Regulatory Sandboxes, Innovation Hubs, and Other Regulatory Innovation Tools in Latin America and the Caribbean

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Abstract

Financial technology (fintech) creates a profound impact and structural change in the financial market in an unusually rapid way. Traditional regulatory tools, as well as the use of new regulatory policies necessary to harness fintech, are insufficient and too slow to fulfill the regulatory objectives of protecting financial consumers, ensuring fair and orderly markets, and reducing systemic risk. Without the use of innovative regulatory tools, countries run the risk that their financial innovation is not developed sufficiently or is launched outside the reach of the regulator and supervisor, with all the risks that this entails.

The innovative regulatory tools recognized and discussed in this report include regulatory sandboxes, innovation hubs, accelerators, and roundtables. Of these tools, the sandbox and hub are the most used and as such will receive particular attention.

This report presents the preliminary results of an IDB survey of innovative regulatory tools implemented around the world, as well as a summary of the available academic literature on the topic. It also analyzes the situation of the countries of Latin America and the Caribbean (LAC), their regulatory and policy options, as well as the operational requirements to employ regulatory innovation.

JEL codes: E42, G2, K2

Keywords: regulation, supervision, fintech, innovation, innovation hub, sandbox, accelerator, innovation table

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The fintech industry in Latin America and the Caribbean (LAC) has at least 1,166 platforms according to the latest comprehensive research of the ecosystem, published by the Inter-American Development Bank (IDB) and Finnovista in 2018. The distribution by geographical origin shows that the number of platforms is concentrated in five countries: Brazil (33 percent), Mexico (23 percent), Colombia (13 percent), Argentina (10 percent), and Chile (7 percent). More recently, the "Global Alternative Finance Market Benchmarking Report" from the University of Cambridge, carried out with the support of the IDB, shows important findings in terms of alternative financing/crowdfunding (CCAF, 2019). The most notable finding is that 60 percent of the more than US$1.8 billion generated in 2018 were used to finance over 270,000 companies' projects throughout the region, which sets a precedent for great contribution and financial inclusion by fintech platforms. The study also shows how "changes in regulation" were the most prevalent concern for the platforms, as 39 percent of those surveyed classified this risk factor as high or very high. It should be noted that this concern outweighs others such as fraud, a higher degree of non-compliance, new and existing competition, or cybersecurity. The same data also demonstrates that greater regulatory adequacy is positively correlated with the volume generated.

It is not surprising then, that the countries with the highest number of platforms and volume of transactions (Mexico and Brazil) are precisely the first to advance in regulating this and other verticals and in developing regulatory sandboxes, all with the support of the IDB. Progress in the realm of public policy in the region continues: Colombia, and more recently, Peru, have created regulations for their regulatory sandboxes. At the same time, at least three jurisdictions in Central America—Costa Rica, El Salvador, and Honduras—are in the process of establishing innovation hubs, with the support of Red Regional del Ecosistema Fintech de América Latina y el Caribe (FintechLAC).[1] These and other regulatory innovation tools are beginning to be used more widely by regulators and supervisors of FintechLAC, and have been promoted by the IDB. It is expected that more countries will join these efforts in the coming years, given that these tools reduce regulatory uncertainty, and open the dialogue between industry and regulators, among many other benefits.

[1] See https://www.iadb.org/en/sector/initiatives/digital-finance-innovation/fintech.

FintechLAC created this document with three main goals on regulatory innovation. The first is to allow the fintech ecosystem and the financial sector to understand the state of the art of regulatory innovation. Since innovations such as regulatory sandboxes, innovation hubs, accelerators, and innovation tables have been used globally, documenting and analyzing those experiences enable us to take into account lessons learned and apply best practices for the benefit of our region. The second goal is to offer a taxonomy that enables understanding the characteristics, benefits, differences, and requirements of regulatory innovation. This objective will enable policy makers to make informed decisions about which innovation to choose. A third objective is to understand the regulatory and institutional capacity requirements for the development of regulatory innovations. This will provide regulators and supervisors with criteria to assess the tool that best suits the development of each country's ecosystem and legal and institutional architecture.

This document has a wide audience, which includes those responsible for public policies, fintech associations and chambers, platforms, financial institutions, and a number of agents that permanently interact in the fintech ecosystem. Our intention is to contribute to the development of public policies that enable innovation in the financial system and the inclusion of more people to access and use financial services.

Finally, there has been in increase in the level of digitization in the financial sector since the beginning of the COVID-19 pandemic. In consequence, this is an opportune moment to share this document and continue to support LAC countries in digitizing the financial sector during such challenging but promising times.

Jorge Castaño

Financial Superintendent of Colombia and President of the Executive Committee of FintechLAC

Latin America's financial system is undergoing its fastest transformation in recent times. The global crisis generated by COVID-19, despite its disastrous impact on public health and economic development, is emerging as an unprecedented catalyst for digital innovation. Isolation has put innovative technology-based models such as fintech to the test, confirming the potential that these have to channel resources in an agile way and offer financial products that adapt to an unpredictable and changing environment.

Previously, financial institutions had been slowly digitizing their traditional processes, lacking a sense of urgency. However, as a result of preventive isolation, entities have moved toward a "digitization for survival", prioritizing virtual financial services, contactless payments, and the prevalence of digital channels for a wide range of activities.

This "great leap" in digital adoption brings us ever closer to meeting regional goals in terms of financial inclusion. The downside is that this process could occur at the expense of widening access gaps for the most vulnerable population. In this regard, governments and policy makers have a leading role to play.

According to the Basel Committee on Banking Supervision (BCBS) and the Bank for International Settlements Bank for International Settlements (BIS) (BCBS and BIS, 2018), in recent years the world's regulators have responded to the development of fintech companies seeking to maximize their benefits while mitigating their risks, mainly on three fronts. On the one hand, much attention has been paid to tracing the regulatory perimeter of fintech companies, with respect to the activities for which traditional financial entities are authorized (credit, deposit, intermediation, etc.). On the other hand, the authorities have turned to catalyze enabling technologies for the provision of innovative financial services (cloud computing, biometrics, use of application programming interfaces, among others), either through regulation, implementing standards, or adopting good practice guidelines. Lastly, policy makers have chosen to implement policies that facilitate innovation in the financial system, highlighting guidelines on cybersecurity, data protection, open banking, digital identity, and regulatory innovation tools (such as hubs and sandboxes). These policies are the foundation that enable the system to have a solid basis, which in turn allow it to progress.

Moreover, a recent study by the University of Cambridge (CCAF, World Bank, and World Economic Forum, 2020), which compiles responses from regulators regarding fintech in the midst of the COVID-19 situation, shows that no regulator reported the cancellation of regulatory innovation initiatives. On the contrary, 36 percent of those surveyed had accelerated the implementation of regulatory sandboxes and innovation offices.

Following these ideas, it is extremely relevant to consider the roadmap that the IDB, with its regional FintechLAC network, had created to support the region's ecosystems. This study on regulatory innovation not only compiles the progress made by countries with dynamism in the fintech space, such as Brazil, Colombia, and Mexico, but also outlines lessons learnt and discuss policies that can be implemented by other countries in the region.

Finally, it is widely known that well-connected ecosystems are those where good outcomes happen faster and those that show the biggest promise in technology. The development of a collaboration agenda within the FintechLAC framework is already beginning to reap benefits so that the region does not miss this great digital leap.

Erick Rincón Cárdenas

President of Alianza FinTech Iberoamérica

For an adequate implementation of fintech in LAC, it is necessary to know the regulatory initiatives that allow the development of the industry in a reliable and adequate way. In addition, one needs to note the significant increase in fintech initiatives in recent years, when new additional alternatives to traditional banking started to be sought after.

This document explores, clearly and in depth, the innovative instruments that regulators have been implementing at the international level. Thereby, it provides readers with knowledge about regulatory initiatives that enable the development and growth of the fintech industry in LAC.

This document was created based on different sources, that include academic literature, surveys, and interviews, to provide a broad overview of existing regulation initiatives. It places particular emphasis on the fintech industry in LAC, starting from a review of the existing state of the art, which serves as the basis for further growth. Thus, this document focuses mainly on regulatory sandboxes, innovation hubs, accelerators, and roundtables, with attention to the sandboxes and the hubs since they are the most used and known tools by Latin American fintech innovators.

The procedure and the requirements that regulators must take into account to implement a sandbox and/or a hub are also clearly set out. This is useful for regulatory and supervision entities, as well as for fintech innovators, since it allows them to identify which tools best meet the conditions and needs of a particular country, and to determine what is most convenient in each case from an objective and integral perspective.

The focus of this document is mainly practical and expository. The goal is to shed light on the existing differences between regulatory initiatives, taking into account current needs generated by the speed of technological and market development, and the change in preferences and behaviors of financial consumers. The clarity afforded here will enable the LAC region to develop their fintech sector widely, with the trust that an adequate regulation brings, to be in tune with other countries that already have more complete regulations on the subject, thus benefitting the market itself and fostering the growth of new initiatives.

Introduction Chapter 1

This study has been carried out with the objective of creating a recommendation guide on the elements and criteria to be considered for the development and implementation of innovative financial regulation and supervision strategies. These strategies may be suitable for harnessing the potential benefits that financial technology (fintech) offers,[2] such as better financial products and services for a larger number of people and companies. At the same time, these strategies are necessary to face the challenges imposed by new business models and existing business delivery methods that are based on new technologies—for example, new risks to regulatory objectives such as financial consumer protection and financial stability, which in many cases go beyond established regulatory areas.

Innovative Regulatory Tools

The innovative regulatory tools recognized and discussed in this report are the regulatory sandbox, the innovation hub, the accelerator, and the roundtable. Of these, the sandbox and the hub are the most used and as such they will receive particular attention. The study has a special focus on the countries of Latin America and the Caribbean (LAC), and is designed to facilitate the work of regulators and other official organizations in their policies to promote the use of fintech.

Today's financial regulators globally recognize the potential benefits of fintech and the difficulties of incorporating innovations into the existing regulatory frameworks. Fintech generates a profound and structural impact on the financial market in an unusually fast way.

[2] For the purposes of this report, fintech is defined as new applications and processes, products, or business models in the financial services sector, composed of one or more complementary financial services and made available to the public via the Internet.

Traditional regulatory tools and the use of new regulatory policies, necessary to be able to channel fintech, are insufficient and too slow as instruments to fulfill the regulatory objectives of protecting financial consumers, ensuring fair and orderly markets, and reducing systemic risk. Without the use of innovative regulatory tools, countries run the risk that financial innovations: (i) are not (sufficiently) developed or (ii) are launched outside the scope of the regulator and the supervisor, with all the risks that this entails (Bijkerk, 2019).

Foundation of this Study and its Importance in the IDB Regional Plan

This study comes at an opportune moment. On the one hand, it aims to assist the numerous financial supervision and regulatory entities in LAC that have been launched or which have started the process of creating a strategy to promote fintech in their countries. On the other hand, the study provides the preliminary results of the use of innovative regulatory tools created by regulators or supervisors around the world.

The study is partly based on a survey prepared by the Inter-American Development Bank (IDB) and the author on the use of innovative regulatory tools, which was applied to the supervisory and regulatory entities of most LAC countries. The author and the IDB also interviewed leaders of innovative activities of the Comissão de Valores Mobiliários do Brasil (CVM), Financial Superintendence of Colombia (SFC), Superintendencia de la Banca de Guatemala (SIB), and the National Banking and Securities Commission of Mexico (CNBV). Finally, the study used the academic literature and publications by supervisory and regulatory entities and international organizations available to date.

This study also considers an important series of IDB documents, particularly the study titled "Regulatory Sandboxes in Latin America and the Caribbean for the FinTech Ecosystem and the Financial System" by Diego Herrera and Sonia Vadillo, from 2018. In their conclusion, the authors explain that.

