

How Regulators Respond to Fintech

Evaluating the Different Approaches—Sandboxes and Beyond



FINANCE, COMPETITIVENESS
& INNOVATION
GLOBAL PRACTICE

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Glossary

Alternative Credit Scoring is defined as non-traditional models of assessing credit risk using machine learning and algorithms based on big data mining.¹

Anti-money laundering and countering the financing of terrorism (AML/CFT) measures are defined by the Financial Action Task Force (FATF), the international standard setter in this area. The BCBS regularly issues guidance to facilitate banks' compliance with their obligations in this area.

Artificial Intelligence (AI) is defined as IT systems that perform functions requiring human capabilities. AI can ask questions, discover and test hypotheses, and make decisions automatically based on advanced analytics operating on extensive data sets. Machine learning (ML) is one subcategory of AI.²

Big data designates the large volume of data that can be generated, analyzed and increasingly used by digital tools and information systems. This capability is driven by the increased availability of structured data, the ability to process unstructured data, increased data storage capabilities and advances in computing power.

Crowdfunding is the practice of funding a project or venture by raising monetary contributions from a large number of people. It is often performed today via internet-mediated registries that facilitate money collection for the borrower (lending) or issuer (equity).³

Distributed ledger technology (DLT) such as blockchain are a means of recording information through a distributed ledger, i.e. a repeated digital copy of data at multiple locations. These technologies enable nodes in a network to securely propose, validate and record state changes (or updates) to a synchronised ledger that is distributed across the network's nodes.⁴

Fintech Ecosystem is made up of consumers, financial institutions, Fintech start-ups, investors, regulators and educational institutions and aims to provide mutually beneficial cooperation among stakeholders, to help deliver financial services at lower cost, higher speed and at better quality to more consumers.⁵

Fintech refers to the advances in technology that have the potential to transform the provision of financial services spurring the development of new business models, applications, processes, and products.⁶

Innovation Facilitator are public sector initiatives to engage with the Fintech sector, such as Regulatory Sandboxes, Innovation Hubs and Innovation Accelerators.⁷

Innovation Hub/Office refers to an Innovation Facilitator set up by a supervisory agency that provides support, advice or guidance to regulated or unregulated firms in navigating the regulatory framework or identifying supervisory policy or legal issues and concerns. Unregulated entities can engage with regulators to discuss Fintech-related issues (share information and views etc.) and seek clarification on the conformity with the regulatory framework and/or licensing requirements.



Machine Learning (ML) is a method of designing problem-solving rules that improve automatically through experience. Machine-learning algorithms give computers the ability to learn without specifying all the knowledge a computer would need to perform the desired task, as well as study and build algorithms that can learn from and make predictions based on data and experience.⁸

New entrant refers to a prospective financial services provider that has not been authorized by the regulator yet.

No enforcement action letters provide assurance to a firm that the regulator would not take enforcement action against them, so long as they comply with the conditions specified in the letter.

Peer-to-peer (P2P) lending refers to direct lending from savers to borrowers—traditionally the platform avoids intermediation by banks but also do not bear the risk of default.⁹

Regtech refers to a regulatory technology or Regtech involves new technologies to help regulated financial service providers streamline audit, compliance and risk management and other back office functions to enhance productivity, and overcome regulatory challenges, such as the risks and costs related to regulatory reporting and compliance obligations. This can also refer to firms that offer such applications.

Regulatory Accelerator or Regtech Lab refers to a partnership arrangement between Fintech providers and central banks/supervisory agencies to ‘accelerate’ growth or develop use cases, such as suptech or regtech, which may involve funding and/or authorities’ endorsement/approval for future use in central banking operations or in the conduct of supervisory tasks.

Regulatory exemptions or waivers exempt a firm from requiring authorization to carry out a regulated activity or compliance with a specific requirement.

Regulatory Sandbox is a controlled, time-bound, live testing environment, which may feature regulatory forbearance and alleviation through discretions. The testing environment may involve limits or parameters within which the firms must operate.

Restricted or temporary licenses can give a firms a license but set limitations on their authorization for example, the type of service that can be provided or the number of customers that can be served or the time validity of the license.

Suptech is the use of innovative technology by supervisory agencies to support supervision. It is intended to help supervisory agencies to digitize (in the main) reporting and regulatory processes, resulting in more efficient and proactive monitoring of risk and compliance at financial institutions.¹⁰

Abbreviations and Acronyms

ACPR	Autorite de Controle Prudentiel, France
ADGM	Abu Dhabi Global Market
AI	Artificial Intelligence
AMF	Autorite des Marches Financiers, France
AML	Anti- Money Laundering
API	Application Programming Interface
ASEAN	Association of Southeast Asian Nations
ASIC	Australian Securities and Investment Commission
BCBS	Basel Committee for Banking Supervision
BFA	Bali Fintech Agenda
BIS	Bank of International Settlements
BNM	Bank Negara Malaysia
BNR	National Bank of Rwanda
BoE	Bank of England
BOT	Bank of Thailand
BSP	Bangko Sentral ng Pilipinas
CBK	Central Bank of Kenya
CDD	Customer Due Diligence
CFPB	Consumer Financial Protection Bureau
CFT	Combating the Financing of Terrorism
CFTC	Commodities and Futures Trading Commission
CGAP	Consultative Group to Assist the Poor
CMA	Capital Markets Authority (Kenya)
CNBV	Comisión Nacional Bancaria y de Valores, Mexico
CPMI	Committee on Payments and Market Infrastructures
DFS	Digital Financial Services
DIFC	Dubai International Financial Centre
DLT	Distributed Ledger Technology
EC	European Commission
EMDE	Emerging Markets and Developing Economies



EU	European Union
FATF	Financial Action Task Force
FCA	Financial Conduct Authority
FINMA	Swiss Financial Market Supervisory Authority
FSB	Financial Stability Board
GDPR	General Data Protection Regulation
GPFI	Global Partnership for Financial Inclusion
GSMA	Groupe Spéciale Mobile Association
HKMA	Hong Kong Monetary Authority
IAIS	International Association of Insurance Supervisors
ICO	Initial Coin Offering
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
IRDAI	Insurance Regulatory and Development Authority of India
JFSA	Japan Financial Services Agency
KPMG	Klynveld Peat Marwick Goerdeler
LAC	Latin America and the Caribbean
MAS	Monetary Authority of Singapore
MENA	Middle East North Africa
MNO	Mobile Network Operator
NBFI	Non-Bank Financial Institution
NFIS	National Financial Inclusion Strategy
NGO	Non-Governmental Organization
OCC	Office of Comptroller of the Currency
OIC	Office of Insurance Commission (Thailand)
OJK	Otoritas Jasa Keuangan (Financial Services Authority of Indonesia)
P2P	Peer-to-peer
PoC	Proof of Concept

RBI	Reserve Bank of India
Regtech	Regulatory Technology
RURA	Rwanda Utilities Regulatory Association
SAMA	Saudi Arabia Monetary Authority
SARB	South African Reserve Bank
SFC	Securities and Futures Commission of Hong Kong
SME	Micro, Small-, and Medium-Sized Enterprises
SSB	Standard-Setting Bodies
Suptech	Supervisory Technology
SWIFT	Society for Worldwide Interbank Financial Telecommunications
UAE	United Arab Emirates
UFA	Universal Financial Access
UK	United Kingdom
UNCDF	United Nations Capital Development Fund
UNSGSA	UN Secretary-General's Special Advocate for Inclusive Finance for Development
USAID	United States Agency for International Development
WBG	World Bank Group



Executive Summary

Technology is changing the paradigm of financial services and putting pressure on financial sector authorities: pressure to adapt to innovations already advanced in their market, and pressure to foster financial innovation so that their market doesn't lag behind peer countries. The past few years have demonstrated that regulations will need to evolve to cover new activities and business models that have been brought about by financial technology (Fintech¹¹) as it works to disintermediate the financial services value chain and transform the landscape as a whole.

Digital disruption however is not new, and we have long been able to summon movies, food, cars and flowers at the touch of a button. However, the impact on the financial sector is different, primarily due to a) the knock-on macroeconomic impact it can have on financial integrity and stability b) the challenges it poses for regulators and policymakers due to the lack of reliable data, the unconventional business models and the potential legal amendments that might be required and c) the bearing on consumer protection. This makes it vitally important that as policymakers foster an enabling environment, the appropriateness of the financial sector policy framework and the potential risks to statutory objectives are monitored closely and mitigated.¹²

Policymakers, regulators and supervisors¹³ worldwide are finding themselves in a regulatory dilemma when trying to achieve the right balance between enabling innovative Fintech and safeguarding the financial system.

Policy responses seen across jurisdictions to Fintech can be broadly grouped into: (i) applying existing regulatory frameworks to new innovations and their business models, often by focusing on the underlying economic function rather than the entity; (ii) adjusting existing regulatory frameworks to accommodate new entrants and the re-engineering of existing processes to allow adoption of new technologies; and (iii) creating new regulatory frameworks or regulations to include (or prohibit) Fintech activities. To support the development of an appropriate legal, regulatory and supervisory framework around the three policy responses, countries have been exploring different regulatory approaches and initiatives designed to promote innovation and experimentation. This paper explores those regulatory approaches in some detail.

Regulatory approaches can be applied either in combination or solely and are not mutually exclusive. We have classified them into four **regulatory approach** categories (a) "Wait & See", (b) "Test & Learn", (c) Innovation Facilitators (including Sandboxes) and lastly (d) Regulatory Laws and Reform. They are often adopted in areas where the regulatory framework is either unclear or where there are gaps, or to specifically support a statutory

objective with the aim of implementing an enabling environment for Fintech. It is then the outcomes and lessons distilled from the use of approaches and the associated regulatory tools that will help define a regulatory response for the country (i.e. regulatory reforms).

When deciding which approach or sequence of approaches to adopt in order to inform subsequent policy responses, there are a number of considerations that need to be made by the policymaker such as the objectives they are trying to achieve, how Fintech plays into the overarching strategy for the country, considerations of the critical success factors, and importantly, the country circumstance. Undertaking an assessment of the landscape while taking into consideration the country context, is a necessary first step for all regulators prior to selecting an approach to Fintech.

Of the approaches described above, the Regulatory Sandbox¹⁴ has been garnering substantial attention. According to the Global Fintech Survey (GFS),^{15,16} it was found that while the Regulatory Sandbox was a common response

adopted by policymakers, there is insufficient evidence to claim that it is the most effective. The GFS of country Fintech experiences conducted in 2019 as part of the WBG-IMF Bali Fintech Agenda gathered responses from nearly a hundred countries. Of those surveyed, it was identified that nearly thirty-three Sandboxes have been initiated since 2016, bringing the total number of Sandboxes globally to over 60¹⁷ at last count.

Other Innovation Facilitators, however, such as Fintech Accelerators and Innovation Hubs which have been used instead of, or as a complement to, a Regulatory Sandbox have shown promise of being more effective and suitable to business needs. Innovation Hubs or Offices in particular are often seen as the first step along a regulatory journey—providing support, advice, guidance and even, in some cases, physical office space, to either regulated or unregulated firms to help them identify opportunities for growth, and navigate the regulatory, supervisory, policy or legal environment. Results however, are still developing, and it is too early to draw a definitive conclusion on the outcomes.

