



**Asia-Pacific
Economic Cooperation**

Advancing Free Trade
for Asia-Pacific **Prosperity**

FinTech Regulatory Sandboxes Capacity Building Summary Report

APEC Economic Committee

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Overview

New technologies help us level up our lives. Rapid advances in financial innovations (FinTech) provide new opportunities for financial services and allow new products, services and players to enter markets. FinTech is able to strengthen financial development, inclusion, and efficiency both domestically and globally. With this, it forces modern financial community to face new challenges in regulation, in particular associated with data privacy, consumer protection and operational risks.

Keeping in mind both “bright” and “dark” sides of financial innovations, modern regulators across the globe search for strategies and instruments of a balanced and prudent FinTech integration into the legal and practical fields. In particular, to ensure FinTech introduction and development regulators set up core FinTech groups and expert networks, as well as establish regulatory sandboxes and other types of “innovation facilitators” like FinTech accelerators, incubators, and innovation hubs.

The APEC economies are one of the key drivers in development and implementation of such frameworks of all types. Many APEC economies have launched their regulatory sandboxes, and other jurisdictions would like to use this experience as a reference in establishing their own sandboxes.

Taking this into account, the current report is aimed at providing an overview from both regulators and the market on (1) the principles of functioning of the APEC regulatory sandboxes and (2) the impact of sandboxes’ piloting on the market. Thus, the main objectives of the report were:

- (1) to compare the experience and challenges of the APEC economies in establishing and developing their regulatory sandboxes;
- (2) to study the level of market satisfaction from sandboxes’ functioning;
- (3) to gather the APEC economies’ point of view on the possibilities of establishing cross-border regulatory sandboxes.

The study was conducted with the means of questionnaires¹. The financial regulators and market participants from Chile; Hong Kong, China; Indonesia; Japan; Korea; Malaysia; Mexico; Philippines; Russia; Singapore; Chinese Taipei; and Thailand took part in the survey.

¹ Two separate questionnaires were specifically created: one for regulators, one for market participants.

The summary report consists of 5 sections. Section I summarizes the information received from financial regulators on the main characteristics of the sandboxes' functioning and based on the APEC-economies experience provides possible steps an economy could refer to in order to set up a fully functional FinTech Sandbox. Section II presents market participants comments on the principles and impact of participating in the piloting. Section III describes the challenges of piloting process. Section IV covers the issue of international cooperation on sandboxes. Section V provides the main conclusions of the study.

The study went in line with the 2020 priority of Malaysia Chairmanship “Inclusive Economic Participation through Digital Economy and Technology” and the recommendations of the APEC Roadmap for a New Financial Services Data Ecosystem.

I. Sandboxes: Characteristics

According to the IMF, generally, a sandbox is a framework set up by a financial sector regulator to allow small scale live testing of innovations by private firms, both regulated and unregulated, in a controlled environment under the regulator's supervision².

The survey shows that fully functional regulatory sandboxes exist in Hong Kong, China; Indonesia; Japan; Korea; Malaysia; Russia; Singapore; Chinese Taipei; and Thailand.

In Philippines the “test-and-learn” approach, which in its functioning principles does not significantly differ from other sandboxes in the region, has been functioning since 2004, but the Bangko Sentral ng Pilipinas has yet to publish a formal framework for this mechanism.

In Mexico the sandbox was launched in 2019, but the piloting has not started yet.

Chile is currently drafting a bill on FinTech industry regulation that will include the idea of FinTech regulatory sandbox establishment.

To enter the sandbox a company usually should prove the innovativeness of its product, as well as provide a business plan or/and expected technical details on the piloting. Apart from these minimum requirements compliance with cybersecurity, anti-money laundering, consumer protection guidelines or licensing conditions could be considered.

The duration of application, testing and review processes could take from around a month (29-42 days in Russia) to 6-24 months (Korea, Indonesia, Japan, Malaysia, Mexico, Philippines, Chinese Taipei). In some jurisdictions (Indonesia, Japan, Korea, Malaysia, Mexico, Philippines, Chinese Taipei) the testing and review period could be extended. Meanwhile in Hong Kong, China; Singapore; and Thailand there are no rigid time limits on piloting.

Real customers are allowed to participate in piloting in almost every studied jurisdiction. The number of participants is not formally regulated and is agreed on a case by case basis by the responsible regulator and the participant. The exceptions are Indonesia and Russia.

² FinTech: the Experience so far, IMF Policy Paper, June 2019, IMF, Washington D.C.

Box 1. Russian Case: No-Real-Customers Issue

The Bank of Russia has launched a regulatory sandbox in 2018 to test innovative financial technologies, products and services. The main stakeholders are the Bank of Russia and financial market participants. The sandbox is regulated by internal documents of the Bank of Russia.

The main objectives of the program are to remove legal barriers for the launch of innovative services, ensure information security, develop technologies and create infrastructure, introduce innovative approaches to public administration, and provide the economy with competent specialists.

To enter the sandbox a project must be proved as innovative and contributing to the improvement of financial services. Moreover, it should be seeking introduction to the Russian market and facing some legal barriers.

At this stage, the target process of an innovative financial technology or service is modelled in a testing environment without any risks to consumers. The piloting is conducted in the limited environment without participation of real customers. This makes it possible to evaluate products and services and identify risks without affecting customers.

As the Bank of Russia commented, until recently the domestic regulation did not allow real-customers piloting, since there were no appropriate legal grounds. In 2020 the Federal Law of July 31, 2020 No. 258 "On Experimental Legal Regimes in the Field of Digital Innovations in the Russian Federation" was adopted, which creates special legal conditions for the functioning of experimental legal regimes in the financial market, allowing testing innovative services on real customers. The law comes into force in 2021.

More information on the sandbox could be found on the official web-site:
http://www.cbr.ru/eng/fintech/regulatory_sandbox/

Note: Adopted from the answers provided by the Bank of Russia.

In every studied jurisdiction the institution responsible for sandbox management has to coordinate with other authorities as the projects piloted in the sandbox are often of a cross-industry nature and thus fall under supervision of different government agencies.

Among the top segments of the financial market that are widely represented in sandboxes are:

- Banks;
- Digital payment system;
- E-money;
- Insurance;
- Credit Rating Agencies.

Other segments like cloud platforms, crowd funding, cross-border funds transfer, investment management, financial planning, financial advisory, big data, distributed ledgers and machine learning are also present in the studied sandboxes.

In the meantime, in Japan, as the sandbox is open not only to financial initiatives but to any type of project, the top 3 segments represented in the sandbox are FinTech, healthcare and mobility.

Box 2. Japanese Case: Universal Regulatory Sandbox

Launched in June 2018, the regulatory sandbox in Japan is open to any entity such as domestic and foreign companies, individuals and local government in any industry sector including financial services and FinTech providers.

In the Japanese sandbox scheme, competent ministers approve project proposals, while the Regulatory Sandbox Team (established in the Cabinet Secretariat) works as a single window of the government for applicants and provides advices, consultation and hands-on to private businesses. For foreign companies, JETRO “Invest Japan Hotline” is the contact point.

Under the sandbox mechanism, the relevant minister in charge of the regulation is to confirm whether there is a conflict between the project and the relevant existing regulation. When there is no conflict, the minister approves the project. In cases of conflict applicants can apply for temporary exemptions.

There were 19 projects piloted so far. In most cases, test periods ranged from weeks to 12 months. Real customers are allowed to take part in piloting, their number depends on the proposed project and is decided on case by case basis. As a result of piloting regulatory reform has been realised.

Significant outcomes under the regulatory sandbox are made public on the official web-site: <http://www.kantei.go.jp/jp/singi/keizaisaisei/regulatorysandbox.html>

Crypto Garage, Inc. was authorised to conduct the first blockchain and finance project under the Regulatory Sandbox in Japan. Under this project, Crypto Garage

provides the participating crypto-exchanges with “SETTLENET”¹, which allows the exchanges to issue a stablecoin pegged to Japanese Yen (JPY-Token) on the “Liquid Network”, and trade against Liquid Bitcoin (L-BTC) that are pegged to Bitcoin on a Bitcoin side-chain launched by Blockstream Corporation. Furthermore, by utilising atomic swap technology², “SETTLENET” allows the exchanges to simultaneously deliver LBTC in exchange for the receipt of JPY-Token on the “Liquid Network”. In addition, SETTLENET will provide the regulatory authorities with the functionality to monitor any unlawful trade, including money laundering.

The term of the project is 1 year, the participating crypto-exchanges are limited to those with a Japanese Crypto-Asset Exchange License. The transaction amount is limited. During the term of the project, Crypto Garage provides SETTLENET to the participating exchanges for free.