> In Latin America, the FinTech sector is making progress in financial inclusion by focusing business models on segments typically overlooked by the traditional banking sector. However, the emer- gence of new entrants and hitherto unknown activities is posing enormous challenges to the institutions responsible for market regulation and oversight, which must safeguard the interests of all actors while ensuring the stability and confidence of the system as a whole. The pace and scale of change are such that the traditional supervisory models fall short; therefore, it is necessary to establish more flexible formulas that facilitate and foster innovative business activity in a controlled environment with minimal risks (Herrera and Vadillo, 2018: 25).

For the reasons stated in the quoted excerpt, among others, the IDB Group has been supporting LAC countries to advance their knowledge of the fintech industry and to create policies and regulatory initiatives that enable the development of this industry within a framework of adequate regulation and supervision. Moreover, the IDB Group is promoting various initiatives aimed at improving and strengthening the institutional capacity of the players in the fintech ecosystem. Among them should be highlighted the regional public goods (RPGs) program "Toward Regulatory Convergence for the Regional FinTech Ecosystem" by FintechLab, whose objective is to support the development, consolidation, and integration of the fintech ecosystem of LAC.[3]

In addition, this document is part of a series of technical reports by the IDB aimed at supporting LAC financial regulators and supervisors with practical recommendations for systematic improvements in the formulation and implementation of successful strategies to reap the benefits offered by fintech for citizens and companies. It is expected that this report can be useful for the fintech ecosystem and the financial sector and its players.

[3] Information about regional public good can be found on the following website: https://www.iadb.org/en/sec-tor/initiatives/digital-finance-innovation/fintech.

Document Outline

The report is structured as follows. After this introduction, Chapter 1 details the state of the art of financial regulatory innovations. This is followed by the description of the existing regulatory sandboxes and innovation hubs models in LAC and the world in Chapter 2, with emphasis on the objectives, admission criteria, stages for the implementation of the mentioned regulatory innovations, as well as their legal regime and the responsibilities of the supervisor and participants, among other characteristics. Lastly, Chapter 3 studies the legal and supervisory framework, considers regulatory and policy options, and deals with aspects that should be considered for the implementation of regulatory sandboxes and innovation hubs.

State of the Art of Innovative Regulatory Tools Chapter 2

Today, regulators globally recognize the potential benefits of fintech. Legal and regulatory frameworks that are focused on traditional financial entities, products, and services do not always offer solutions for the innovations proposed by fintech (Bijkerk, 2019; Wechsler, Perlman, and Gurung, 2019). Thus, many supervisory and regulatory entities are implementing specific innovative regulatory tools to facilitate the incorporation of innovative financial entities, products, and services in a controlled manner.

The information and literature on innovative forms of regulation and supervision in the financial market is vast and continues to grow. There exist numerous reports from different national supervisory and regulatory entities detailing their plans, as well as their implementation and evaluation experiences. Also, there are reports from regional and global financial institutions and from the academic world. However, there appears to be a lack of literature and information in the LAC region in particular.

This chapter concisely presents the most outstanding information and literature to date on regulatory innovations. It provides a historical overview and introduces a series of definitions from which it builds a taxonomy of different innovation tools.

Key Definitions

In recent years, the Basel Committee on Banking Supervision (BCBS) in conjunction with the Bank for International Settlements (BIS) (BCBS-BIS, 2018), as well as the Financial Stability Board (FSB)[4] (FSB, 2017), have carried out exploratory work through which they have been able to distinguish three key types of facilitators of innovation: the innovation hub, the accelerator, and the regulatory sandbox. Following the definitions provided by the aforementioned entities, this report understands that:

Innovation hub

An innovation hub is a function within the regulatory agency dedicated to facilitating regulatory clarification and guiding innovative regulated or unregulated companies in navigating the existing regulatory framework. Information exchange on fintech issues in connection with an innovative technology-driven project takes place within a hub. Communication between the company and the supervisor is generally quite open and informal.

Accelerator

An accelerator is a fixed-term program generally created and managed by experienced participants from the private sector in order to accelerate the innovation of young companies (start-ups and scale-ups). It includes tutoring or training of sponsoring partners, who also facilitate contact with potential investors. An accelerator program can culminate in a public launch event or demo day in which selected young companies can present their solutions to a problem. The BCBS-BIS (2018: 40–42) adds in its description that supervisory and regulatory entities "can understand accelerators as projects or programs where private sector companies are involved to address specific problems or explore new technologies. Through the articulation and association of projects with private sector fintech companies, agencies can explore how innovative solutions could be used in central bank operations, including the performance of supervisory tasks (suptech)".

[4] The FSB maintains a Financial Innovation Network that brings together dozens of experts from supervisory and regulatory entities worldwide to explore new technological trends, innovative financial products and services, as well as their impact on the financial system. Part of its operational activities consists of an intensive dialogue with innovative companies.

Regulatory sandbox

A regulatory sandbox is defined by Herrera and Vadillo (2018: 4–5) as "space for experimentation that enables innovative companies to operate products or services temporarily under certain rules that put limits on features such as the number of users or the period in which the product can be offered. This allows companies to test original products, services, and solutions under the supervisor's watchful eye". The sandbox involves a process of prior application and selection by the supervisor according to specific criteria, such as being a genuine innovation with a benefit for the consumer, which is not easily adaptable to existing regulatory frameworks, and being ready to be sold on the market.

The FSB (2017) also recognizes the use of other forms of proactive attention to financial innovation, such as forums, roundtables, and work tables between supervisory and regulatory entities and innovative companies.

Box 1

Summary of Definitions of Innovation Facilitators

Regulatory sandbox

A regulatory sandbox is a space for experimentation that allows innovative companies to operate temporarily, under certain rules that limit aspects such as the number of users and the period of time. In this way, companies can test original products, services and solutions, under the watchful eye of the supervisor" (Herrera and Vadillo, 2018: 5).

Innovation hub

An innovation hub is a function within the regulatory agency dedicated to facilitating regulatory clarification and guiding regulated or unregulated innovative companies in navigating the regulatory framework.

Accelerator

An accelerator is a fixed-term program generally founded and managed by experienced participants from the private sector in order to accelerate the innovation of young companies (start-ups and scale-ups). It includes tutoring or training from the sponsoring partners, who also facilitate contact with potential investors. The accelerator program can culminate in a public launch event or demo day so that selected young companies can present their solutions to a problem.

Source: BCBS-BIS (2018).

History and Distribution of Innovative Regulatory Tools

Specific regulatory and supervisory strategies for managing financial market innovation have been in place for at least 13 years. In 2007, the Netherlands Authority for the Financial Markets (AFM) created the first innovation hub (at the time called innovation room).[5] When the global financial crisis of 2007–08 began, the innovation hub was relegated. Later on, when the Luxembourg Commission de Surveillance du Secteur Financier (CSSF) opened an innovation hub (Buckley et al., 2019) in 2014, it began a second phase of concrete strategies to stimulate innovation in the field of fintech.

The first regulatory sandbox completely applied to the financial industry was created in 2012 by the Consumer Financial Protection Bureau (CFPB)—the regulatory agency that carries out the supervision of the financial sector from the perspective of financial consumer protection in the United States—, under the name "Project Catalyst" (CFPB, 2016). This project is an initiative designed to foster innovation and entrepreneurship aligned with consumer interest in the markets for financial products and services.

In this project, the CFPB is committed to achieve three main objectives:

1. **Generate and use direct communication with innovative companies.**

2. **Understand new and emerging products in the market in order to adapt the current regulations, which have been established based on existing products only.**

3. **Get involved with innovators who have new ideas that benefit the consumer.**

[5] This innovation hub was led by the author of this report, who in his time did not have a special focus on financial technology (the name fintech did not exist yet). The hub was a place where companies with innovative products or services could get comprehensive service from the regulatory agency and, if necessary, other Dutch government entities such as the Central Bank or the Ministry of Finance. The innovation hub of the AFM brought together the necessary experts to analyze the most efficient way to fit a product or service into legal and regulatory frameworks.

In the inaugural phase of Project Catalyst, three innovative data-processing companies were selected which committed to sharing anonymized consumer data with the CFPB to help the agency to better understand consumer behavior and consumer trends.[6]

The term "regulatory sandbox" was adopted by the UK's Financial Conduct Authority (FCA) in 2015 within "Project Innovate", an initiative launched to channel and support disruptive innovation that offers new products and services to clients, and challenges existing business models.[7] The FCA uses the project to interact constructively with innovative companies and to remove unnecessary regulations that create barriers to innovation. As part of Project Innovate, an innovation hub was first created, in 2014,[8] which achieved the objectives of guiding and preparing a significant number of companies to launch their innovative product or service and obtain their regulatory authorization more quickly (FCA, 2015). The FCA then decided to expand its project by introducing a regulatory sandbox in 2015.

Since then, the creation of innovation hubs and sandboxes by the world's supervisory and regulatory entities has been on the rise. In recent years, the number of agencies that operate institutionalized financial regulatory innovation instruments has increased sharply. The BCBS-BIS (2018) reports 15 jurisdictions with an innovation hub, five with an accelerator, and seven with a regulatory sandbox for 2018. The article by Buckley et al. (2019) compiles 50 established or announced regulatory sandboxes globally. A joint report by the World Bank and the Cambridge Centre for Alternative Finance of the University of Cambridge (CCAF) consisting on the results of a survey in which 111 supervisory and regulatory entities participated, accounts for 29 innovation hubs and 24 sandboxes (World Bank and CCAF, 2019).

Compared to the rest of the world, LAC registers the lowest percentage of innovation hubs, sandboxes, and accelerators. According to the World Bank and CCAF (2019), only 8 percent of the supervisory and regulatory entities surveyed have an innovation hub or a sandbox, or are in the process of building one. There are no reports of any running accelerators.

[6] See CFPB (2012).

[7] For more information on the FCA regulatory sandbox, see FCA (2015), and for information about project innovate, see FCA (2014b, 2014c).

[8] See FCA (2014a).

These figures are below the global average of 30 percent of sandboxes or innovation hubs in regions such as Asia, and it strikingly contrast with Europe, which average reaches almost 60 percent (World Bank and CCAF, 2019). Moreover, another recent report from the FinTech Working Group of the United Nations Secretary-General's Special Advocate for Inclusive Finance for Development (UNSGSA) and CCAF (2019) shows a total absence of innovation hubs in the LAC region and a scarce number of sandboxes, operational or under construction, functioning only in Brazil, Colombia, Jamaica, and Mexico.

Preliminary Results of the Implementation of Innovative Regulatory Tools

It is still too early to be able to draw a definitive conclusion on the achievements and failures of the different ways of stimulating financial innovation. Academic literature and reports from regulatory agencies are scarce. In addition, the information available is usually related to throughput data (how many times a hub or sandbox was consulted, how many projects were analyzed, etc.). Only agencies that have implemented innovative instruments and that have been in operation for some years are in a position to share information on the output (licenses obtained, products launched on the market) and the outcome (the final result and its relationship with regulatory objectives). The following section outlines some eye-catching results that may enable reflection.

Growing number of innovative companies served

The first set of results shown are based on throughput data and corresponds to the number of companies that have benefited from innovation hubs and regulatory sandboxes (see Table 1).

Table 1: Number of Companies Served Globally

Instrument	Number of companies served
Regulatory sandbox	180
Innovation hub	2,163

Source: World Bank and CCAF (2019).

The recent survey by the World Bank and the CCAF (2019) reports that innovation hubs supported 2,163 innovative companies worldwide, while sandboxes reached 180 companies. This number is based on data from 29 innovation hubs and 24 sandboxes.

