed to play in the sandbox is typically limited, either by a rule or on a case-by-case basis.[36] Periods range, in the first instance, from 6 months (UK, Brunei-Darussalam, India, Mozambique[37]), 12 months (Australia, Thailand, Malaysia[38]), or 24 months (Ontario, Abu

---

[32] *See* FCA, DEFAULT STANDARDS FOR SANDBOX TESTING PARAMETERS [hereinafter FCA Default Standards], customer selection (2017), https://www.fca.org.uk/publication/policy/default-standards-for-sandbox-testing-parameters.pdf .

[33] *See* Bank Negara Malaysia Framework, *supra* 11, at marginal no. 6.3.(c).

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

[35] 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/.

[36] *See* MAS Guidelines, *supra* note 12, at marginal no. 5.3; DNB/AMF Next Steps, *supra* note 11, at section 4. In addition, the HKMA seem to practice a case-by-case assessment.

[37] *See* FCA Default Standards, *supra* note 32, section duration; AMBD Guidelines, *supra* note 12, Appendix B; Reserve BANK OF INDIA, DRAFT ENABLING FRAMEWORK FOR REGULATORY SANDBOX (Apr. 18, 2019), at 6.1, https://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&ID=920; Press Release, Fin. Sector Deepening Moçambique (FSDMOC), How FSDMoç is addressing financial sector regulation challenges: The Regulatory Sandbox Story! (May 17, 2018), http://fsdmoc.com/fsdmoc-addressing-financial-sector-regulation-challenges-regulatory-sandbox-story/.

[38] *See ASIC Corporations Instrument 2016/1175* s 6(2); *ASIC Credit Instrument 1176/2016* s 6(2); ASIC RG 257, *supra* note 12, at marginal no. RG 257.71; Bank Negara Malaysia Framework, *supra* 11, at marginal no. 9.2; Bank of Thailand Sandbox, *supra* note

Dhabi, Arizona[39]). Generally, extensions are available.

The more certain the sandbox conditions, the more likely they will suffice as a risk mitigating device, thereby reducing the importance of the time limit. For instance, the Swiss sandbox proposal ("Innovationsraum") is not limited timewise. For as long as the FinTech remains below the determined threshold of CHF1 million in deposits from the public, it will not be subject to a licensing requirement. If the FinTech has between CHF1 million and CHF100 million in deposits from the public, it will be subject to a restricted license scheme with a lower regulatory burden.[40] However, such limits may not suit specific risks and opportunities or neglect systemic implications, and in some cases regulators should consider other thresholds, depending on the business model, for instance number and type of clients.

C. Mandatory provisions subject to waiver

Most sandbox rules do not specify which mandatory provisions may be lifted,[41] but some regulators do disclose the minimum level of compliance inside the sandbox. For instance, Singapore's MAS[42] 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, appropriately in our view, are strict on confidentiality of customer information; management's fitness (in particular honesty and integrity); handling of customers' monies and assets by intermediaries; and AML/CTF measures.

11, at section A.4; Thai SEC Sandbox, *supra* note 19, para 3.

[39] *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), 24 October 2016, decision *In the matter of the Securities Legislation of Ontario and in the Matter of Angellist, LLC and Angellist Advisors, LLC*; ADGM Guidance, *supra* note 11, at 10; ARIZ. REV. STAT. ANN. § 41-5605(A) (2018).

[40] EFD Erläuternder Bericht, *supra* note 12, at 18, referring to the modification of Article 6 II (a) of the Swiss Bank Ordinance.

[41] *See* Bank Negara Malaysia Framework, *supra* 11, at marginal no. 7.3(a); FCA Regulatory Sandbox, *supra* note 11, at 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, *supra* note 17, at 2; "somewhat lenient rules" in the Bank of Thailand Sandbox, *supra* note 11, at section A.1.

[42] *See* MAS Guidelines, *supra* note 12, at marginal no. 2.3, annex A.

The Ontario Securities Commission,[43] upon conditions that certain investors access only certain services, has granted relief in respect of audit requirements regarding financial statements; know-your-client requirements; suitability requirements; dispute resolution requirements; certain disclosure and reporting requirements; and prospectus requirements.

The HKMA requirements that may be waived in the sandbox are security-related requirements for electronic banking services, and the timing of independent assessment prior to launching new technology services.[44]

Most authorities sensibly refrain from stipulating an exhaustive list of requirements that may potentially be relaxed within the regulatory sandbox, preferring to retain flexibility.

D. Removing the privilege

Sandbox rules typically specify grounds upon which to withdraw the privilege.[45] Reasons for forced exit from the sandbox include risks exceeding benefits; non-compliance with laws or regulatory impositions; and the purpose of being in the sandbox not being achieved.[46]

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.

---

[43] *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*.

[44] HKMA FSS, *supra* note 17, at 2.

[45] *See* ASIC RG 257, *supra* note 12, at marginal no. RG 257.54; Bank Negara Malaysia Framework, *supra* 11, at marginal no. 10.1; MAS Guidelines, *supra* note 12, at marginal no. 7.4.c f.; AMBD Guidelines, *supra* note 12, at marginal 9; ADGM Guidance, *supra* note 11, at 12; DNB/AMF Next Steps, *supra* note 11, at section 4; CBB Guidelines, *supra* note 12, at RS-5.1.1, RS-5.1.2.

[46] *See* wording used by CBB Guidelines, *supra* note 12, at RS-5.1.1 ("a critical flaw (i.e. a flaw that causes the risk to customers or the financial system to outweigh any benefits of the service […]) has been discovered.").

II. POTENTIAL BENEFITS OF SANDBOXES

There are three principal potential benefits of implementing a sandbox. The first is the message doing so sends to the market. The second is the boost to innovation in the market. The third is how much the regulator stands to learn about innovations in the market.

Interestingly, while all the focus globally seems to have been on sandboxes, Australia's experience clearly suggests that an innovation hub may well be a far more important regulatory reform and a far better way of achieving these three ends. However, it also remains true that terms like "Innovation Hub" or "Project Innovate" will not cut through as effective messaging the way the image of toys in a sandpit does – perhaps a psychologist one day will identify some failure of maturation in childhood development shared by many FinTech entrepreneurs but of course, not scholars, who are too grown-up for their own good. Or perhaps the term, sandbox, is simply fun, somewhat paradoxical and memorable?

A. Market message of having a sandbox

A regulatory sandbox signals a regulators' propensity to support innovation.

In Australia, ASIC allows the requirement for an Australian financial services licence to be waived for entities admitted to its regulatory sandbox. However, this waiver is subject to restrictive conditions and eligibility criteria, which has resulted in very limited participation.[47] In fact there are only, at the time of writing, about six entities that have taken advantage of ASIC's sandbox. Comparison with the Supervisory, Regulatory and Insurtech Sandboxes in Hong Kong suggests why this might be so, as these sandboxes have no limit on the duration of the exemption period, no financial limits on the businesses that may apply and a broader range of eligible products and services than does the ASIC one.[48] At the insistence of the federal Treasury in Australia, at the time of writing, there is a proposal to expand the breadth of ASIC's sandbox, but the legislation to implement this has been hung up in federal Parliament.

