WORKING PAPER

Regulatory Sandboxes and Financial Inclusion

Ivo Jenik and Kate Lauer

October 2017

ACKNOWLEDGMENTS

This paper was prepared by Ivo Jenik, financial sector specialist (CGAP), and Kate Lauer, senior policy consultant (CGAP), with contributions from Lisa Kristina Stahl, financial sector analyst (CGAP), under the leadership of Gregory Chen, lead financial sector specialist (CGAP) and Timothy Lyman, lead financial sector specialist (CGAP). Peer review comments were provided by Schan Duff, a senior fellow in the Aspen Institute's Financial Security Program, Philip Rowan, international lead at Financial Conduct Authority's Innovation Hub, and Marianna Nunan, senior publishing officer (CGAP).

The authors would like to thank the Bank of England, the Financial Service Authority of Indonesia, the Bank of Indonesia, the Hong Kong Monetary Authority, the Hong Kong Securities and Futures Commission, the Capital Markets Authority of Kenya, Bank Negara Malaysia, Bangko Sentral ng Pilipinas, the Securities Commission Malaysia, the Monetary Authority of Singapore, the Financial Conduct Authority of the United Kingdom, the Financial Sector Deepening Trust Africa, the United Nations Capital Development Fund, and many other stakeholders—including numerous FinTech firms—for invaluable insights.

1818 H Street NW, MSN IS7-700
Washington DC 20433
Internet: www.cgap.org
Email: cgap@worldbank.org
Telephone: +1 202 473 9594

Suggested citation: Jenik, Ivo, and Kate Lauer. 2017. "Regulatory Sandboxes and Financial Inclusion." Working Paper. Washington, D.C.: CGAP.

I. INTRODUCTION

A regulatory sandbox is a framework set up by a financial sector regulator[1] to allow small scale, *live testing* of *innovations* by private firms in a *controlled environment* (operating under a special exemption, allowance, or other limited, time-bound exception) under the regulator's supervision. The concept, which was developed in a time of rapid technological innovation in financial markets, is an attempt to address the frictions between regulators' desire to encourage and enable innovation and the emphasis on regulation following the financial crisis of 2007–2008.

A regulatory sandbox introduces the potential to change the nature of the relationship between regulators and financial services providers (regulated or aspiring) toward a more open and active dialogue. It may also enable the regulator to revise and shape the regulatory and supervisory framework with agility. However, establishing a sandbox should not distract policy makers who are facing elementary regulatory challenges nor should it be expected to affect the mindset change in that many view as necessary for regulators to keep up with the FinTech revolution.

Regulators establish sandboxes for various reasons, but the most common reason is to promote competition and efficiencies in financial services markets through innovation. Whether a sandbox succeeds in its objectives will depend on how it is framed and, fundamentally, on market conditions (providers, competition, quality of innovations, level of development of the financial market infrastructure, customer trust and engagement).

Concepts like regulatory sandboxes have been applied in nonfinancial sectors (e.g., coding sandboxes for software development and clinical trials) (Innovate Finance 2016b; GOS 2015). Financial sector regulators have often been involved in a reactive "catch-up game" and have occasionally opted for an ad hoc solution, such as in case of M-Pesa in Kenya.

The first sandbox-like framework was set up by the U.S. Consumer Financial Protection Bureau (CFPB) in 2012 under the name Project Catalyst (CFPB 2016). In 2015, the U.K. Financial Conduct Authority (FCA) coined the term "regulatory sandbox" (FCA 2015). Since then, the concept has spread across more than 20 countries from Abu Dhabi to Sierra Leone.

In addition to regulatory sandboxes, or in the absence of one, several countries have adopted other mechanisms that support financial innovation ("innovation facilitators").[2] These include "(FinTech) innovation hubs," "(FinTech) incubators," "(FinTech) accelerators," and "industry sandboxes." Innovation facilitators are part of a broader ecosystem for innovation and may complement a sandbox because they have the landscaping potential to inform broader FinTech policy development (and the selection of companies to participate in the sandbox).

The importance of innovation for financial inclusion is well-established. Whether regulatory sandboxes may play a role in harnessing innovation to support financial inclusion remains to be seen. While low levels of financial inclusion remain prevalent in emerging

1 Unless noted otherwise, "regulators" is used in the paper as a generic term that refers to regulators and supervisors.

2 See, e.g., FSB (2016).

markets and developing economies (EMDEs), innovations are present and hold the promise of positive change. Financial sector regulators need to be responsive to this opportunity, but they face challenges due to several factors:

- Lack of regulatory capacity in terms of adequate resources, staff, expertise, and tools.[3]
- Underdeveloped financial market infrastructure and limited market with retail financial services.
- Complexities of balancing key regulatory objectives of financial inclusion, stability, integrity, consumer protection, and competition.

Our working hypothesis is that regulatory sandboxes can enable innovations that are likely to benefit excluded and underserved customers. Practical examples of such innovations range from mobile money to remote customer identification enabled by a biometric technology. In some instances, for those innovations to be realized, a sandbox would be helpful; in other instances, a sandbox may play a marginal role, if any. Indeed, a regulatory sandbox is not a one-size-fits-all solution, and there may be other approaches that are more efficient, nimble, and responsive to the market.

This paper is based on a combination of desk research and interviews with selected regulators, sandbox firms, supervisors, and other stakeholders. It is for financial sector regulators in EMDEs, development agencies, and financial inclusion professionals who want to better understand regulatory sandboxes and their (potential) impact on digital financial inclusion. The paper is organized as follows:

- Section II provides an overview of the current landscape for regulatory sandboxes. It then analyzes potential benefits and risks of the sandbox concept in the context of financial inclusion.
- Section III outlines key issues that every policy maker who is considering establishing of a regulatory sandbox should be aware of.
- Section IV offers concluding remarks and speculative points about future developments.
- Annex 1 includes a list of countries that use a regulatory sandbox and a simplified comparative analysis of regulatory sandboxes organized around specific design components.
- Annex 2 includes a snapshot of sandbox firms.
- Annex 3 provides illustrative examples of alternative approaches to the regulatory sandbox.