At first glance, the total figures show that innovation hubs have been much more active than sandboxes and offered their services to innovative companies 10 times more than sandboxes. However, the figures are not entirely comparable because it must be taken into account that "the attention" of a regulatory agency to a technological innovation in a regulatory sandbox is usually much more intense and longer than in an innovation hub. "Attention" in an innovation hub can refer to a response during a telephone call or a brief visit from the innovative entrepreneur to the expert of the financial supervision or regulation entity. "Being served" in the sandbox means in many cases having passed the entire application, preparation, testing, and evaluation process of the regulatory sandbox cycle. The latter usually has a duration and attention from the financial supervision or regulation entity that can extend for months and even years.

The different supervisory and regulatory entities that implemented regulatory innovation a few years ago report similar figures. The FCA, for instance, reports that 686 innovative companies attended 1,563 requests received in all the support functions of the innovate project during the five years of its existence (2014–19). It is understood that most of the support was provided by the innovation hub. Regarding the regulatory sandbox, 47 tests were carried out during the first four years of its existence. At the time of publication of the report, 63 proposals were found in process in the sandbox (FCA, 2019). Such figure is already more than the number of tests performed, suggesting that the sandbox has gained traction over time. It can also be stated that for more than half of the requests received (686 of 1,563, that is, 44 percent) the FCA has not provided any form of support (Ibid.).

The report does not specify what has been done with the large number of unmet requests (if they are still on the waiting list or in process to be taken into account, if they did not require support, etc.).The figures are nonetheless significant.

In the case of the Australian Securities and Investments Commission (ASIC), its innovation hub worked with 380 financial institutions and advised 347 of them, between March 2015 and December 2018. Of the 380 financial institutions, 53 (14 percent of the total) provided digital financial advice, 52 (14 percent) payment systems, 43 (11 percent) peer-to-peer lending, 30 (8 percent) equity crowdfunding, 29 (8 percent) consumer financial credit, and 28 (7 percent) other financial market activities. In addition, 71 of such institutions (19 percent) operated hybrid business models, and the remaining 74 (19 percent) were categorized within financial services related to pensions, insurance, and other items. There were 85 physical meetings with financial entities. Its sandbox served six companies (ASIC, 2019). Once again, the bottom line is that innovation hubs offer a broader and more frequent service to innovative companies than sandboxes, albeit less thorough.

Moreover, the innovation hub of the AFM and The Netherlands Bank (DNB), created in June 2016, along with the sandbox of the same entities founded in December that year, served 650 clients in a period of three years (AFM-DNB, 2020).[9] Approximately 350 clients were served by DNB and 300 by AFM. The AFM and DNB's (2020) report does not state separate numbers for innovation hubs and sandboxes. It explains that more than half of the contacts were from start-ups, while approximately 10 percent were already regulated companies. The incumbent companies that contacted the hubs and sandboxes the most were technology companies with almost 40 companies in each agency (19 percent of the total DNB clients, 39 percent AFM), followed by payment solutions companies (34 or 17 percent DNB and 10 or 10 percent AFM), consultants (26 or 13 percent DNB; 10 or 10 percent AFM), banks (22 or 11 percent DNB; 11 or 11 percent AFM) and insurance companies (11 or 5 percent DNB; 3 or 3 percent AFM), intermediaries (6 or 3 percent DNB; 8 or 8 percent AFM), and various other types of institutions (AFM-DNB, 2020).

The fourth entity to consider is the Monetary Authority of Singapore (MAS). This entity is world-renowned for having introduced its sandbox early, at the end of 2016 (MAS, 2016), for its closeness to the financial market, and for granting direct financing to innovative companies.

[9] The DNB is the Central Bank of the Netherlands, which operates interconnectedly with the AFM.

However, the case of Singapore is less well documented, as the MAS has not published an assessment report or official figures on the use of the sandbox. The only recent publication is from a local academic (Lin Lin, 2019) who tries to assess the operation of the sandbox and notes the lack of official data. The academic documents, through direct email contacts with MAS officials and interviews with financial entrepreneurs in the local market, that the MAS sandbox works with low numbers of tests. It should be noted that by the date consulted—July 29, 2019—, the sandbox had two companies, and three companies with a completed test. In addition, two companies exited the sandbox without test success (Lin Lin, 2019: 98–99). The author concludes that the sandbox is not very successful and that the MAS uses it as a last resort instrument to stimulate fintech in the country.[10]

In the LAC region, the number of companies served is still small. Table 2 details the results collected in the interviews with the corresponding supervisory and regulatory entities.

Table 2: Number of Companies Served in the LAC region, May 2020

Instrument	Innovation hub	Sandbox regulatorio
Colombia SFC	210	10
Guatemala SIB	40	n.d.
Mexico CNBV	n.d.	0

Source: Author's elaboration based on interviews with supervisory and regulatory entities.
Note: Figures for Colombia are from December 2020. n/d stands for no data available.

[10] Lin Lin (2019) also notes that MAS officials wrote that the sandbox has provided advice to more than 140 companies between November 2016 and July 2018. This description suggests that there is a confusion of terms and that the so-called MAS sandbox functioned as an innovation hub (which provides advice) rather than a regulatory sandbox (in which tests are carried out). It also notes that the 2017–18 annual MAS report records 40 formal applications in the November 2016–March 2018 period. This figure reflects the operation of a regulatory sandbox.

In the LAC region, interviews with the supervisory and regulatory entities show that the innovation hub of the Financial Superintendence of Colombia (SFC) served the largest number of companies, for a total of 210, between May 2018 and December 2020. These companies received some form of advice on existing regulation or supervision. They included licensed financial entities, fintech platforms, and other companies with concerns about regulations and policies in relation to fintech. During the mentioned period, the SFC reports that 20 companies requested to enter the sandbox, of which 10 were accepted (an acceptance rate of 50 percent). This discrepancy of 20 applications and 10 acceptances has been seen in figures from other sandboxes in the world, due to the fact that not every proposal is sufficiently elaborated or the information provided is incomplete. The SFC figure is also affected by a legal impediment for which it cannot accept projects that operate outside the legal and regulatory scope, in such a way that the powers within the sandbox are limited to making adjustments to instructions given by the SFC in its supervisory framework. To overcome this inconvenience, a law and a decree have recently been approved, which will enable companies to enter the sandbox for up to two years.[11] Eligible companies are those that intend to implement innovative technological developments to carry out activities supervised by the SFC, or for entities supervised by the SFC who wish to undertake tasks that are not specific to their license.

On the other hand, in approximately two years of operation, the Mexican CNBV sandbox has had 45 interested companies, but only received two applications as of May 2020—both of which companies gave up participating in accordance with their own interests. An interview with the SIB of Guatemala reveals that about 40 companies were served in its innovation hub within a period of existence of just one year (the hub was created in July 2019). Three Brazilian financial regulation and supervision entities, the Central Bank of Brazil, the CVM, Susep (the regulator of insurers and open pension funds) and Previc (the regulator of closed pension funds), have each launched a regulatory sandbox that will function in an interconnected manner. They expect to receive the first cohort of companies with novel products, services or business models in the beginning of 2021. The companies in each cohort will have a dedicated staff member and can be in the sandbox for a period of one year with the option of extending one more year. They will be open to regulated and unregulated companies.[12]

[11] The former refers to Article 166 of Law 1955 of 2019, available at https://www.funcionpublica.gov.co/eva/gestor-normativo/norma.php?i=93970, while the latter is the Decreto 1234 from 2020, which can be accessed through https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=142005

[12] Information obtained during a telephone interview on June 9, 2020 with officials of the CVM.

Licenses granted and reduced time to authorization

Regarding the results at the output level, there is not much public information available. Data is only available from two supervisory and regulatory entities: the FCA and the ASIC. The FCA (2019) granted 101 new licenses or license changes to innovative companies, including innovation hubs and sandboxes. In contrast, the ASIC (2019) granted 69 new licenses. The FCA (2019) also reports another interesting piece of information: the time to obtain a license has been reduced by 40 percent for innovative companies in the area of mutual funds. Assuming the same rigor in the licensing process as in the normal process, this is a clear positive result.

Other important achievements

To get a first impression of the results at the outcome level, data from a survey by the World Bank and CCAF from 2019 was used. Table 3 represents responses from supervisory and regulatory entities at the global level on the initial perceived impact of the operation of an innovation hub (29 agencies) or a regulatory sandbox (24 agencies).

Table 3: Results Reported by Supervisory and Regulatory Entities that Have Implemented an Innovation Hub or Sandbox (in %)

	Innovation hub	Sandbox
Technology upgrades	92	76
Built better relationships with the industry	77	62
Published guide to clarify regulatory framework	77	57
Improved regulatory framework	54	57
Developed a system for risk diagnosis	27	24
Too early to judge	23	38
Improved reporting system	19	24
Limited impact to date	8	5
Other (please specify)	4	5
None	0	0

Source: World Bank and CCAF (2019).

The impact perceived by supervisory and regulatory entities regarding the operation of an innovation hub or a sandbox is mostly positive. No agency has noticed a null impact, although 23 percent of those that operate an innovation hub and 38 percent of those that operate a sandbox consider that it is too early to make a definitive judgment on the matter. Eight percent of the agencies with an innovation hub and five percent of those with a sandbox have perceived a limited impact. The greatest impact has been noted in the improvement of the understanding of innovation technologies and in the optimization of relations with the sector. It has also been noted that the implementation of an innovation hub or a sandbox has led to other actions, such as the publication of guides to clarify the regulatory framework, improvements to the framework, the development of a system for diagnosing the risks faced by the regulatory objectives, and improvements in the reporting system.

There is not much more information at the outcome level regarding the possibility of achieving specific objectives, such as financial inclusion and market development by supervisory and regulatory entities to promote financial innovation. Not only is it too early to determine what works and what doesn't, but it is also impossible to measure what is counterfactual. The comparison of countries would be very imprecise knowing that success depends on many factors and not just on the existance or lack of a sandbox. As Malcolm Sparrow (2000) points out in his book "The Regulatory Craft", it is impossible to determine the causality of a regulatory measure. The regulatiry agency can only tell a story structured on its own efforts and take into account the events it observes in the financial market related to them.

An example of a structured story appears in the FCA (2019) report, where the entity points to financial product and service innovations that benefit consumers, which is one of its regulatory objectives. The entity also perceives that existing companies are responding to these innovations by improving their own offerings. Lastly, it notes that innovative companies are increasingly attracting more investments from venture capital institutions and considers it a signal of the value of regulatory security offered by the FCA.

Another example is the report from the innovation hub and sandbox of the supervisory and regulatory entities AFM and DNB (2020) from the Netherlands. Several positive points stand out there. The first one is the fact that an easily accessible site for market innovators responds to a market need, especially for innovative companies (such as technology companies) that are not familiar with financial regulation.

Furthermore, the Dutch supervisory and regulatory agencies recognize that they learn quickly from the developments in the financial markets, which facilitates their regulation and supervision practices. The innovation hub itself reduces uncertainty about financial supervision. This allows the innovator to better focus on developing their innovation.

Despite the fact that it is still too early for a conclusion and that data is scarce, most academic and regulatory authors agree that the innovative regulatory instruments used by supervisory and regulatory entities do help send a signal to the private sector about its importance and the regulatory agency's interest in facilitating financial innovation.[13] When the use of these instruments becomes part of a compendium of activities (within a long-term strategic plan) of the regulatory agency, the signal to the financial sector will be stronger and more continuous. It stands to reason that this positively influences innovative entrepreneurs. It may also mitigate the fear of venture capital investors, who can put their capital at the disposal of innovative financial companies, which has a real positive effect on financial innovation.

[13] See Buckley et al. (2019); Herrera and Vadillo (2018); Mueller (2017).