Nonetheless, and this is perhaps the most important learning in the

---

[47] Lance Sacks, *Growing the Sandbox – Australia's enhanced Fintech regulatory sandbox* 1–9 (2017), https://www.cliffordchance.com/briefings/2017/11/growing_the_sandboxaustraliasenhance.html.

[48] *See e.g.*, *id.* at 6.

story of ASIC's sandbox, its sandbox would seem to have been a success, precisely because it has sent a message to industry and the market that ASIC is a flexible, approachable regulator open to dealing with innovative enterprises. Furthermore, the real success story in ASIC's history as a pro-innovation regulator has been its Innovation Hub.

The number of entities in a regulator's sandbox is typically very small. For instance, in the pioneering sandbox established by the UK Financial Conduct Authority, there were 18 participants in cohort one. At the time of writing, the ADA Chair Sandbox Database lists 117 firms for the UK and 6 firms for ASIC – truly a tiny proportion of financial services firms licensed in those countries.[49] An outlier in this regard is the Regulatory Sandbox Register by the CBB in Bahrain which lists 31 participants currently active inside the sandbox framework compared to 385 fully regulated financial institutions;[50] this indicates a broader sandbox definition than we have applied in this article.

Our research suggests that sandboxes play two far more important roles and both should appeal to developing country regulators.[51] First, establishing a sandbox sends a strong message to FinTechs that the regulator is open to innovation.[52] The strength of the message, however, is highly time-specific and also – in our view – jurisdiction specific. Any

---

[49] *Sector Overview*, FIN. CONDUCT AUTHORITY, (last updated Apr. 9, 2018), https://www.fca.org.uk/about/sector-overview/ ("The FCA is the conduct regulator for 58,000 financial services firms and financial markets in the UK, and the prudential regulator for over 18,000 of those firms.") .

[50] *See FinTech & Innovation - Regulatory Sandbox Register*, CENTRAL BANK OF BAHRAIN (CBB), https://www.cbb.gov.bh/fintech/ (last visited Jun 24, 2019); *Number of Banks and Financial Institutions - April 2019*, CENTRAL BANK OF BAHRAIN (CBB), https://www.cbb.gov.bh/ (last visited June 26, 2019).

[51] *See* Dirk Zetzsche, Ross Buckley, Douglas Arner & Janos Barberis, *supra* note 1, at 101.

[52] *See* Watkins, Daniels, & Slayton, *supra* note 20, at 5, discussing how the concentration of FinTech companies and a "benefit of live testing within a sandbox" may attract venture capital firms and give VC a reason to "leave its narrow ambit on the coasts to create a more diverse investment portfolio". *See also* I. JENIK & K. LAUER, REGULATORY SANDBOXES AND FINANCIAL INCLUSION 4 (2017), http://www.cgap.org/sites/default/files/Working-Paper-Regulatory-Sandboxes-Oct-2017.pdf. However, this message may also be sent by innovation hubs, *see* UNSGSA FINTECH WORKING GROUP AND CCAF, EARLY LESSONS ON REGULATORY INNOVATIONS TO ENABLE INCLUSIVE FINTECH: INNOVATION OFFICES, REGULATORY SANDBOXES, AND REGTECH UNSGSA CCAF 25 (2019), https://www.unsgsa.org/files/3515/5007/5518/UNSGSA_Report_2019_Final-compressed.pdf ("A dedicated innovation office with knowledgeable staff and a strong will to push things through was identified as a *key enabler of a pro-innovation culture*.") (emphasis added).

copy-cat sandbox project does not send such a strong pro-innovation signal as did the FCA's original sandbox; and this is even more true in a world where almost 50 sandboxes have been created or announced around the globe (see Appendix). Moreover, sandboxes are probably most effective in jurisdictions where there are already a significant number of innovation focused firms (such as the UK, Hong Kong, Australia and Singapore) and less effective in small developing countries that lack a significant number of startups and innovation companies. In many cases, such jurisdictions are unlikely to attract desirable foreign participants by way of a sandbox and a sandbox is not really the best way to encourage the development of domestic firms. Second, it provides an important learning opportunity for regulators, especially if and when coupled with an innovation hub. An innovation hub which integrates with a sandbox can change traditional dynamics, as the industry comes to see the regulator as an entity they can approach for assistance with regulatory challenges rather than a distant policeman to be avoided. ASIC, in a series of proactive moves, has managed to achieve this cultural shift with a combination of an Innovation Hub, a regulatory sandbox and a Digital Finance Advisory Panel, which meets quarterly and includes representatives from industry, industry associations and all relevant regulatory agencies.[53] The planned structure in South Africa is similar, with the sandbox explicitly envisaged as a way for the regulator to learn about innovations in technology and business models in order to best develop appropriate balanced proportional regulatory responses.

The numbers really highlight the effectiveness of an innovation hub relative to a regulatory sandbox. In ASIC's case, from March 2015 to December 2018, its innovation hub dealt with 380 entities, provided informal assistance and advice to 347 of those, and granted 69 new credit licences.[54] Compare these figures with the six entities that, in a somewhat shorter period, took advantage of ASIC's regulatory sandbox. The experience seems to be that very few potential entrants qualified for the relatively strict sandbox requirements, and that nearly every potential entrant required the more bespoke approach that the hub facilitates.

[53] *See Digital Finance Advisory Panel*, ASIC, https://asic.gov.au/for-business/innovation-hub/asic-and-fintech/digital-finance-advisory-panel/ (last visited June 26, 2019); *see* ASIC, '15–21MR Innovation Hub: ASIC Update' (Aug. 5, 2015), http://asic.gov.au/about-asic/media-centre/find-a-media-release/2015-releases/15-211mr-innovation-hub-asic-update/. Ross Buckley currently chairs the Digital Finance Advisory Panel of ASIC and the views herein are strictly his own, not ASIC's.

[54] ASIC's Innovation Hub, Progress Report, March 2015-December 2018, https://asic.gov.au/for-business/your-business/innovation-hub/results/ *See supra* n. 4 for numbers regarding FCA's Project Innovate.

Furthermore, while an innovation hub is admittedly far more demanding of seasoned regulatory expertise and more risky to regulatory reputation due to the need to issue an immediate assessment than a sandbox,[55] this demand on regulator time is also a major advantage of a hub, as it facilitates a more interactive two-way knowledge exchange – vital for regulators in this field as it keeps them right at the cutting-edge of developments in technology. The previous literature has accredited those "bidirectional educational benefits"[56] to sandboxes alone. But, in fact, innovation hubs are doing the same work, and we would suggest potentially much better .