3 See, e.g., GPFI (2016).

II. REGULATORY SANDBOX AND FINANCIAL INCLUSION

2.1. Overview

Regulatory sandboxes prevail in high- and middle-income countries—a majority of which do *not* struggle with significant financial inclusion problems (see Annex 1). This may explain why most regulatory sandboxes were not designed to primarily promote financial inclusion. In addition, in most of these countries, the regulator's mandate does not explicitly include financial inclusion. The Central Bank of Malaysia's and Bahrain's regulatory sandboxes are the only ones that explicitly list financial inclusion among key objectives.[4]

As the concept and the implementation of regulatory sandboxes evolve, we are seeing distinct models. Despite the diversity, many regulatory sandboxes follow the FCA's blueprint, and therefore, they have the following design components:

- Objectives of the sandbox.
- Eligibility to apply to the sandbox.
- Criteria (specified in the application) regarding risks, safeguards, and other restrictions.
- Timing for applicants and sandbox entities tests.
- Costs to the regulator and the sandbox entities.
- Regulator's actions following sandbox test(s).

Objectives. The key objective(s) of a regulatory sandbox are determined by the regulator's mandate and are typically set forth in the founding document. A common objective of a regulatory sandbox is to promote competition and efficiencies through innovation. However, the role of regulatory sandboxes in promoting innovation may be limited in instances where a regulatory reform would be a more sensitive approach to deal with new entrants and technologies.[5]

Eligibility. Eligibility depends first on the regulator's authority and the legal framework. Only those institutions that may fall under the authority of the regulator(s) (there may be a sandbox formed by more than one regulator) and that are not under exclusive authority of another regulator can apply to the sandbox. Some sandboxes permit only incumbents, others permit only start-ups, and a few permit both. Only products or services, whose innovative nature deserves a special treatment instead of outright regulatory approval or rejection, may enter the sandbox.

Criteria for sandbox entities. Sandbox entities are subject to restrictions, such as maximum number of customers served, and they may be required to put in place safeguards that reflect the risks and benefits of the proposed innovation, including strengthened disclosure and a compensation fund, to limit potential impact of test failure on market participants. They also must comply with mandatory rules because regulators

4 As of 25 September 2017, the central banks of Bahrain, India, and Sierra Leone refer to financial inclusion as one of the motives for establishing a regulatory sandbox.

5 Regulatory sandboxes have been criticized for being merely a process used to answer the question of whether an innovation or innovator should be allowed to launch instead of solving the broad underlying problems presented by legacy regulatory and supervisory approaches (Mueller 2017). Philippon (2017) argues that for FinTech to disrupt the financial system for the better, substantial regulatory reform is needed. Zetzsche et al. (2017, 10) further suggest that implementation of a regulatory sandbox may provide useful signals in this regard—too many applications for a regulatory sandbox indicate deficiencies in rules and the need for a reform.

cannot waive criteria set forth by law unless the law permits such action by the regulator.

Timing. Applicants must demonstrate readiness to test the innovation. Any testing must be time-bound to prevent protracted probing of innovations that are either underdeveloped or simply not viable.

Costs. While most jurisdictions offer a sandbox free of charge, there are costs associated with running tests. However, for some sandbox entities (and some applicants that are not admitted into the sandbox), the feedback from the regulator on applicable regulations reduces legal fees, which can be as high as or even higher than the costs associated with sandbox testing. The regulator may have costs associated with the sandbox, including new staff who may be hired.

Regulator's actions following a sandbox test. A successful test may result in several outcomes. To date, the most commonly sought outcome is either full-fledged or tailored authorization of the innovator/innovation. Exceptionally, regulators would initiate changes in the legal and regulatory framework to enable legal implementation of the innovation. Sometimes, a sandbox firm may be allowed to continue its operations outside the regulatory perimeter. If testing fails, the sandbox firm is required to cease running its innovation.

Regulatory sandboxes share design components, but their details vary. Regardless of this variability, several reports point to certain benefits and risks common to the existing operational sandboxes.[6]

Benefits

- A standardized and publicized framework for dealing with innovations that promote open and transparent communication between regulator and the sandbox entity(ies) to facilitate learning from each other.
- A clear signal to the market and among the regulatory and supervisory staff that innovation is on the regulator's agenda.
- A safe space where live experiments can be conducted in a controlled manner and with safeguards in place to contain (and compensate for) any potential harm to customers and the financial system as a whole.
- Potential for reduced time-to-market cycle by streamlining the authorization process and reducing uncertainty for market players.

Risks

- Potential competition issues that stem from advantages sandbox entities may have both in regulator advice and in being first to the market. The latter may be especially unfair if the selection criteria are defined vaguely or there is a lack of transparency leading to selection bias or the appearance of selection bias.
- Poor selection of sandbox firms because of the limited capacity of the regulator to assess the technology underlying the innovation.
- Liability issues in case of failed testing that resulted in harm to customers or other market participants, which may threaten the reputation of the regulator and trust of customers in the financial system.
- In jurisdictions where regulators are held liable (under civil, administrative, and/or criminal law) for

6 See, e.g., Zetzsche, et al. (2017); Mueller (2017); Lloyd and She (2017); Dostov (2016).

decisions made on authorization of financial services providers, the regulator could be held liable for decisions on admission of sandboxed entities. This may make them reluctant to open the sandbox to disruptors.

2.2. Financial Inclusion Benefits

Using a regulatory sandbox may affect financial inclusion—and specifically, digital financial inclusion—in several ways. Some effects stem from general benefits listed in the previous section, such as improving capacity of regulators to deal with innovations and promoting competition—including between innovators and incumbents—with positive impact on pricing of financial products and services. Other effects are specific to financial inclusion, such as promoting innovation that improves financial inclusion and improving capacity of regulators to balance financial inclusion with other regulatory objectives.

There are several ways in which innovations may improve financial inclusion:

- New, affordable products or services that address the needs of the excluded and underserved customer segments (M-Pesa, BitPesa).
- Distribution channels that reach out to dispersed populations in remote and rural areas (AliPay).
- Operational efficiencies that allow financial services providers to serve low-margin clients profitably (Yu'e Bao).
- Business models that allow financial services providers to serve marginalized clients to achieve scale (PayGo).
- Ways to address compliance (e.g., customer due diligence) and risk-management (e.g., credit scoring) barriers to financial inclusion (iProov).[7]
- Increased competition that may prompt incumbents to focus more attention on unserved and underserved segments to keep their revenues steady.