¹ “SETTLENET” is a suite of products to enhance application development on the “Liquid Network”. The Liquid Network is an inter-exchange settlement network connecting cryptocurrency exchanges, market makers, brokers, and other financial institutions around the world. Liquid enables rapid, confidential, secure transfers of bitcoin between members of the network. The network is operated and managed by its federated members, ensuring the system has no single point of failure.

² A technology enables peer-to-peer simultaneous exchange of crypto assets from one part to another, without counter-party risk and going through a third party service without any counter-party risk or intermediaries.

Note: Adopted from the answers provided by the Cabinet Secretariat of Japan.

According to the IMF, commonly stated objectives of FinTech sandboxes are (1) to stimulate market development, competition and innovation, (2) to ensure the regulatory framework is appropriate, (3) to identify gaps in the availability of necessary market products, (4) to promote financial inclusion and (5) to study operating and business models.

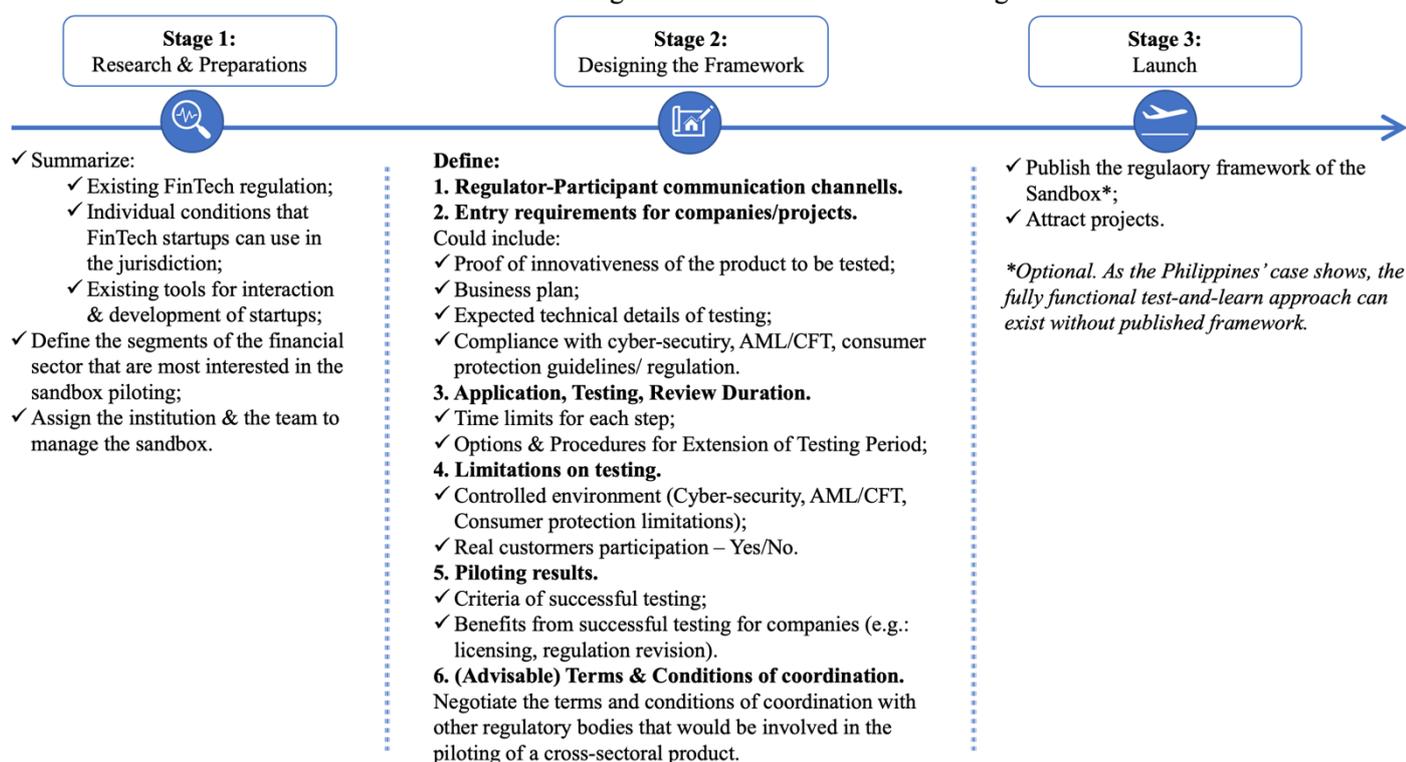
The financial regulators, who participated in the survey, agreed that generally FinTech sandboxes contribute to boosting the economy through consumer convenience improvement in the financial sector. In particular, while facilitating pilot trials of FinTech initiatives sandboxes allow to gather market data and user feedback, as well as identify risks associated with the tested project. This information is used to improve regulation that, on the one hand, will not create obstacles to technologies

development, and on the other hand, will strengthen consumer protection, market competition and financial inclusion.

In several economies (Indonesia, Malaysia, Mexico, Philippines, Thailand) **licensing** of the piloted project is also among the possible results of successful sandbox testing. A comparative table with more details on the sandboxes’ design is provided in the *Appendix 1*.

Based on the answers provided by the economies Picture 1 below presents possible stages an economy could consider going through in order to establish a fully functional FinTech regulatory sandbox. The scheme provides flexible basic benchmarks that an economy could refer to, adapt and enlarge in accordance to its economic, financial, institutional and regulatory conditions.

Picture 1. Launching a FinTech Sandbox: Possible Stages



II. Sandboxes: Market Satisfaction and Recommendations

In order to make another step to further improvement of sandboxes' functioning the current paper tempted to study the level of market satisfaction in (a) application process, (b) timing of the project, (c) quality of interaction with regulator, as well as to collect market suggestions on possible changes in piloting procedures.

The results of polling³ demonstrate strong market satisfaction both in the functioning of sandboxes and the interaction with regulator. In particular the respondents define the sandbox piloting experience as “a collaborative process relied on openness, trust, and responsiveness”. The respondents underline that regulators are well informed “on current business environment and concerns”. Their “helpful and open-minded teams” provide “great legal advice”, “necessary assistance, guidance, counselling services” and “constructive feedbacks” that help the enterprises “to move forward” with their ideas, overcome emerging challenges and mitigate possible risks.

Among the major benefits from participating in piloting are:

- Promotion of financial innovation and new business models;
- Facilitation of dialogue and direct engagement with regulator;
- Inputs on improvement and sharing experience with regulator (in particular – better understanding of risks and barriers);
- Faster and less costly business development due to testing in a controlled environment that excludes time-consuming and expensive registration and supervisory procedures;
- Expanding of business through publicity (press releases on successful piloting) that helped to raise awareness of the company, demonstrate stability and reliability of the business model and as a result – attract investment;
- Market entry due to the license received upon successful piloting or due to the regulation amendment;
- Establishment of financial legal and regulatory framework and improvement of existing framework to facilitate entry of potential FinTech start-ups and support graduate participants of the sandboxes in the market.

³ Answers of 45 market sandbox participants from Indonesia, Japan, Korea, Malaysia, Philippines, Russia, Singapore, Chinese Taipei, and Thailand were received as a result of polling.

Market participants provided several suggestions on improvement of the existing piloting frameworks. These suggestions are of a technical nature and mostly address formal procedures like documents/reports provision or testing timeline. In particular, the respondents called to:

- Reduce the application and evaluation process time, possibly through expanding communication channels (encourage participants to discuss application via email, video conferencing, face-to-face meetings or establish direct contact with specific divisions' representatives);
- Simplify and reduce paperwork such as application and inspection reports.

It was also suggested that the testing time in the sandbox could be more flexible and vary for different projects based on their risk levels. Additionally, in the final piloting evaluation reports regulators could provide more tips on better adaption to new regulations.

III. Sandboxes: Challenges

Along with the market the financial regulators also elaborated on the challenging aspects of sandboxes' functioning. According to the respondents, the main challenges for a sandbox mechanism are mostly connected to the insufficient regulation understanding on the market participants' side, as well as to risk management and building cross-agency FinTech cooperation on the regulators' side.

(1) Insufficient regulation understanding. In several occasions, entrepreneurs do not have appropriate knowledge of the legal framework that regulates the financial activities or products they want to innovate. In this context, the lack of good understanding of financial regulations forces the supervisory authority to spend more time and resources on advising and communication.