ASIC has long been a flexible regulator willing to work one-on-one with industry participants and so in one sense its Innovation Hub is merely a continuation and formalization of past practices. The important thing, from their perspective however, is that their sandbox and hub, in a way, have served to announce to FinTechs outside Australia, in particular, that ASIC is open for business. This experience confirms the findings in some of our earlier research, that the major reasons for any regulator to have a sandbox are (a) to send a message to the market about the regulator's flexibility and openness, and (b) for the regulator to learn about cutting edge developments from industry in the dialogues that sending this message to the market tends to engender.[57] If the pro-innovation message is the sandbox's principal objective, there should be little reason to create one in financial centers known for their openness to innovation. This is particularly true if the pro-innovation message had already been sent without a sandbox, as in the case of Luxembourg, by introducing the world's first innovation hub.[58]

---

[55] This is often overlooked in policy papers. *See*, for instance, UNSGSA, *supra* note 52, at 25 (stating that "[a]n innovation office is only as useful as the quality of the regulatory resources behind it. Innovation offices are often able to start up quickly with a core staff of two or three, then expand based on need and demand. (By contrast, the design stage alone of a regulatory sandbox requires significantly more staff and even further resources in its implementation stage.) Innovation offices in both the UK and the U.S. have commenced with a lean approach and expanded as necessary.").

[56] *See*, for instance, Michael Wechsler, Leon Perlman & Nora Gurung, *The State of Regulatory Sandboxes in Developing Countries*, (2018), at 4.1.4, https://ssrn.com/abstract=3285938.; *see also* Chris Brummer & Yesha Yadav, *Fintech and the innovation trilemma*, 107 GEORGETOWN LAW J. 235–307, 285 (2019).

[57] *See* Dirk Zetzsche, Ross Buckley, Douglas Arner & Janos Barberis, *supra* note 1, at 101.

[58] Luxembourg's CSSF had created the first innovation department in 2014, sending a pro-innovation message without a sandbox. Up to today, as a result of the innovation department, the CSSF has issued licenses to companies like Bitstamp Europe, BitFlyer Europe, Finologee, PPRO and SnapSwap International, turning Luxembourg in a cryptocurrency and payments centre. Since 2018, the Luxembourg House of Financial Technology (LHoFT), a public-private partnership, provides the function of an innovation

The US landscape is different, and currently does not have an active federal regulatory sandbox. In part, this is because of the view that, whilst the promotion of innovation matters, doing so may not be the proper role of the regulatory authority.[59] There is also a view that many of the federal securities laws are not amenable to being waived. However, some efforts have gone into promoting innovation on a federal level, including the creation of innovation hubs, proposing a federal sandbox through a body other than the US Securities and Exchange Commission (SEC), and sandboxes being implemented at the state level, with Arizona[60] and now Wyoming[61] first off the rank in that sense.

The US SEC includes the Strategic Hub for Innovation and Financial Technology (FinHub). The FinHub seeks to facilitate the SEC's "active engagement with innovators, developers and entrepreneurs" as the financial technology sector quickly evolves.[62] The FinHub does not include a sandbox, with the SEC stating that its "role is not to hand out permission slips for innovation."[63] Rather, the FinHub seeks to promote innovation through activities such as providing advice on digital marketplace financing and automating investment advice.[64]

However, the view of the SEC with regard to sandboxes is not necessarily ubiquitous in the US. The US Consumer Financial Protection Bureau (CFPB) has an innovation department that has proposed the implementation of a "Product Sandbox" which would "give companies regulatory relief when testing new financial products and services" and would include the sharing of data with the CFPB.[65] They have also proposed implementing or revising their no action letter policy, global financial innovation network and "Trial Disclosure Sandbox".[66]

---

hub in cooperation with the CSSF. The non-exhaustive list on LHoFT#s website details approx. 100 firms, including Ripple, LendInvest, *see* https://www.lhoft.com/en/our-startups (last visited June 23, 2019).

[59] Hester M. Peirce, Commissioner, US Securities and Exchange Commission [hereinafter SEC], *Beaches and Bitcoin: Remarks before the Medici Conference* (May 2, 2019), https://www.sec.gov/news/speech/speech-peirce-050218 (last visited June 24, 2019).

[60] *See* Watkins, Daniels, & Slayton, *supra* note 20.

[61] *See* Financial Technology Sandbox Act, HB0057, 65th Leg. (Wyo. 2019).

[62] *FinHub*, SEC, https://www.sec.gov/finhub (last visited Jun 24, 2019).

[63] SEC, *supra* note 59.

[64] SEC, *supra* note 62.

[65] *Innovation*, CONSUMER FIN. PROTECTION BUREAU [hereinafter CFPB], https://www.consumerfinance.gov/about-us/innovation/ (last visited June 24, 2019).

[66] *Id.*

B. Boost to innovation and competition

A sandbox and/or an innovation hub are designed to promote innovation and competition.[67] First, it is hoped they will incentivize financial services firms to accelerate their digital transformation. Second, at the global level, sandboxes have added to the competition among financial centers as to which will become the world's pre-eminent FinTech hub. The sandbox, as an institution, challenges reluctant regulators without sandboxes and pushes them, at the least, to publish, and possibly review, their dispensation policies.

The operation of both of these impacts can be seen with the 'global sandbox' program established by the Global Financial Innovation Network (GFIN), an FCA-led coalition of regulators from around the world.[68] The program aims to ensure consistent or similar treatment in sandboxes across jurisdictions, incentivizing digital transformation and reflecting the global operation of many financial services firms. The program also seeks to increase the appeal of the 17 participating jurisdictions to incoming financial services firms.

While sandbox conditions could lead to a race-to-the-bottom style competition, on balance, the more likely outcomes at this stage will be beneficial from sandboxes as most countries are in dire need of more competition within their financial services sector.

C. Regulatory Learning

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 of putting their licence to operate at risk, and allows regulators to learn before major risks materialize. In the context of the GFIN, this learning occurs on an international level, with the network functioning as a forum for collaborative knowledge sharing between firms and regulators.[69] At the same time, within the sandbox, dispensation efficiency is not curtailed by the anti-dispensation incentive on regulators provided by their being criticized for being too lenient. In particular, when the conditions of the

---

[67] *See also* Wechsler, Perlman and Gurung, *supra* note 54, at 4.1.2.

[68] Global Financial Innovation Network, *Terms of Reference for Membership and Governance of the Global Financial Innovation Network* (August 2019), https://www.fca.org.uk/publication/mou/gfin-terms-of-reference.pdf (last visited 17 September 2019).

[69] *Ibid.*

sandbox are specified clearly, entrepreneurs are assisted in arguing for dispensations.