2.3. Financial Inclusion Risks

Operating a regulatory sandbox requires adequate resources (staff and funding). However, many regulators put sandbox responsibilities at the top of their staff's existing work program, instead of hiring dedicated staff. Where capacity is stretched, stretching it further with regulatory sandboxes may have a negative impact on other areas of regulator's responsibilities (e.g., regulation, monitoring, supervision, and enforcement).

In low-capacity environments characteristic for EMDEs, resources may be scarce and may be needed for areas with higher priority, such as creating a legal and regulatory framework for basic enablers of digital financial inclusion or building basic market infrastructure.[8] Some argue that a sandbox is a distraction in countries in which such basic enablers are not yet in place. The regulators may, in fact, be facing pressure to focus on the newest technology and demonstrate a progressive and open-minded viewpoint even if they should prioritize more substantial (but less prominent) work.

Successful implementation of a regulatory sandbox may be jeopardized by

7 The use of technology in risk management and compliance is referred to as RegTech—a newer element of the FinTech revolution. RegTech is also used by regulators and supervisors and may become an essential means for regulators and supervisors to address the opportunities and risks presented by FinTechs.

8 See, e.g., CGAP (forthcoming).

institutional arrangements for regulation and supervision. Increasingly, the line between financial products and services is becoming blurry and so is the line between competencies of public authorities responsible for regulation and oversight of the financial market. Establishment of a regulatory sandbox by one authority (as opposed to multiple) may disadvantage innovators in other areas (e.g., insurance, if the sandbox is established by the banking regulator) unless a coordination mechanism is put in place.

New products and services that are tested in a sandbox may present additional risks that may be hard to assess before the service/product is fully launched in the market. These risks may include those stemming from features of the innovation and/or limited regulatory and supervisory capacity (e.g., poorly designed regulatory requirements, whether too light or too burdensome, inadequate supervisory tools necessary for collecting and analyzing the data generated or used by new technologies). Risks may also result from the lack of *consumers'* understanding of a new product.

Unless they are designed to promote financial inclusion, regulatory sandboxes may attract innovators that are interested in competing with incumbents for affluent clients rather than in venturing into excluded and underserved segments. (See Annex 2 for the overview of sandbox firms many of which seem to fit this description.) Thus, innovation may bring more convenience to those who are already included, while further perpetuating the disadvantaged status of excluded customers.

2.4. Choosing a Framework to Harness Innovation for Financial Inclusion

Some regulators may want to make financial inclusion an integral part of their sandbox function. This can be done in several ways, including the following:

- Eligibility criteria can include a requirement that the tested innovation target financially excluded and underserved customers. For example, the sandbox entity may be required to serve a minimum number of those customers within a certain period.

- The innovator may be required to include excluded and/or underserved customers in testing samples to collect data on their needs and profiles, provided that the customers are well-informed about the experimental nature of the service and safeguards are in place to ensure any harm can be compensated for 100 percent.

- There may be a preferential regime for the innovators deemed to be particularly relevant to financial inclusion. Such a regime may take various forms, including a more streamlined application and testing process, fee waivers, and the like. However, any such privilege should be subject to measurable commitments, ongoing monitoring, and claw back rights should the innovator fail to deliver on its financial inclusion promise.

By making financial inclusion an explicit component of the regulatory sandbox's mission, regulators would be able to leverage testing as an opportunity to measure potential impact of the innovation on financial inclusion. Regulators could use that information for their policy work, regulation, and supervision.

A regulatory sandbox is only one option among a handful of other tools available to regulators that are dealing with innovation (inside or outside a financial inclusion context).[9] In countries where innovation has improved financial inclusion, two other approaches are particularly relevant (see Annex 3). The first approach is *test-and-learn*: a regulator, in close cooperation with an innovator, crafts a framework to test a new idea in a live environment and adopt safeguards (pursuant to, for example, a memorandum of understanding, no enforcement action letter, or letter of no objection) to minimize the impact of potential failure and to set criteria against which they measure success. Based on testing, the regulator decides whether to grant the innovator permission to launch the innovation market-wide, which may involve a licensing process and may require regulatory changes. Test-and-learn is sometimes mistaken for *wait-and-see,* an approach applied when an innovation is not yet fully understood and the regulator chooses to let it develop before deciding whether (and how) to intervene.

Compared to ad hoc test-and-learn and wait-and-see approaches, the regulatory sandbox creates a proactive, standardized approach to innovation that offers the potential for any eligible firm (licensed or not) to partake and involves more structured, transparent communication between a regulator and innovators. The benefits of these two features are (*i*) more transparency with the claimed positive outcomes of higher awareness (innovators know about the sandbox and feel encouraged to pursue innovative ideas) and improved access to venture capital (admission to a sandbox serves as a signaling mechanism for investors interested in the sandboxed company) and (*ii*) enhanced opportunities for the regulator to understand the innovation before any intervention is made and for the innovator to understand the applicable regulatory and supervisory framework. The latter is an inherent feature of test-and-learn, too.

In addition, test-and-learn allows for more flexibility given its rather ad hoc and tailor-made nature. Wait-and-see is a better fit than both test-and-learn and sandboxes where innovation is not mature or needs to evolve (e.g., scale up) to be meaningfully assessed by a regulator.

Some jurisdictions have been experimenting with alternatives that combine multiple approaches and that often respond to various restrictions in the legal and regulatory framework. An example is the proposal by the U.S. Office of the Comptroller of the Currency to adopt a national FinTech charter. BaFin in Germany, Commission de Surveillance du Secteur Financier in Luxembourg, and regulators APRI and AMF in France have decided to pursue an alternative approach to regulatory sandboxes by granting leniency for testing and piloting.

9 Zetzsche, et al. (2017) present four main approaches that regulators use to balance innovation and core regulatory objectives: (*i*) doing nothing (*laissez-faire or* permissive regime), (*ii*) using a "cautiously permissive" case-by-case approach based on forbearance, (*iii*) providing "a structured context for experimentation" via a regulatory sandbox or other frameworks for structured piloting exercises, and (*iv*) using "a formal approach" that accommodates innovations through legislative and regulatory changes.