(2) Managing new risks arising from the innovation. With the emergence of new FinTech initiatives concerns about data privacy, cyber risks and financial stability arise. Even though the studied sandboxes provide a completely safe testing environment, if the applicants do not follow the agreed piloting agenda, the risks of (a) damaging participants' rights and interests, (b) decrease of financial consumers trust in new business models and market in general and (c) market order disruptions appear.

(3) Building cross-agency cooperation. Most FinTech innovations are of cross-industry or cross-disciplinary nature. Thus, sandbox tests may fall under the jurisdiction of different government agencies. In order to promote successful FinTech development and supervision, cross-agency cooperation strengthening, and new supervisory thinking construction become essential.

The respondents also noted the following challenges for sandboxes' proper and safe functioning:

- Understanding of new technology and business model;
- Absence of internationally accepted sandbox standards;
- Expert risk assessment;
- Expert assessment of customer influence;
- Inability to assess economic feasibility;

The respondents are successfully handling most of these challenges through profound research, sound communication policies, proper risk assessment and

management, active dialogue with market participants and cross-agencies cooperation as well as international cooperation.

Box 3. Thailand Case: Handling the Challenges

While operating the sandbox, the Bank of Thailand (BoT) identified 5 main challenges connected to changing the testing time and defining success criteria, building appropriate infrastructure, timely update of the regulation and digital literacy promotion.

The BoT shares its experience in handling these challenges.

(1) Optimisation of innovation and risk. Even if some tested projects may take longer than initially expected in order to ensure proper management of risks occurred from new technologies, the sandbox is flexible to expand testing scope to facilitate business.

(2) Understanding of innovation. As some risks of new technologies tested in the sandbox cannot be understood and controlled at the beginning, the BoT and the sandbox participant may later agree to revise a testing scope or key success indicators to ensure the most efficient outcome and risk governance.

(3) Infrastructure and common standard. The development of interoperable infrastructure or common standard is very important to reduce fragmentation of the industry. As tested projects involve many stakeholders and may be time-consuming, the BoT plays facilitating role for the appropriate infrastructure development.

(4) Updated regulations for the changing environment. The BoT reviews its regulations on a regular basis to ensure that they can facilitate development of innovation and technology.

(5) Digital Literacy. In order to gain correct public understanding and maintain good user experience and confidence the BoT always ensures that sandbox participants communicate details of the tested project to the public in an appropriate and careful manner.

Note: Adopted from the answers provided by the Bank of Thailand.

Nonetheless, some challenges still stay unresolved. Probably, the most discussed are the issues of internationally accepted sandbox standards and the launch of cross-border FinTech piloting platforms.

IV. FinTech: The Cooperation Future

Lately the FinTech cooperation has become one of the key elements of the international agenda. Thus, the Bali FinTech Agenda, proposed by the IMF and the World Bank, emphasises the need to encourage FinTech international cooperation and information-sharing. The Bank of International Settlements offers the central banking community to collaborate on innovative financial technology through the BIS Innovation Hub's Innovation Network. FinTech events like Singapore FinTech Festival, FinTech Demo Day (Korea), FINOPOLIS (Russia) allow experts from around the world to exchange their experience in development, regulation and promotion of FinTech.

Moreover, taking into account the cross-border nature of the modern global market, the initiatives like ASEAN Financial Innovation Network's cross-border marketplace and sandbox platform API Exchange (APIX), as well as the Global Financial Innovation Network (GFIN) emerge. These initiatives encourage the interaction between innovative firms and regulators, as well as allow testing of innovative solutions in different jurisdictions.

Box 4. GFIN: Paving the Way for Cross-Border Testing

The Global Financial Innovation Network (GFIN), launched in January 2019, is an international network of financial regulators and related organizations committed to supporting financial innovation in the best interests of consumers. It comprises 50 organizations from around the globe, including the Monetary Authority of Singapore (MAS), the National Banking and Securities Commission (NBSC) of Mexico, the Financial Supervisory Commission (FSC) of Chinese Taipei and the Hong Kong Insurance Authority (IA).

The GFIN was created mainly to provide a more efficient way for innovative firms to interact with regulators and help them test solutions in a jurisdiction which they would like to expand their business to. Additionally, it created new means of cooperation between financial services regulators to work on innovation-related topics, sharing different experiences and approaches.

The GFIN supports the development of cross-border testing, involving respective sandboxes of the participating regulators. This creates an environment that allows entities to simultaneously trial and scale new technologies in multiple jurisdictions, gaining real-time insight into how a product or service might operate in

the market. To-date, 17 regulators are involved in the cross-border testing work stream.

As described by the FSC, under the global sandbox mechanism promoted by the GFIN in order to maintain market integrity and high standards of consumer protection firms willing to participate in the cross-border trials are required to meet the application requirements of all the jurisdictions in which they would like to test. In the meantime, the regulators involved are only responsible for tests in their own jurisdictions and should consider the associated risks. Thus, the mechanism “helps innovative firms to further push forward with cross-border innovation”, as well as “enhances multinational supervisory cooperation and communication”.

According to the Hong Kong IA, the GFIN is also developing a single-entry application form for cross-border testing “with a view to streamlining the application process and ensuring regulators will receive all information necessary to assessing applications”.

The FSC underlines that by sharing experience and exchanging opinions among the members of GFIN it “can track the latest global FinTech trends and work to ensure that the innovative experimentation mechanism is in line with international practices”.

Note: Adopted from the answers provided by the Financial Supervisory Commission of Chinese Taipei, the Hong Kong Insurance Authority, the Monetary Authority of Singapore and from the official web-site of the GFIN: <https://www.thegfin.com>

The participants of the current study agree that the main opportunity that international FinTech cooperation could provide to sandboxes’ functioning is learning from others’ experience and best practices. The respondents notice that several economies “*have extensive experience in administering and supervising regulatory sandboxes, advising emerging FinTech companies*” which could “*provide rich lessons on financial innovation and market trends to be shared with foreign authorities*”. Moreover, regulators would be able to “*jointly explore innovation projects especially of a cross-border level*”, as well as “*exchange supervisory information on local FinTech firms with foreign authorities to enhance their business operations*”.

**Box 5. ASEAN Financial Innovation Network:
Cross-border marketplace and API Exchange**

The ASEAN Financial Innovation Network (AFIN) was established as a non-profit organization in 2018 to promote FinTech-Financial Institution collaboration and support financial inclusion across the ASEAN region.

To support its major mission, AFIN has launched the API Exchange (APIX). APIX is the world's first cross-border, open architecture API marketplace and sandbox platform with cloud-based architecture that allows Banks/Financial Institutions to discover FinTechs that operate in their region and rapidly incorporate the FinTech in minimum viable products that create business value.

The scope of the APIX platform exceeds the one of a traditional sandbox. APIX supports the entire innovation lifecycle including discover, design and deployment phases. The collaboratively pre-solved terms of engagement and labs allow the APIX participants to directly focus on finding content solutions without spending too much time on negotiating terms and setting up testing infrastructure that would have been needed on a bilateral basis.

APIX consists of two major blocks – the Marketplace and the Sandbox. Via the Marketplace the participants are able to discover problems posted by the Financial Institutions, share ideas on solving these problems, as well as explore different Fintechs and their solutions and APIs. The Sandbox provides the users with a catalogue of APIs which can be purchased and then utilized respectively to implement solutions.

Today APIX unites 64 financial institutions and 357 FinTechs. The benefits for FinTechs from participating in APIX include increasing the credibility of the brand through getting listed as a vetted APIX member; connecting with qualified clients; minimizing the time and cost to develop prototypes and PoCs; promoting solutions to leading investment companies. At the same time the financial institutions are provided with fast, secure and credible access to vetted international FinTechs and knowledge exchange channels.

Note: Adopted from the official APIX web-site: <https://apixplatform.com/>

Among the topics that in the nearest future might become urgent for sandboxes globally the respondents suggested:

- FinTech solutions for economic recovery in the aftermath of the COVID-19 pandemic;
- Blockchain technology;
- Regtech;
- Artificial Intelligence;
- Cross-border transfer;
- Tokens and distributed ledger technology;
- Stable coins;
- Open banking and application programming interface;
- Proper monitoring and supervision of big technology companies or companies that provide borderless financial services.

In order to build efficient and successful international FinTech cooperation the respondents suggested using “*discussion platforms*” like Singapore FinTech Festival, FinTech Demo Day (Korea), FINOPOLIS (Russia), as well as “*innovation groups*” like an Inter-American Development Bank initiative called FintechLAC⁴ and the Global Financial Innovation Network (GFIN).