An innovation hub does not deliver the same certainty as to regulatory lenience so entrepreneurs may be more reluctant to share all details of their business. However, seasoned regulators with a pro-innovation reputation will share information in an innovation hub that immediately assists firms to draft an adequate business plan, resulting in a fast track to market with a full license, something that regulatory sandboxes cannot promise. This fast track to market requires a quid-pro-quo as to the details of the technology employed; hence an innovation hub prompts in practice mutual learning similar to a regulatory sandbox.

III. RISKS OF SANDBOXES AND ALTERNATIVE APPROACHES

A. Maintaining a Level Playing Field

In designing a regulatory sandbox, maintaining a level playing field between regulated and unregulated entities may matter as, otherwise, in the longer term, banks, insurers and asset managers may possibly suffer from a shortage of human and financial capital *and* innovation that is drawn off to FinTech startups. However, limitations with regards to time and money imposed on most firms in sandboxes at least diminish that risk.[70] Regulators must strike a balance between encouraging innovation and protecting clients[71] 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.

Accordingly, 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 established regulated institutions. Sandbox rules and other practices should enable licensed und unlicensed institutions to benefit equally if they seek to develop innovative products or services.

Sandboxes are not necessarily appropriate in all circumstances. Sandboxes are but one way to enhance communication between regulators and innovative firms, other approaches include class waivers, piloting and sandbox umbrellas.[72]

---

[70] Bromberg, Godwin, & Ramsay, *supra* note 4, at 9.

[71] *See Id.*

[72] CFPB, *supra* note 65.

B. Alternatives and Complementary Measures to a Sandbox

The principal complement to a sandbox, and the one we recommend, is an innovation hub. It supports the message the sandbox sends, of regulatory openness and flexibility. It achieves the second and third benefits of a sandbox, the boost to innovation and competition and the regulatory learning, better than any sandbox; and it offers a further benefit over any sandbox as it will typically benefit a much wider array of FinTech firms than will fall within the relatively strict limits of any sandbox. The reason a hub probably does not achieve the first benefit of sending a message as effectively to the market is the huge interest and hype around sandboxes at the moment, and this is, in our view, really the principal reason for a regulator to have both a hub and a sandbox. The hub does the heavy lifting of promoting innovation and competition (and it is heavy lifting as it will consume substantial regulator time) while the sandbox does the advertising role of promoting the jurisdiction as being open and receptive to FinTech business; and both roles matter. In Australia's case, the innovation hub preceded the sandbox by over a year, and experience has shown it to be the more effective regulatory innovation.

There are, however, two other principal alternatives to a sandbox, which we analyse for the sake of completeness as significant countries adopt both alternatives. These are class waivers and a testing and piloting regime.

C. Class waivers for FinTech testing

Australia is unique in that its sandbox grants a class waiver for FinTech testing if certain eligibility criteria are met.[73] Class waivers are made by regulators to exempt tightly defined classes of people or products from the obligation to complying with regulatory requirements. ASIC ties its hands to a greater extent than other regulators, thereby providing a high degree of regulatory certainty. If certain conditions are met, a firm qualifies automatically for a waiver of specified regulatory requirements. These conditions are: the service or product may not be offered to more than 100 retail clients (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

---

[73] *See ASIC Corporations Instrument 2016/1175* section 5 *et seq*; *ASIC Corporations Instrument 2016/1176* section 5 et seq; ASIC RG 257, *supra* note 12, at marginal no. RG 257.39.f.

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[74] and other regulatory instruments.[75] 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).[76] 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 banks and with a maximum A$10,000 balance;
- General insurance, for personal property and home contents up to A$50,000 insured;
- Liquid investments, for listed Australian securities or simple schemes up to A$10,000 exposure; and
- Consumer credit contracts with certain features, and for 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 may well best be applied in this way, but the situation is presently uncertain.

A closer look reveals how different the class waiver is from a normal regulatory sandbox. ASIC does not engage with innovative firms prior to granting the privilege – the waiver is granted as a matter of law, rather than upon application. Innovation is not a prerequisite, nor does a knowledge exchange necessarily take place between privileged firms and ASIC. In fact, the Australian class waiver is a traditional approach cloaked

---

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

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

[76] *Cf.* ASIC RG 257, *supra* note 12, at marginal no. RG 257.56 *et seq*.

in FinTech-friendly terms. ASIC has done this, in part because of sensible doubts as to its expertise in assessing how innovative is a business model. Similar approaches are likely in other countries where regulators have similar concerns.[77] ASIC also operates its Innovation Hub that achieves for it the learning benefits derived elsewhere from operating sandboxes, and hosts regular events for industry at which ASIC learns of recent developments in industry, and industry in turn learns about ASIC's current regulatory thinking.

D. A testing and piloting regime

The international popularity of sandboxes does not make them silver bullet solutions. Sandboxes are one form of "test and learn" methodology, with a variety of regulators using different forms of "test and learn" approaches to innovation and new technologies. For example, the US OCC and SEC, the German BaFin, the Luxembourg CSSF, and both French regulators APRI and AMF, have expressly declined to create regulatory sandboxes. Instead these regulators, in the main, apply leniency to testing and piloting.[78] Other regulators use extensive piloting programs to substitute for a regulatory sandbox.[79] The approach of the HKMA, although labelled a "sandbox" is probably closer to this approach than the sorts of sandboxes we have

---

[77] 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.

[78] D.C. OCC, SUMMARY OF COMMENTS AND EXPLANATORY STATEMENT: SPECIAL PURPOSE NATIONAL BANK CHARTERS FOR FINANCIAL TECHNOLOGY COMPANIES (Mar. 2017), https://www.occ.gov/topics/responsible-innovation/summary-explanatory-statement-fintech-charters.pdf; BUNDESANSTALT FÜR FINANZDIENSTLEISTUNGSAUFSICHT (BAFIN) (FED. FIN. SUPERVISORY AUTH.), ANNUAL REPORT 40-41 (2015), https://www.bafin.de/SharedDocs/Downloads/EN/Jahresbericht/dl_jb_2015_en.pdf?__blob=publicationFile&v=2.

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

focused on above.

An exemption for testing and piloting is particularly useful for authorized financial institutions. They can test new technology and business models without filing for regulatory approval. The point where testing and piloting ends and regular activity starts can be challenging to identify. One feature, however, will be an intention to continue.[80] A test lacks this feature: a test is a one-time event and whether the process is continued depends on the outcome of the test, which is entirely open. A pilot is a test where the organizational and financial resources have been devoted to the continuance of business and only some data for the decision are missing, which the pilot is designed to provide.

Where clients consent, the FinTech could justify testing and piloting for some time. From a regulators point of view, for this reason, the clarity of a sandbox's rules may well be attractive.