Existing Models of Regulatory Innovation

Chapter 3

In light of their importance and usefulness, this chapter outlines in detail the existing models of financial regulatory innovation and their dissemination in LAC. On the one hand, with an innovation hub (or innovation office), regulators "guide" innovative entrepreneurs within the regulatory system through the study of business proposals and the analysis and explanation of regulatory and supervisory requirements for innovative products, services, and business models to be introduced to the market.

In addition, supervisors and regulators can have a first-hand understanding of what business models are about and, based on the evidence, they can take preventive measures to mitigate any risk to regulatory objectives. On the other hand, with a regulatory sandbox, supervisory and regulatory entities take an even more proactive stance, creating an environment in which an innovative product or service can be tested in the real market, under the watchful eye of the supervisor. During the trial period, the entrepreneur and the regulator closely follow the progress of the financial product or service to guide the development of the innovation toward an outcome that is optimal for the society and the regulator's objectives, while learning about potential risks that the new product or service may bring to regulatory objectives.

The Regulatory Sandbox

As already pointed out, a regulatory sandbox is defined by Herrera and Vadillo (2018: 4–5) as a "space for experimentation that enables innovative companies to operate products or services temporarily under certain rules that put limits on features such as the number of users or the period in which the product can be offered. This allows companies to test original products, services, and solutions under the supervisor's watchful eye". An early example of a regulatory sandbox in the region can be found in Mexico (see Box 2).

Objectives

The operation of a regulatory sandbox helps to achieve several specific objectives for the regulatory agency. The main ones are the following:

1. **Reduce regulatory uncertainty.**

A sandbox aims at reducing the regulatory uncertainty perceived by innovative companies. The close communication of innovative companies with the supervisor enabled by the sandbox helps companies understand better the scope and application of the legal and regulatory framework to new products, services, and business models.[14]

2. **Encourage financial innovation.**

According to the FCA (2017: 6), "companies use sandboxes to test an innovative product among financial consumers and its commercial viability. Moreover, sandboxes are used to experiment on the viability of a technology". In other words, a sandbox directly encourages financial innovation.

3. **Reduce innovation time.**

Several supervisory and regulatory entities report that the intensive work supervisors carry out on new products, services, and models in the sandbox can accelerate the process of obtaining an operating license or authorization (FCA, 2017).[15]

[14] See, for example, Herrera and Vadillo (2018); Wechsler, Perlman and Gurung (2019).

[15] See also Joint Committee (2018).

4. Increase awareness of innovation.

A sandbox also helps reduce the information gap that exists between the supervisor and the market, and facilitates the knowledge of the supervisor about particular innovations.

5. Facilitate risk control and prevention.

A sandbox facilitates collecting data and information in an initial stage of market development, which helps to analyze potential risks of innovations for regulatory objectives and to prevent their materialization.[16] Furthermore, with its intensive scrutiny, the regulator is in a position to target specific innovations in ways that are most beneficial to society.

[16] See, for example, BCBS-BIS (2018); Buckley et al. (2019); FSB (2017).

Box 2

The Sandbox of the CNBV of Mexico

The regulatory sandbox *Modelos Novedosos en México* was created in 2018 with the FinTech Law; in it financial technology institutions (ITF) were outlined for the first time. ITF can be electronic payment fund or crowdfunding institutions. They must be incorporated as public limited companies and require authorization from the CNBV in order to operate in a regulated manner. Title IV of this Law empowers the CNBV to grant temporary authorizations in the event that financial regulation generates impediments for new models of fintech (Ministry of Finance-CNBV, 2018).

The regulatory sandbox admits unregulated companies when they have a novel model to carry out a financial activity that requires a concession, authorization, or registration in accordance with financial laws. It also admits regulated financial entities that want to test a novel model for carrying out activities that require exceptions to their secondary regulation (Ministry of Finance-CNBV, 2019).

In the two years of its existence, the CNBV sandbox has been an object of interest for many entrepreneurs, and it is expected that the first temporary authorizations will be granted in 2021. According to the representatives of the CNBV, the sandbox is still mostly unknown in the market, which is why it needs more publicity around its characteristics and benefits. In 2020 the CNBV participated in the first financial innovation contest, called the "Sandbox Challenge", organized with the support of the United Kingdom Embassy. The contest awarded prizes such as legal and business advice sponsored by specialized consulting firms. The call received 166 pre-registrations, of which 81 completed their registration. The corresponding projects were assessed and six finalists were selected at the end of August.[a] These projects are expected to be authorized in 2021 to enter the CNBV sandbox. They also expect to receive new projects after the success of the contest.

[a]Information obtained by email from the CNBV. Generic information on the "Sandbox Challenge" is available at https://www.sandboxchallenge.com/en/home/

Source: Author's elaboration.

Foundations for Creating a Sandbox

A regulatory sandbox is a novel tool in financial regulation (even though it has existed for many years in other fields such as medicine). Consequently, its newness raises questions such as what basis a regulatory agency has to create a sandbox. There are several foundations (legal and other) for the implementation of a regulatory sandbox in the financial system, including the following:

1. **Foundation based on traditional regulatory objectives.**

Various supervisory and regulatory entities, such as those of Denmark, Lithuania, the Netherlands, Poland, and the United Kingdom, have reported that they have found a sufficient basis to create a sandbox in their existing traditional regulatory objectives, including protecting financial consumers and investors, maintaining a fair, transparent, and efficient market, and fostering financial stability (Joint Committee, 2018). Their explanation is that sandboxes and innovation hubs help collecting necessary information to create policies and mitigate the risks that arise from innovation in the markets for their regulatory objectives (Ibid.).

2. **Foundation based on other regulatory objectives.**

Other supervisory and regulatory entities have additional regulatory objectives, such as market development and formation, capital formation, financial inclusion, or fostering financial market innovation. As it will be explianed in more detail in Chapter 3, the supervisory and regulatory entities of many developing countries, including several in LAC, are governed by some of these regulatory objectives. Therefore, if their legal framework allows it, they can use them to create a sandbox or an innovation hub. An example is the Polish Financial Supervision Authority (KNF), which aims to promote innovation in the financial market, itself a principle used to create the regulatory sandbox (Joint Committee, 2018).

3. **Agencies that do not have a sufficient base.**

Several supervisory and regulatory entities have reported that they do not consider that their legal or regulatory framework allows them to create a regulatory sandbox or an innovation hub. In these cases, the creation of an innovative instrument could be considered a breach of regulations or of their functions. Consequently, this could result in prevarication (a criminal offense) by the supervisory body or its officials. Then, in cases where the agency does not have a sufficient base, it will have to seek the creation of an adequate base. The next chapter details this situation and shows examples of agencies that have followed this path.

Participants

Usually participants to a sandbox belong to one of two groups. That is, in most jurisdictions, both regulated companies (incumbent) and unregulated (fintechs, start-ups and scale-ups and other entrants) can apply to enter a sandbox. However, there are some exceptions, such as the SFC sandbox, in which companies supervised by said body can participate. Entities not supervised by the SFC must make an alliance with a supervised entity in order to start the joint application process to the sandbox.

Selection criteria

To enter a regulatory sandbox, innovative companies have to meet a series of criteria published by the regulatory agency. These criteria are generally as follows:

1. **Only innovative financial activities are accepted.**

In principle, sandboxes are open to all kinds of financial activities, provided they are innovative. Therefore, non-innovative products, services, and business models are not accepted.

2. Prior authorization or license is required.

Many supervisory and regulatory entities allow both regulated and unregulated companies in their sandbox, but require an authorization or license with restrictions for innovative companies so that they can test their new product, service, or model.[17] After exiting the sandbox, the innovator can request that this restriction be lifted and thus obtain full authorization.[18]

However, there are innovative products, services and business models that are not regulated per se—for example, technology to improve regulatory compliance, mobile phone applications, etc.—but that do need to be tested in a sandbox. For this kind of innovative solutions, supervisory and regulatory entities do not usually request a prior authorization or license (Joint Committee, 2018).

[17] Regulated companies do not usually need an authorization or license, except in the case that they require an additional authorization for products or services that fall outside their usual scope.

[18] See, for example, FCA (2015).

The Regulatory Sandbox Cycle

The operation cycle of a regulatory sandbox has four phases: application, preparation, testing and evaluation. Figure 1 shows the phases and their main characteristics.[19]

Figure 1: Phases of the Regulatory Sandbox Cycle

Application	▪ Firm sends application request ▪ Application judged against published criteria ▪ Decision of (non) acceptance by the regulator
Preparation	▪ Check parameters established by regulator ▪ Request for temporary or partial license if proposal is outsied of regulatory remit ▪ Limits and restrictions imposed
Testing	▪ Testing the proposal in real but limited market ▪ Intensive supervision
Evaluation	▪ Revision of results of testing ▪ Decision on appropriate exit from sandbox

Source: Joint Committee (2018).

[19] The sandbox cycle is based on the common characteristics of existing sandboxes in the European Union exposed in Joint Committee (2018) and various communications of the FCA, among them FCA (2015), as well as AFM-DNB (2020); BCBS-BIS (2018); Herrera and Vadillo (2018).

1

Application

In phase 1, the innovative company can submit an application that is analyzed by the regulator, taking into account the criteria published for accessing the regulatory sandbox. Most regulatory and supervisory agencies accept applications on an ongoing basis, but there are also agencies that admit companies on a cohort basis. An example of the latter is the FCA.

To enter the the sandbox, certain criteria is reviewed with respect to products, services, and activities, and regarding the companies that offer them. The criteria commonly requires that the product, service, or business model meet the following characteristics:

1. Is *innovative* and *new.*
2. Is in *need of the test.*
3. Is *ready to be introduced in the market.*
4. Has *added value* for the local market and is aligned with at least one regulatory objective, such as financial inclusion or market development.

The admission criteria for the applicant are usually that the company:

1. Is *legally established.*
2. Has a *robust business plan.*
3. Has the *right technical resources.*

4. Has *proper insurance.*

5. Is characterized by *good governance, and has adequate systems and controls.*

6. Is *fully operational.*

2 **Preparation**

Once the product, service, or activity is accepted in the sandbox, the preparation phase begins. In this one, the supervisory and regulatory entity establishes the parameters that apply during the testing phase in the sandbox. These parameters are usually specific to each product, service, or business model. The exception to this rule occurs when a supervisory and regulatory entity works with cohorts of companies that offer the same type of product or service. In this case, one can create parameters for the entire cohort.

In the preparation phase, it is determined whether a company needs and/or has a sufficient license or authorization to operate the new product, service, or business model in the sandbox. If you need a license (with restrictions), the supervisory and regulatory entity will establish a timeline for the company to obtain it. Test parameters such as the following are established:

1. The *number* of financial consumers or the *monetary limit of sale.*

2. Some *operational requirements* for the test phase, such as the company's cyber-protection system.

3. The *content and frequency of the information and data* that the company has to provide to the supervisor.

4. An agreement between the supervisor and the company on the *contact method and the frequency of communication* during the test.

5. The *duration* of the test, which usually varies with each application, and takes between three months and two years, although there are supervisory and regulatory entities that do not establish a fixed time.

6. Criteria to determine the *success of the test*.

7. Procedure to *exit the sandbox*, in particular the treatment of products and services contracted by clients.

8. An agreement in which the company accepts to *mitigate and compensate for damages* that the new product or service may cause to the interests of customers who participate in the test.

3 Testing

Then, in phase 3 of the sandbox cycle the company can perform the test under intense monitoring by the sandbox experts of the supervisory and regulatory entity. During the period in the sandbox, the product, service, or business model is tested to identify all its benefits and risks. As mentioned above, the trial period can be determined by the supervisory and regulatory body in the preparation phase. However, it can also be left open and be decided later on when the trial period is deemed to have ended. In any case, most supervisory and regulatory entities that establish a fixed period in advance usually have the possibility of extending it if they deem it necessary. This is the case, for example, of Mexico's CNBV, which in principle has a trial period of two years with the possibility of extending it for one year, and of the SFC, which has a six-month trial that can be extended up to a maximum of two years.