Referring in particular to the idea of launching regional/global sandboxes, on the one hand, the respondents underlined that as “*several FinTechs operate in a cross-border eco-system*”, the cross-border piloting is not only “*interesting and helpful*”, but “*urgently needed*”. It was also noticed that “*cooperation and collaboration among peers from other jurisdiction is always a way to learn and share information towards formulating the appropriate regulatory and supervisory approach*”.

On the other hand, several respondents underlined, that the concept of regional/global sandboxes “*needs to be studied further*” due to the “*issue of the difference in legal systems, environments and sandbox features implemented in each economy*”.

⁴ FintechLAC is the first Public-Private group of Fintech in Latin America and the Caribbean, founded by the IDB. It consist of a group of financial regulators and supervisors and Fintech associations from 15 economies. The objective of the initiative is to support the development, consolidation, and integration of a FinTech ecosystem in the region through promotion of policies and regulations, as well as institutional strengthening for ecosystem actors.

Note: Adopted from the official web-site of FintechLAC: <https://www.iadb.org/en/sector/initiatives/digital-finance-innovation/fintech>

V. Conclusion

The results of the study show that notwithstanding some legal and institutional differences the APEC economies have generally formed their FinTech sandboxes using **similar principles**. Thus, the entry requirements normally include a confirmation of innovativeness of the product to be tested, as well as a business plan or/and expected technical details on the piloting. Almost everywhere (except Indonesia and Russia) real customers take part in piloting. Moreover, in every studied economy many cross-industry products, supervised by several authorities, are tested in the sandboxes. This forces the institution-manager of the sandbox to coordinate the piloting with other government agencies.

Along with the functioning principles of their piloting frameworks, the APEC economies also share the **challenges** they face while running the FinTech sandboxes. Firstly, the regulators noted that in several occasions the market does not have sufficient regulation understanding for the product it is willing to test and launch. Secondly, the regulators face serious challenges in managing the risks for consumer protection, market trust and order that appear if applicants deviate from the agreed piloting agenda. Thirdly, the cross-agency cooperation strengthening, and new supervisory thinking construction is needed in order to allow effective and appropriate piloting of cross-industry projects.

Among the **top-segments represented in the studied sandboxes** are Banks, Digital payment systems, E-money, Insurance and Credit Rating Agencies.

The study also shows **strong market satisfaction** both in the functioning of sandboxes and the interaction with regulator. In particular, according to the market, among the major benefits from participating in piloting are:

- Facilitation of dialogue and direct engagement with a regulator;
- Faster and less costly business development;
- Market entry due to the license received upon successful piloting or due to the regulation amendment.

The **market suggestions on improvement** of the existing FinTech sandboxes are of a technical nature and mostly address formal procedures like reduction of the application and evaluation process time, as well as simplification of application and inspection reports.

The APEC economies agree that the **international cooperation** could play a significant role in further development of FinTech sandboxes. Thus, discussion platforms, as well as innovation groups could contribute to building a more efficient international FinTech sandboxes experience exchange.

Moreover, the idea of launching **regional/global sandboxes** could be particularly helpful, as many FinTech companies operate in a cross-border ecosystem. With this, the APEC sandboxes' regulators note that concept of regional/global sandboxes demands further research due to the difference in legal systems, environments and sandbox features implemented in each economy.

Appendix 1.1 Survey Participants: Financial Regulators

Economy and Institution	Legislation that gives powers	Separate FinTech stream	Individual conditions available for FinTech startups	Tools for interaction and development of startups
<p>Chile</p> <p>Financial Markets Commission (CMF)</p>	<p>The CMF is the Chilean financial regulator and it relates to the central government through the Chilean Ministry of Finance. The powers given to the CMF are detailed in Legal Decree 3.538 which was modified by Law 21.000 published on Feb. 23, 2017 and March 4, 2017 in the Official Gazette and by the new General Banking Law published in the official Gazette on January 12, 2019. Additionally, the CMF has powers granted to it in laws 18045, 18046, 20345, 19220, 18876, among others.</p>	<p>No</p>	<p>The Chilean Ministry of Finance is currently drafting a bill that will be presented to Congress in order to regulate the FinTech industry.</p>	<p>N/A</p>
<p>Hong Kong, China</p> <p>The Hong Kong Monetary Authority (HKMA)</p> <p>The Securities and Futures Commission (SFC)</p> <p>Insurance Authority (IA)</p>	<p>The three regulators in Hong Kong, China with Fintech sandboxes are the Hong Kong Monetary Authority (“HKMA”), the Securities and Futures Commission (“SFC”) and Insurance Authority (“IA”). Their regulator powers are derived from different legislations, namely the Banking Ordinance (Cap. 155) for regulation and supervision of banking business and the business of taking deposits; the Securities and Futures Ordinance (Cap. 571) for securities related activities; and the Insurance Ordinance (Cap. 41) for the insurance industry.</p>	<p>Yes, for all three regulators</p>	<p>(a) “Technology neutral” approach that cut across different sectors to ensure a level playing field for all market participants.</p> <p>(b) the HKMA’s Fintech Supervisory Sandbox (“FSS”) is available to Fintech as well as other technology initiatives intended to be launched in Hong Kong, China by Authorized Institutions (“AIs”). A Fintech startup may partner with AIs to conduct pilot trials of Fintech/ technology products/ services intended to be launched by AIs in Hong Kong, China in the FSS.</p>	<p>HKMA: the Fintech Supervisory Chatroom (“Chatroom”) for providing supervisory feedback to both AIs and tech firms at an early stage of their Fintech projects.</p> <p>SFC: a Fintech Contact Point to enhance communication with businesses which are involved in the development and application of Fintech and intend to conduct “regulated activities” in Hong Kong, China. They have also set up the SFC Fintech Advisory Group (“FTAG”) to gather the industry’s feedback on its Fintech initiatives and broaden its understanding of the Fintech landscape.</p> <p>IA: the Insurtech Facilitation Team to enhance the communication with the industry,</p>

Economy and Institution	Legislation that gives powers	Separate FinTech stream	Individual conditions available for FinTech startups	Tools for interaction and development of startups
				<p>and a working group in Future Task Force which provides a platform for industry players including Insurtech startups to exchange ideas of innovative Insurtech ideas.</p> <p>The three regulators would also:</p> <p>(a) Publish statements to the general public and issue circulars to licensed intermediaries so as to clarify regulatory stances and provide additional guidance on the relevant regulatory requirements.</p> <p>(b) Host and participant in Fintech events and seminars from time to time.</p>
<p>Indonesia</p> <p>Financial Service Authority (OJK)</p>	<p>Financial Service Authority/Otoritas Jasa Keuangan (OJK) is an institution formed by the Law No. 21 Year 2011 on the Establishment of Financial Service Authority. All roles and responsible are derived from the said regulation.</p> <p>Digital Financial Innovation Group itself is a part of OJK, established by the direction of OJK Board of Commissioner as a response to the rapid development of Fintech in Indonesia and the need to oversee the industry.</p>	<p>Yes</p>	<p>The legal framework is less complicated for FinTech startups.</p> <p>Using light touch and safe harbor approach, through regulation No. POJK 13/2018, Indonesia adopted responsible innovations, in which fintech startups shall go through 3 consecutive legal compliance processes: recording, regulatory sandbox, and registration.</p> <p>The requirements for fintech startups to apply for recording process are relatively easier compared to common standard financial institutions.</p> <p>For the next phase, fintech startups which already recorded at OJK would need to prepare for thorough evaluation in the regulatory sandbox. During this process, fintech startups may be exempted from some specific non-prudential regulations, such as AML/CFT.</p>	<p>(a) Fintech Center called OJK INFINITY to foster fintech development. The Center, among others, provides consultancy related to legal compliance. Occasionally, the Center also hold a seminar, workshop and knowledge sharing session which open not only for startups but also for other industry as well. OJK INFINITY could also provide a co-working space for the industry to meet with each other or with the authorities.</p> <p>(b) A mini-site called GESIT (https://www.ojk.go.id/gesit) which could assist the industry to gather various resources regarding fintech startup development as a reference for legal compliance process.</p> <p>(c) Regulatory Sandbox mechanism.</p>