III. ISSUES TO CONSIDER

Regulators around the world are asking: “Should I set up a sandbox?” A regulatory sandbox should respond to real demand instead of becoming a solution looking for a problem. The answer, therefore, depends on several key factors: (*i*) legal and regulatory framework, (*ii*) stakeholder ecosystem, (*iii*) capacity and available resources, (*iv*) market conditions, and (*v*) policy priorities.

Legal and regulatory framework. The legal and regulatory framework determines several things:

- The ability of a regulator to set up a sandbox—the statutory mandate to set up a sandbox.
- The flexibility of a sandbox—i.e., the discretion the regulator can exercise regarding the issuance of waivers and temporary exemptions to sandbox firms. Any regulatory sandbox is a sum of discretions available to the regulator.
- The utility of a sandbox—a regulatory sandbox tends to be more useful for jurisdictions that have complex regulatory frameworks or highly prescriptive rules, each of which can present obstacles to innovation.

Stakeholder ecosystem. All except a few of the sandboxes have been established by one regulator (as opposed to multiple regulators working in collaboration). Where multiple sandboxes exist within a single jurisdiction, a coordination mechanism such as joint selection committee should be put in place. The borderless nature of digital technology adds further complexity. There are several regulatory barriers that artificially limit cross-border application of innovations. National regulatory sandboxes are unlikely to solve that issue. Perhaps to the contrary, unless coordinated, they may allow for exceptions from rules harmonized across countries (as a result of international standards), thus making the innovation less compatible with the legal and regulatory framework of other countries. This challenge may be overcome with international cooperation among sandboxes[10] or even establishment of an international sandbox as discussed in Europe[11] and Asia,[12] for instance.

Capacity and resources. As noted, operating a regulatory sandbox requires adequate resources (staff and funding)—resources that may not be available to regulators in low-capacity/low-resource environments. These regulators may need to consider less costly alternatives. For example, a regulator can establish a mechanism for enabling better and easier communication between the regulator and innovators without setting up a sandbox.[13]

Market conditions. Factors that are important in assessing market conditions include the quality and quantity of innovation in the market, the number and types of financial services providers and their offerings, the level of competition, state of market growth, the quality

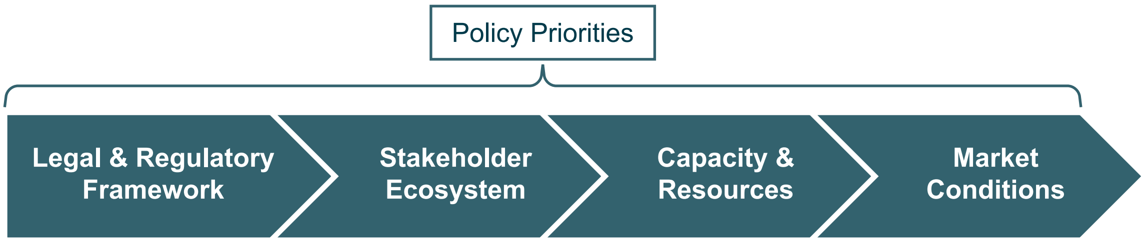
10 Several countries have adopted memoranda of understanding to foster international cooperation to promote FinTech. Among the most active countries are Abu Dhabi, Australia, Kenya, Singapore, and the United Kingdom.

11 See, https://ec.europa.eu/info/finance-consultations-2017-fintech_en.

12 Monetary Authority of Singapore has partnered with IFC to develop the ASEAN Financial Innovation Network, part of which should be a regional sandbox. The actual features of the sandbox remain unknown (as of 2 August 2017), but there are indications that it will not be a regulatory sandbox, but rather an industry sandbox that is used to test and offer FinTech solutions to incumbents in the region (see, e.g., http://www.mas.gov.sg/News-and-Publications/Media-Releases/2017/IFC-and-Monetary-Authority-of-Singapore-Collaborate-to-Advance-FinTech-Innovation-in-Asia.aspx).

13 E.g., OCC Innovation Office Open Hours and others (Duff 2017, 4, 8).

FIGURE 1. Decision-Making Process for Establishing a Regulatory Sandbox



of innovation, and the level of development of financial market infrastructure. Sandboxes may be less important for large banks and other incumbents than for start-ups that may not know which regulator is relevant to it, how to approach the regulator, or what the regulations provide (Mueller 2017, 11).[14] In the financial inclusion context, market conditions will also concern the number of excluded and underserved customers and the providers (informal and formal) that serve them. Ideally, **policy priorities** should be reflected in these factors and should be subject to multi-stakeholder discussions and consultations. These discussions and consultations should feed into the determination of whether to establish a sandbox and how—i.e., its design (see Figure 1).

There may be an overall framework, such as a national financial inclusion strategy and an individual strategic plan reflective of agency priorities, that affects priorities of an individual regulatory agency. If establishing a regulatory sandbox does not fall under a regulator's priority framework, then the regulator should carefully consider whether moving toward a sandbox would dilute available resources and jeopardize implementation of the actual priorities.

14 So far, this position has been supported by the data about sandbox firms (see Annex 2).

IV. CONCLUSION

Regulatory sandboxes are quite new, and the lack of data and diversity of sandbox approaches make any measurement of success or comparison of individual sandboxes difficult. However, what is known so far indicates that sandboxes are an important complement to a policy maker's existing approaches to dealing with innovation. Formal, transparent, and open dialogue between a regulator and innovators, where each side learns from the other, is perhaps a key element of regulatory sandboxes and a means for advancing to a regulatory mindset that responds to and reflects the FinTech revolution underway.

In the financial inclusion arena, a regulatory sandbox can open space for positive change through innovation. Indeed, an innovation relevant to financial inclusion may come out of a sandbox. Moreover, policy makers can design a sandbox that is specifically tailored to promote innovation in support of financial inclusion. At the same time, regulators will remain responsible for supporting the creation of an enabling environment for digital financial services based on basic regulatory enablers. A regulatory sandbox should not be a distraction for policy makers. It should not draw their attention (and resources) away from more urgent tasks.