IV. CONCLUSION

We began this article with a question: what is the most effective way to support the development of an innovative FinTech ecosystem? We have argued in this article that much of what regulatory sandboxes promise is delivered by innovation hubs which are likewise being established by regulators, in some cases simultaneously with the sandbox. If we define sandboxes narrowly, as a set of entry requirements compliance with which entitles one to participate in a safe harbor freed of many regulatory requirements, among the many advantages associated with sandboxes, only the easier, cheaper and faster regulatory compliance through a tailored process of restricted authorization is attributable to a sandbox.

The many other potential advantages of sandboxes are delivered at least as well by innovation hubs. These advantages include, in particular,

- the potential for the regulator to issue informal advice and directions regarding regulatory compliance
- guidance on how to interpret requirements for a firm's specific test;
- waiver or modification of any "unduly burdensome rule" for the purpose of the test; and
- "no action" letters where individual guidance or waivers are not possible, which provide an indication that disciplinary action will not be

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

pursued for a finite duration if certain conditions are met (but do not offer any protection against liabilities to consumers).

At the same time, the data so far available does not justify the statement that regulatory sandboxes, on a stand-alone basis, are the most effective means to further innovation. Given that regulatory sandboxes require significant financial contributions, and sometimes new legislation, we conclude that regulators should focus their resources on developing effective innovation hubs rather than sandboxes.[81] In many cases, the maximum benefit would be achieved by integrating an innovation hub and a sandbox together as part of a strategy to support the evolution of an innovative FinTech ecosystem.

The reason we draw this distinction between sandbox and hub therefore is that we believe a narrowly conceived sandbox is particularly attractive to regulators as it promises to be pro-innovation without drawing unduly on regulatory resources, while setting up both sandbox and innovation hub demands commensurate regulatory resources and delivers pro-innovation benefits in line with this investment of resources. There is no such thing as a free lunch. A regulator cannot have its cake, without paying for it. Where resources are limited, regulators should focus their resources on developing innovation hubs in order to build FinTech ecosystems rather than sandboxes. And where a sandbox is developed, in order to gain the greatest benefits, it should be integrated as part of an innovation hub in order to provide the greatest benefit for ecosystem development.

***

[81] *See also* Simone di Castri & Ariadne Plaitakis, *Going Beyond Regulatory Sandboxes to Enable FinTech Innovation in Emerging Markets* 10 (2018), https://www.ssrn.com/abstract=3059309 ("Financial authorities, especially those with limited resources [in terms of funds, staff, expertise, and/or tools], *should be careful not to prioritize sandboxes over other, more fundamental, infrastructure-building initiatives* in their quest to enable digital finance.") (emphasis added); JENIK AND LAUER, *supra* note 52, at 8 ("regulators may need to consider less costly alternatives").

APPENDIX A -- SANDBOXES AROUND THE WORLD[82]

For the purposes of Appendix A, a 'narrow' sandbox is one that is strictly for the purpose of providing regulatory relief to accepted entities. Often, narrow sandboxes exist within the framework of an innovation hub or equivalent. Narrow sandboxes are the most common. A 'broad' sandbox is one that provides some of the services more commonly provided by an innovation hub.

Country	Start	Narrow or broad?	Authority
Abu Dhabi[i]	9/2018	Broad, it offers relief from financial regulations, as well as FinTech solutions and international market access	Abu Dhabi Global Market (ADGM), partnering with ASEAN Financial Innovation Network (AFIN)
Australia[ii]	12/2016	Narrow, but exists within the framework of the 'innovation hub'	Australian Securities and Investments Commission (ASIC)
Bahrain[iii]	6/2017	Narrow	Central Bank of Bahrain (CBB)
Bermuda[iv]	**Proposed** 2018	Narrow, but exists within the framework of the 'innovation hub' and encourages companies to use the it before eventually applying for entry into the Sandbox.	Bermuda Monetary Authority (BMA)
Brazil[v]	**Proposed** 06/2019	Narrow	Cooperation of Ministry of the Economy, Central Bank of Brazil, Securities Commission

[82] This section draws on the ADA Chair Sandbox Database. For China, Israel, Jamaica, Sweden, Turkey and Uganda sandboxes have been proposed or announced according to newspaper articles, but we could not verify the existence of a sandbox with official sources.

Country	Start	Narrow or broad?	Authority
			and Superintendent of Private Insurance
Brunei[vi]	2/2017	Narrow	The FinTech Office
Canada[vii]	2/2017	Narrow	Canadian Securities Administrators (CSA) (represents Canada's provinces and territories)
Denmark[viii]	2/2018	Narrow, it appears as if there is very limited regulatory relief.	Danish Financial Supervisory Authority (the Finanstilsynet)
Dubai[ix]	5/2017	Narrow	Dubai Financial Services Authority
Fiji	**Proposed** 2017	Broad, as it is planned to provide a platform to enable existing financial institutions along with interested parties to individually lodge an application or collaborate to explore new products and services[x]	Reserve Bank of Fiji
Hong Kong (Fintech Supervisory Sandbox)	9/2016	Narrow, but the Sandbox includes a chatroom to easily access consumer feedback, which may be considered broader than usual[xi]	Hong Kong Monetary Authority (HKMA)
Hong Kong (Insurtech Sandbox)[xii]	9/2017	Narrow	Insurance Authority (IA)
Hong Kong (SFC Regulatory Sandbox)[xiii]	9/2017	Narrow	Securities and Futures Commission (SFC)

Hungary	12/2018[xiv]	Narrow,[xv] but sits within the framework of the 'MNB InnoHub',[xvi] which is an innovation hub	Central Bank of Hungary
India	**Proposed** 2018	The proposals (by both the Reserve Bank of India[xvii] and the Insurance Regulatory and Development Authority of India[xviii] that are in the early stages	Royal Bank of India and the Insurance Regulatory and Development Authority of India
Indonesia	9/2018	Broad, as it is aimed at facilitating communication between providers, monitoring the development of businesses, and evaluating the offerings before they launch[xix]	Financial Technology office of the Bank of Indonesia
Japan	06/2018	Narrow[xx]	Japan Economic Revitalization Bureau, the Government of Japan
Jordan	06/2018	Narrow[xxi]	Central Bank of Jordan
Kazakhstan	01/2018	Broad, as it also includes a FinTech Office[xxii]	The Astana International Finance Centre as a part of the Astana Financial Services Authority (AIFC)[xxiii]
Kenya	**Proposed** 12/2018	Narrow[xxiv]	Capital Markets Authority
Kuwait[xxv]	09/2018	Narrow	Central Bank of Kuwait (CBK)
Lithuania	09/2018	Narrow, but the Bank of Lithuania would 'cooperate' with participants and 'provide consultations within its competence'[xxvi]	Bank of Lithuania