FIGURE 1: Factors to Consider Before Evaluating a Regulatory Approach



In order for Fintech to thrive a multi-dimensional approach needs to be adopted. Our experience has revealed that a detailed review of existing laws and regulations, combined with a defined means of communication with the regulator (such as an innovation office to serve as point of contact) and in suitable cases a “test-and-learn” methodology which could potentially result in regulatory reform has worked best. This requires an in-depth consideration of regulatory framework and constantly fine-tuning it to suit the changing environment and emerging business models.

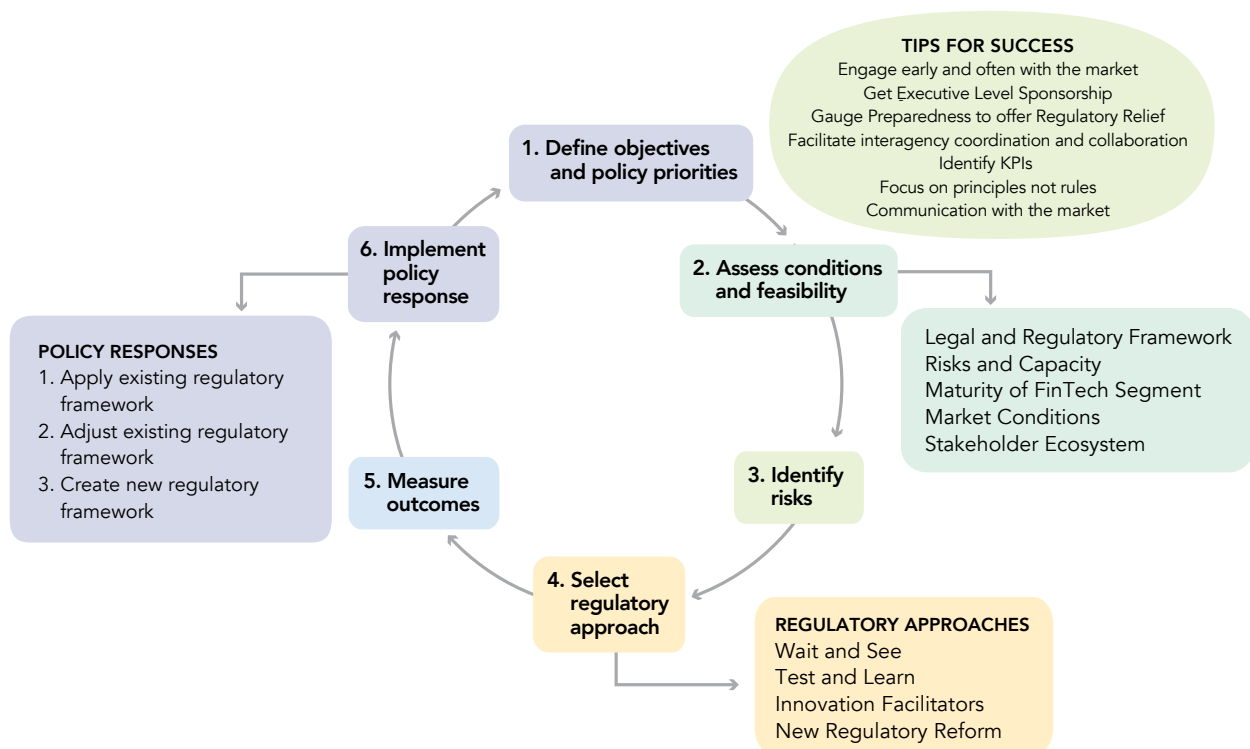
In parallel, policymakers should engage with the broader ecosystem such as enabling infrastructure and platforms—such as interoperability and the development of data repositories- needed to support Fintech. With a growing digital economy, the role and importance of information and cybersecurity also increases, adding security functions to protect critical information and infrastructure. Adaptation of policy, legal and institutional contexts should be complemented by knowledge exchange. The interdependence of our financial systems demand that we collectively strengthen our efforts in knowledge sharing and coordination. As the

financial sector moves on from bilateral to networked business models, so too must international institutions and domestic authorities enhance mechanisms through which to co-innovate, share experience and coordinate efforts to promote an orderly adoption and integration of innovation. The healthy development of such an ecosystem will result in mutually beneficial cooperation among stakeholders, and eventually, help financial services be delivered at lower cost, higher speed and at better quality to more consumers.

As this emerging field develops, supervisory authorities might need to be granted enough power and resources to exercise effective, flexible and principles-based prudential supervision. However regulatory approaches should not be a substitute for building effective, permanent regulatory and legal frameworks that may eventually need to be established to create transformational change.

This paper provides an overview of different regulatory approaches to Fintech, discusses their pros and cons using country case studies where appropriate, while providing high-level guidance and allowing policymakers to draw from lessons and learnings across the globe.

FIGURE 2: Process to Identify Regulatory Approaches and Policy Responses Towards Fintech







INTRODUCTION

Technology enabled innovation in financial services are fast reshaping economic and financial landscape—promising customer-centric products and services, delivered with resilience, diversity and depth. Fintech has the potential to significantly disrupt the traditional business model of financial institutions by enhancing efficiencies, reducing costs and expanding access to financial services. While presenting opportunities, Fintech also presents risks at both the macro and micro levels.

Digital disruption however is not new, and we have long been able to summon movies, food, cars and flowers at the touch of a button. However, the impact on the financial sector is different, primarily due to a) the macroeconomic impact it can have on financial integrity and stability, b) the challenges it poses for regulators and policymakers and the potential legal amendments that might be required and c) the risks towards consumers. This makes it vitally important that as policymakers foster an enabling environment,²¹ the financial sector policy framework and the potential risks to statutory objectives are monitored closely and mitigated.

BOX 1

Potential Impacts of Fintech on Financial Inclusion

Financial inclusion is one of critical drivers of poverty reduction and economic growth in emerging markets and developing economies as identified by the G20. Currently, an estimated 1.7 billion adults globally lack access to a transaction account and are excluded from the formal financial system.¹⁸ While there have been tremendous gains that have already been achieved in furthering inclusion, the fast-evolving digital economy together with effective supervision—which may be digitally enabled- are essential to cross some of the remaining hurdles in achieving financial inclusion.^{19,20} New technology-enabled financial services such as peer-to-peer (P2P) lending, crowdfunding, alternative credit scoring, and new forms of savings, remittances and insurance, if properly regulated, can extend the benefits of financial inclusion to millions of unbanked and underbanked people around the world.

This has led to financial sector policymakers, regulators and supervisors²² worldwide finding themselves in a regulatory dilemma when trying to achieve the right balance between enabling innovative Fintech and safeguarding the financial system. Regulators are facing many impediments to striking this balance, and effectively supervising and regulating emerging innovations remains a challenge. According to the *Regulating Alternative Finance*²³ report, which surveyed 111 jurisdictions, the top four reported impediments to effectively supervising emerging innovation include (i) limited technical expertise (65 percent); (ii) limited funding / resources (48 percent); (iii) jurisdiction over the activity is unclear or limited (41 percent); and (iv) need to coordinate the activities of multiple regulators (38 percent).

To this end, in response to requests from policymakers keen to foster Fintech's potential benefits and to mitigate its possible risks, the WBG and IMF in collaboration developed the "Bali Fintech Agenda" (BFA). As individual countries formulate their policy approaches, the BFA brings together and advances key issues for policymakers and the international community to consider. It distills these considerations into 4 key objectives:

- **Objective 1:** Foster enabling environment to harness opportunities
- **Objective 2:** Strengthen financial sector policy framework
- **Objective 3:** Address potential risks and improve resilience
- **Objective 4:** Promote international collaboration

Each of these objectives are further divided into 12 elements arising from the experiences of member countries²⁴ (See Annex 1). The paper expands specifically on the BFA Elements VI (Adapt **Regulatory Framework and Supervisory Practices** for Orderly Development and Stability of the Financial System) and VII (**Modernize Legal Frameworks** to Provide an Enabling Legal Landscape) as they relate to adaptation of Regulatory Framework, Supervisory Practices and Legal Frameworks.

The report introduces a range of regulatory responses that have been used by regulators thus far to engage with Fintech and provides guidance for policymakers to understand the benefits and limitations of each, while taking into context the determinants for their relative appropriateness within jurisdictions. While some Fintech activities can often be covered within existing regulatory frameworks, the majority of jurisdictions are taking or planning to take additional regulatory measures to respond to emerging Fintech services, the scope and scale of which vary substantially including new laws, Innovation Offices, Regulatory Sandboxes and even reskilling to respond to transforming environment.²⁵

The various approaches to innovation seen globally have been collated into four main categories. The paper offers particular focus on the roles of Innovation Facilitators (a collective term for Regulatory Sandboxes, Regulatory Accelerators and Innovation Offices) as novel and prevalent concepts. However, it is important to note that there is no one size that fits all. Assessment against several criteria including the maturity of the sector, gaps in service offerings, robustness of the regulatory framework, trust in the system, among other considerations, are required in order to effectively gauge the relative appropriateness of each approach within different jurisdictions.

This paper is structured to describe the different challenges facing regulators given the rise of Fintech innovations in Section II and the various regulatory approaches being taken as a response to emerging innovations in Section III. Sections III also expands on each of the regulatory approaches in turn, and Section IV and V provides guiding considerations to support policymakers evaluating an appropriate regulatory approach for their jurisdiction. Also included are results from the Global Fintech Survey conducted as part of the Bali Fintech Agenda on the approaches taken by jurisdictions and the WBG-CGAP global survey on lessons learnt from existing Sandboxes experiences. Where possible, the paper includes country examples as case studies, these are meant to be for illustrative purposes only and are not displayed as examples of best practice.



|| CHALLENGES IN REGULATING FINTECH

There has been an increasing number of non-bank financial institutions that have come into existence since 2008, and innovation will continue to accelerate. Although there are numerous benefits that Fintech brings, policymakers need to also be cognizant of the risks to consumers and, more broadly to financial stability and the challenges that regulators face in regulating this, as yet, unfamiliar territory.

As the financial system adapts, concerns arise regarding a range of issues, including: consumer and investor protection; the clarity and consistency of regulatory and legal frameworks, and the potential for regulatory arbitrage and contagion; the adequacy of existing financial safety nets, including lender-of-last-resort functions of central banks; and potential threats to financial integrity. Moreover, the adoption of Fintech may pose transition challenges, and policy vigilance will be needed to make economies resilient and inclusive, so as to capture the full benefits of this emerging trend.

This brings a number of challenges for regulators. One of the most prominent challenges of regulating Fintech is that it **blurs international borders** and creates borderless platforms. Providers can offer services globally, causing complex transaction monitoring for public authorities. This issue is exacerbated as some of the players are **outside the scope of regulation and regulation is not harmonized** across borders highlighting the need for international co-operation. These include services such as crypto-exchanges, peer-to-peer lenders and those offered by Big Tech players—like Google, Amazon, Facebook and Apple that are entering the realm of financial services.

Another important issue that regulators have had to deal with is the **increased disintermediation** of the value-chain and the bypassing of traditional intermediaries. This is further complicated by bringing **different sectors** from finance and technology together with to telecommunications and infrastructure to compete and collaborate as they provide services. Often sectors fall under the mandate of different regulators and call into question regulators' assumptions about market participants and practices. The rate of adoption of Fintech and the potential for players to **scale rapidly** and the impact this has on the financial system puts further pressure on the regulator to respond rapidly without necessarily having the full picture. Other issues include the **lack of reliable information** about the structure and operations of Fintech markets and the fragmentation of the institutional and supervisory setting.