Throughout the testing phase, the company is expected to submit the pre-agreed written reports and communicate with the supervisory and regulatory body intensively. The interaction between supervisor and company during the test involves more intense supervision than usual.

During this phase, the test can be terminated by the supervisor or at the request of the company at any time. Termination can occur when the company does not meet the test parameters, when the test causes unforeseen harm to customers, or when the product, service, or business model somehow does not perform as expected. In addition, if the company fails to comply with the law or the regulatory framework during the test (passing the previously established parameters), the supervisory and regulatory entity can take action with all its regular supervisory instruments to mitigate the risks it perceives and/or minimize the damage to its regulatory objectives.

4 Evaluation

In phase 4 of the sandbox cycle, the test results are analyzed. There are several ways to do so. One way is for the supervisor to create a report based on the accounts received and the experiences observed during the testing phase. Another way is for the report to be provided by the company whose innovative proposal was in the sandbox. There is also the possibility that the supervisory and regulatory entity creates a joint report with the company (Joint Committee, 2018: 28). In any case, the report determines the success of the test, which depends on the parameters established in the preparation phase.

The result of a successful trial can mean that the innovative company deems it as viable to offer the product or service to the general public. This can be done as long as the company is allowed by regulatory license. If they only have a license or authorization with restrictions, obtained especially to enter the regulatory sandbox, the company will have to go through an application process to lift the restrictions or obtain the appropriate license through the normal regulatory authorization process.

To exit the sandbox there are also various alternatives, which often depend on what the company wants to do with the new product, service, or model put to the test and what the regulatory framework requires in each case. Experiences collected by the consulting company Deloitte (2018) on the FCA regulatory sandbox show that many entrepreneurs adapt their new business model, product, or service so that it can receive a full authorization or, conversely, change their proposal in such a way that it is outside the scope of regulation.

In other cases, the consulting company reports that entrepreneurs who have been inside the FCA sandbox find that the assessment and exit phase is the least clear and transparent.

The above describes the common functioning of a regulatory sandbox and can be considered as the essence of this innovative regulatory tool to manage fintech. However, there exist also sandboxes with sligthly different features. These are briefly described in Box 3.

Box 3

Special Sandboxes

This study describes sandboxes where companies can test their product, service, or innovative activity in an environment protected and monitored by the regulatory agency in order to enter the financial market and thus stimulate innovation. There are also slightly different sandbox forms or functions, but they are not necessarily exclusive. For example, in the case of Colombia sandboxes could have more than one form or function. These are briefly detailed below:

Compliance assistance sandbox

Compliance assistance sandbox for the promotion of regulatory policies.[a] The main objective of this type of sandbox is to ensure that regulated financial entities comply with the legal and regulatory framework. An example is that of the SFC's sandbox, which previously only allowed supervised entities to enter. This is based on the norm that allows the SFC to "instruct the supervised and controlled entities on the way in which they must comply with the provisions that regulate their activity, set the technical and legal criteria that facilitate compliance with such standards and indicate the procedures for their full application" and "instruct supervised entities on how to manage the risks implicit in their activities".[b]

Policy promoting sandbox.

The purpose of this type of sandbox is to test whether a current rule or regulation prevents a product, service, or innovative activity from entering the market. It can be considered as an advanced kind of compliance assistance sandbox because they only support regulated entities.

[a] ee, for example, CFPB: https://files.consumerfinance.gov/f/documents/cfpb_final-policy-on-cas.pdf.
[b] Article 11.2.4.1.2, 4th and 5th of Decree 2555 from 2010. Available at https://www.superfinanciera.gov.co/inicio/10083580.

The sandbox of the SFC, described above as *compliance assistance sandbox*, is also used for the purpose of determining—with the regulated entities that have new products, services, or business models—which are the standards that need adaptation so that promising innovations can enter the financial market in such a way that the SFC obtains full supervision.[c]

Thematic sandbox

This type of sandbox is used to promote innovation specifically in a general market segment, such as innovative international payment services. Another case may be that of a sandbox dedicated to a specific objective, such as financial inclusion, for which it only supports innovative products and services that promote said objective.[d]

Multi-jurisdictional sandbox

In this type of sandbox, supervisory and regulatory entities from various jurisdictions collaborate through a multilateral treaty of understanding to test products, services, and business models of companies that operate in several countries at the same time. This sandbox is promoted by the network of supervisory and regulatory entities, the Global Financial Innovation Network (GFIN).[e] The GFIN (2019) tries to facilitate the introduction of innovative products and services at a global level.

[c] Explained orally by the management of InnovaSFC, the SFC department that runs the sandbox, during an interview conducted on May 26, 2020.

[d] See, for example, Duff (2019).

[e] See the GFIN website for more information about the network https://www.fca.org.uk/firms/global-financial-innovation-network.

Source: Author's elaboration.

The Innovation Hub

Another regulatory innovation for fintech is the innovation hub. As mentioned in Chapter 1, an innovation hub is a function within the regulatory agency that allows entrepreneurs with fintech innovation to approach and maintain an open and informal dialogue about their product, service, or activity with the regulator (BCBS-BIS, 2018; FSB, 2017). An innovation hub usually has at least one dedicated officer (sometimes part-time), a web page where the hub's services can be found, and a way to contact the hub for an in-person appointment. There may also be a section for frequently asked questions and answers from the regulatory agency. Moreover, the hub can be present at fintech fairs and it can also organize one, as has been the case with the SIB of Guatemala.

The innovation hub is one of the most popular tools for financial regulatory and supervisory entities to stimulate financial innovation. A recent report by the World Bank and CCAF (2019) indicates that there are 32 innovation hubs globally, either existing or being built. Among them are the SFC of Colombia (SFC, n.d.) and the SIB of Guatemala (Vargas Sierra, 2019). Another 14 financial supervision and regulation entities are in the process or contemplating the possibility of opening one (World Bank and CCAF, 2019).

Innovation hubs usually offer a dialogue between the innovating company and the regulatory agency, which can occur in iterative steps. During the dialogue, the innovative entrepreneur becomes familiar with the relevant legal and regulatory requirements and analyzes the extent to which their innovation aligns with regulatory objectives, such as market development through financial inclusion, financial consumer protection, market integrity, etc. In the event that there is an alignment between the innovation, the regulatory objectives, and the legal and regulatory requirements, the regulator advises the entrepreneur about the administrative processes until they are granted a license or are given an authorization to operate.[20] If there is still no legislation or regulation, which usually happens in cases of financial innovation related to technology, it will not be feasible for the company to obtain a license or authorization until the legal and regulatory framework is adapted and allows it.

[20] See, for example, the ASIC website https://asic.gov.au/for-business/innovation-hub/.

In addition to dialogue, the innovation hub of some supervisory and regulatory entities, such as the SFC, makes it possible to identify regulatory barriers and, if deemed feasible and appropriate, to advance internal processes to adapt them to regulatory projects so that innovative companies can offer innovative financial products or services (SFC, n.d.). Aside from individual business services, according to its website the SFC hub also offers generic services such as industry training opportunities and trend mapping and early-stage initiatives.[21]

Moreover, the SFC reports that the innovation hub serves as a gateway to the sandbox. After having gone through the innovation hub and asked their regulatory questions, innovative companies enter the sandbox to test their new product, service, or business model.[22]

Some innovation hubs work with cohorts or batches of companies. The cohorts may be focused on a specific topic, for example, innovative products and services for investment or international payments, but this is not strictly necessary. An example is constituted by the supervisory and regulatory entities of Portugal: the Autoridade de Supervisão de Seguros e Fundos de Pensões (ASF), the Bank of Portugal (BdP), and the Comissão do Mercado de Valores Mobiliários (CMVM), which have joined in the innovation hub Finlab.[23] The hub publishes the requirements and specifies the period that innovative companies have to submit their proposals. The first cohort had two groups and ran between September 2018 and May 2019. The hub receives applications for two months and then selects the candidates, which takes about a month. Then it analyzes the proposals, over a period of another two months. Later, within about six weeks, it issues a report with an analysis of the proposal. At the end, after another month, the hub gives feedback to the innovative company which can be used to accelerate its development or, if necessary, to request authorization from the relevant regulatory agency (ASF, BdP and CMVM, 2019).

The innovation hub is usually made up of officials from the regulatory agency with a variety of specializations: experts in financial products, technology, regulation, and administrative processes for obtaining licenses and authorizations. The number of staff of the innovation hub, will depend on the size of the financial market in each country and the level of innovation.[24]

[21] For more information, see the SFC website https://www.superfinanciera.gov.co/.

[22] Interview conducted with SFC staff on May 26, 2020.

[23] For more information about Finlab, see their official website https://www.portugalfinlab.org/.

[24] See Buckley et al. (2019).

The AFM innovation hub in mid-2000 was small and employed on-demand and part-time staff from various departments (e.g., risk, authorization, policy, legal) who provided support to five companies during its first year of operation. This is also how the Portugal innovation hub works. An example of a major innovation hub is that of the ASIC, which has between five and 10 full-time employees who in a period of just three years served 380 financial institutions, gave advice to 347 of them, and granted 69 new licenses (ASIC, 2019).

The Accelerator

As already noted, an accelerator is a fixed-term program generally founded and operated by experienced participants from the private sector in order to accelerate the innovation of young companies (start-ups and scale-ups). It provides tutoring or training, sponsoring partners and contact with potential investors. It can culminate in a public launch event or demo day in which selected young companies can present their solutions to a problem (BCBS-BIS, 2018; FSB, 2017).

Accelerators are typically market driven and operated. Its financing can come from the market participants, investors, or even from State entities such as the Ministries of Industry, Technology, etc. Even though supervisory and regulatory entities usually have very little involvement, there are some exceptions. For instance, MAS operates an accelerator under the name of Digital Acceleration Grant as part of its Financial Sector Technology and Innovation scheme, from which it supports fintech projects.[25] According to the MAS website the program "supports smaller Singapore-based financial institutions and fintech companies adopt digital solutions to increase productivity, strengthen operational resilience, better manage risk and better serve clients". These companies have to be certified by the Singapore FinTech Association and cannot have more than 200 employees. Within the accelerator, there are two different programs (of one and two years respectively) in which MAS finances 80 percent of personnel, professional services, and technology expenses, with a cap of US$120,000 and US$100,000.[26]

[25] For more information, see the MAS website https://www.mas.gov.sg/development/fintech/digital-acceleration-grant.

[26] Ibid.

Other Tools

The FSB (2017) indicates that supervisory and regulatory entities use tools other than sandboxes, innovation hubs, and accelerators to manage fintech innovation. It specifically mentions roundtables (or forums). The roundtable can be established by the regulatory agency, but also by the Ministry of Economy or another government institution. This tool brings together experts from the regulatory agency with innovative fintech entrepreneurs and other stakeholders, such as experts from the academic world. The table discusses issues of common interest, ranging from formulating a national strategic plan for the development of a specific part of the financial sector related to the innovation of fintech, to practical aspects, such as obstacles faced by entrepreneurs in the market or in the regulatory framework, or risks that regulatory agencies see in the innovators' business models.