Economy and Institution	Legislation that gives powers	Separate FinTech stream	Individual conditions available for FinTech startups	Tools for interaction and development of startups
<p>Korea</p> <p>Financial Services Commission</p>	<p>The Special Act on Financial Innovation Support</p>	<p>Yes</p>	<p>(a) Innovative Financial Services (sandbox). (b) Appointed representatives - a system that enables financial institutions to delegate their essential business, which is prohibited to be delegated under the Regulations on Business Delegation by Financial Institutions, to fintech companies. (c) Consigned test - a system that allows financial companies to use services developed by fintech companies.</p>	<p>(a) Giving opportunities to develop services, e.g., by providing office area and services like mentoring, education, and consulting. Encouragement of financial companies to nurture fintech startups through Fintech Lab. (b) Attracting investment to the fintech sector by establishing Fintech Innovation Fund, introducing platform for sharing information, and holding regular investment relations meetings. (c) Providing supports for overseas expansion of FinTech startups by enhancing overseas network and laying ground for expansion; providing supports to cover costs needed for test-bed, guarantee insurance, security checks, and the usage of cloud services.</p>
<p>Malaysia</p> <p>Central Bank of Malaysia (BNM)</p>	<p>Financial Services Act 2013 (FSA), Islamic Financial Services Act 2013 (IFSA), Money Services Business Act 2011 (MSBA)</p>	<p>Yes</p>	<p>(a) Policy and operational flexibilities provided through the Fintech Regulatory Sandbox to enable product, service or solution to be deployed and tested in a live environment subject to certain parameters. (b) Regulatory adaptation through reviewing existing regulation and publishing new policies to facilitate new innovation.</p>	<p>BNM maintains open communication channels with institutions seeking advice on the Sandbox. In addition to this, BNM conducts educational and public outreach programmes for fintech companies to communicate and clarify regulatory expectations. This is done through collaborations with industry associations, Government and international agencies as well as other regulatory bodies to catalyse the growth of fintech. Such examples include but are not limited to the organisation of MyFintech Week, the implementation of the Fintech Booster programme in collaboration with Malaysia Digital Economy Corporation (MDEC) and the ASEAN Gig Economy Challenge in collaboration with United Nations Capital Development Fund (UNCDF)</p>

Economy and Institution	Legislation that gives powers	Separate FinTech stream	Individual conditions available for FinTech startups	Tools for interaction and development of startups
Mexico Ministry of Finance	The Law that Regulates the Financial Technology Institutions or “LRFTI” sets the legal framework for innovation through the regulatory sandboxes and gives powers to the Financial Authorities within their competence (Ministry of Finance, Banco de México, National Banking and Securities Commission, National Commission for Retirement Savings, National Insurance and Surety Commission).	No	Specific regulatory requirements for each type of fintech models, taking into account the type of services, with the main goal of promote its development, in appropriate conditions and under a regulatory framework.	The Financial Authorities usually offer to the startups/entrepreneurs to address them within the Regulatory Sandbox (RS) process and the necessary information they must submit. Likewise, the National Banking and Securities Commission (CNBV) have a specific work division which have an open communication with the public (through a mailbox) to attend any questions from the startups/entrepreneurs interested in the RS.
Philippines Bangko Sentral ng Pilipinas	Republic Act (RA) No. 11211 (approved by the President of the Philippines on 14 February 2019), an Act amending RA No. 7653, otherwise known as the New Central Bank Act establishes the Bangko Sentral ng Pilipinas as an independent central monetary authority.	Yes	Enabling approach toward promoting responsible financial innovation hopes to draw existing and new players alike to engage the regulator.	Open communication channels with institutions seeking guidance on the implementation of digital financial innovations in the market.
Russia Bank of Russia	The Bank of Russia has special legal status established by Article 75 of the Constitution of the Russian Federation. The status, goals, functions and powers of the Bank of Russia are defined by Federal Law No. 86-FZ, dated 10 July 2002, ‘On the Central Bank of the Russian Federation (Bank of Russia)’ and by other federal laws.	Yes	There are no special conditions for FinTechs; they adhere to the same regulation and requirements as incumbent firms.	Regulatory sandbox
Singapore Monetary Authority of Singapore (MAS)	The Monetary Authority of Singapore Act confers MAS powers to issue legal instruments for the regulation and supervision of financial institutions. In addition,	Yes	From the regulatory sandbox perspective, depending on each sandbox experiment, appropriate conditions (e.g. safeguards and controls) will be applied to contain the consequences of failure and maintain	(a) A FinTech Office, comprising representatives from various government agencies in Singapore, serves as a one-stop virtual entity for all FinTech matters and promotes Singapore as a FinTech hub.

Economy and Institution	Legislation that gives powers	Separate FinTech stream	Individual conditions available for FinTech startups	Tools for interaction and development of startups
	<p>MAS also has frameworks and guidelines in place which cut across various classes of financial institutions.</p> <p>The MAS FinTech regulatory sandbox relies on existing legislations administered by MAS.</p>		<p>the overall safety and soundness of the financial system.</p>	<p>(b) The MAS FinTech Regulatory Sandbox.</p> <p>(c) Annual Global FinTech Hackcelerator programme which selects up to 20 FinTechs from all around the world to work with corporate champions to solve problem statements collected from the industry. During the 12-week virtual programme, the FinTechs will work with the corporates, industry mentors and MAS to conceptualise their market-ready solutions into usable prototypes which will be presented at Demo Day, which is held at the Singapore FinTech Festival.</p>
<p>Chinese Taipei</p> <p>Financial Supervisory Commission (FSC)</p>	<p>Acting upon the authority of the "Financial Technology Development and Innovative Experimentation Act" (hereinafter referred to as the Act, Appendix 1), the FSC launched the FinTech Innovative Experimentation Mechanism (so-called as the sandbox) on April 30, 2018</p>	<p>No</p>	<p>(a) Business Angel Investment Program (launched by the government) to provide initial working capital to startups at the early stage.</p> <p>(b) Sandbox</p> <p>(c) FSC facilitation of the set-up of the FinTechSpace (offering FinTech startups office space and rent reductions).</p>	<p>(a) Contact points, such as the Financial Technology Development and Innovation Center (the Innovation Center) and the "Regulatory Clinic" in the FinTechSpace, to help startups resolve questions on financial regulations.</p> <p>(b) A cross-agency cooperation channel called the "Front Shop Back Factory" mechanism. A startup with a preliminary idea may go to the Ministry of Economic Affairs (MOEA) "Innovative regulatory sandbox" for general legal counseling. After its idea becomes solid and practicable, the startup may go to the Innovation Center to seek guidance in applying to take part in a FinTech Innovative Experiment.</p>
<p>Thailand</p> <p>Bank of Thailand (BoT)</p>	<p>The main legislations granting powers to BoT are Bank of Thailand Act 1942, Financial Institution Business Act 2008, and Payment System Act 2017 along with their amendments.</p>	<p>Yes</p>	<p>Due to its legal duties and powers, BoT does not regulate fintech startups in particular, but BoT's supervisory power is exercised based on activities that startups are involved such as payments, lending, and money transfer. If startups would like to provide financial services under BoT's supervision, it will be</p>	<p>(a) Regulatory sandbox.</p> <p>(b) Channels for consulting regulatory issues with regulators (FinTech Clinic and FinTech-RegDays events)</p> <p>(c) Forums (Bangkok FinTech Fair and Blockchain the Series conference).</p>

Economy and Institution	Legislation that gives powers	Separate FinTech stream	Individual conditions available for FinTech startups	Tools for interaction and development of startups
			required to apply for a license or make a registration with the BoT as specified by the laws.	

Appendix 1.2 Survey Participants: Market

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
Indonesia	Privy Identitas Digital (PrivyID)	Digital banking, sheet lending, loan crowd-funding, equity crowd-funding, robo-advice, e-money, digital payment services, insurtech business models, financial activities related to crypto assets	4 years old	Permanent employees - 167 Probation employees - 26 Intern - 36	Digitalization of operations, new product, the use of new technologies, etc	POJK 12 of 2017 which has been amended by POJK 23 of 2019, only described that verification that are being done by third party services, need approval from the Financial Service Authority (OJK). The POJK regulates the requirements and procedures of the cooperation from third party service to conduct verification. Currently the POJK is still in the drafting process.
	PT Dwi Cermat Indonesia	Aggregator	5 years old	171 people	Digitalization of operations and easy access to financial products	POJK 13. The regulation is generally applied to providers. However, as an aggregator, our institution, Cermati, needs a specific regulation to suit better with the industry. There are many uncertainties in POJK 13 that makes Cermati business difficult to expand.
	PT Jurnal Consulting Indonesia	SaaS, accounting software. Tax and accounting cluster	5 years old	589 people	Digitalization of accounting process, with variable features to simplify operations from administration, operational, and taxation complexity in order to help the user keep focusing on the most important things to develop their business.	Cashlink features. Jurnal's user bank statement for reconciliation is stored in Jurnal's database.
	PT. Pembayaran Lintas Usaha	Digital banking, fintech balance sheet lending, loan crowd-funding, equity	8 years old	129 people	Digitalization of operations, a new product, the use of	We need legitimacy from regulator to validate our process and results. We need to comply to POJK 23/2019 regarding CDD using third