A regulatory sandbox should not be thought of as an exclusive entry point to the financial market for all innovations either. There will be other avenues for innovation: some innovations will emerge spontaneously from garages in Nairobi and grow in significance before they are regulated; some will be rolled out and will scale up in gray zones, yet under the (strict) scrutiny of supervisors; others will represent incremental tweaks that stretch the boundaries of existing rules.

The multitude of avenues for innovation means that a regulatory sandbox is not a one-size-fits-all solution. It is one instrument among other options, including a test-and-learn approach. Policy makers need to carefully choose the approach that best fits their priorities, capacities, and capabilities in line with the interests of their constituencies. For instance, some incremental innovations cannot be tested within a limited period and at a small scale required by regulatory sandboxes. And even if the scalability of a sandbox can be improved by automating the admission process or otherwise (e.g., through FinTech waivers such as those in Australia and Switzerland), certain innovations simply may neither fit a regulatory box nor a regulatory sandbox.

ANNEX 1. COUNTRY COMPARISON TABLES

TABLE A1-1. Countries with an Existing or Proposed Regulatory Sandbox

Australia[a]	*Hong Kong*	*Malaysia*	*Singapore*	*Turkey*
Bahrain	*India*	*Mauritius*[b]	*Republic of Korea*	*UAE (Abu Dhabi)*
Brazil	*Indonesia*	*Mexico*	*Sweden*	*UK*
Brunei	*Japan*	*Netherlands*	*Switzerland*[a]	*USA*
Canada	*Jordan*	*Russia*	*Taiwan*	
China	*Kenya*	*Sierra Leone*	*Thailand*	

Note: The list includes the countries with an operational ( ), established ( ), and officially announced ( ) regulatory sandboxes (as of 31 August 2017).

a. Regulatory sandbox is used to describe a regime based on industry-wide waivers.

b. The regulatory sandbox is not limited to providers of financial services; is open to any industry.

Table A1-2. Examples of Regulatory Sandboxes

	Options	Illustrative Examples	Comments
Objective(s)	Innovation	Abu Dhabi, Hong Kong, Malaysia, Netherlands, UK	A legislative change may be needed when (*i*) the envisioned objectives do not fall under the current mandate or (*ii*) the regulator does not have the powers necessary to set up a sandbox.
	Competition	Abu Dhabi, Bahrain, Indonesia, Thailand, UK	
	Consumer benefits	Bahrain, Netherlands, Singapore, Thailand, UK	
	Financial inclusion	Bahrain, India, Malaysia, Sierra Leone	
Eligibility	Regulated and aspiring financial services providers	Australia, Canada, Netherlands, Singapore, Switzerland, Thailand	The eligibility criteria may be dictated by the regulator's mandate and actual legal and regulatory framework (e.g., a regulator may not be allowed to let third-party providers into a sandbox unless partnered with authorized firms—Hong Kong).
	All innovators	Abu Dhabi, Brunei, Malaysia, US (Catalyst)	
	All products/activities (within the regulator's remit)	Canada, Hong Kong, Singapore, Thailand, UK	
	Defined products/ activities	Australia, India, Thailand, Republic of Korea	
Safeguards	Minimum capital	UK	A regulatory sandbox should not promote regulatory arbitrage, generate inacceptable risks, or become a vehicle for forbearance. Therefore, some regulatory requirements, such as basic AML/CFT and consumer protection requirements, should not be waived even for limited testing.
	Fit & proper	Netherlands	
	AML/CFT	Abu Dhabi, Australia, Canada, Hong Kong, Netherlands	
	Consumer protection	Australia, Brunei, Hong Kong, Malaysia, Thailand, UK	
	Quantitative limits (max. no. of customers; max. assets under management)	Australia, Bahrain, Brunei, Malaysia	
	Reporting requirements	Australia, Brunei, Malaysia, Thailand, UK	
Timing	Cohorts	Bahrain, Kenya, Abu Dhabi (UAE), UK	Either option comes with benefits and downsides. The actual configuration should be primarily determined by the overall objectives and the regulator's capacity.
	Rolling	Australia, Canada, Malaysia, Mexico, Netherlands	

ANNEX 2. A SNAPSHOT OF SANDBOX FIRMS[15]

I. The Australian Securities and Investments Commission's Sandbox

First Rung: The firm offers an app that customers can use to arrange savings where they transfer their money in a variety of ways (direct transfers, round ups, other inbound transfers), and their savings are held in a custodian bank account with an Australian bank.

Goodments Pty Ltd.: This start-up provides a share trading application that matches retail investors to shares based on their sustainability profile (ethical, sustainable, and social values).

II. Bank of Thailand's Sandbox

Kasikorn Business-Technology Group: A technology arm of Kasikornbank (KBank) will be using blockchain technology to certify letters of guarantee and could use the same technology to certify other documents.

III. Bank Negara Malaysia's Sandbox

- **GetCover:** Motor insurance start-up.
- **MoneyMatch:** Fully digital peer-to-peer currency exchange platform with eKYC functionality that enables users to conduct cross-border remittances and exchange foreign currencies.
- **GoBear:** Free comparison site for insurance, credit cards, and loans in several Asian markets.
- **WorldRemit:** Helps people send money abroad at affordable rates.

IV. Consumer Financial Protection Bureau

Upstart Network: A company that uses alternative data in making credit and pricing decisions for consumer loans provided through its online lending platform. Upstart evaluates consumer loan applications using traditional factors such as credit score and income, as well as incorporating nontraditional sources of information such as education and employment history.

V. Financial Conduct Authority's Sandbox in the United Kingdom

Cohort 1 (July 2016)—69 applications, 24 applications accepted, 18 firms tested (see www.fca.org.uk/firms/regulatory-sandbox/cohort-1).

- **Start-up (15)**
  - **Billon:** An e-money platform based on distributed ledger technology that facilitates the secure transfer and the holding of funds using a phone-based app.
  - **BitX:** A cross-border money transfer service powered by digital currencies/blockchain technology.
  - **Blink Innovation Limited:** An insurance product with an automated claims process that allows travelers to instantly book a new ticket on their mobile device in the event of a flight cancellation.
  - **Bud:** An online platform and app that allows users to manage their financial products, with personalized insights, on a single dashboard. Bud's marketplace introduces relevant services that users can interact with through API integrations.
  - **Citizens Advice:** A semi-automated advice tool that allows debt advisers and clients to

15 As of 31 August 2017.

compare the key features of available debt solutions.