The rapid pace of change necessitates regulators to be agile and adapt to the constantly changing environment. To do so, policymakers need to understand how to balance support and encouragement of Fintech and disruptive technologies while also mitigating

risks, including macro-fiscal risks of financial integrity and stability. While many Fintech risks might be addressed by existing regulatory frameworks, new issues are arising from new firms, products, and activities that lie outside the current regulatory perimeter requiring adaptation of the framework to facilitate the safe entry of new products,

activities, and intermediaries (Element VI, of Bali Fintech Agenda). It demands improvements and extensions of monitoring frameworks to support public-policy goals and to avoid disruptions to the financial system. The regulatory approaches described in this paper have developed in response to these demands.

BOX 2

Overview of Select Risks Posed by Fintech Firms²⁶

Alongside the many benefits of Fintech, Fintech can potentially have adverse systemic impacts on the financial system. Policymakers should be aware of major risks posed by Fintech prior to identifying an approach to regulating it. The major risks posed by Fintech include (but are not limited to):

Legal / Regulatory Risks: To the extent that Fintech activities are novel and are not appropriately covered by existing legislation, requiring legal and regulatory frameworks to adapt. This may be even more prevalent when considering cross-border activities. Moreover, due to the novelty of the products, services and players, the correct legal / regulatory response is not always clear. As a result, jurisdictions may buck the trend and swing towards particular approaches which may not always be the most appropriate option given the context of a particular jurisdiction.

Lack of coordination: Efforts toward adapting legal and regulatory frameworks to new innovations often span across different ministries, departments and agencies, who often have parallel and overlapping supervisory and regulatory functions. Without proper coordination, including clear lines of communication with other relevant stakeholders and institutions involved (both domestically and internationally), policy frameworks may become fragmented, designed inappropriately, or result in policy gaps, all which can impede the development or diffusion of innovations and limit efforts to promote stability and inclusion.

Consumer Protection and Capabilities: Vulnerable population groups do not always possess the required skills and experience to appropriately use digital financial products and services. As a result, new risks like fraud (i.e. digital ponzi schemes) or theft (i.e. data breaches from a P2P platform) are compounded for vulnerable consumers who are using digital channels to often enter the financial sector for the first time. In addition, insufficient digital disclosure, redress and transparency by new providers put depositors and investors at higher risks.

Oversight, Risk Management and Governance: The due diligence on Fintech firms could be somewhat less rigorous than for regulated firms that sit clearly within the regulatory perimeter introducing a risk of potential regulatory arbitrage. This could introduce contagion, dependency or even concentration risk that might not be mitigated in a timely manner. In addition, the rapid pace of change makes it more difficult for authorities to monitor and respond to risks in the financial system (including general business risk), especially given the limited availability of relevant data and indicators.

Cyber risks. Cyber-attacks are becoming more prevalent, and the susceptibility of financial activities to cyber-attacks is higher as products and services continue to migrate to digital platforms, particularly as different entities become more inter-connected and platforms are opened or shared. The greater use of technology and digital solutions expand the range and number of entry points for cyber-attacks. In this regard, Fintech activities could increase the overall vulnerability of the consumer as well as the financial system to cyber risk.

Data: Transparency, privacy and ownership. With the rise of open banking, BigTech and alternative sources of data, newer players have access to customer information given the nature of interaction with the customer. Privacy is an important element of trust in a service, but transparency is also needed to reduce transaction costs. Getting the balance right and answering questions around the ownership, usage and jurisdiction of the underlying data and transactions remain an important consideration for regulators.

Competition. Ensuring a level playing field between regulated financial institutions and Fintech players, and also amongst them, remains a challenge.

AML/CFT risks. Fintech can be used to conceal or disguise illicit origin or sanctioned destination of funds, facilitating money laundering or terrorist financing, and the evasion of sanctions. In the case of crypto-currencies, for instance, their traceability is limited due to user anonymity and anonymizing service providers that obfuscate the transaction chain. The decentralized nature of governance along with the anonymity offered by these platforms has created additional vulnerabilities that require regulatory responses.

Third-party reliance. Some Fintech activities can increase third-party reliance within the financial system. Disruptions to these third-party services may pose wider systemic risks the more central these third parties are in interconnecting multiple systemically important institutions or markets. In some cases, the third parties may not be financial institutions (e.g., cloud services) and hence not subject to financial regulation and supervision.

Business Risk of Critical Financial Market Infrastructures: If innovative payment and settlement services grow into critical FMIs, they could introduce a stability risk—for example, general business losses can have the potential to impair the provision of critical services and interfere with recovery or an orderly wind down. Some of these critical services may be provided by a parent company with other business lines, such as technology or data aggregation, which may sometimes conflict with the offering of financial services.

Contagion: For instance, large losses hitting a single Fintech firm could be interpreted as indicating potential losses for the whole sector and lead to contagion effects. Contagion risk may also be raised by increased access and problems associated with weak ‘links’ between the multiple entities involved within a particular financial activity.

Procyclicality: Fintech activities could be prone to procyclical market dynamics, due to more pronounced herd behavior. For instance, investors and borrowers on Fintech lending platforms may exhibit larger swings in behavior than with traditional intermediation of funds when a sudden unexpected rise in non-performing loans triggers a drying up of new funds. This risk would be further exacerbated if risk models were highly correlated due to reliance on similar algorithms—thereby potentially increasing the

amplitude of swings in asset prices. Finally, Fintech credit intermediaries might have limited incentives to accurately assess credit quality or maintaining lending standards. All of this could increase procyclicality in the provision of those financial services, and amplify shocks to the financial system when they arise.

Excess volatility: A number of Fintech activities are specifically designed to be fast. This might imply that they are more likely to create or exacerbate excess volatility in the system. For example, algorithmic traders may be programmed to be more active during periods of low volatility and to rapidly withdraw during periods of market stress, thus reducing market liquidity and increase asset price volatility. More generally, in more competitive environments, an increase in the speed and ease of switching between service providers could potentially make the financial system excessively sensitive and could cause capital adequacy concerns.

Disintermediation: Digital currencies and wallets could themselves displace traditional bank-based payment systems, while aggregators could become the default means of accessing banks and applying for new bank accounts and loans. Oligopolies or monopolies may emerge, for example, in the collection and use of customer information, which is essential for providing financial services.

Maturity & Liquidity Mismatch: For instance, maturity mismatches could arise through securitization or if lending platforms were to start using their own balance sheet to intermediate funds. In addition, Fintech enabled platforms may not perform liquidity transformations leading to liquidity mismatches.

Increased Inequality: Although the benefits of Fintech are often touted to help to improve financial inclusion of underserved consumers, Fintech also poses risks in widening the digital divide. Large, vulnerable populations still do not have access to sufficient mobile or internet services, and therefore new innovations may only capture higher-income population groups. As a result, as the industry evolves, products and services may be inappropriately designed for vulnerable population groups and can pose serious risks to ill-equipped consumers. This digital gap may contribute to increases in economic and social inequalities.





THE DIFFERENT REGULATORY APPROACHES

There does not exist a ‘blanket approach’ to applying regulatory approaches to Fintech, and different regulators have employed different methods and tools when assessing and responding to developments.

The most commonly observed policy responses fall into one of the following categories:²⁷

Policy Responses

- (i) **Applying** existing regulatory frameworks to new innovations and their business models, often by focusing on the underlying economic function rather than the entity. In this scenario, the existing regulatory framework does not change and instead authorities clarify how existing requirements apply to Fintech;
- (ii) **Adjusting** existing regulatory frameworks to accommodate new entrants and the re-engineering of existing processes to allow adoption of new technologies. In this scenario the current regulatory framework is amended to include Fintech activities; and
- (iii) **Creating** new regulatory frameworks or regulations to include (or prohibit) Fintech activities. This includes instruments like laws or new regulations to extend regulatory perimeters, introduce specific requirements for new class of players in the ecosystem or to specifically prohibit certain Fintech activities.²⁸

To support the development of an appropriate legal, regulatory and supervisory framework around the aforementioned policy response areas, many countries have been exploring new regulatory approaches aimed at promoting innovation and experimentation, particularly in areas where the regulatory framework is either unclear or not present. The approaches have been categorized into four broad categories as outlined below.

It is important to note that, while each category is distinct, integration among the approaches is common and they can be applied in tandem. In addition, it is possible for elements within each category to overlap, be applied differently in different jurisdictions, and share similar policy tools. Therefore, with these caveats in mind, the four broad categorizations are:

Regulatory Approaches

- 1. “Wait-and-See”:** This approach is defined by regulators observing and monitoring the trend(s) of innovation from afar before intervening where and when necessary. Over time, however, as regulators gain capacity around innovation, and technology becomes more commonly adopted by licensed entities, policymakers may incrementally change regulations over time. A “wait-and-see” approach has commonly emerged when there is regulatory ambiguity on whether an activity falls under the remit of a particular institution. Alternatively, when there has been a need to further build regulator capacity prior to issuing a response, a “wait-and-see” approach has offered regulatory forbearance in order to allow innovations to develop unhindered. In some instances, depending on its application, this approach also includes a “do nothing” response.
- 2. “Test-and-Learn”:** This involves the creation of a custom framework for each individual business case, allowing it to function in a live environment (often with a “no-objection” letter from the regulators). However, the extensiveness of supervision and oversight, as well as the safeguard measures put in place, have varied across jurisdictions. In some cases, policymakers have followed a “light-touch” without close supervision, and in others, policymakers have followed more extensive frameworks on a case-by-case basis that involved stringent supervisory attention and oversight;
- 3. Innovation Facilitators:** A point of contact or a structured framework environment to promote innovation and experimentation. This category includes Innovation Hubs/ Offices, Accelerators and Regulatory Sandboxes as different types of facilitators;
- 4. Regulatory Laws & Reforms:** Refers to the introduction of new laws or licenses—both overarching and product specific—in response to innovative firms or business models. In some cases, countries have used the development of new laws to expand their mandate, and to build capacity and accountability while supporting the development of more discreet, secondary reforms and amendments to frameworks. Often one or more of the aforementioned regulatory responses might eventually lead to regulatory reform and hence this is also defined as one of the three policy responses.

Each approach has its own pros and cons, and many share similar risks. A combination of the approaches can and has been used by different jurisdictions.

Below each approach is discussed in turn highlighting the pros, cons and challenges of implementing them while providing country examples to illustrate their operation.