Malaysia	10/2018	Narrow, in conjunction with the option of an 'informal steers' so that proposed products/services that are addressed by existing regulations cannot circumvent these regulations[xxvii]	Bank Negara Malaysia
Malta	**Proposed** 01/2019	Broad, as it is a wide, cross-sectorial approach with sandbox and FinTech Innovation Hub as different "pillars" of a broader concept[xxviii]	Malta Financial Services Authority (MFSA)
Malta[xxix]	01/2019	Narrow; only for Virtual Financial Assets and Virtual Tokens	Malta Gaming Authority (MGA)
Mauritius	10/2016	This 'sandbox' is designed to allow business activity only when there 'exists no legal framework, or adequate provisions' in the law to address the activity being proposed[xxx]	Economic Development Board of Mauritius
Mexico[xxxi]	03/2018	Broad, as it is in the context of a whole FinTech law[xxxii], aiming at promoting financial innovation throughout the country	CNSF
Mozambique	05/2018	Narrow[xxxiii]	The Bank of Mozambique
Netherlands	01/2017	This 'sandbox' only 'leverages the scope offered by the law when interpreting the rules', meaning that regulations are interpreted generously but are usually still applied[xxxiv]	De Nederlandsche Bank

Nigeria	03/2018	Narrow, but is a part of the Financial Service Innovators Association of Nigeria[xxxv]	Central Bank of Nigeria and Nigerian Inter-Bank Settlement System
Norway	**Proposed** 12/2018	Narrow, but is under the supervision of FSA, which also has an 'innovation hub'[xxxvi]	Finanstilsynet (Financial Supervisory Authority)
Philippines	11/2017	Narrow[xxxvii]	Bangko Sentral ng Philinas (BSP)[xxxviii]
Poland	10/2018	Narrow[xxxix]	Polish Financial Supervision Authority
Republic of Korea	04/2019	Narrow[xl]	Financial Services Commission (FSC)
Russia	04/2018	Narrow[xli]	Central Bank of Russia
Saudi Arabia	02/2019	Narrow,[xlii] in conjunction with a broader 2030 plan to promote 'financial inclusion'[xliii]	Saudi Arabian Monetary Authority
Sierra Leona	05/2018	Narrow[xliv]	Bank of Sierra Leone
Singapore	Sandbox: 06/2016 Sandbox express: **proposed** in 11/2018	**Sandbox**: narrow[xlv] **Sandbox Express**: a particularly narrow but expediated sandbox designed for low risk ventures[xlvi]	Monetary Authority of Singapore
South Africa	**Proposed** 02/2018	broad, as it is part of a proposed decision on "Innovation facilitators" defined as collective term for innovation hubs, sandboxes and accelerators under the "SARB	South African Reserve Bank (SARB)

		Financial Technology (FinTech) programme"[xlvii]	
Spain	**Proposed** 02/2019	Broad, as it is part of a larger FinTech law that contains additional measures such as direct communication channels to the regulator and other authorities ("comunicaión ágil") and a mechanism to directly submit questions in case any doubts arise[xlviii]	Banco de España
Sri Lanka	**Proposed** 05/2018	Narrow[xlix]	Central Bank of Sri Lanka
Switzerland	08/2017	Broad, as it includes public funds of up to CHF 1 million and is part of an 'innovations area'[l]	Swiss Federal Council
Taiwan	04/2018	Narrow, noting that protection from regulations is discretionary[li]	Financial Supervisory Commission
Thai Land	12/2016	Narrow[lii]	Bank of Thailand
UK	06/2016	Narrow, but sits within the broader framework of the Project Innovate	Financial Conduct Authority (FCA)
U.S.	**Proposed** in 07/2018 (not yet launched)	Narrow, but sits within the broader framework of the Office of Innovation[liii]	US Consumer Financial Protection Bureau (CFPB)
Arizona, USA	07/2018	Narrowliv	State Attorney General's Office
Washington	**Proposed**	As of yet unclear, although the Mayor's	Innovation Council, reporting to the Mayor

DC, USA	01/2019 (researching effective implementation strategy)	Order appears to have broad specifications[lv]	
Wyoming, USA	**Proposed** 02/2019	Narrow[lvi]	Wyoming Division of Banking

[i] *See* Press Release, Dubai International Fin. Centre, DFSA Regulatory Sandbox Accepts Seven New Firms into its Latest Cohort (Jan. 2019), https://www.difc.ae/newsroom/news/dfsa-regulatory-sandbox-accepts-seven-new-firms-its-latest-cohort/; Press Release, Abu Dhabi Global Market, Abu Dhabi Global Market Announces Launch of Digital Sandbox to Accelerate Financial Services Innovation and Financial Inclusion in the UAE and the Region (Sept. 17, 2018), https://www.adgm.com/mediacentre/press-releases/adgm-announces-launch-of-digital-sandbox-to-accelerate-financial-services-innovation-and-financial-inclusion-in-the-uae-and-the-region/.

[ii] *See* Media Release, The Honourable Scott Morrison, Launch of an innovative regulatory sandbox for Fintech (Dec. 15, 2016), http://sjm.ministers.treasury.gov.au/media-release/133-2016/; *Fintech regulatory sandbox*, ASIC, (Jan. 5, 2019), https://asic.gov.au/for-business/innovation-hub/fintech-regulatory-sandbox/.

[iii] *See* Rad El Treki, *Central Bank of Bahrain (CBB) launch regulatory sandbox for fintech firms* (Feb. 2018), https://www.tamimi.com/law-update-articles/central-bank-bahrain-cbb-launch-regulatory-sandbox-fintech-firms-2/.

[iv] BERMUDA MONETARY AUTHORITY (BMA), GUIDANCE NOTE - INSURANCE REGULATORY SANDBOX AND INNOVATION HUB (2018), https://www.bma.bm/viewPDF/documents/2019-03-28-07-59-32-BMA-Insurance-Regulatory-Sandbox-Innovation-Hub-Guidance-Note.pdf.

[v] Press Release, Comissão de Valores Mobiliários, Comunicado Conjunto, de 13 de junho de 2019 (June 13, 2019) (Braz.), http://www.cvm.gov.br/noticias/arquivos/2019/20190613-1.html.

[vi] *See* Press Release, Amry Rizal Bin Dato Paduka Hj Wahid, Fintech Regulatory Sandbox Guidelines 1-4 (Feb. 27, 2017), https://www.ambd.gov.bn/SiteAssets/fintech-office/FTSG%20v1_final.pdf.

[vii] *See CSA Regulatory Sandbox,* CANADIAN SECURITIES ADMINISTRATORS, https://www.securities-

administrators.ca/industry_resources.aspx?id=1588 (last visited June 25, 2019); Canadian Securities Administrators, The Canadian Securities Administrators Launches a Regulatory Sandbox Initiative, Cision (Feb. 23, 2017), https://www.newswire.ca/news-releases/the-canadian-securities-administrators-launches-a-regulatory-sandbox-initiative-614619474.html. As to CSA's authority to represent Canadian securities regulators *see* Media Release, ASIC, ASIC broadens fintech cooperation with Canadian regulators (Dec. 12, 2017), https://asic.gov.au/about-asic/news-centre/find-a-media-release/2017-releases/17-430mr-asic-broadens-fintech-cooperation-with-canadian-regulators/.