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
	Sukses (Espay CDD)	crowd-funding, robo-advice, e-money, digital payment services, insurtechbusiness models, financial activities related to cryptoassets			new technologies, etc	party must be approved by Financial Service Authority (OJK)
Korea	Samsung Life Insurance Co., Ltd.	Life Insurance	63 years old (established in 1957)	5 232 <i>people</i>	Customer management with big data, digitalization of operations, a new product, etc.	Existence of provisions expressly prohibiting such services by law.
	Shinhancard Co, ltd	Credit sales, Cash advance service, Installment finance service, etc.	34 years old	2 605 people	Digital Transformation (RPA, AI, Blockchain, Big data, etc)	Limitations of non-face identification methods.
	SK telecom	Credit Bureau	36 years old (established in 1984)	4 785 people	Innovations for various industries applying technologies of mobile communications, AI, big data, etc	The company cannot run the alternative credit bureau business using non-financial data such as mobile communication and e-commerce because there are no applicable laws.
	Korea Investment & Securities Co., Ltd.	Full-service investment bank (brokerage, asset management, investment bank, and trading etc)	Established in 1974	2 681 people	RPA (robotic process automation), adoption of new technologies/services targeting millennials, etc.	In order to deposit fractional shares to customers' accounts, it was essential that the servicer also maintain a fractional share account to make up a whole share, which was prohibited. [Financial Investment Services & Capital Markets Act Article 309-3, Enforcement Decree of FIS&CMA Article 184-2].
	Kakaopay Corp.	Fintech service, Money transfer, Bill payment, Membership, Electronic authentication, Online Investment, Loan brokerage, etc.	3 years old (Date of business commencement - March 17, 2017)	491 people	We are trying to solve financial inconvenience using AI and blockchain security technology	We have faced the regulation which prohibits loan brokers to intermediate loans from several different financial companies

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
	Who's Good	Non-financial (ESG) based credit bureau	6 years old (Established in 2014)	15 people	Sustainable Lending in accordance with International Standard, targeting SME	In order to run the credit information business, it was necessary to obtain permission from the Financial Services Commission, but it was limited because the basis for the operation was not in financial related laws.
	DOUZONE BIZON.CO. LTD.	Web-based business platform provider	43 years old	1 395 people	The new use of accounting data	Regulation of the Credit Information Act, which does not allow credit information business.
	Finda, Inc.	Digital banking, fintech balance sheet lending, loan crowd-funding, equity crowd-funding, robo-advice, e-money, digital payment services, insurtech business models, financial activities related to cryptoassets	5 years old	25-30 people	Developing a digitalization of loan origination and providing a new single platform that consumers would be able to check and compare loan products offered by different financial institutions	Governance code on loan brokerage; brokers must intermediate only single financial institutions' loans.
	Rainist	Personal Finance Management	7 years old	135 people	Digitalization of operations	1 new withdrawal account for 1 month guidance from FSS.
	Viva Republica	Fintech industry. Providing services in money transfer, payment, financial products, investment etc.	Established on 23rd of April 2013	405 people	Leading transformation of financial market with technology	Exclusivity restriction for loan brokerage.
Malaysia	CIMB Bank Berhad	Financial Services - Banking	About 90 years old	35 000 people	Digitalization of operations with the use of new technologies	There were no guidelines nor minimum requirements on eKYC at the time, so we were required to go via the sandbox. Multiple engagement sessions were required to land on acceptable control parameters, e.g. minimum ID document security feature checks, false

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
						acceptance rates, etc.
	Jirnexu	Digital Financial Marketplace	8,5 years old (established in 2012)	212 people	Digitalisation of insurance via the use of new technologies to help consumers get insured in a safe and convenient way. Enables end-to-end process of educating, comparing and purchase of insurance products.	Prior to Insurance & Takaful Aggregator Framework, there was no regulatory framework for digital channel acquisition and therefore insurers that wanted to work with Jirnexu were not sure what the relationship/agreement would be needed for Jirnexu to operate “safely” and in compliance with the regulatory requirements. Incidentally Jirnexu’s services fall under the definition of “financial advisory business” in the Financial Services Act 2013, but the existing framework for financial advisory business is incompatible with nature of digital channel acquisition business such as Jirnexu.
	MoneyMatch	Remittance and crossborder payments	4 years old	73 people	Digital remittance platform, non-face-to-face retail customer onboarding process	Non-existent guidelines for digital electronic customer onboarding to utilize our digital platform for remittance
	1. OCBC Bank (Malaysia) Berhad (“OBMB”) 2. OCBC Al-Amin Bank Berhad (“OABB”)	Traditional Financial Institution (“FI”)	88 years old	1. OBMB: 3 378 people 2. OABB: 219 people	Digitalization of Operations	The need to perform a thorough due diligence review on Amazon Web Services (“AWS”)’ capabilities and expertise prior to hosting the sandbox solution on its cloud infrastructure The regulatory policy/ guidelines on cloud implementation for FIs was not available yet.

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
	WorldRemit Malaysia	Digital payment services (international remittance service).	3 years in Malaysia, 9 years globally.	2 in Malaysia, over 700 globally.	Digitalization of operations; use of new technologies for e-KYC and transaction monitoring; potentially able to use digital asset to improve treasury and funding effectiveness.	Implementation of e-KYC, specifically on automating the categorization of customers between type 1 and 2.
Philippines	G-Xchange, Inc. (E-Money Issuer)	E-money	10 to less than 20 years	737 people	A new product	A few years back, EMIs were operating under bank-centric regulations. This has improved but would need continuous monitoring so that it reaches a level where EMIs are provided a regulatory framework that is suitable to its needs and growth.
	PayMaya Philippines, Inc. (E-Money Issuer)	E-money	5 to less than 10 years	678 people	Digitalization of operations, a new product, the use of new technologies	Regulations covering the new financial product (electronic money) has not been established yet. KYC processes were based on traditional regulations which required physical face-to-face contact with the applicant.
	Rizal Commercial Banking Corporation – RCBC (Bank)	Digital Banking	20 and more years	6259 people	New Product and new technologies	None
	Union Bank of the Philippines (Bank)	Digital Banking	20 and more years	3600 people	Digitalization of operations, a new product, the use of new technologies	Current regulations are still evolving to cover new technology to be used by the Bank in its new financial service.
Russia	Joint stock	Digital banking	Established on	1104 people	New technologies of	Regulatory requirement to analyse credit risk

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
	company Commercial Bank "Modulbank"		23 rd of June 1992		credit risk analysis	on base of fiscal financial reporting of clients.
	Operator of National Crowdfunding Platform, LLC	Alternative financing, tokenized crowdfunding	2,5 years old	2 people (and 3 teams outsourced)	Investment operator with tokens issuing/execution (utilitarian digital assets) in terms of Federal Law № 259, based on distributed ledger technology, smart contracts, merchant system, etc.	No tax regulation or instructions from tax department available for digital assets buying/execution, etc. The investor has the right to cancel the investment deal in 5 days which is a huge risk for investment project (project investment campaign might be ruined; it is a way to sabotage the project) No regulation for digital financial assets/rights available (securitization).
	Alfa Bank	Banking	30 years old	About 24 000 people	Digitalization of operations, a new product, the use of new technologies, etc.	Many federal laws and regulations of several state regulators concerned with banking legislation, payment system, AML/CFT legislation, information security regulations, etc.
	Bescontact LLC (DBA: Cardsmobile)	Tokenization, Digital payment services, IoT	Established in 2012	164 people	Tokenization, Digital issuance of bank cards, Card aggregation, IoT	Lack of: implementation entity; protocols to interact with Implementation Entity; SBP attestation standards for adjacent platforms (availability metrics); regulations and standards for PISP operation, as well as to company that represents PISP, and PISP security standards; centralized management of PII consents.
	QIWI Bank	Digital banking, e-money, digital payment services	27 years old	Over 3000 people	Digitalization of operations, a new product, the use of new technologies	The need to improve identification mechanisms, research on the applicability of new technology, and the absence of legislation regulating Project's area
Singapore	ICHX TECH Pte Ltd	Capital markets; securities issuance and trading	2 years old	50 people	Digitalization of securities using	The digital form of securities is new to the market.