Guiding Considerations for Policymakers to Remain Agile and Mitigate Risks While Applying Regulatory Approaches towards Fintech

The potential benefits of Fintech are fueling policymakers to establish new regulatory approaches and initiatives to enable innovation. Across the regulatory responses and approaches listed in this paper, policymakers should also recognize the need to establish methods to mitigate risks of Fintech when employing new regulatory approaches to enable (or even prohibit) innovation. Below we summarize a select few considerations (adapted from the FSB note²⁹) for policymakers, which can guide policymakers when employing a new Fintech regulatory approach:

- **Assess the regulatory perimeter and update it on a timely basis.** Regulators should be agile when there is a need to respond to fast changes in the Fintech space, and to implement or contribute to a process to review the regulatory perimeter regularly.
- **Build staff capacity in new areas of required expertise.** Supervisors and regulators should consider placing greater emphasis on ensuring they have the adequate resources and skill-sets to deal with Fintech.
- **Mitigate cyber risks.** Cooperation at the global level has the potential to minimize undesirable consequences of fragmentation of the cyber-security efforts and raise awareness of cyber risks. Ex ante contingency plans for cyber-attacks, information sharing, monitoring, a focus on incorporating cyber-security in the early design of systems, and financial and technology literacy could help to lower the probability of cyber events that have adverse effects on financial stability.
- **Monitor macro-financial risks.** While there are currently no compelling signs of these risks materializing, experience shows that they can emerge quickly if left unchecked.
- **Further develop open lines of communication across relevant authorities.** Due to the potentially growing importance of Fintech activities and the interconnections across the financial system, authorities may wish to develop further their lines of communication to ensure preparedness.
- **Share learnings with a diverse set of private sector parties.** In order to support the benefits of innovation through shared learning and through greater access to information on developments, authorities should continue to improve communication channels with the private sector and to share their experiences.
- **Contribute to greater international cooperation.** Increased cooperation will be particularly important to mitigate the risk of fragmentation or divergence in regulatory frameworks, which could impede the development and diffusion of beneficial innovations in financial services and limit the effectiveness of efforts to promote financial stability.

REGULATORY APPROACH 1: “WAIT-AND-SEE”

The Wait-and-See approach, as the name indicates, involves the regulator in a primarily observer capacity. This approach consists of permitting new Fintech business models to function with the explicit intention to allow innovations to develop unhindered by what could be interpreted as disproportionate regulatory requirements; those, that might disincentivize competition or be potentially disproportional to the risk posed or the economic usefulness of the product offered. While, at the same time affording regulators the ability to informally monitor trends determining when and where formal intervention is performed. As regulators gain capacity around innovation, and technology becomes more commonly adopted by licensed entities, policymakers may incrementally change regulations over time. A “wait-and-see” approach has often emerged when there is regulatory ambiguity on whose remit a particular activity falls, or a when there is a need to monitor the market and build regulator capacity prior to issuing a response. This should not be misinterpreted as a passive approach, but rather one where active learning is taking place usually during the time when the technology is still nascent and not expected to adversely impact the statutory objectives—stability, protection, integrity and/or inclusion—of the policymaker.

Many jurisdictions have applied this approach when there is a collective need to better understand a technology and its possible application(s) in the financial market. For instance, The European Securities and Markets Exchange (ESMA),³⁰ used this approach to monitor developments in Distributed Ledger Technology (DLT), and a number of jurisdictions have adopted this method to review their reactions to cloud computing before releasing guidelines.

A country where this approach was used, albeit with mixed results, is China and its initial response to both Peer-2-Peer (P2P) lending and mobile payments. While the story for P2P lending did not end very well (See Box 4), this approach served the widespread mobile payments market—dominated by Alipay and WeChat—well. Since its inception in 2013, the mobile payments landscape in China was unregulated given its relative small scale at the time of inception. As such, the PBOC did not include restrictions such as transaction caps and the need to report transaction details to the bank holding the trust account.³³ Although small step changes in regulatory policies were introduced frequently such as tightening access to payment licenses and requirements on renewals, this was not limited to mobile payment operators. Recognizing the need for a more fundamental change in regulation, the People’s Bank of China (PBOC) began regulating mobile payments on June 30th, 2018,³⁴ implementing a new mobile payment regulation requir-

BOX 4

“Wait-and-See” Approach by the Central Bank of Ireland around Crypto-assets³¹

The Central Bank of Ireland does not have specific cryptocurrency regulation, and there is no prohibition of cryptocurrency activities within Ireland. Instead, the Central Bank of Ireland has taken a “wait-and-see” approach to the regulation of cryptocurrencies. In March 2018, a speech made by the Director of Policy and Risk at the Central Bank of Ireland shed light on their approach:

“To the extent that virtual currencies, ICOs, or those involved in their issuance or trading, are not subject to existing regulation, then the question arises: has the regulation fallen behind developments and needs updating. Or is it the case that these activities are just new examples of old types of activity and there is no need for further regulatory intervention, beyond making consumers properly aware of the significant risks through consumer warnings? Or might it simply be too early to say? . . . At the Central Bank, we are actively engaged with other European and international policymakers as we all try to figure out a way forward, including for example, work at the ESAs [European Supervisory Authorities]. Given the cross-jurisdictional nature of virtual currencies and ICOs, we at the Central Bank welcome these efforts by the ESAs.³²”

In parallel to its approach, the Central Bank of Ireland has also endorsed a statement by the European Banking Authority, warning consumers of risks when undertaking transactions with virtual currencies (government-issued notices have been a common action across all jurisdictions and regulatory approaches).

ing all mobile payments to go through the central bank's clearing system. In essence, the authorities monitored the market, reacted to trends and introduced a significant change in regulation that was in part introduced to prevent instances of money laundering or fraud, as well as issues that were rampant in the P2P market.

Wait-and-See approaches, while useful, have shown to have a shelf-life and need to be carefully used. While some jurisdictions have employed a passive approach, it is important to note that an active approach is often required to better mitigate risks to the financial sector through active learning. With a Wait-and-See approach, active learning should take place usually during the time when the technology is still nascent and not expected to adversely impact the statutory objectives—stability, protection, integrity and/or inclusion—of the policymaker. When the regulator actively monitors the market, regulators can begin to recognize when more direct action is needed especially as conduct and prudential objectives are impacted.

Wait-and-See approaches worked well for areas such as mobile payments in China, but did not achieve the same degree of success with P2P models. In the case of P2P, regulators globally have grown more familiar with P2P lenders entering the financial space and now have accumulated experience in dealing with the risks associated with their activities allowing them to respond in a timely manner. However, there will always be instances when non-traditional entities unfamiliar to regulators might seek to enter the market and a wait-and-see approach will continue to remain relevant.

REGULATORY APPROACH 2: "TEST-AND-LEARN"

The Test-and-Learn approach can be defined as cautiously permissive and involves some flexibility that is provided on a case-by-case basis. Flexibility is granted by way of dispensations from particular rules for new firms or new activity(s). The extent to which that regulators can make use of the tools and associated dispensations, depends in part on the specific legislative context. It is intended to be an agile approach, where regulators faced with innovative products can grant restricted licenses or partial exemptions for new-entrants or established intermediaries testing new technologies. This flexible and proportionate approach should ensure however, that the principles of the existing regulation continue to be upheld.

This approach has the potential to provide regulators with the opportunity to observe and understand the risks and how the market is developing so that when a regulatory strategy is developed it is appropriately suited to the risks the innovation product, process or application poses. Similar to the Wait-and-See approach, this too is not intended to be used indefinitely, but rather to provide regulators with sufficient data and experience needed to adjust regulation or apply it accordingly. Early adopters of this approach include Tanzania,⁴¹ Philippines and Kenya. (See Box 6).

In the early 2000s the Philippines, regulators stated expressly that their approach is to "follow the market", while allowing non-banks to offer financial services and scale through licensed remittance agents and offering operators a "letter of no objection". After observing the market's development for a few years incorporating the learnings from the test period, Bangko Sentral ng Pilipinas issued e-money regulations in 2009 carefully tailored to the Filipino market.⁴²

This approach differs from the more structured approach such as a Regulatory Sandbox (described in detail below) in that the oversight undertaken by regulators is at an arm's length and requires oversight to be conducted on the open market without a ring-fenced or controlled environment. Each application is decided on a case-by-case bases and the extent to which regulators can make use of dispensation(s) depends on their specific legislative context. The national legal mandate of a country determines the powers available to the regulator and the ability to extend dispensations with or without associated legislative action such as amendment of laws. For instance, only some legislations allow for "no objection" letters as in the case of Kenya, or restricted licensing.

The Test-and-Learn approach however, has some drawbacks when it comes to scalability. While small or highly specialized Fintech ecosystems are well suited for such a model, jurisdictions with large and diverse Fintech markets could cause a strain on regulatory capacity and make it difficult to handle a growing number and variety of actors requesting exemptions.

In addition, ensuring equal treatment of participants and a level playing field could become more difficult. This is illustrated again with the case of M-Pesa in Kenya that achieved an initial exponential rise driven by demand from a growing customer-base which required the number of agents servicing these customers to also increase multi-fold. As a bank product reliant on a telco-provided trans-

BOX 5

Wait & See Approach: The China Story

Peer-to Peer (P2P) lending platforms are a method of debt financing that directly connects individuals or companies with lenders. They were seen as an innovative model that could cater to those borrowers who might have been overlooked by traditional financial institutions. The first online lending platform, Zopa, was founded in the UK in 2005 and Chinese companies followed suit in 2007, starting with PPDAL Group, with rapid growth since then.

In China, P2P was touted as a pioneering model to help reform the mainland's finance sector attracting money from investors by offering them high yields (8–12% compared to the much lower base interest rate offered by the government).³⁵ The Chinese authorities decided to adopt a Wait-and-See approach as these platforms served the useful purpose of providing many small-scale businesses, micro-entrepreneurs and at-risk individuals with credit they could not previously access. While this was potentially an accurate approach to use, allowing the market to grow faster and reach scale more so than any other jurisdiction,—according to People's Bank of China (PBOC), there were over 8000 P2P platforms and over 50 million registered users at the beginning of 2018 that together conducted 17.8 billion RMB worth of transactions making it larger than the rest of the world combined.³⁶ The fact that the regulation did not kick in at the right time caused some issues.

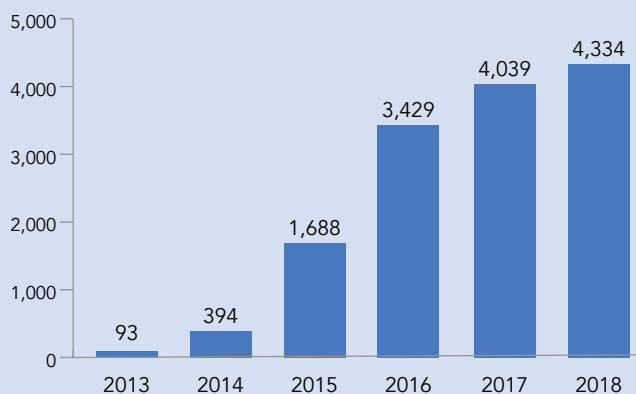
By the end of 2015, prior to the issuance of any regulations or an established regulatory framework, there were roughly 3,448 P2P platforms in operation, 1,031 (roughly 1 out of 4) of which were categorized as either having difficulty paying off investors, being investigated by the national economic crime investigation department, or whose owners have disappeared with investor funds.³⁷ The regulators' slow response to the aggressive growth led to multiple scams and controversies giving rise to the country's largest Ponzi scheme. By 2016, the Chinese Banking Regulatory Commission reported that roughly 40 percent of P2P lending platforms were in fact Ponzi schemes.³⁸ This set-in motion a domino effect with wide-spread panic among the lenders leading to shrinking of transaction

values, which further prompted defaults preventing legitimate platforms from functioning. In a little over two years, the industry had gone from zero to about \$218 billion in outstanding loans.