Roundtables can be generic or thematic. The generic ones deal with general topics, such as the national strategy related to fintech or raising enough capital to build a strong innovative sector. In contrast, the thematic roundtables can address issues such as the development of a specific sector (e.g., insurance) or a particular service (such as crowdfunding). Examples of roundtables in LAC can be found in Argentina. These have been organized by the Central Bank and the National Securities Commission (CNV), and function in specialized groups with axes established according to the interests of the participants and the corresponding regulator or supervisor. In the case of the Central Bank, the tables include, among other, payment methods and infrastructure, blockchain solutions, transversal technologies and systems, and alternative credit and savings channels.[27] The CNV has tables for debt crowdfunding, regulatory sandbox, blockchain and crypto assets, as well as for gender and fintech.[28]

A roundtable prepares a platform where the innovative part of the financial market can have structured and open conversations with the supervisory and regulatory entity, which does not have the habit of contacting the market except in case they are executing their monitoring role. Then, a roundtable is useful for regulators to obtain in-depth knowledge about the development of the market and, as such, anticipate emerging risks that may be connected with the new business models of fintech. For entrepreneurs, a table is useful for generating interest and support from regulators to their potentially beneficial proposals for regulatory objectives. A convinced regulator can prioritize the formulation of regulation and thus remove a legal vacuum that prevents the launch of certain activities, products, or services.

[27] See the information posted in the official website of the Central Bank of Argentina http://www.bcra.gov.ar/Noticias/Mesa-innovacion-financiera.asp.

[28] See CNV (2019).

Moreover, the roundtable can stimulate innovative entrepreneurs who have not yet dared to move forward in this field, seeing that the regulator shows genuine interest. It is also possible that the roundtable encourages the interest of venture capital companies to finance innovative companies. Therefore, a roundtable, which functions in a generic and non-individualized way, can promote a virtuous cycle of innovation in a country.

Collaboration of Different Supervisory and Regulatory Entities

There is a growing trend of collaboration between different supervisory and regulatory entities of the same country in matters of fintech innovation. In several countries, interconnections have been established between sandboxes or innovation hubs of different supervisory and regulatory entities or joint vehicles. These collaborations turn out to be not only efficient if the protocols allow it, but also a necessity in today's financial market. Financial technological innovation tends to operate within existing regulatory frameworks and exceed their limits. These have been established for the most part before the wave of fintech in recent years and have often developed organically along the sectoral lines of banking, financial markets, insurance, and pensions, whose supervision is in the hands of individual agencies for each sector.[29] Thus, to adequately test (regulate and supervise) the novel products, services, and business models that fall into various regulatory frameworks, it is essential to concentrate the supervisory efforts of the relevant agencies.[30]

[29] There are also agencies that combine the supervision of two or more sectors, such as the CNBV which combines banking and securities markets. Moreover, there are agencies with comprehensive supervision over all sectors, and systems with a functional approach (the so-called twin-peaks model), in which case one agency deals with conduct supervision and another with supervision of the prudential part. For an in-depth explanation of the development of financial regulatory frameworks and institutions, see Bijkerk (2019)

[30] It is clear that the growing trend of products, services and business models that go beyond the purview of a single regulatory agency, which began in the 1990s and has been reinforced by the latest wave of fintech, is putting the regulation institutional system of each country to the test. For a discussion of various institutional options, see Bijkerk (2019).

Interconnected agencies

The first option is to create an interconnection between financial regulatory and supervisory entities. This exists in an administrative protocol established to, among other purposes, exchange information and work together on new products, services, and business models that cover both regulatory areas of the collaborating regulatory entities. Within the scope of the legal frameworks of the countries of the region, this can be achieved through memoranda of understanding, inter-institutional agreements, or administrative acts that grant differentiated and specific powers to the agencies.

An example is the cooperation of the supervisory and regulatory entities AFM and DNB in the Netherlands. The process is carried out as follows: a company contacts one of the agencies and presents its innovative proposal. The agency first analyzes whether it is (i) within its scope of regulation, (ii) within the scope of its partner agency, or (iii) within the scope of both agencies. In the first case, the proposal is addressed by the regulatory agency that was contacted individually, without contacting or involving the other agency. In the second case, the proposal will be referred to the collaborating agency without further paperwork. In the third case, the innovative proposal will be attended jointly with the collaborating agency.

An example of interconnected agencies in LAC can be found in Brazil, where the Central Bank of Brazil, the Comissão de Valores Mobiliarios, Susep (the regulator of insurers and open pension funds), and Previc (the regulator of closed pension funds) have built a cooperation system of their respective sandboxes. The cooperation includes coordinated responses from relevant regulatory entities to innovative proposals.

Agencies with joint vehicle

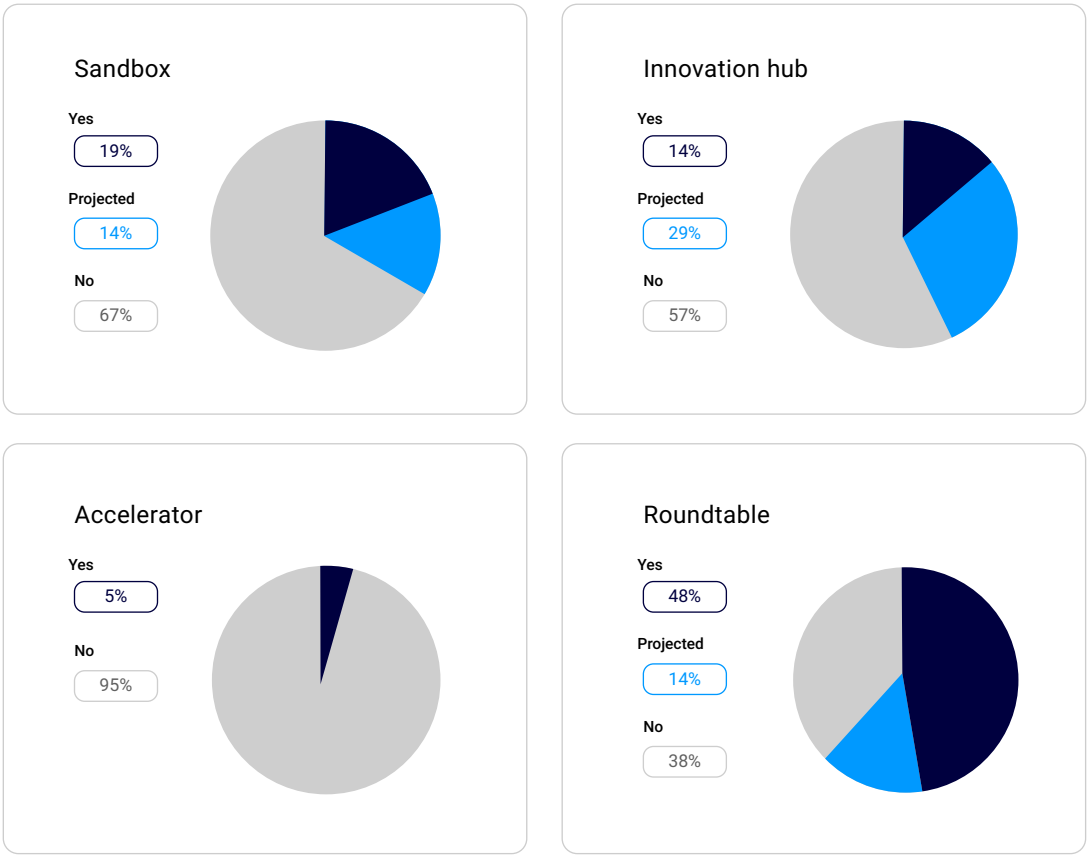
In the second situation, joint vehicles, a further step is taken and operations are integrated in such a way that they operate in the market as a single vehicle. An example is Finlab, where three supervisory and regulatory entities cooperate behind a single brand.

The Situation in LAC

As mentioned in the previous chapter, the latest global reports confirm that the LAC region lags behind in terms of regulatory advances to manage technological innovation (UNSGSA and CCAF, 2019; World Bank and CCAF, 2019). To fully understand the scenario, as part of this report, a survey was applied to financial regulators and supervisors in the region, and virtual interviews were conducted with supervisory and regulatory entities in Brazil, Colombia, Guatemala, and Mexico, which have or are in the process of implementing a sandbox or an innovation hub. The survey was carried out during the first quarter of 2020 and the interviews were conducted during the second quarter. The survey was sent to 27 financial regulation or supervision entities in 21 countries within the region, and responses were received from 21 entities in 15 countries. The numbers reported in this document are based on 21 responses. The tables 4–6 reflect the data by jurisdiction (country) and not by individual financial regulatory or supervisory entity.[31]

[31] The following are the financial regulation and supervision entities that participated in the survey: CVM, Central Bank of Chile, Commission for the Financial Market of Chile, SFC, General Superintendence of Insurance (Sugeval) of Costa Rica, Superintendency of Banks of Ecuador, Central Reserve Bank of El Salvador, Financial System Superintendence of El Salvador, Superintendency of Banks of Guatemala, Banque de la République d'Haiti, Central Bank of Honduras, CNBS of Honduras, CNBV of Mexico, Superintendency of Banks and Other Financial Institutions of Nicaragua, Superintendency of Banks of Panama, Ministry of the Presidency of Panama, Superintendency of the Securities Market of Panama, CNV of Paraguay, Superintendency of the Securities Market of Peru, Central Bank of the Dominican Republic, Superintendency of the Securities Market of the Dominican Republic.

Figure 2: Innovation Facilitators in LAC Countries (percentage)



Source: Author's elaboration based on responses from supervisory and regulatory entities to the survey coducted as part of this study.

Figure 2 shows that the penetration of regulatory innovation continues to lag behind in LAC countries. Only 19 percent of the countries surveyed have a regulatory sandbox, where 14 percent have it in their pipeline. In the case of innovation hubs, 14 percent of the countries have one in operation and 29 percent have it in their pipeline. Figure 2 also shows that only 5 percent of the countries work with an accelerator. In contrast, roundtables are more widespread: 48 percent of the countries have one in place and 14 percent have one in the pipeline. Table 4 shows the specific details by country.

Table 4: Innovation Facilitators by Country, selected LAC countries

Country	Regulatory sandbox	Innovation hub	Accelerator	Roundtable
Argentina	No	No	No	Yes
Brazil	Yes	No	No	Yes
Chile	No	In progress	No	Yes
Colombia	Yes	Yes	Yes	Yes
Costa Rica	No	In progress	No	In progress
Dominican Republic	No	No	No	No
Ecuador	No	In progress	No	In progress
El Salvador	No	In progress	No	Yes
Guatemala	No	Yes	No	No
Haiti	No	No	No	No
Honduras	No	In progress	No	Yes
Mexico	Yes	No*	No	No
Nicaragua	No	No	No	No
Panama	No	In progress	No	Yes
Paraguay	No	No	No	No
Peru	In progress	No	No	Yes

Source: Author's elaboration based on responses from supervisory and regulatory entities to the survey coducted as part of this study.
*Although it does not have a formal hub, the CNBV sandbox performs functions associated with a hub, such as targeting entrepreneurs.

The survey results show that financial regulatory and supervisory entities have few vehicles in place to stimulate financial innovation. However, they also indicate that a growing number of countries are working on creating these vehicles, particularly innovation hubs. Many representatives of financial regulation and supervision entities in the region have been aware that the absence of facilitation and policies can have negative consequences. Examples include a possible stagnation of financial markets in producing wealth and achieving the regulatory objectives of better protecting financial consumers and investors, promoting a fair and efficient market, reducing systemic risks, fostering financial stability, and achieving financial inclusion, which is particularly important in LAC. However, in some cases they have also expressed legal difficulties and other obstacles in achieving these ends. Chapter 3 focuses on these questions.

Legal and Supervisory Framework: Regulatory and Policy Options and other Aspects to Consider

Chapter 4

The previous chapters summarized the state of the art of financial regulatory innovations and described the operation of regulatory instruments for managing financial innovation. This chapter sets out the options for regulatory agencies to create instruments through changes in regulatory objectives, the regulatory framework, and the legal framework. In addition, it details the operational requirements that exist to operate with one or more innovative regulatory instruments.