[viii] *See FT Lab*, FIN. SUPERVISORY AUTHORITY, https://www.dfsa.dk/en/Supervision/Fintech/FT-lab (last visited June 25, 2019).

[ix] *See Innovation – The DFSA and Financial Technology*, DUBAI FIN. SERVICES AUTHORITY, https://www.dfsa.ae/Fintech (last visited June 25, 2019).

[x] RESERVE BANK OF FIJI, QUARTERLY REVIEW 45 (2017), https://www.rbf.gov.fj/getattachment/About-Bank/Organisational-Structure/Jan-2019.pdf?lang=en-US.

[xi] *Fintech Supervisory Sandbox (FSS)*, HKMA, https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech-supervisory-sandbox.shtml (last visited June 25, 2019).

[xii] INSURANCE AUTHORITY, ANNUAL REPORT 54 (2017-2018), https://www.ia.org.hk/en/infocenter/files/IA_Annual_Report_2017_18_English.pdf.

[xiii] *SFC Regulatory Sandbox*, Securities and Futures Commission (last updated Sept. 29, 2017), https://www.sfc.hk/web/EN/sfc-fintech-contact-point/sfc-regulatory-sandbox.html.

[xiv] PC Research, *Hungary: Central Bank Launches Regulatory Sandbox to Commence Operations from 2019*, PAYMENTS COMPLIANCE (Dec. 21, 2018), https://paymentscompliance.com/premium-content/research_report/hungary-central-bank-launches-regulatory-sandbox-commence-operations.

[xv] *Regulatory Sandbox*, MAGYAR NEMZETI BANK (MNB), https://www.mnb.hu/en/innovation-hub/regulatory-sandbox (last visited June 25, 2019).

[xvi] *Services of the MNB InnoHub*, MAGYAR NEMZETI BANK (MNB), https://www.mnb.hu/en/innovation-hub/#engedely (last visited June 25, 2019).

[xvii] ET Bureau, RBI to form regulatory sandbox for fintech, set up data science lab, THE ECONOMIC TIMES (Sept. 21, 2018) https://economictimes.indiatimes.com/industry/banking/finance/banking/rbi-to-form-regulatory-sandbox-for-fintech-set-up-data-science-lab/articleshow/65894188.cms.

[xviii] PTI, Irdai to develop "sandbox" approach for fintech-related products, LIVEMINT (Sept. 19, 2018), https://www.livemint.com/Industry/AjKydVlS6I68lH2Xq4mhDO/Irdai-to-develop-sandbox-approach-for-fintechrelated-prod.html.

[xix] IndonesiaGO Digital, Bank Indonesia's Regulatory Sandbox of Fintech for the Assurance of the Consumer's Safety, MEDIUM (Nov. 6,

2018), https://medium.com/@indonesiagodigital1/bank-indonesias-regulatory-sandbox-of-fintech-for-the-assurance-of-the-consumer-s-safety-2497c07019e3.

[xx] *Opening of the single window of the Government of Japan for "Regulatory Sandbox framework in Japan"*, JAPAN EXTERNAL TRADE ORGANIZATION (June 26, 2018), https://www.jetro.go.jp/en/invest/newsroom/2018/3f4f6be41d8f9201.html.

[xxi] Media Release, Central Bank of Jordan, CBJ unveils its support to the financial technology (FinTech) sector and stresses on the Cryptocurrencies ban, http://www.cbj.gov.jo/DetailsPage/CBJEN/NewsDetails.aspx?ID=214 (last visited June 25, 2019).

[xxii] ASTANA INTERNATIONAL FIN. CENTRE (AFSA), AIFC FINANCIAL TECHNOLOGY RULES (FINTECH) AIFC RULES NO. AFSA-F-PC-2019-0001 12 (2019), http://afsa.kz/storage/files/01708ab7f0da4b9c/FINTECH_v1_AFSA-F-PC-2019-0001_15.03.2019.pdf.

[xxiii] Dene-Hern Chen, Kazakhstan Bets Big on a Fintech Future, OZY (May 1, 2018), https://www.ozy.com/fast-forward/kazakhstan-bets-big-on-a-fintech-future/85183.

[xxiv] CAPITAL MARKETS AUTHORITY (CMA), REGULATORY SANDBOX POLICY GUIDANCE NOTE (2018), https://www.cma.or.ke/index.php?option=com_phocadownload&view=category&download=471:draft-regulatory-sandbox-policy-guidance-note-2018&id=54:policy-guidance-notes&Itemid=202 (last visited June 25, 2019).

[xxv] *Regulatory Sandbox Framework Document*, CENTRAL BANK OF KUWAIT (last visited June 25, 2019), http://www.cbk.gov.kw/en/legislation-and-regulation/regulatory-sandbox/general-framework.jsp.

[xxvi] BANK OF LITHUANIA, RESOLUTION ON THE APPROVAL OF THE REGULATORY SANDBOX FRAMEWORK OF THE BANK OF LITHUANIA 1-2 (Sept. 19, 2018), https://www.lb.lt/uploads/documents/files/EN/our-functions/supervision-of-financial-institutions/sandbox/03-166_2018%2009%2019_EN.pdf.

[xxvii] BANK NEGARA MALAYSIA, FINANCIAL TECHNOLOGY REGULATORY SANDBOX FRAMEWORK 1-2 (Oct. 18, 2016), http://www.bnm.gov.my/index.php?ch=57&pg=137&ac=533&bb=file.

[xxviii] MALTA FIN. SERVICES AUTHORITY, MFSA FINTECH STRATEGY 12 (2019), https://www.mfsa.com.mt/wp-content/uploads/2019/01/MFSA-Fintech-Strategy-visual.pdf.

[xxix] MALTA GAMING AUTHORITY, GUIDANCE ON THE USE OF INNOVATIVE TECHNOLOGY ARRANGEMENTS AND THE ACCEPTANCE OF VIRTUAL FINANCIAL ASSETS AND VIRTUAL TOKENS THROUGH THE IMPLEMENTATION OF A SANDBOX ENVIRONMENT (2018), https://www.mga.org.mt/wp-content/uploads/MGA-VFA-and-ITA-Sandbox.pdf.

[xxx] *Regulatory Sandbox License*, ECONOMIC DEVELOPMENT BOARD MAURITIUS, http://www.edbmauritius.org/schemes/regulatory-sandbox-license/ (last visited June 25, 2019).

[xxxi] *See* Diego Herrera & Sonia Vadillo, *Sandbox Regulatorio en América Latina y el Caribe para el ecosistema FinTech*, BANCO INTERAM. PARA EL DESARRO. 41 (2018), at 16 (Sp.).