The initial hands-off approach began to taper off by mid-2015 when the PBOC provided a series of announcements leading up to China's first regulatory instrument for online lending, the 'Interim Measures on Administration of Business Activities of Online Lending Information Intermediaries', issued in August, 2016. In addition, Chinese regulators prepared a set of P2P market interim measures (constituted as the "1+3" system) in line with the overall internet finance development guidance.³⁹ Since then, Chinese authorities have ramped up regulations and have shut down many small and medium-sized P2P lending platforms across the country. They are also looking to incorporate a model of P2P marketplace lenders working alongside banks with the latter functioning as custodian partners.

Since 2016, China continued to take a more cautious regulatory approach. In less than two years, regulations triggered the shutdown of the majority of P2P lending platforms from 2016 to 2018. By 2018, only 1,021 providers remained in place, and the Chinese government expects that number to further shrink to around 50–200 providers over time.⁴⁰

Failed peer-to-peer lending platforms in China (cumulative)



Source: Bloomberg news

BOX 6

Common Dispensations provided

- Letter of no objection: A letter that allows a firm to operate in the open market without a specific license with an implicit sanction from the regulators. No objection letters can include restrictions and reporting requirements as deemed necessary by the regulator.
- Letter of no enforcement/action: A letter essentially stating that no enforcement proceedings will be taken against the firm to whom the letter has been issued as long as it works within the boundaries delineated in the letter.
- Restricted authorization: A tailored authorization process that essentially restricts firms to only offer those products or services as agreed with the regulator. Some restricted authorizations are associated with an authorization fee.

The extent to which regulators can make use of dispensation(s) depends on their specific legislative context. The national legal mandate of a country determines the powers available to the regulator and the ability to extend dispensations with or without associated legislative action such as amendment of laws.

BOX 7

Test-and-Learn Approach: Kenya

In 2007, when Safaricom approached the Central Bank of Kenya (CBK) with their proposal to set up a mobile phone-based money transfer service, it raised a dilemma for the regulator. CBK was unsure how a financial service offered by a telecommunication operator could fit within the existing banking regulation. Although the primary instinct of a risk-averse regulator would have been to deny permission to a largely unknown, new financial service, the CBK took into consideration the wide reach and potential this new service might have.

At this time the Banking Act did not provide basis to regulate payment products offered by non-banks, and CBK concluded that it had no clear authority over non-bank funds transfer, and hence would not interfere in allowing the telecommunications operator to launch the M-Pesa. In order to allow a telecommunications operator to provide a transactional account, the CBK initiated some actions. First, a team of CBK legal experts developed Trust Account requirements invoking the Trust Law. The Central Bank also issued a letter of no objection, indicating that CBK would allow the service to launch, provided certain basic conditions were met including:⁴³

- A. Appropriate measures are put in place to safeguard the integrity of the system in order to protect customers against fraud, loss of money and loss of privacy and quality of service.
- B. The system will provide adequate measures to guard against money laundering.
- C. Proper records are kept and availed to regulatory authorities in formats as may be required from time to time.
- D. M-Pesa will observe all existing laws governing its relationship with its agents and customers.

This letter empowered Safaricom to launch M-Pesa which attracted one million users in the first nine months and rose to four million in 18 months. The resounding success propelled Kenya into the poster child for creating enabling regulatory environments particularly those contributing to financial inclusion and economic growth. Today, over 93% of the population have access to mobile payments⁴⁴ and circa 50% of Kenya's GDP is processed over M-Pesa.

mission system, M-Pesa defied the distinction between bank-led and telco-led financial innovation.⁴⁵ A lack of threshold rules and regulations for agents caused some cases of lack of product transparency and information at the point of transaction.

The extensiveness of supervision and oversight, as well as the safeguard measures put in place, have varied across jurisdictions. In some cases, policymakers have issued light frameworks without close supervision, and in others, policymakers have issued extensive frameworks on a case-by-case basis that involved stringent supervisory attention and oversight. The roles and responsibilities of the regulator when employing a 'Test-and-Learn' approach cannot be overstated, and the capacity of a regulator to provide adequate oversight and assessment of the market is critical to mitigate risks. While the approach may be beneficial to regulators with significant market experience, who are well equipped to make outcomes-based decisions that can have longer term benefits, regulators with less experience might find it hard to calibrate dispensations optimally. Weak oversight may cause error or difficulty in generalizing results to the broader environment, and could be inefficient when developing more standardized regulatory solutions. In addition, suboptimal or excessive dispensation can lead to innovations developing inadequately in the market or may cause unacceptable risks and losses to consumers. This also raises questions around the accountability and responsibilities of regulators, particularly in the event of legal risks or negligence, calling into question the role of regulators as enablers.

Although the framework may continue to remain viable, each Test-and-Learn approach has a maturity—as the market develops, a continuation of this approach may begin to have adverse consequences for competition and consumer protection. Without a sufficient shift towards more active market supervision instances of anti-competitive practices could⁴⁶ arise that need transformative regulatory change to combat them.

REGULATORY APPROACH 3: INNOVATION FACILITATORS

A number of policymakers globally have begun to adopt an Innovation Facilitator approach in response to Fintech developments. While similar in some respects to the Test-and-Learn approach, the primary difference is that a Test-and-Learn approach is bottom-up approach where

the market steers the endogenous demand for further improvement and adaptation of the legal and regulatory framework; while Innovation Facilitators are top-down, regulator driven initiatives.

Typically, Innovation Facilitators are one of three types: Innovation Hub (also referred to as Innovation Offices), Regulatory Sandboxes and Regulatory Accelerators (also referred to as Regtech labs):

- **Innovation Hub:** An Innovation Hub can take various avatars depending on the appetite and mandate of the authority. It is most often a central contact point to streamline queries and provide support, advice, guidance to either regulated or unregulated firms to help them navigate the regulatory, supervisory, policy or legal environment. Support can be direct or indirect via guidance to the market and does not generally include testing of products or services.
- **Regulatory Sandboxes:** A Regulatory Sandbox, which over 60 policymakers (November 2019) either have in place or are planning to deploy, is a virtual environment that enables the live testing of new products or services in controlled and time-bound manner. This involves a more structured approach which often includes controlled experimentation in a live environment to promote innovation and guide interactions with firms while allowing regulators good oversight of emerging financial products. It is open to innovative business models, products and processes both regulated and not, or which might be regulated in the future. Typically, firms that apply to enter a Regulatory Sandbox already have a developed offering and are testing the viability of that offering in the market.
- **Regulatory Accelerators:** Accelerators are more inward focused and enable partnership arrangements between innovators or Fintech firms and government authorities to innovate on shared technologies to most commonly solve pre-defined use cases. It should be noted that firms that partner with an institution as part of an Accelerator process, most likely do not fall within the regulatory perimeter due to issues of conflict of interest.

Innovation Facilitators tend to be more resource intensive than the previously described approaches with a number of regulators setting up wholly new units requiring staff with specialized skill sets. The units have a specific focus to promote greater engagement and knowledge exchange with new-entrants as well as incumbents trial-

ing new products and technologies. **Annex 2** contains a non-exhaustive list of operational and proposed Innovation Facilitators globally.

While it was found that while Regulatory Sandboxes⁴⁷ were a common response adopted by policymakers, there is insufficient evidence to claim that it was the most effective. In fact, the Global Fintech Survey (GFS)^{48,49} of country Fintech experiences conducted in 2019 as part of the WBG-IMF Bali Fintech Agenda gathered responses from nearly a hundred countries. Of those surveyed, it was identified that nearly thirty-three Sandboxes have been initiated since 2016, bringing the total number of Sandboxes globally to over 60⁵⁰ at last count.

Other Innovation Facilitators, however, specifically Innovation Hubs which have been used instead of, or as a complement to, a Regulatory Sandbox have shown promise of being more effective and suitable to business needs. They are often seen as the first step along a regulatory journey—providing support, advice, guidance and even,

in some cases, physical office space, to either regulated or unregulated firms to help them identify opportunities for growth, and navigate the regulatory, supervisory, policy or legal environment. However, the results are still developing, and it is too early to draw a definitive conclusion on the outcomes.

Innovation hubs

An Innovation Hub, or Innovation Office as they are sometimes referred to, often provides a dedicated point of contact for firms to raise enquiries with competent authorities on Fintech-related issues and to seek non-binding guidance on regulatory and supervisory expectations, including licensing requirements.⁵¹ Most commonly, they provide support, advice, guidance and even, in some cases, physical office space, to regulated and unregulated firms. Single points of contact, dedicated newly created units, identified networks of experts or similar organizational arrangements can be considered as Innovation Hubs.

FIGURE 3: Benefits of an Innovation Facilitator for Regulators, Firms and Individuals