- **Epiphyte:** A payments services provider that aims to provide cross-border payments using blockchain technology.
- **Issufy:** A web-based software platform that streamlines the overall initial public offering distribution process for investors, issuing companies, and their advisers.
- **Nextday Property Limited:** An internet-based property company that will provide an interest-free loan for a guaranteed amount to customers if they are unable to sell their property within 90 days.
- **Nivaura:** A platform that uses automation and blockchain for issuance and lifecycle management of private placement securities.
- **Otonomos:** A platform that represents private companies' shares electronically on a blockchain. This enables these companies to manage shareholdings, conduct book-building online, and facilitate transfers.
- **Oval:** An app that helps users build up savings by putting aside small amounts of money. These savings can then be used to pay off existing loans early. Oval will be working with Oakam, a consumer credit firm, and several Oakam customers during the test period.
- **SETL:** A smart-card-enabled retail payment system based on an OpenCSD distributed ledger.
- **Swave:** A microsavings app that provides an across-account view, enables a round-up service every time a user spends money, and calculates an affordable savings amount based on the user's spending behavior.
- **Tradle:** An app and web-based service that creates personal or commercial identity and verifiable documents on a distributed ledger. In partnership with Aviva, it will provide a system for automated customer authentication.
- **Tramonex:** An e-money platform based on distributed ledger technology that facilitates the use of "smart contracts" to transfer donations to a charity.

- **Incumbent (1)**
  - **Lloyds Banking Group:** An approach that aims to improve the experience for branch customers that is aligned with the online and over-the-phone experience.
- **Partnership (2)**
  - **Govcoin Limited:** A technology provider that has partnered with the Department for Work and Pensions (DWP) to determine the feasibility of making emergency payments using means other than cash or the Faster Payments Scheme. The payments platform will use blockchain to allow DWP to credit value to a mobile device to transfer the value directly to a third party.
  - **HSBC:** An app developed in partnership with Pariti Technologies, a FinTech start-up, to help customers better manage their finances.

Cohort 2 (January 2017)—77 applications, 31 accepted, 24 testing (see www.fca.org.uk/firms/regulatory-sandbox/cohort-2)

- **Start-up (24)**
  - **AssetVault:** A firm that enables consumers to catalog all their assets in a secure online register and better understand their total value. AssetVault works with insurance providers to protect consumers and their assets with appropriate insurance products.
  - **Assure Hedge:** A web-based platform that offers foreign exchange options to help small and medium size enterprises and individuals protect against losses incurred because of currency fluctuations.
  - **Beekin:** A firm that leverages artificial intelligence and data-sharing to build transparency and liquidity in alternative assets (real estate, angel investments) and offers risk management and analytics services to small investors.
  - **BlockEx:** A firm that aims to test a bond origination, private placement, and lifecycle management platform based on a distributed ledger technology.
  - **Canlon:** An insurance policy that saves a portion of the net premium to reimburse policyholders if a claim is not made.
  - **Disberse:** A blockchain-based services provider that distributes and tracks development and humanitarian finance.
  - **Evalue:** An on-going, fully automated online streamlined advice process for employees in the workplace designed to help them set and achieve realistic retirement goals.
  - **Experian:** A mortgage eligibility tool that can be used to help consumers who are in the research phase of buying a home by increasing their awareness of their eligibility, based on the lender's affordability criteria.
  - **FloodFlash:** A firm that provides event-based flood insurance, including in high-risk areas. Customers receive a pre-agreed settlement as soon as the company's sensor detects that flood waters have exceeded a certain depth.
  - **Insure a Thing:** An alternative insurance business model where the consumer makes payments at the end of the month, based on the exact cost of claims settled during that period.
  - **Money Dashboard:** A tool that offers an instant view of consumer affordability by aggregating and organizing financial transactions from online accounts and mapping them to mortgage lenders' criteria that support a digital mortgage journey.
  - **Moneyhub Enterprise:** A firm that applies a combination of artificial intelligence, data analytics, and psychology to nudge consumers to encourage affirmative financial actions.
  - **Nimbla:** A firm that provides flexible trade credit insurance and credit and invoice management tools to U.K. small and medium enterprises, via an online platform.
  - **Nivaura:** A firm that focuses on automating the primary issuance and administration of financial assets through a centralized system or a blockchain infrastructure.
  - **Nuggets:** A consumer blockchain application that gives users a single biometric tool for login, payment, and identity verification,

without sharing or storing private data.

- **nViso:** An online platform that provides advisers and clients behavioral assessment profiles generated by artificial intelligence and facial recognition.
- **OKLink:** A money remittance service that combines domestic e-money transfers on OKLink's cross-border blockchain settlement system.
- **Oraclize:** A distributed ledger technology based on an e-money platform that turns digital identity cards into secure digital wallets through smart contracts and fiat-backed tokens.
- **Paylinko:** A DLT-based payments solution that enables users to send and receive payments using a link.
- **Sabstone:** A blockchain-based platform that aims to help companies receive early payments from their clients against their invoices.
- **Saffe:** A face recognition payments and authentication services provider.
- **Systemsync:** An employee benefits comparison platform for small and medium enterprise that is powered by payroll's automated Workplace Pension submissions.
- **YouToggle:** An app that uses mobile phone telematics to monitor a user's driving and create an individual score that can be shared with a car insurer to obtain a discount. Driving information captured by the app could also be used as evidence in the event of a motor accident.
- **ZipZap:** A cross-border money remittance platform that chooses the most efficient means for a payment to reach its destination, including via digital currencies.

VI. Monetary Authority of Singapore's Sandbox

PolicyPal Pte Ltd.: A firm that provides an app that brings together all insurance policies of a customer to allow him/her to manage his/her policies in an easy and efficient way and to purchase additional coverage where needed.

ANNEX 3. EXAMPLES OF OTHER REGULATORY APPROACHES

I. Test and Learn

A. Kenya

Kenya has become known for sanctioning/endorsing innovative solutions—the development of mobile money—outside the existing regulatory framework until the framework could be modernized.