Regulatory and Policy Options for Creating Innovative Regulatory Instruments

Supervisory and regulatory entities are known for their work in executing their objectives of protecting the financial consumer and investor; maintaining a fair, efficient, and transparent financial market; and promoting financial stability. These objectives can fit with the creation of a regulatory sandbox or an innovation hub, as the study of the three European regulatory authorities, theJoint Committee,[32] demonstrated, and can be aligned with financial market development objectives by promoting fintech. In countries where the civil law tradition governs in an strict sense, which is the case in most countries that inherited the legal systems of Spain, France, the Netherlands, and Portugal,[33] the actions of the regulatory agency that deviate from these traditional objectives can be considered as excesses of their legal powers.

The (potential) crime of prevarication may restrict supervisory and regulatory entities to launch innovative instruments such as a sandbox or an innovation hub, and explains at least partially the delay in the region in creating these instruments.

[32] The Joint Committee is made up of the European Banking Authority (EBA), the Insurers and Occupational Pensions Authority (EIOPA), and the European Securities and Markets Authority (ESMA).

[33] Countries in the common law tradition emanating from the United Kingdom have much fewer restrictions on creating regulatory innovation instruments. For an in-depth explanation of the difference between legal traditions and the consequences for financial regulatory agencies today, see Bijkerk (2019), chapter 3, pp. 45-70.

To avoid exceeding the legal attributions, there are two options: (i) have other regulatory objectives, such as the development and creation of financial markets, capital formation, and financial inclusion, which in principle would cover the creation of instruments such as an innovation hub or a sandbox; or (ii) achieve explicit changes at the legal level that allow the use of those instruments. Table 5 shows the countries that have in place, or are undergoing a legal change process that incorporates, an objective that facilitates the creation of a sandbox or innovation hub. Table 6 shows the countries that have achieved an explicit legal change, or are in the process of doing so, that allows the creation of a specific instrument.

Table 5: Regulatory Objectives Consistent with the Creation of Innovative Regulatory Instruments in LAC Countries

Country	Market development and formation	Capital formation	Financial inclusion
Brazil	Yes	Yes	Yes
Chile	Yes	No	Yes
Colombia	Yes	Yes	Yes
Costa Rica	Yes	No	Yes
Dominican Republic	Yes	No	No
Ecuador	No	Yes	In project
El Salvador	Yes	No	Yes
Guatemala	No	No	In project
Haiti	Yes	Yes	Yes
Honduras	Yes	Yes	Yes
Mexico	No	Yes	Yes
Nicaragua	No	No	Yes
Panama	Yes	Yes	Yes
Paraguay	Yes	No	In project
Peru	Yes	Yes	Yes

Source: Author's elaboration based on responses from supervisory and regulatory entities to the survey coducted as part of this study.

Table 6: Legal or Regulatory Changes for the Creation of Innovative Regulatory Instruments in LAC Countries

Country	Regulatory sandbox	Innovation hub	Accelerator
Argentina	Draft standard under assessment	No	No
Brazil	Yes	No	No
Chile	No	No	No
Colombia	Yes	Yes	Yes
Costa Rica	Yes	In progress	Yes
Dominican Republic	No	Yes	No
Ecuador	No	No	No
El Salvador	No	No	No
Guatemala	No	Yes	No
Haiti	No	No	No
Honduras	In progress	In progress	No
Mexico	Yes	No	No
Nicaragua	No	No	No
Panama	In progress	In progress	No
Paraguay	No	No	No
Peru	Yes	No	No

Source: Author's elaboration based on responses from supervisory and regulatory entities to the survey coducted as part of this study.

Below are the options from which supervisory and regulatory entities may choose from to create innovative regulatory tools to manage fintech.

Create legal foundations

Option 1

Several supervisory and regulatory entities, especially those that operate under civil law, which are the majority in LAC, have found that the law does not cover the creation of regulatory sandboxes or innovation hubs. Thus, there is a need to create a new legal base that explicitly facilitates the creation of a regulatory sandbox.

An example in Europe is that of Spain, which has approved a law to create a sandbox, since neither the National Securities Market Commission (CNMV) nor the Bank of Spain have the power to exempt from compliance with certain rules, unless there is legal authorization.[34] In LAC, the CNVB has created the sandbox through a new law to regulate new FTIs[35] and their subsequent regulatory framework.[36] Colombia has also recently created a law developed into a decree that allows the SFC to extend access to the sandbox for unregulated companies, whereas previously it was restricted to previously regulated firms.[37]

Changing or producing a legal basis is not a simple process, because it is not usually part of the competence of the supervisory and regulatory entities, but of a Ministry of Finance or Treasury. Usually, a regulatory agency will have to explain the need for a new law or a change in legislation. If the Ministry is convinced, it begins a process of preparation and public consultation. Then, it has to be presented and approved in the Parliament of the nation for its implementation. Such legislative process usually takes several years and obviously slows down the creation of innovative regulatory tools. It is worth mentioning that the COVID-19 pandemic is highlighting the urgency of digitizing financial services. This has prompted governments and regulators in many countries within and outside LAC to prioritize legal, regulatory and operational work to manage fintech.

Create foundation in administrative acts

Option 2

Moreover, there are supervisory and regulatory entities that have been creating a specific base within the regulatory powers of their executive branch to allow the creation of a sandbox or an innovation hub. Creating regulations is usually easier and faster than changing a law, because it is usually part of the competence of the supervisory and regulatory entities and therefore the change is an administrative process. However, the development of regulatory changes is a thorough procedure and is also often accompanied by a public consultation. Therefore, a regulatory change takes at least six months to a year.

[34] See the Law for the digital transformation of the financial system. Available at https://www.boe.es/diario_boe/txt.php?id=BOE-A-2020-14205.

[35] See the link http://www.diputados.gob.mx/LeyesBiblio/pdf/LRITF_090318.pdf.

[36] See, Ministry of Finance-CNBV (2019).

[37] See the Decree 1234, available at https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=142005.

Create a new regulatory objective

Option 3

Supervisory and regulatory entities restricted in terms of foundations to create an innovative tool such as the sandbox can also consider the possibility of adding a new regulatory objective to their statutes that facilitates its design. This may be a simpler and faster option than changing the law or regulation, as long as the alternative is available.

Operational Requirementas

The introduction and operation of a sandbox is expensive—its management involves around US$1 million—38 and requires intensive and meticulous management by the regulatory agency. According to the data collected by the UNSGSA and CCFA's (2019) report, the timeframe to design a sandbox takes between six and 18 months. Thus, this limits the usefulness of the sandbox to countries with a large and advanced fintech ecosystem.

In contrast, the creation and operation of an innovation hub are less complicated and less expensive. This is due to the fact that the service to the innovator is usually less lengthy and formal than that of a sandbox, where there is intense supervision under specific rules during the trial period. This makes the hub a viable instrument for all regulators.

Roundtables require a minimum investment by the regulatory agency, while accelerators are usually created and managed by entities external to the regulatory agency. This section sets out the operational requirements of the main innovative regulatory instruments (see Figure 3), with the exception of the accelerator, since, as it was mentioned before, this tool is usually handled by entities outside the regulatory agency.

[38] See Appaya and Jenik (2019).

Figure 3: Operational Requirements for Regulatory Sandboxes and Innovation Hubs

Source: Author's elaboration.

Adequate human resources

An innovative regulatory instrument such as a regulatory sandbox or an innovation hub requires, first of all, a team of officials with a high level of expertise. They have to be trained to face innovative proposals for advanced technology while understanding financial products and services, and mastering existing regulation. [39] Moreover, it must have experts in risk analysis in order to determine the benefits that proposals can bring and the damage they may cause to regulatory objectives. This is especially critical in the case of operating a sandbox, because supervisory officials must be able to detect immediate damage to regulatory objectives and consequently stop or withdraw a product, service, or company from the sandbox.

[39] See, for example, Buckley et al. (2019); Herrera and Vadillo (2018); Joint Committee (2018); Wechsler, Perlman and Gurung (2019).

In addition to having expert staff available, it is necessary to train them and keep their knowledge up to date in regard the latest advances in fintech and regulatory responses. Depending on the activities that the sandbox or the hub are going to use and the level of innovation in the financial market, personnel trained in the use of new technologies such as big data, machine learning, and artificial intelligence are required. Moreover, the financial regulation and supervision entity must have sufficient technical means. This also implies that the regulatory agency has to periodically send experts to specialized courses, which in many cases are offered abroad, in countries with more advanced, state of the art financial technological innovation markets.

There is not much detailed information on the exact costs of sandboxes and innovation hubs, since regulators do not usually report the costs of their instruments, although—as has already been mentioned—in the case of managing a sandbox the figure would amount to US$1 million.[40] The examples studied in this report also indicate that this sum may be true, taking into account the number of expert officials employed. The AFM sandbox and hub had five full-time employees in 2018, which was reduced to two in 2019 (AFM, 2020). The CVM sandbox will have four operational officers and will be supervised by three directors of relevant departments.[41] The SFC mentions that it has four full-time staff members for the Innova SFC department, which includes the sandbox and the hub.[42]

Proportional organization

The setup of human resources within the organizational chart of the regulatory agency may vary. There are agencies such as the FCA that run a division dedicated to the operation of the regulatory sandbox and the innovation hub. Other agencies work with a small core innovation team and add specialists from other departments (e.g., authorization, policy, and regulatory risk analysis) based on the demand for the proposals they receive (an example is the CNBV). A third alternative is to operate without basic equipment and use only part-time and on-demand experts. This has been the modus operandi of the AFM innovation hub since the mid-2000s and is the current way of operating the regulatory sandbox of Portuguese regulation and supervision entities.

[40] See Appaya and Jenik (2019).

[41] Information provided during an interview with CVM staff on June 9, 2020.

[42] Information provided during an interview with SFC staff on May 26, 2020.

Obviously, each of the alternatives have their own benefits. Having at least a basic operating team increases and guarantees the operational activity and its consistency in dealing with innovative companies, while working without a core team reduces the operation costs significantly. The golden rule in the latter case is that the human resources dedicated to the operation of innovative instruments such as sandboxes and hubs are proportional to the size and growth of innovative proposals in the local financial market and their need for intensive attention from the supervisor. As already mentioned, having an operational sandbox in a country with a incipient and little developed fintech ecosystem does not generate an optimal use of resources from regulatory and supervisory entities.

Sufficient budget

There is a need to have a sufficient budget in order to have adequate human resources for innovation in the financial market. However, this budget has to cover more than the personnel expenses. For instance, the operation of hubs and sandboxes involves very intensive contacts with market players. This requires staff training, which must often be carried out in institutions outside the country. In addition, as they are novel instruments, it is necessary to resort to promotional activities such as holding events and presenting at fairs. For example, in Guatemala a three-day regional event was organized to share and exchange experiences on the operation of innovation hubs. It is also necessary to have sufficient technical means to receive and process the information provided by companies. Finally, an advanced level of communication tools is required, such as web pages (or specific sections in them) to share information and data safely. All of this implies an initial and ongoing investment that has to be properly budgeted for. It is estimated that the annual budget for a team of about four staff managing a sandbox and/or hub activities with all the other requirements specified above can amount to US$1 million.[43]

[43] See, for example, Appaya and Jenik (2019).

Clear communication

Since these are novel regulatory activities, it is of utmost importance that the agency communicates the details about them clearly. This communication has to be directed to innovative companies or other parties interested in the financial market, and also to the general public. It should be clear for what purpose the innovative instrument(s) are launched, how they are used, and how they affect the implementation of regulatory objectives. In particular, it must be left unquestioned how the regulatory agency intends to maintain risk control of its objectives, such as financial consumer protection.