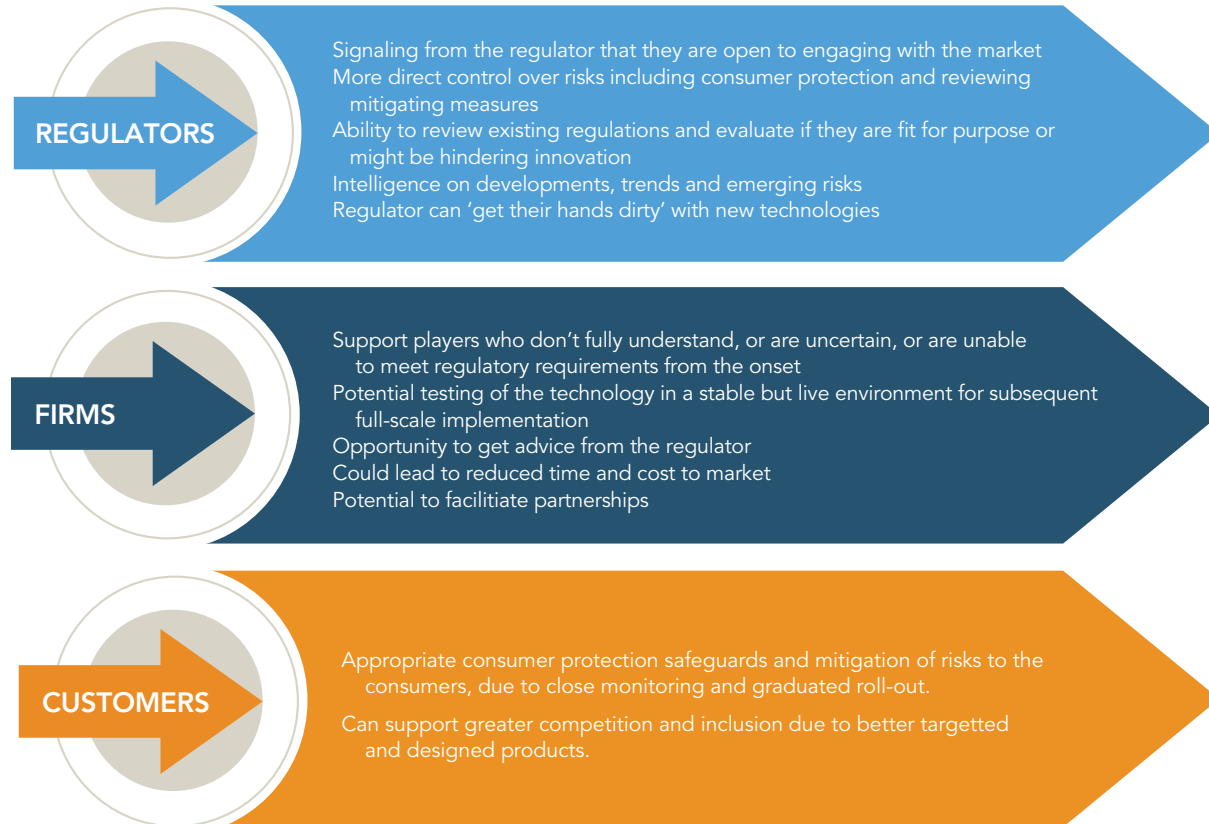
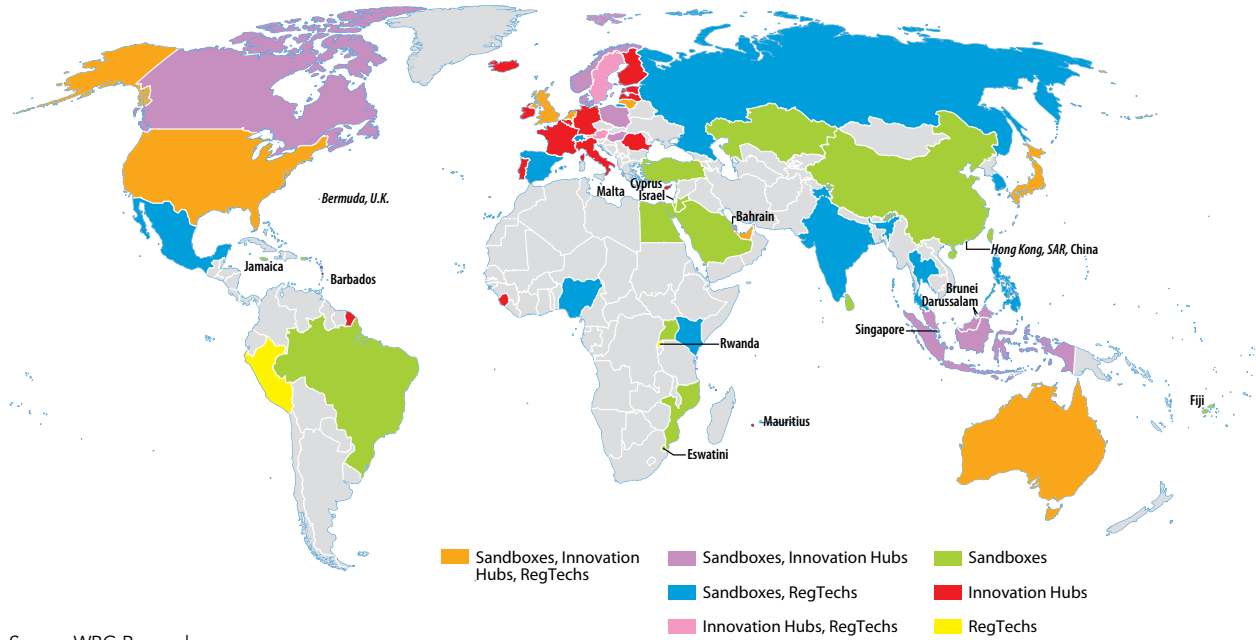
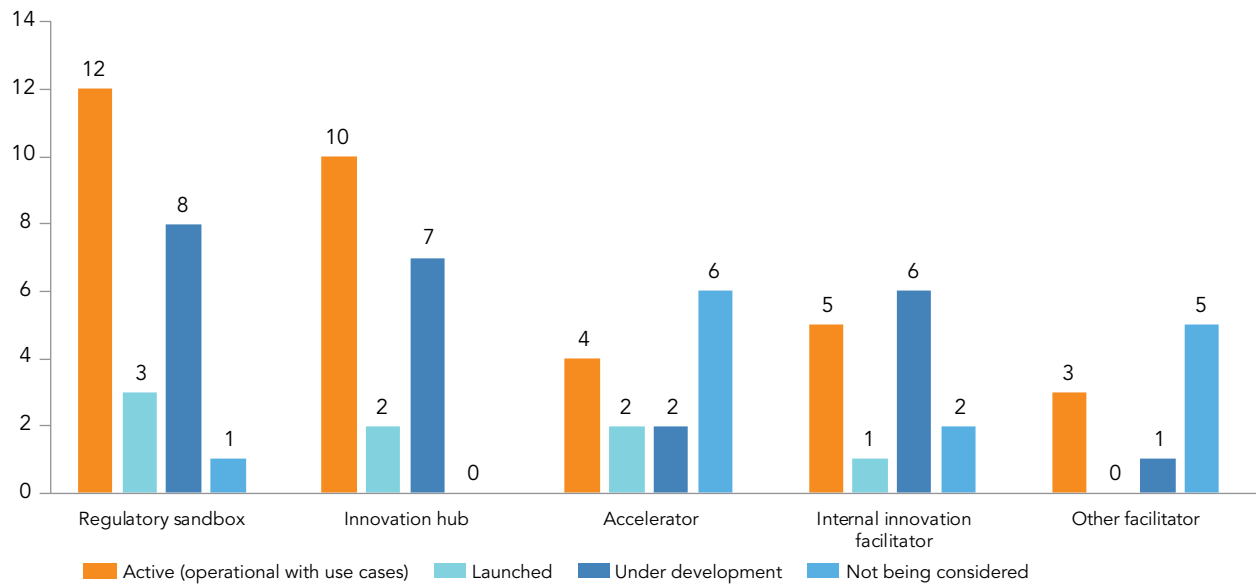


FIGURE 4: Sandboxes, Innovations Hubs and Regtech Labs around the World



Source: WBG Research

FIGURE 5: Prevalence of Regulatory Innovation Initiatives Globally



Source: World Bank and CGAP. "Innovation Facilitator Survey". 2019

Essentially, an Innovation Hub can take any form that is seen most beneficial and suitable to the regulator while signaling to the market that the regulator is keen to interact with and enable the emerging field of Fintech. Although providing guidance tends to be their most common function, their function can for instance, range from hosting and attending industry events to providing assistance in making an application for authorization or new products. They facilitate regulator–innovator engagement and act as a point-of-contact for the industry both for mutual learning as well as for policy and regulatory guidance. Supervisors may use Innovation Hubs to understand and monitor the new business models and technologies as well as to identify regulatory and supervisory challenges associated with Fintech.

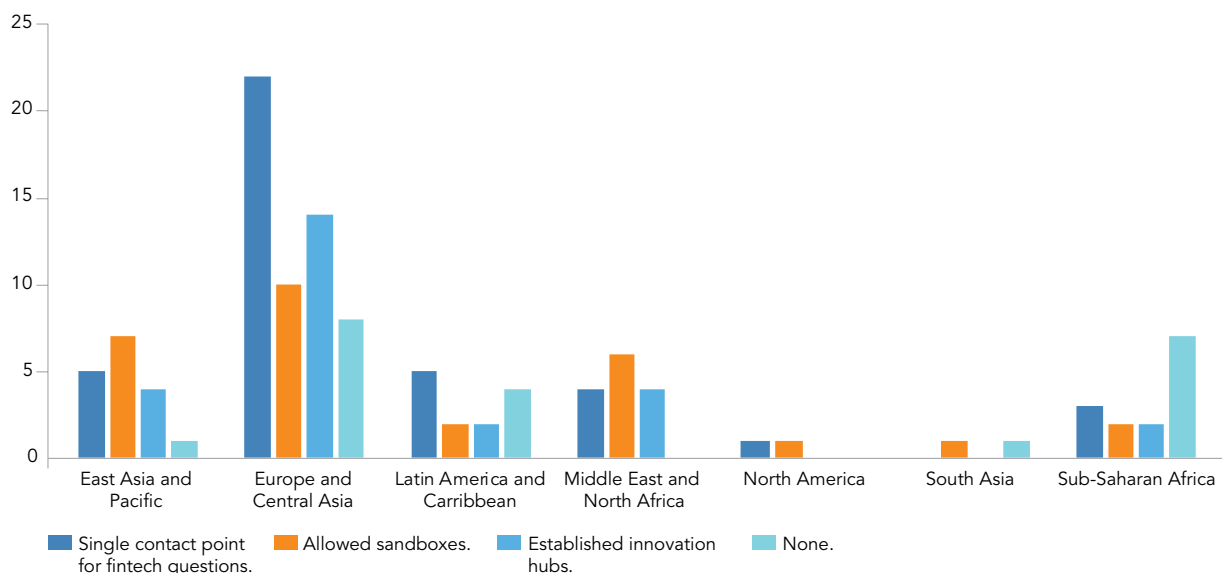
An example is the Australian Securities and Investments Commission (ASIC) who in 2015, set up an Innovation Hub to assist Fintech start-ups navigate the regulatory system and its laws, including by providing *informal* guidance from senior regulatory advisers about the overarching regulatory framework and questions relating to ASIC’s relief powers. For the regulator, this interaction helps to inform them about emerging issues around Fintech that could be relevant for policy development. Some regulators such as Malaysia (Digital Finance Innovation Hub) and Thailand (OJK Infinity⁵²) have set up

innovation hubs with other players that go beyond the financial sector and not only provide a regulatory clarity but also enable service providers, including financial institutions, Fintech start-ups and academics to collaborate. This depicts the range of possible functions that an Innovation Hub (or office) can have.

An Innovation Hub can be particularly useful for those jurisdictions who are considering their approach to Fintech and can be less resource intensive to establish. They can be implemented in complement with other approaches and are a good primary step for regulators to gauge the interest and maturity of the market. In addition to being less resource intensive, according to the ‘Regulating Alternative Finance’ WBG–CCAF survey,⁵³ respondents reported that Innovation Offices supported a much higher number of firms than Regulatory Sandboxes.

Respondents of the survey had collectively supported over 2,000 firms through Innovation Offices but less than a tenth of that (180) total through Sandboxes (see Figure 7). This ratio holds even for those jurisdictions that have both types of initiatives in place—the median regulator reported ten times as many Innovation Office alumni as Sandbox tests. This can be attributed to the fact that the most important service offered to firms from most

FIGURE 6: Propensity of Regulatory and Supervisory Innovation Facilitators towards Fintech



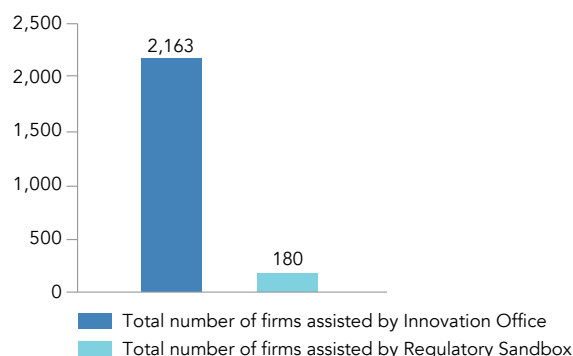
Source: WBG-IMF Global Fintech Survey 2019

(Note: Single contact point here refers to a single person or dedicated email address where queries can be sent and is not the same as an Innovation Hub)

Innovation Facilitators, is by a large margin, guidance—as was highlighted in the latest WBG-CGAP Innovation Facilitator survey 2019.⁵⁴ The other services compared being funds, infrastructure and waivers. While different initiatives provide different functions and benefits, the successes of Innovation Offices can be instructive for regulators considering how best to use their limited resources to most efficiently achieve impact.