In 2007, during early meetings between Safaricom and the Central Bank of Kenya (CBK) on the initial prototype of the funds transfer service, CBK (including Bank Supervision, Legal, National Payment Systems and Research Departments) raised several questions and areas of potential concern (e.g., what was the nature of the activity, the legal status of M-Pesa, integrity risks [including anti-money laundering and combatting the financing of terrorism], technology-related risks).

Following response from Safaricom, CBK's legal counsel concluded that Safaricom would not be doing banking business by offering M-Pesa. CBK further concluded that due to the lack of mandate over nonbank funds transfer providers, CBK would not interfere in the launch of M-Pesa and issued a short letter of no objection (February 2007) that allowed Safaricom to proceed, provided certain basic conditions were met.

CBK later developed specific regulations that clarify the standards for mobile money providers.

B. Indonesia

In 2013, Bank Indonesia (BI) launched the Pilot Branchless Banking Program. The program allowed banks and/or telecommunication companies (with BI oversight) to offer banking and payments system services through agents. The program followed the issuance of Branchless Banking Guidelines that were based on voluntary compliance and applied to all banks and telecommunication companies that chose to join the pilot branchless banking program. The principles or guidelines were not full authorization for banks to use agents to extend services. Instead, BI authorized a limited number of banks to conduct services through agents (known as UPLKs or Financial Intermediary Service Units) in certain pilot areas.

Until 2013, mobile money or branchless banking services in Indonesia faced limited uptake, in large part because of regulatory obstacles. Through the Branchless Banking Guidelines/Principles, BI removed some of these obstacles and allowed the branchless banking and mobile money sector to develop through pilots with five banks (Bank Mandiri, BRI, BTPN, Bank Sinar, and CIMB Niaga) and four MNOs (Telkomsel, Indosat, XL Com, and Telkomall). The pilots were implemented in close partnership with BI to extract learnings and experience to shape the subsequent full regulations.

The pilots concluded in November 2014. Soon after, BI and OJK (Financial Services Authority) released further updates to the branchless banking regulations that expanded the number of financial institutions able to provide branchless banking services, and enabled participants in the pilots to build a more concrete branchless banking or digital financial services program.

C. The Philippines[16]

Bangko Sentral ng Pilipinas (BSP) has established a policy environment that is intended to enable and promote useful

16 "C. The Philippines" was written with input from Pia Bernadette Roman-Tayag, head, Inclusive Finance Advocacy Staff, BSP.

innovations that can improve the design and delivery of financial services. Typically, transformational innovations have features that are not contemplated by existing regulations. BSP, recognizing the potential of these innovations, has deliberately taken a test-and-learn approach. Specifically, BSP engages with innovators to understand their innovations, to assess risks, and to determine how appropriate regulations can be applied. BSP adopted this approach when e-money was introduced and just developing. It permits nonbank providers to operate on a pilot basis with identified parameters, in close coordination with BSP and using existing regulations as the operating framework. BSP adopted e-money regulations five years after the first pilot was approved—when the business, risks, and appropriate regulatory approach were fully understood.

Since then, BSP has used the test-and-learn approach for various innovations, including digital agnostic platforms that facilitate credit origination for banks, cloud-based core banking solutions that can allow banks to expand their reach, new e-money instruments designed for e-commerce, use of individuals as payments agents, and e-KYC solutions. These innovations are presented to BSP, evaluated, and allowed within certain parameters (i.e., limitations in geography, number of accounts, or types of transactions). Regular reporting is required throughout the pilot stage.

Aside from the test-and-learn approach, BSP proactively monitors emerging FinTech applications and relevant market developments.

II. Wait and See

A. China

China, especially before 2015, is often praised for adopting a liberal approach before designing a comprehensive regulatory system approach for the new environment of what is called internet finance (the Chinese equivalent to digital financial services).

A typical scenario to illustrate this approach is China's approach to peer-to-peer (P2P) lending. For some time, Chinese regulators refrained from interventions and let the industry grow and evolve. While this has helped to grow the industry, it has also created some issues, including platform failures and practices such as (*i*) pooling, slicing, and packaging of underlying loans, (*ii*) guarantee of repayment and financial returns without proven capacity to deliver, and (*iii*) shadow banking-like maturity transformation.

Emerging issues and instances of fraud (the largest of which was the E'zubao Ponzi scheme, which exposed 900,000 investors to losses upwards of US$7.5 billion) led to a focused regulatory intervention.[17] The intervention was meant to support the industry by creating a transparent and level playing field for platforms, investors, and borrowers. The regulation resulted in a drop in the number of P2P platforms from more than 3,000 platforms in 2015 to 2,448 in 2016, but it has not had adverse effect on the overall lending volumes (Aveni and Jenik 2017).

17 See., e.g., Aveni and Jenik (2017).

BIBLIOGRAPHY

Abu Dhabi Global Market. 2016. "The FinTech Regulatory Laboratory: The Regime for FinTech Innovation." Abu Dhabi: Abu Dhabi Global Market.

AFM (Dutch Authority for the Financial Markets). 2016a. "More Room for Innovation in the Financial Sector." Amsterdam: AFM.

———. 2016b. "Intense Supervision in a Changed Playing Field." Amsterdam: AFM.

AMBD (Monetary Authority of Brunei Darussalam). 2017. "FinTech Regulatory Sandbox Guidelines." Bandar Seri Begawan, Brunei: AMBD.

ASIC (Australian Securities & Investments Commission). 2016a. "Consultation Paper 260: Further Measures to Facilitate Innovation in Financial Services." Sydney, Australia: ASIC.

———. 2016b. "Response to Submissions on CP 260: Further Measures to Facilitate Innovation in Financial Services." Sydney, Australia: ASIC.

Aveni, T., and I. Jenik. 2017. "Crowdfunding in China: The Financial Inclusion Dimension" Brief. Washington, D.C.: CGAP.

BCBS (Basel Committee for Banking Supervision). 2017. "Sound Practices: Implications of Fintech Developments for Banks and Bank Supervisors." Basel, Switzerland: BCBS.

BNM (Bank Negara Malaysia). 2016. "Financial Technology Regulatory Sandbox Framework." Kuala Lumpur, Malaysia: BNM.