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
					distributed ledger technology and smart contracts	
	Thin Margin Private Limited	Money changing services	4 years <i>old</i>	3 people	Using new online technology to improve on the traditional money changing business model in Singapore	The money changing regulation in Singapore was written based on an offline framework and did not take into account of the new online technology that we will be utilizing. This created some regulatory obstacles for us when we were trying to implement our new financial service.
Chinese Taipei	Cathay Life Insurance Co., Ltd.	Life insurance products and related services, including individual traditional life insurance, individual injury insurance, individual health insurance, group insurance, annuities, and investment-linked insurance	Established in 1962	33 218 people	App and tools on instant messenger (LINE), AI Chatbot, AI Marketing, AI underwriting & claiming, app and health promotion, intelligent product recommendation site, uber-style agent platform, API management platform, etc.	None
	EMQ Limited	Cross-border remittance/payment service	6 years old	120 people	Digitalization and standardization of cross-border fund flow among banks, FinTechs, and traditional financial services across multiple regions	The restrictions imposed to the FX services based on the existing financial structure and technology.
	How-Investech Inc.	Online securities services and blockchain application in the mutual fund industry	Established in March 2016	22 people	How Investech Inc. innovates fund trading process into a	In order to launch our FundSwap service, we needed to obtain a license and meet strict regulatory requirements.

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
					P2P exchange model, called FundSwap. This allows investors to exchange funds directly through block chain records.	
	KGI bank	Digital banking	29 years old	About 2400 people	Digitalization of operations, the use of new technologies, etc.	Regulations and technical applications.
	Taipei Fubon Commercial Bank	Retail banking, corporate banking, digital banking	36 years old	6750 people	The use of new technologies	Chinese Taipei's Banking Act
Thailand	Siam Commercial Bank Public Company Limited.	Deposit & Lending products, Digital Banking & Digital Payment Services	114 years old	Estimated 17 000 employees	Biometrics (eKYC - Facing recognition), Blockchain (L/G, Cross- border remittance) AI/ML (Information-based Lending)	-
	Kasikornbank Public Company Limited	Banking	75 years old	20 324 people	Digital Banking, eKYC, digital onboarding, facial recognition, Blockchai	New standard for customer onboarding, using biometrics technology in KYC to support digital self-onboarding
	Bank of Ayudhya Public Company Limited	Banking, consumer finance, investment, asset management, and other financial products and services to small and medium enterprises, large corporations and individual customers	75 years old	Krungsri and Subsidiary 33 621 Krungsri Bank 15 261	Biometrics (e-KYC - Face recognition); NDID- Cross Bank/Entities verification; Blockchain (e-L/G, Cross-border remittance, Supply Chain)	Unable to test new innovative products, services or business model in a live environment with real users as there is no regulations in place or may not comply with the current regulation.

Economy	Company Name	Industry	Age	Number of employees	Type of innovation	Regulatory boundary encountered while implementing new financial services
					QR Payment	
	TMB	Banking	62 years old	8 000 people	e-KYC, Process Automation, Payment Innovation, and etc.	Due to the concept of Sandbox is relatively new to our central bank, there has been many changes along the way which many times cause confusion and change in scope and timeline.
	Advanced Mpay Company Limited	Electronic Money Service Business, Payment Facilitating, Receiving Electronic Payment Service Business, Electronic Money Transfer Service Business.	15 years old (established in 2005)	50 people	Mobile Payment, WEB Payment, QR Co	Payment System Act B.E. 2017 with relevant guidelines issued by Bank of Thailand and Money Laundering laws issued by Anti-Money Laundering Office.
	True Money Co. Ltd.	e-Money e-payment services Money Transfer service	6 years old	Approximately 1000 people	The use of new technologies e.g., Biometric comparison, e-KYC via National Digital ID platform.	There are a lot of regulatory that Company has to comply with from various regulators e.g., Anti-Money Laundering Office: Anti-Money Laundering Act, B.E. 2542 (1999) Bank of Thailand : e-Payment regulation (e-money, transfer, etc.) regarding the licenses; KYC (Know Your Client) / KYM (Know Your Merchant) -Regulatory Sandbox. National credit bureau (NCB): ETDA / NDID

Appendix 2. Comparative Table: APEC Regulatory Sandboxes

Economy, Sandbox Establishment Date	Coordination with other Authorities	Application, Testing & Review Duration	Top segments represented	Entry Requirements	Real customers participation	Piloting Results	Next Development Steps	Market Satisfaction (based on the received market answers)
<p>Hong Kong, China</p> <p><i>September 2016:</i> Hong Kong Monetary Authority (HKMA).</p> <p><i>September 2017:</i> Securities and Futures Commission (SFC); Insurance Authority (IA).</p>	<p>The sandboxes of the HKMA, SFC, and IA have been linked up since November 2017. There is a single point of entry for cross-sector Fintech initiatives.</p> <p>Applicants may choose to access a particular sandbox they consider the most relevant. The regulator concerned will act as the primary point of contact and help applicants to access other regulators' sandboxes concurrently.</p>	<p>No rigid time limit on trials. Varies depending on the nature of each specific case.</p>	<p>Technology initiatives of entities supervised by HKMA, SFC, IA.</p>	<p><i>HKMA, SFC, IA:</i> Adequate safeguard to protect the interests of the customers during the trial.</p> <p><i>SFC:</i> A number of licensing conditions including limiting their services to professional investors and the maximum amount to be invested by each client.</p> <p><i>IA:</i> Compliance with the IA's Guideline on Cybersecurity (GL20), which covers IT risk management, annual review and incident response plan;</p> <p>An exit strategy for the pilot run in case it has to be terminated without success.</p>	<p>No rigid limit imposed.</p>	<ul style="list-style-type: none"> - Market data and user feedback gathering; - Identification and addressing any risks or concerns associated; - Expediting the launch of new technology products; - Reducing development cost; - Facilitation of early communication between the regulatory and the Fintech firm; - Financial innovation promotion. 	<p>Sandboxes review in order to keep abreast of the latest regulatory experience and technological development.</p> <p><i>HKMA:</i> Development of a cross-border testing framework with other GFIN regulators.</p>	<p style="text-align: center;">-</p>

Economy, Sandbox Establishment Date	Coordination with other Authorities	Application, Testing & Review Duration	Top segments represented	Entry Requirements	Real customers participation	Piloting Results	Next Development Steps	Market Satisfaction (based on the received market answers)
Indonesia August 2018	Yes, if a piloted project is beyond the Financial Service Authority (OJK) supervision.	Maximum period of 1 year. Can be extended to 6 months if required.	<ul style="list-style-type: none"> - Aggregator; - Alternative Credit Scoring; - Financial Planner. 	<ul style="list-style-type: none"> - Complete the documents which include: <ul style="list-style-type: none"> - copy of deed of establishment of the legal entity of Financial Innovator; - complete identity data of the management; - brief explanation of the product; - data and other information related to IKD activities; - business plan; - Clustering process by Expert Panel OJK; - Get a recorded status. 	No.	<ul style="list-style-type: none"> - New legal framework - Organization receives the required license; service is approved to be provided in the market; - Upgrade license (activity base licensing). 	<ul style="list-style-type: none"> - Capacity building to all members of panel forum especially in technology supervision. - Conduct the industrial sandbox when the SRO is ready. 	Satisfied

Economy, Sandbox Establishment Date	Coordination with other Authorities	Application, Testing & Review Duration	Top segments represented	Entry Requirements	Real customers participation	Piloting Results	Next Development Steps	Market Satisfaction (based on the received market answers)
<p>Japan</p> <p>June 2018</p>	<p>Yes.</p> <p>The sandbox is open to any projects, not only Fintech.</p> <p>Competent ministers approve project proposals by applicants.</p> <p>Regulatory Sandbox Team works as the single window of the government for applicants.</p> <p>The ministers and the team are to cooperate under the basic policy determined by the cabinet.</p>	<p>In most cases, up to 12 months</p>	<ul style="list-style-type: none"> - Fintech; - Medical/healthcare; - Mobility. 	<p>Approval from the relevant minister in charge of the regulation and of the industry.</p>	<p>Yes.</p> <p>Number of participants depends on the proposed project on case by case basis.</p>	<p>Regulatory reform under the regulatory reform scheme.</p>	<p>-</p>	<p>-</p>

Economy, Sandbox Establishment Date	Coordination with other Authorities	Application, Testing & Review Duration	Top segments represented	Entry Requirements	Real customers participation	Piloting Results	Next Development Steps	Market Satisfaction (based on the received market answers)
Korea April 1, 2019	Yes	Maximum - 4 years (2 years after designation + one time extension for another 2 years)	<ul style="list-style-type: none"> - financial institutions, fintech companies, tech companies, big tech companies, and start-ups aligned with the definition under the Commercial Act; - entities in various fields such as payment, credit rating, asset market and insurance. 	The applicants for the sandbox must be: <ul style="list-style-type: none"> - financial companies, etc; - companies which are aligned with the definition under the Commercial Act and have domestic branches. 	Yes, the number is decided on case by case basis.	Possible easing of regulations or entry barriers.	<ul style="list-style-type: none"> - Find out new issues and projects related to using new technologies; - Improve regulations that the sandbox granted exemptions; - Encourage the success cases of the sandbox. 	Satisfied