Recognizing the common challenges and the cross-border nature of Fintech, Hubs have also been set up on a global level to support and encourage coordination among international regulators and to pool resources. An example of this is the Bank of International Settlements (BIS) Innovation Hub(s). The BIS established innovation Hubs with the explicit intention to support central bank collaboration on research and innovation in financial tech-

FIGURE 7: Number of Firms Supported by Innovation Offices and Regulatory Sandboxes



Source: World Bank and Cambridge Center for Alternative Finance. "Regulating Alternative Finance: Results from a Global Regulator Survey". 2019

BOX 8

Example of Innovation Hub Approach—Bank of France-ACPR Fintech Innovation Unit

In France, there are three main authorities in the financial sector. **Banque de France** (the French Central Bank); **Autorité de Contrôle Prudentiel et de Résolution-ACPR** (the French Prudential Supervision and Resolution Authority)- an independent supervisory authority that operates under the auspices of the Banque de France; and **Autorité des marchés financiers** (AMF) the securities regulator in France.

In June 2016, the ACPR Fintech-Innovation unit was set up to act as the single point of contact for innovative financial sector projects in both the banking and insurance sectors. The unit provides an interface, between project initiators and regulators while coordinating between the various ACPR departments within Banque de France on projects regarding payment services, as well as with AMF (through its Innovation and Competitiveness Unit) for projects regarding investment services.

The primary objectives of the ACPR Fintech-Innovation unit are to support Fintech players to better understand the nuances of the regulatory environment, and to facilitate the approval or authorization processes should the firm require a regulated status.

However, it also has a secondary objective to assess the challenges, risks and opportunities related to technological innovation in the financial sector and the impact of this on financial stability. Learnings from which are then used to inform and contribute to global dialogue and research on the subject.

Demonstrating how an Innovation Hub can be a complementary to other approaches, and support coordination between different regulatory bodies, the ACPR Fintech-Innovation unit exists in parallel with the Fintech Innovation and Competitiveness Unit of the AMF; with whom they conduct consultations with the private sector in both formal and informal settings to discuss regulatory and supervisory subjects related to Fintech and innovation.

Another government initiative is the Banque de France's Lab, created under the responsibility of the Chief Digital Officer, specifically to bring the central bank's business lines closer to new practices and technologies. While more akin to an Accelerator or Regtech lab (see section below) the lab creates a space for collaboration and connects the Banque de France with innovative Fintech start-ups, to experiment with new concepts and technologies in connection with the activities of the central bank.

nology and accelerate their digital efforts while keeping in mind their statutory objectives. The first Hubs have been launched in Singapore, Hong Kong and Switzerland (see Box below).

Regulatory Sandboxes

A Regulatory Sandbox⁵⁹ is a controlled, time-bound live testing environment, defined by regulators which may feature regulatory forbearance and alleviation through discretions. It allows innovators to test, on a small scale, innovative products, services, business models and delivery mechanisms subject to regulatory discretion and proportionality. The testing environment may involve limits or parameters within which the testing firms must operate.

Sandboxes have generally been intended to facilitate those innovations that do not fit neatly into the current regulatory framework, but, as we see below the objectives for setting up a Sandbox have been varied. The idea stemmed from the use of Sandboxes in the tech industry where developers test software in a segregated environment to avoid risks to the wider system while allowing products to be safely brought to market. In the financial

world, Sandboxes tend to work in a live, but restricted environment and can be open to authorized and unauthorized businesses and technology firms providing services to entities based on tailored eligibility criteria.

At their core, Sandboxes are, formal regulatory programs that are a reaction to the rapidly changing backdrop of digital financial services. They provide a dynamic, evidence-based regulatory environment which learn from, and evolve with, emerging technologies. It should be highlighted however, that while Sandboxes bring the potential to change the nature of the relationship between regulators and financial services providers toward a more open and active dialogue and brings agility to the regulatory and supervisory framework, the evidence on Sandboxes from available data is yet inconclusive.

It is vital that regulators first consider the objective and the problem they are trying to solve before setting up a Sandbox as it will define both the design as well as the measurement of outcomes. Once defined, the regulator will need to identify if they have the appropriate statutory mandate to pursue the stated objective. The objectives for Sandboxes studied have varied, they can

BOX 9

The Bank of International Settlements (BIS) Innovation Hub

The Bank of International Settlements (BIS) has established innovation hubs to support central bank collaboration on research and innovation in financial technology. BIS launched hubs in Singapore, Hong Kong and Switzerland in 2019 to identify and develop insights into critical trends in technology affecting central banking; develop public goods in the technology space geared towards improving the functioning of the global financial system; and serve as a focal point for a network of central bank experts on innovation.⁵⁵

Each hub has been set up with a different area of focus in mind.

Hong Kong: It is expected that the Hong Kong center will look into the role of DLT and BigTech. The first projects by BIS and the Hong Kong Monetary Authority (HKMA) innovation hub explore the use of Distributed Ledger Technology (DLT) to digitalize trade finance processes, study the impact of BigTech on financial markets, and conduct a study on the application of Artificial Intelligence (AI) technology in the banking industry.⁵⁶

Singapore: In Singapore the focus is more on Suptech applications. The BIS and Monetary Authority of Singapore (MAS) hub are establishing a framework for public digital infrastructures on identity, consent and data sharing and creating a digital platform that connects regulators and supervisors with digital and technology solution providers.⁵⁷

Switzerland: The innovation hub by BIS and Swiss National Bank (SNB) focuses on examining the integration of the digital central bank money into the Distributed Ledger Technology infrastructure and addresses the rise in requirements placed on central banks to be able to effectively track and monitor fast paced electronic markets.⁵⁸

BOX 10

Assessing the Appropriateness of the Sandbox Option

Of the approaches described in this paper, the Regulatory Sandbox has been gaining substantial traction with regulators globally and over 60 have burgeoned in different parts of the globe over the last 3 years. But when should a regulator set up a Sandbox and what are the critical success factors for a Sandbox?

It is vital to understand the objective of setting up the Sandbox as well as the maturity of the Fintech segment and capacity and mandate of the regulator prior to implementing a Sandbox approach. Many jurisdictions that have already set up Sandboxes have failed to have many, or any, applicants (see box 11). This might belie the need for a resource-intensive Sandbox and an alternative approach might have served the regulator better.

Most Sandboxes will only admit those firms that have a viable product, enabling them to test the appropriateness of their business model for the market in which they want to operate. For those markets where the Fintech ecosystem is still nascent, other Fintech tools might be a better fit. In addition, Sandboxes are significantly resource heavy due to temporary framework that needs to be established, the detailed hands-on supervision and bespoke guidance that needs to be given to each individual firm in the process and the not insignificant consumer protection implications. A Sandbox approach may not always be the most appropriate approach for regulators struggling with capacity and resource constraints. (*These considerations are further expanded in Section IV: Evaluating the Right Regulatory Option.*)

include one or a combination of objectives:⁶⁰ including, to stimulate competition and innovation in the marketplace (e.g.: UK FCA), to ensure the regulatory framework is fit-for-purpose (e.g.: Singapore MAS), to recognize gaps in the availability of necessary market products (e.g.: Malaysia), or to explore a particular theme such as products pertaining to financial inclusion only (e.g. Sierra Leone). Moreover, a number of Sandboxes have the more general objective of “supporting innovation in financial technologies” making the measurement of outcomes somewhat intangible.

Sandboxes can be broadly broken into four- types (that are not mutually exclusive) as dependent on their primary objective:

1. Policy focused: These Sandboxes seek to specifically remove regulatory barriers to innovation and usually have the added objective of identifying if the regulatory framework is fit for purpose under the current market conditions.

A policy focused Sandbox can use the Sandbox process to evaluate particular regulations or policies. This could make the eligibility criteria for the Sandbox more focused in that it only accepts applicants that can help evaluate a specific regulatory hypothesis (i.e. whether a specific rule or regulation should change in light of

a specific test result, rather than the commercial viability of the underlying technology⁶¹). An example of this type of Sandbox is the one established by the Monetary Authority of Singapore (MAS) which assumes that the Regulatory Sandbox is a tool of last choice. Where there are no clear applicable regulation or the firm is unable to meet regulatory requirements from the onset, the Regulatory Sandbox will then support firms negotiate the regulatory requirements of specific activities.

2. Innovation Focused: These Sandboxes are more aligned with increasing competition in the marketplace through encouraging innovation and lowering the cost of entering the regulated marketplace. They test use-cases and the viability of new technologies and business models and hasten the route to market while building capacity around services or business models.

The most well known example of this Sandbox is the UK FCA (Financial Conduct Authority). Set-up in late 2015 and the initial proponent of the term ‘Sandbox’, the FCA is the most active in terms of the number of firms they have accepted into the process. The framework was set up under FCA’s objective of promoting effective competition and most firms graduate from the Sandbox to existing licensing regimes. No new

BOX 11

Australia's Sandbox: A Process of Iteration

In Australia, the first iteration of the Sandbox was revealed by the Australian Securities and Investments Commission (ASIC) in December 2016. Any eligible Fintech company needed only to notify ASIC of its intention to offer products and services within the Sandbox rules. No further approvals from ASIC or other regulators were required.

The relatively restrictive parameters (see below) of the Sandbox, however, resulted in limited participation with only one start-up utilizing the Sandbox in 7 months. ASIC therefore took further measures to improve the Sandbox, and the Government thereafter issued new draft legislation and regulations to create an enhanced Regulatory Sandbox.

The new Sandbox provides a "lighter touch" regulatory environment to allow additional flexibility to Fintechs that are still at the stage of testing their ideas. While safeguards remain the same in the new legislation, the key proposed changes include:

- Extending the exemption period from 12 months to 24 months
- Enabling ASIC to grant conditional exemptions to financial regulations for the purpose of testing financial and credit services and products
- Empowering ASIC to make decisions regarding how the exemption starts and ceases to apply
- Broadening the categories of products and services that may be tested in the Sandbox, to include life insurance products, superannuation products, listed international securities, and crowd-sourced funding activities.
- Imposing additional safeguards such as disclosures, information about a provider's remuneration, associations and relationships with issuers of products and the dispute resolution mechanisms available.

The reform importantly allowed ASIC to control how exemptions are granted and withdrawn and requires Fintech firms to notify clients that they are using the exemption. Certain baseline obligations continue to apply during the course of the process i.e. the obligation to act in a client's best interests, and obligations on handling client money and on preparing statements of advice where personal advice is provided. For credit contracts these include responsible lending obligations, special rules for short-term contracts, limitations on fees and charges, and unfair contract term rules. Breaching these obligations may result in the ASIC cancelling a firm's exemption.

Source: ASIC website

regulation has been created as a result of the FCA Sandbox.

- 3. Thematic:** The third type of Sandbox is a thematic Sandbox. As the name suggests, this focuses on a precise theme with the objective of accelerating adoption of specific policy, innovation or supporting the development of a particular sub-sector or even the development of products for a particular segment of the population.