BOT (Bank of Thailand). 2016. "Public Hearing on Guidance to Participate [sic] the Regulatory Sandbox." Thailand: Silk Legal.

Central Bank of Bahrain. 2017. "Regulatory Sandbox Consultation Paper." Manama, Bahrain: Central Bank of Bahrain.

CGAP. Forthcoming. "Basic Regulatory Enablers for Digital Financial Services—Lessons Learned from CGAP's Ten Focus Countries." Washington, D.C.: CGAP.

CFPB (Consumer Financial Protection Bureau). 2016. "Project Catalyst Report: Promoting Consumer-Friendly Innovation." Washington, D.C.: CFPB.

———. 2017. "CFPB Announces First No-Action Letter to Upstart Network." Washington, D.C.: CFPB.

CFTC (Commodity Futures Trading Commission). 2017. "CFTC Launches LabCFTC as Major FinTech Initiative." Press release. Washington, D.C.: CFTC.

Chudasri, D., and P. Sirimai. 2017a. "Fintech Firm Aims to Play in Sandbox." *Bangkok Post*, 21 February.

———. 2017b. "SEC Readies Sandbox for Fintech Firms." *Bangkok Post*, 21 February.

Committee on Digital Payments. 2016. "Medium Term Recommendations to Strengthen Digital Payments Ecosystem." New Delhi: Committee on Digital Payments.

De Brauw Blackstone Westbroek. 2016. "DNB and the AFM Create Regulatory Sandbox." Amsterdam, the Netherlands: De Brauw Blackstone Westbroek.

Duff, S. 2017. "Modernizing Digital Financial Regulation." Washington, D.C.: Aspen Institute.

Duhaime, C., et al. 2016. "FinTech in Canada: British Columbia Edition." Canada: Digital Finance Institute.

FCA (Financial Conduct Authority). 2015. "Regulatory Sandbox." London: FCA.

FINMA (Swiss Financial Market Authority). 2017. *Annual Report 2016*. Bern: FINMA.

FSB (Financial Stability Board). 2016. "Financial Stability Board Agrees 2017 Workplan." 17 November. http://www.fsb.org/2016/11/financial-stability-board-agrees-2017-workplan/

———. 2017. "Financial Inclusion Implications from Fintech." Basel: FSB.

FSRA (Financial Services Regulatory Authority). 2016a. "Consultation Paper No. 2: Policy Consultation on a Regulatory Framework to Support Participants Deploying Innovative technology within the Financial Services Sector." Abu Dhabi: FSRA.

———. 2016b. "Consultation Paper No. 3: Consultation on Proposed Legislative Framework for Innovative Financial Technology." Abu Dhabi: FSRA.

———. 2016c. "FinTech Regulatory Laboratory Guidance." Abu Dhabi: FSRA.

GPFI (Global Partnership for Financial Inclusion). 2016. "Global Standard-Setting Bodies and Financial Inclusion: The Evolving Landscape." Washington, D.C.: CGAP.

GOS (Government Office for Science). 2015. "FinTech Futures: The UK as a World Leader in Financial Technologies." London: GOS.

Hallatt, W., et al. 2016. "Hong Kong Launches Regulatory Sandbox in Wake of Developments in Australia, Malaysia, Singapore, and the UK." Hong Kong: Herbert Smith Freehills.

HKMA (Hong Kong Monetary Authority). 2016a. "Dear CEO Letter of September 6, 2016 re Fintech Supervisory Sandbox." Hong Kong: HKMA.

———. 2016b. "Dear CEO Letter of September 6, 2016 re HKMA-ASTRI Fintech Innovation Hub." Hong Kong: HKMA.

Innovate Finance. 2016a. "Call for Input." London: Innovate Finance.

———. 2016b. "Industry Sandbox: A Blueprint for an Industry-Led Virtual Sandbox for Financial Inclusion." London: Innovate Finance.

International Monetary Fund (IMF). 2017. "Fintech and Financial Services: Initial Considerations." IMF Staff Discussion Note. Washington, D.C.: IMF.

Kietduriyakul, K., and K. Phongsathaporn. 2016. "FinTech Update: Thailand's FinTech Regulatory Sandbox." Bangkok, Thailand: Baker & McKenzie.

Lloyd, J., and A. She 2017. "As FinTech Evolves, Can Financial Services Innovation Be Compliant?" Hong Kong: EY.

MAS (Monetary Authority of Singapore). 2016a. "Consultation Paper: FinTech Regulatory Sandbox Guidelines." Singapore: MAS.

———. 2016b. "Response to Feedback Received—FinTech Regulatory Sandbox Guidelines." Singapore: MAS.

———. 2016c. "Regulatory Sandbox Guidelines." Singapore: MAS.

Mueller, J. 2017. "FinTech: Considerations on How to Enable a 21st Century Financial Services Ecosystem." Washington, D.C.: Milken Institute.

Mutegi, M. 2016. "The Fintech Sandbox: A Unique Kenyan Prospect." *Pulse*, 14 November.

OCC (Office of the Comptroller of the Currency). 2016a. "Recommendations and Decisions for Implementing a Responsible Innovation Framework." Washington, D.C.: OCC.

———. 2016b. "Exploring Special Purpose National Bank Charters for Fintech Companies." Washington, D.C.: OCC.

OSC (Ontario Securities Commission). 2016. OSC Launchpad Presentation.

PayPal. 2017. "Fintech from the Frontlines: The Opportunity for Technology to Improve Financial Services for All." San Jose, Calif.: Paypal.

Philippon, T. 2017. "The FinTech Opportunity." Basel, Switzerland: Bank for International Settlements.

Sirimai, P. 2017. "Four Fintech Firms Apply for Sandbox." *Bangkok Post*, 9 May.

Vella, H. 2017. "Malaysia: Central Bank Issues First Licences for Fintech Sandbox." *Tech Wire Asia*, 30 May.

Vogel, A., C. Peterman, and L. Reto. 2017. "Federal Council Proposes Revisions to Boost Fintech Innovations." *Lexology*, 28 April.

Zetzsche D., et al. 2017. "Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation." Frankfurt am Main: European Banking Institute.