[xxxii] LEY PARA REGULAR LAS INSTITUCIONES DE TECNOLOGÍA FINANCIERA, Diario Oficial de la Féderación [DOF] 09-03-2018, (Mex.) http://www.dof.gob.mx/nota_detalle.php?codigo=5515623&fecha=09/03/2018.

[xxxiii] Kátia Agostinho, *How FSDMOC Is Addressing Financial Sector Regulation Challenges: The Regulatory Sandbox Story!* (Sept. 17, 2018), http://fsdmoc.com/fsdmoc-addressing-financial-sector-regulation-challenges-regulatory-sandbox-story/; Mozambique: Incubator extends access to financial services, CLUB OF MOZAMBIQUE (May 18, 2018), https://clubofmozambique.com/news/mozambique-incubator-extends-access-to-financial-services/.

[xxxiv] DNB/AMF Next Steps, *supra* 11, at 2.

[xxxv] Babajide Komolafe, *CBN, NIBSS unveil regulatory sandbox to empower fintechs*, VANGUARD (Mar. 26, 2018), https://www.vanguardngr.com/2018/03/cbn-nibss-unveil-regulatory-sandbox-to-empower-fintechs/; CENTRAL BANK OF NIGERIA, EXPOSURE DRAFT OF THE NATIONAL FINANCIAL INCLUSION STRATEGY REFRESH (July 6, 2018), https://www.cbn.gov.ng/Out/2018/CCD/Exposure%20Draft%20of%20the%20National%20Financial%20Inclusion%20Strategy%20Refresh_July%206%202018.pdf.

[xxxvi] *Finansiell teknologi (FinTech)*, FINANSTILSYNET, (Jan. 8, 2019), https://www.finanstilsynet.no/tema/fintech/ (Nor.) (last visited June 25, 2019).

[xxxvii] Arai Garcia, *The Philippines: The World's Newest Tech Sandbox for The Third Web*, CONSENSYS MEDIA (Nov. 28, 2017), https://media.consensys.net/the-philippines-the-worlds-newest-tech-sandbox-for-the-third-web-c67759c653bc.

[xxxviii] Je Gino-Gino, *BSP Using the Regulatory Sandbox Approach for FinTech Companies in the Philippines*, BITPINAS (Apr. 22, 2018), https://bitpinas.com/news/bsp-using-regulatory-sandbox-approach-fintech-companies-philippines/.

[xxxix] KOMISJA NADZORU FINANANSOWEGO (KNF), RULES GOVERNING THE "REGULATORY SANDBOX" AT THE POLISH FIN. SUPERVISION AUTHORITY' PROGRAMME 1, 3-4, https://www.knf.gov.pl/knf/en/komponenty/img/Rules_Regulatory%20Sandbox_63545.pdf (last visited June 25, 2019).

[xl] Press Release, Fin. Services Commission, Financial Innovation Support Act Passed in The National Assembly (Dec. 10, 2018), https://www.fsc.go.kr/downManager?bbsid=BBS0048&no=131950.

[xli] *Regulatory Platform*, CENTRAL BANK OF RUSSIA, http://cbr.ru/fintech/regulatory_platform/ (last visited June 25, 2019) (Rus.).

[xlii] *About Us*, SAUDI ARABIAN MONETARY AUTHORITY, http://www.sama.gov.sa/en-US/Regulatory%20Sandbox/Pages/About-Us.aspx (last visited June 25, 2019).

[xliii] Media Release, Saudi Arabian Monetary Authority, SAMA Launches Regulatory Sandbox For Financial Institution's and Fintechs' (Feb. 11, 2019), http://www.sama.gov.sa/en-US/News/Pages/news11022019.aspx.

[xliv] *Requesting Applications to Participate in the BSL Sandbox Program*, BANK OF SIERRA LEONE,

https://www.bsl.gov.sl/BSL_Sandbox_Program.html (last visited June 25, 2019).

[xlv] MONETARY AUTHORITY OF SINGAPORE, FINTECH REGULATORY SANDBOX GUIDELINES (2016), at marginal 2.3, https://www.mas.gov.sg/-/media/MAS/Smart-Financial-Centre/Sandbox/FinTech-Regulatory-Sandbox-Guidelines-19Feb2018.pdf?la=en&hash=1F4AA49087F9689249FB8816A11AEAA6CB3DE833.

[xlvi] MAS proposes fintech sandbox scheme with fast-track approvals, STRAITSTIMES (Nov. 14, 2018), https://www.straitstimes.com/business/banking/mas-proposes-fintech-sandbox-scheme-with-fast-track-approvals.

[xlvii] Press Release, South African Government, Reserve Bank establishes Financial Technology (FinTech) programme (Feb. 13, 2018), https://www.gov.za/speeches/fintech-13-feb-2018-0000.

[xlviii] Press Release, Ministerio de Economía y empresa, El Gobierno impulsa la adaptación delmarco de regulación y supervision financiera al nuevo contexto digital, con el Anteproyecto de Ley que regula el Sandbox (Feb. 22, 2019), http://www.mineco.gob.es/stfls/mineco/prensa/ficheros/noticias/2018/190222_np_digital.pdf (Sp.).

[xlix] Press Release, Central Bank of Sri Lanka, Sri Lankan FinTech Regulatory Sandbox (May 2, 2018), https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/press/notices/notice_20180502_sri_lankan_fintech_regulatory_sandbox_e.pdf.

[l] Press Release, The Federal Council, Federal Council wants to reduce barriers to market entry for fintech firms (Nov. 2, 2016), https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-64356.html.

[li] *Regulatory Sandbox and competition of Financial Technologies in Taiwan*, COMPETITIONPOLICYINTERNATIONAL.COM (Jan. 31, 2019), https://www.competitionpolicyinternational.com/regulatory-sandbox-and-competition-of-financial-technologies-in-taiwan/.

[lii] Jason Corbet, *Thailand launches regulatory sandbox for fintech services*, ASIA BUSINESS LAW JOURNAL (June 19, 2017), https://www.vantageasia.com/thailand-launches-regulatory-sandbox-for-fintech-services/.

[liii] CFPB, *supra* note 65.

[liv] Wendy Kearns, Andrew J Lorentz and Davis Wright Tremaine, Fintech Sandboxes – Update on State Approaches', PAYMENT LAW ADVISOR (Apr. 16, 2018), https://www.paymentlawadvisor.com/2018/04/16/fintech-sandboxes-update-on-state-approaches/.

[lv] Press Release, Department of Insurance, Securities and Banking (Washington, DC), Mayor Establishes the District of Columbia Financial Services Regulatory Sandbox and Innovation Council (Feb. 11, 2019), https://disb.dc.gov/release/mayor-establishes-district-columbia-financial-services-regulatory-sandbox-and-innovation.

[lvi] State of Wyoming, HB0057 – Financial Technology Sandbox (Feb. 19, 2019), https://wyoleg.gov/Legislation/2019/HB0057.