Economy, Sandbox Establishment Date	Coordination with other Authorities	Application, Testing & Review Duration	Top segments represented	Entry Requirements	Real customers participation	Piloting Results	Next Development Steps	Market Satisfaction (based on the received market answers)
Malaysia October 2016	Yes, solutions that come under the Sandbox may be within the purview of other regulators such as the Securities Commission Malaysia (SC).	Up to 12 months. Any extension must obtain the approval of Central Bank of Malaysia (BNM).	<ul style="list-style-type: none"> - Insurtech - Money Service Businesses - Payments 	The eligibility criteria for a solution to be tested in the Sandbox Framework is captured below: <ul style="list-style-type: none"> - Value proposition, including innovativeness of business model, product, service or solution. - Demonstration on the usefulness and functionality of the product, service or solution, including identifying the associated risks. - Having necessary resources to support the testing in the Sandbox, for example, resources and expertise to mitigate and control potential risks and losses arising from offering of the product, service and solution. - Realistic business plan to deploy the product, service or solution on a commercial scale in Malaysia post-Sandbox. - Provision of the product, service or solution is incompatible with laws administered by BNM. - Fit and proper test on key personnel. 	Yes, the number depends on the safeguards pre- agreed prior to live testing.	Learning points for regulator and participating company regardless if the testing has failed or succeed. If required, applicants will be directed to apply for license under the prevailing laws and regulations or placed under enhanced/new regulatory framework to cater for the graduates of Sandbox applicants.	An enhanced Sandbox Framework is currently in BNM's pipeline.	Satisfied

Economy, Sandbox Establishment Date	Coordination with other Authorities	Application, Testing & Review Duration	Top segments represented	Entry Requirements	Real customers participation	Piloting Results	Next Development Steps	Market Satisfaction (based on the received market answers)
Mexico March 2019	Yes, if the submitted project is competence of two or more authorities.	<i>For companies:</i> 2 years, with the opportunity to extend for 1 year. <i>For institutions:</i> 1 year, with the opportunity to extend it for 1 year.	N/A	<ul style="list-style-type: none"> - Demonstrate that the project is innovative. - The project will be tested within a controlled environment. - The project must bring a benefit to the clients. - The project must be ready for the test. - The project must be for a limited number of clients. 	Yes, the number is proposed by participant, can be reduces by Financial Authorities.	<p>If tests are successful:</p> <p><i>For companies:</i> a license as a financial institution.</p> <p><i>For financial entities:</i> the secondary regulation will be amended in order to let the financial entities to perform the activity.</p>	Promote and strengthen the communication channels between the entrepreneurs and authority.	N/A
Philippines 2004 - "test-and-learn" approach	Yes	6 months to 1 year. However, based on experience, and depending on the merits, longer periods may be allowed.	<ul style="list-style-type: none"> - Digital payment system; - E-money; - Core banking systems utilizing cloud platforms. 	<ul style="list-style-type: none"> - Proposed activities are not yet explicitly covered by existing BSP rules and regulations but are within the regulatory ambit of the BSP; - Financial soundness of the proponent; - Risk management systems; - Controls addressing cybersecurity, anti-money laundering and consumer protection. 	Yes, the number is agreed between the BSP and the participant.	<ul style="list-style-type: none"> - Formulation/updating of regulatory framework; - Issuance of license to the entity; - Close monitoring of developments and relevant issues. 	<p>Formalization of the "test-and-learn" approach:</p> <ul style="list-style-type: none"> - clear definition of parameters, timelines, and eligibility criteria to improve transparency and efficiency in the approval process. 	Satisfied
Russia 2018	Yes.	Currently from 29 to 42 days	<ul style="list-style-type: none"> - Banks; - IT-companies; - Insurance. 	<ul style="list-style-type: none"> - Legal barriers; - Introduction to the Russian market; - Improving the quality of financial services; - Innovativeness 	Currently no.	Legal framework is created.	Optimization of the current process, launch of experimental regulatory regime for piloting on real customers (draft bill developed).	Satisfied

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Singapore June 2016	N/A	Each sandbox is customisable, depending on the needs of the proposed financial service.	<ul style="list-style-type: none"> - Investment management; - Broking; - Crowd funding; - Cross-border funds transfer; - Insurance; - Financial advisory; - Big data; - Distributed ledgers; - Machine learning and AI. 	<ul style="list-style-type: none"> - Organisation full profile. - Service/Product full profile. - Details of the applicable legal/regulatory requirements and the relaxation sought. - Proposed sandbox design. - Necessary controls to manage risks and failure in sandbox. - Exit and transition plan. <p>For more details please refer to the following Chapter 6: Sandbox evaluation criteria in the sandbox guidelines.</p>	Yes.	<ul style="list-style-type: none"> - Sandbox entities tweaked and improved their solutions. - Sandbox entities obtained the relevant regulatory approvals to continue delivering their financial products and services after exiting sandbox. - Legislations have been amended to facilitate new business models enabled by technology. 	Development of the Monetary Authority of Singapore Sandbox Express launched in August 2019.	Satisfied
Chinese Taipei April 30, 2018	Before deciding on approval or rejection, the Financial Supervisory Commission (FSC) shall call a review meeting comprised of government agencies representatives, experts and scholars with relevant professional knowledge, expertise, or experience in the proposed innovative experimentation.	<p><i>Application</i> - 60 days after receiving the application.</p> <p><i>Testing & Review</i> - 1 year, but if involves any statutory amendment, can be extended up to 3 years.</p>	<ul style="list-style-type: none"> - FinTech startups; - Banks; - Securities and Futures enterprises. 	<ul style="list-style-type: none"> - Source of funds; - Involved financial businesses; - Description of innovativeness (technological innovation or business model innovation); - Scope, duration and scale of the innovative experimentation; - Data on key managers carrying out the experimentation; - Major clauses of the contract signed with participants; - Participant protection measures; - Potential risks during the test period, RM mechanism; - Description of money laundering and terrorist financing RA and risk mitigation measures based on risk-based approach; - Information systems used in 	Yes. The maximum number of customers in single experimentation is not regulated (maximum in practice - about 48,000 persons).	If the project is proved successful and a statutory amendment is needed for the same business to be carried out in the real market, the FSC will start to review and amend relevant regulations during the sandbox period.	<p>The FSC has promulgated the operation directions of business trial applications in 2019 for the banking industry, securities & futures industry, and insurance industry respectively. A licensed financial institution may apply for business trials if it tries to conduct the approved business in innovative technological ways.</p> <p>The FSC adopts a dual system of sandbox tests and business trials to accelerate FinTech innovation :</p> <ul style="list-style-type: none"> - The sandbox 	Satisfied

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				<p>the experimentation and description of security control operation and risk response measures;</p> <ul style="list-style-type: none"> - Expected benefits of the experimentation and benchmarks for measuring the benefits achieved; - Exit mechanism in case the experimentation is terminated on own initiative, cancelled or revoked by the competent authority, or the testing period expires; - Relevant information on financial technology patents involved; - Cooperation agreements and description of relevant parties regarding their respective rights and obligations (if the test will be conducted in collaboration with other individuals, sole proprietorships, limited partnerships or legal persons). 			<p>continues to foster financial innovation, and speed up innovation development and commercialization by adapting regulations as well as communicating with the startups.</p> <ul style="list-style-type: none"> - The business trial encourages financial institutions to continue innovating financial goods and services within the scope of approved businesses by using innovative technological ways. 	

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Thailand 2016	Yes, if a piloted project is beyond the Bank of Thailand (BoT) supervision.	Not defined, agreed between a sandbox applicant and BoT.	<ul style="list-style-type: none"> - Banks; - FinTech payment service providers; - Lending firms. 	Products and services are: <ul style="list-style-type: none"> - under the BoT's supervision; - innovative and involve new technology not already available or will enhance efficiency; - developed to serve as an infrastructure or common standard for Thai financial sector or regulations require sandbox experiment. 	Yes.	In general the service is approved to make a full-scale launch to the market.	Applying new technologies to develop interoperable infrastructures which can be utilized by a wide range of financial service providers; New technologies are encouraged to contribute to the development of digital finance which provides an end-to-end service solution to customers; Promoting people to be more equipped with digital financial literacy and financial discipline.	Satisfied