Continuous internal communication

Communication is not only needed outside the regulatory agency, but also within it. Since innovative instruments are new to the agency, all staff should have the necessary information to understand why the agency has decided to launch these instruments and how it intends to fit them into its day-to-day operations. In fact, the interviews with the regulatory innovation leaders of the SFC, the SIB, and the CNBV highlight how acceptance within the regulatory agency is a great challenge. At the beginning, it is common that most officials of regulatory and supervisory entities consider that proactive instruments such as hubs and sandboxes are contrary to the regular work of detection, analysis and risk mitigation, and to traditional regulatory objectives, which are usually reactive.

Amplify risk tolerance agency

In accordance with the previous section, supervisory and regulatory entities tend to focus on the traditional tasks of reducing risks related to their common objectives of protecting the financial consumer and the investor, the operation of efficient, transparent and fair markets, and the promotion of financial stability. Creating instruments such as sandboxes that also serve to promote financial innovation and guide innovative companies through the legal and regulatory framework can be considered alien to the traditional role of supervisory and regulatory entities, and adds risks of non-compliance with the aforementioned regulatory objectives.

Consequently, it is not surprising that the creation of sandboxes is debated by the supervisory and regulatory entities in the world.

There are regulators who believe that a sandbox can contribute to creating a gap in the field among market players, particularly between those innovative firms selected to be part of the sandbox program and other established innovative companies. France's Autorité des marchés financiers (AMF), for example, rejected the idea of a sandbox and has created a so-called "soundbox" stipulating that their "approach to disclosure and innovation is based on the idea that meeting the European regulatory framework will help companies win the trust of investors and fintech sponsors, and will give credibility to their international clients" (AMF, 2016). In a similar vein, the U.S. Securities and Exchange Commission (SEC) explicitly explained that it has an innovation hub but not a regulatory sandbox because "its role is not to deliver coupons with permits for innovation" (Pierce, 2019).

These reactions can be understood by virtue of the fear of financial institutions that a sandbox not only supposes flexibility and stimulation of innovation, but also a more lax application of regulation and a loosening of supervisory standards (a "race to the bottom", "light touch") (Mueller, 2017). This loosening was held partially responsible for the financial crisis of 2008–09; consequently, it has left deep traces within the supervisory and regulatory entities that suffered fair criticism and reconsidered their use in subsequent years.[44]

However, and as explained in the previous chapters, there are compelling reasons to use innovative regulatory instruments, since existing laws are not enough to cover all financial innovations that reach the markets quickly. It is well-known that legal and regulatory changes take a long time, they cannot be made without fully understanding all the potential risks and benefits of each innovation, and that, when they finally materialize, they may be outdated due to the rapid transformation of the technology.

The work of the regulatory and supervisory entity in the use of innovative instruments to manage financial innovation and achieve objectives should not result in loosening the agency's regular tasks with respect to risk control for traditional regulatory objectives. Furthermore, to generate support within the agency it is necessary to align the creation and use of innovative regulatory instruments with the traditional purposes of detecting, analyzing, and mitigating risks. Through an innovation hub and a sandbox, the regulatory agency receives a large amount of information that can be used to control risks that would otherwise undermine financial consumer protection objectives; the maintenance of a fair, transparent and efficient market; and the promotion of financial stability.

[44] See, for example, Bijkerk (2019).

Executive support

International experience and interviews with regulatory innovation leaders in LAC lead to the conclusion that the support of a member or official at the executive level of the regulatory entity is necessary and critical. Employing a new instrument has its complexity and risks in terms of design, construction, and operation for the regulatory agency. The instrument can fail and attract new unknown risks. The support of an executive member to persist in the need for the use of an innovative instrument often goes against the most conservative and reticent voices. This persistence means that the agency is expanding its risk tolerance.

Long-term strategic plan

Supervisory and regulatory entities that launched an innovative regulatory instrument and have already been operating for a few years emphasize that the implementation of aa sandbox or an innovation hub, is almost always included in a long-term strategic plan. An example is the FCA, presented in the previous chapter, which prepared a long-term strategy from the start (Project Innovate), first launching an innovation hub in 2014 and, a year later, a sandbox.

Regulatory innovation leaders in LAC also expressed in the interviews conducted the need for a long-term strategic plan with the implementation and creation of innovative instruments in phases. According to them, it is of utmost importance that the plan is executed step by step and the result of each implementation is studied and observed. This ensures that results and learned experienced are communicated consistently in each instance, and that each instrument can be refined and improved. It also facilitates decision-making to create additional step-by-step regulatory tools.

1 **Fintech map**

A good plan begins with creating a map of the fintech activities in the jurisdiction. This map contains a description of the existing activities, their size, and an estimate of their growth and potential benefits for the local market. It also includes an initial estimate of the benefits and risks that the activities may have in relation to regulatory objectives, and a brief analysis of the way in which they fit (or not) within the existing legal and regulatory framework.

Some regional resources published by the IDB are useful, such as "Fintech: Latin America 2018: Growth and consolidation" published in 2018 and targeted to all fintech verticals.[45] In addition, at a global level, there is, among other publications, "The Global Alternative Finance Market Benchmarking Report" (CCAF, 2019) for crowdfunding and alternative finance more specificaly.

It must be noted that this mapping will reflect an approximate, and not exact estimate, given that not all novel activities are usually legally defined, databases are non-existent or they are incomplete, and many companies are not yet regulated. The mapping will have to be done based on interviews with the largest market players; fintech associations (if they exist); anecdotal evidence; analysis of reports from foreign regulators, other entities, and individuals that have carried out market studies in similar countries; and the opinion of the regulatory experts involved. This estimate will be sufficient to detect the areas with the greatest potential benefits and risks where the regulatory agency should focus its efforts.

2 **Exploratory analysis before selecting tool(s)**

A long-term plan also includes an in-depth exploratory analysis of each fintech segment that is important to the local market and the fulfillment of regulatory objectives. Exploratory studies should be conducted after the fintech map has been developed. They should collect information and data with greater precision than the fintech map, including the following details:

1. **Characteristics of the innovation, including a more accurate size estimate than the fintech map (for example, through a survey of the largest market participants).**

2. **Information about how the fintech segment fits or does not fit into the existing legal and regulatory framework.**

3. **Potential benefits to achieve existing regulatory goals.**

[45] An update is expected in 2021.

4. **Potential risks to achieve regulatory objectives.**

5. **Traditional and innovative regulatory and supervisory options that can deliver the greatest benefits while keeping risks under control.**

In conclusion, before choosing the innovative tool(s) that a regulatory and supervisory entity considers employing, it is crucial to do a thorough analysis of each of the important fintech areas and create regulatory options. When doing so, traditional instruments of regulation and supervision should be considered, as well as innovative tools, if necessary.

3 A regulatory sandbox benefits from an innovation hub and regular monitoring

Once the suitable innovative regulatory tool(s) have been chosen, it is important to bear in mind that a regulatory sandbox benefits from an innovation hub and both are reinforced through communication with the regular supervision departments (AFM-DNB, 2020). This was expressed during the interviews in 2020 by the CNBV (sandbox and regular departments) and the SFC (hub, sandbox, and departments), which has implemented both tools. The reason is that innovative companies usually contact the hub first to find out about the legal and regulatory framework and then, if necessary, go to the sandbox to test their new product, service, or business model. In other words, a hub can serve as the first point of contact with the regulatory agency, simply because it is more informal and accessible.

We can conclude from these experiences that creating a hub prior to the implementation of a regulatory sandbox could be a good idea (as explained above, the FCA has done so). The experience gained from the hub will signal to the supervisors who operate it if there is demand and need for a sandbox. This is the policy followed by Guatemala, whose officials expressed that they felt very comfortable with this gradual plan.

Also, both innovative tools benefit from the regular supervision work. Although there are differences between the operation of the innovative tool(s) and the regular supervision, the signals collected by the hub or sandbox can be used for the regular supervision work afterward. In addition, officials of the regular departments bring a lot of knowledge to analyze novel products, services, and models in determining regulatory scope. For this reason, most supervisory and regulatory entities operate their hub and sandbox not only with expert fintech personnel, but also in close relationship with the relevant traditional supervisory departments.

Build a different culture

Finally, to obtain the maximum benefit from technological innovation while controlling risks, it will be necessary to change the culture of the regulatory and supervisory entity. This is cited by all the regulatory innovation leaders interviewed. The culture of a traditional regulatory agency is usually focused on complying with the law and regulations, as well as on controlling and mitigating the risks of regulatory objectives, but not necessarily on facilitating financial innovation (perhaps due to a lack of financial innovation among its regulatory objectives). However, in this report it has been argued that managing financial technological innovation is currently a critical need for financial regulation and supervision entities in order to achieve their traditional objectives of protecting the financial consumer, maintaining financial stability, and ensuring a fair, transparent, and efficient market.

A change from this reactive culture (which is intangible and resides in the mental structures of the officials, the group norms, and the way of communication) toward a culture that also includes facilitating financial innovation is not generated quickly or easily. Some anecdotal experiences, obtained in interviews with LAC regulatory innovation leaders and the author of the report, can serve as inspiration for change in regulatory agency culture. Among the most important, the following stand out:

1. **Have a long-term strategic plan that explains well why classic tools and a reactive culture are not enough to encompassfintech.**

2. Communicate the actions taken within the plan in a transparent, detailed, and self-critical manner, where necessary.

3. Clarify that the use of innovative regulatory instruments to promote financial innovation has to go hand-in-hand with the roles of detection, analysis, and mitigation of the risks faced by the regulatory objectives.

4. Use concrete methods to generate internal understanding, such as holding periodic meetings to discuss the plan and its implementation with various departments within the agency, even those that have little or no direct contact with the use of innovative instruments. An interesting example is the method used by the SFC, which has appointed approximately 30 officials within the departments that comprise it to serve as “technology champions”.[46] These officials periodically analyze new trends observed in their daily work with the sandbox and innovation hub management team.

[46] The SFC calls them "innovation accelerators". The active information dissemination-absorption model is also known in companies and regulatory and supervisory entities in the area of risk management, where such officials are often called “risk champions”.

Conclusions

Based on a revision of the global literature on innovative regulatory instruments (mainly regulatory sandboxes and innovation hubs), as well as the analysis ofinterviews and surveys of regulators and supervisors of LAC, this reports concludes that:

Supervisory and regulatory entities are starting to catch up

In the region supervisory and regulatory entities are starting to catch up with global developments. Several of them have created or are in the process of creating a regulatory sandbox or innovation hub.

1 of 4

Financial regulatory innovation is a must

The use of financial regulatory innovation is not just another option for regulatory and supervisory entities, but rather a necessity that emerges given the high speed and profound consequences of the penetration of technology in the financial system. Without regulatory innovation, countries run the risk that financial innovation is: (i) not (sufficiently) developed or (ii) released outside the reach of regulators and supervisors, with all the risks that this entails.

2 of 4

Start with a strategic plan with a fintech map and exploratory studies.

Before taking any decision on the use of financial regulatory innovation, regulators and supervisors must develop a strategic plan for fintech. This plan should include the preparation of a fintech map and exploratory studies of the major innovations in the local markets.

3 of 4

Regulatory sandbox versus innovation hub

Regulatory sandboxes are tools geared toward more robust fintech ecosystems. Sandboxes have a high level of requirements (human resources, among others), are complex to create and manage, and are expensive. Therefore, it can be very useful and profitable for countries whose financial markets enjoy a high level of innovation, but not for countries with a market that is still small and not very advanced.

In contrast, an innovation hub is less complex to create and operate, and, consequently, less expensive. It is an effective and viable instrument for regulatory and supervisory entities in countries with large, small, and medium markets, and with all kinds of levels of innovation.

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