This is illustrated by the Bank of Thailand (BOT) who initiated a Sandbox for the development of Thai Standardized QR Codes for Payments. Over a five-month

period in 2017, the central bank worked with eight financial institutions to test the product. The Thai QR code standard which complies with international standards was developed jointly with the central bank, financial institutions, non-bank payment service providers, and international card schemes. Five firms successfully exited from the Sandbox with the approval to provide QR code payment services to the general public. Other themes include financial inclusion Sandboxes, such as those developed by Bank of Sierra Leone (Box 9) and Bank Negara Malaysia⁶² for products, services and business models that are designed to advance financial inclusion. While Japan's Financial

Services Commission's Fintech Proof of Concept (POC) Hub focuses on customer identity verification and automating customer suitability determinations.⁶³

- 4. Cross-Border:** The fourth and final type of Sandbox is the cross-border or multi-jurisdictional Sandbox. This encourages and supports cross-border movement and operation of firms while encouraging regulator cooperation. It is a way of promoting cross-border regulatory harmonization and enabling Fintechs to scale more rapidly on a regional or global basis.⁶⁶

Regional Sandboxes may be attractive for consumers and regulators alike. According to a recent IDB study, close to 20% of all Fintech in the Latin America-Caribbean region operate in more than one jurisdiction—most likely because individual markets in the region may be too small for the business model to achieve scale.⁶⁷ For many Fintechs, the ability to deliver a financially sustainable solution requires scale beyond what country-level markets can provide. Regional Sandboxes may help facilitate cross-border expansion through shared testing programs that support harmonized regulatory requirements. Regulators may also find shared Sandbox facilities beneficial in reducing the potential for regulatory arbitrage across individual Sandbox jurisdictions.

A typical Sandbox lifecycle can last anywhere between 6–24 months (For example, periods range from six months in Brunei and the United Kingdom; to twelve months in Australia, Malaysia, Thailand; or twenty-four months in Abu Dhabi and Ontario) from application through to exit. They can be cohort-based as illustrated below or accept applications on an ad-hoc basis which then follow a similar cycle to the cohort method once applications are accepted. Before applications can be accepted, the objectives, Sandbox framework, including core definitions, governance, eligibility criteria, evaluation processes, timing for each window, external communication procedures and vitally the exit procedures should be considered and agreed. Some jurisdictions have made these frameworks open for public consultation promoting transparency and encouraging an open and honest dialogue between entrepreneurs and regulators.

While in the Sandbox itself, the Fintech firm is usually provided with either a restricted authorization or a temporary license. They are usually designed to set a limitation on the range of activities they are allowed to conduct or the type of service that can be provided or the number of customers that can be served.⁷⁰ The status of the firm once the Sandbox cycle is complete is important and should be well-thought-out prior to launching the Sandbox.

BOX 12

Thematic Regulatory Sandboxes in Sub-Saharan Africa⁶⁴

Thematic Regulatory Sandboxes can promote and encourage innovation which focuses on accomplishing policy priorities, such as Financial Inclusion. Evaluation criteria, in the Sierra Leone Sandbox framework require an applicant to demonstrate how its proposed innovation can advance the country's national financial inclusion strategy (NFIS). The framework also allows for Inclusion objectives to be bound to Sandbox participants through the requirement that the underserved be included in Sandbox testing (collecting vital information and data about their needs) and/or being a direct beneficiary of the proposed innovation after deployment. Incentives may also be offered to innovators who primarily address financial inclusion objectives.⁶⁵

The Financial Sector Deepening Africa (FSD Africa) Network, in conjunction with financial and technical support from partnering organizations and respective central banks, launched 'Fintech challenge' contests in Sierra Leone and Mozambique—two developing countries in Sub-Saharan Africa with high unbanked populations. These challenges represented an effort to promote, attract and catalyze development of local Fintech innovation to create beneficial solutions to the country, specifically encouraging innovation in providing financial services to the underserved. The contest funding provided a vital injection of seed capital to local innovators, an investment similar to an Accelerator. Contest winners who addressed areas of need were awarded cash prizes and invited to participate in the subsequent launch of a 'thematic' financial inclusion focused Regulatory Sandbox pilot program.

The Global Financial Innovation Network (GFIN)

In early 2018, the United Kingdom's Financial Conduct Authority (FCA) proposed a global Sandbox—for firms to test innovative products, services, or business models across more than one jurisdiction. It aimed at creating a platform for cooperation between financial service regulators on innovation related topics by sharing their experiences and approaches. The Global Financial Innovation Network (GFIN) was formally launched in January 2019 by an international group of financial regulators and related organizations, including the World Bank Group.

GFIN now comprises of a network of 38 (and counting) organizations committed to supporting financial innovation pertinent to consumer interests. It seeks to provide innovative firms with an efficient way of interacting with regulators across jurisdictions, while scaling their ideas. The response to establishing GFIN as a practical method for collaboration and cross-border testing has been wholly positive across leaders from the industry as well as international regulators.

The objectives of GFIN are three-fold:

- i. To act as a network of regulators to collaborate and share experience of innovation in respective markets, including emerging technologies and business models, and to provide accessible regulatory contact information for firms.
- ii. To provide a forum for joint Regtech work and collaborative knowledge sharing/lessons learned.
- iii. To provide firms with an environment in which to trial cross-border solutions.

In order to achieve these objectives, they have organized themselves into three workstreams that directly reflect each of the three objectives. Early responses to the convening of the network included welcoming the need for regulatory cooperation, and a platform to collaborate on common challenges or policy questions that firms faced across different jurisdictions.

In June 2019, the network published their key milestones from the one year of operation⁶⁸ including recognizing the need for a standard assessment process to assess eligibility for cross-border trials and increased cooperation between regulators.

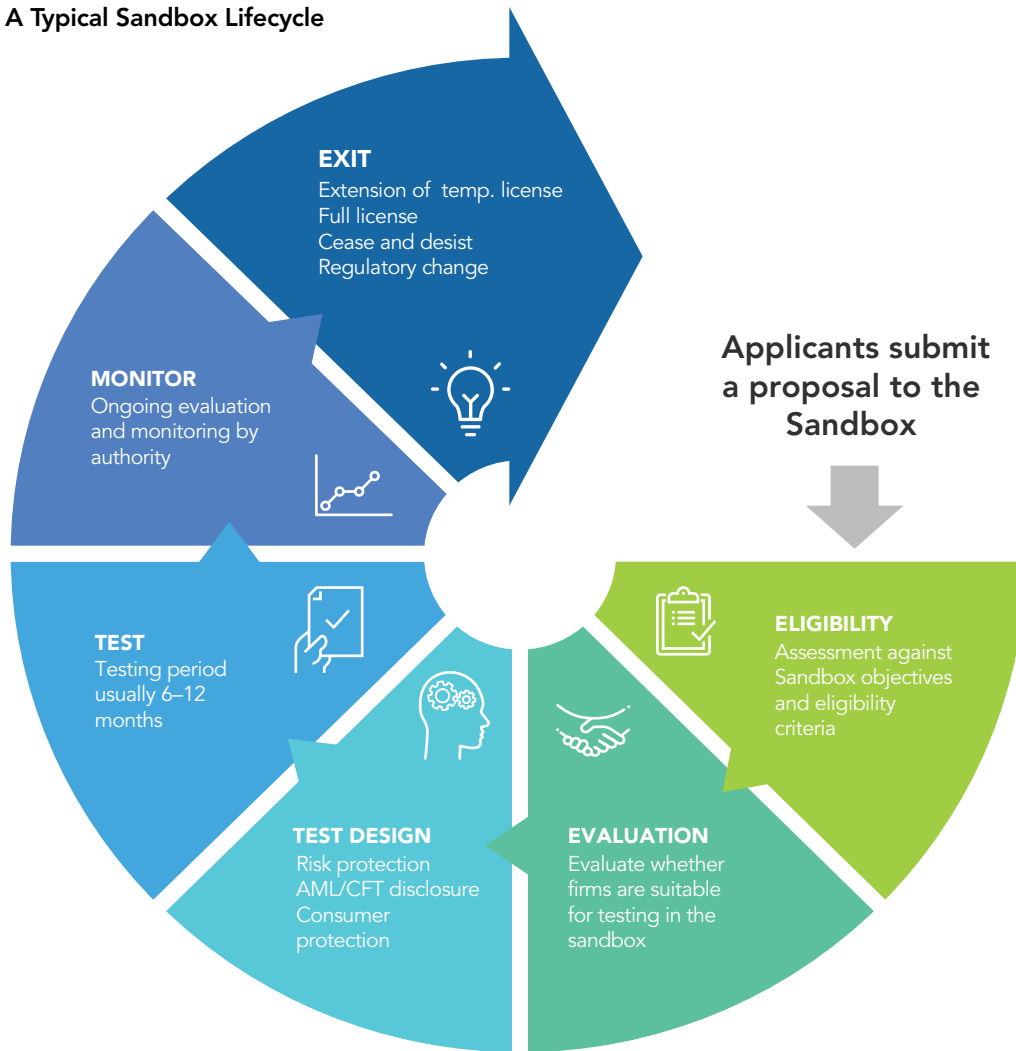
There are essentially 4 options available to the firms at exit. They are:

1. Full authorization: If the test is successful, and the firm is deemed capable of being suitable for the market, the firm applies for full authorization so the restricted authorization or temporary licensing can be removed. At this point any relaxed legal and regulatory requirements expire and the Sandbox entity must either begin to legally operate or exit from the Regulatory Sandbox. To be eligible to migrate to full authorization and licensing, policymakers should consider the requirements that an applicant may need to demonstrate to show it has achieved its intended test outcomes, can comply with relevant or revised legal / regulatory requirements, and is ready to deploy the innovation on a broader scale.

2. Regulatory Change: This is the recognition that the regulatory framework as it currently stands is not adequate and requires a regulatory change to support this new type of business model. Policymakers should be ready and willing to face this outcome before embarking on a Regulatory Sandbox.

3. Extension: Firms can also apply to extend the period in the Sandbox test environment if conclusive results are not obtained. However, this should be used sparingly as otherwise it bears the risk of an extended period of operating with exemptions. Should an extension be required, a formal application for extension including the time-period for which extension is required should be made by the firm. The decision to grant an extension is often under the sole discretion of the regulator.

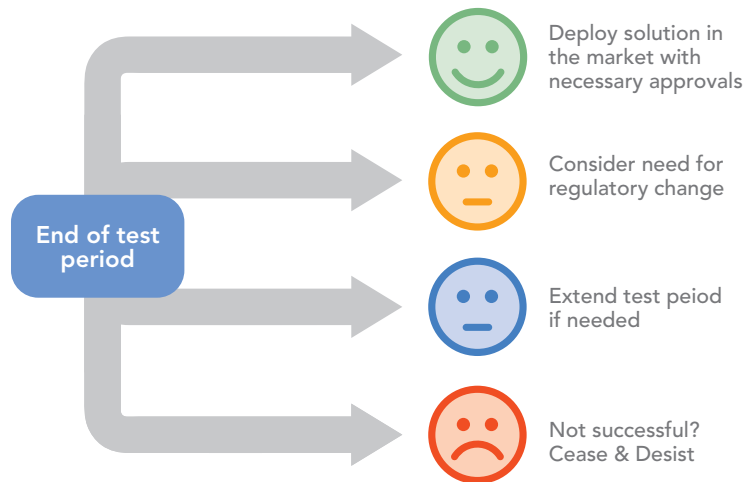
FIGURE 8: A Typical Sandbox Lifecycle



4. Cease and Desist: This can take place at any time during the testing phase. If the testing has revealed to the firm and the regulators that it is not suitable for the market, either due to the lack of readiness or the need for the product not clear within the market. Some firms have also changed their business model and offering based on the results and reactions during the testing phase. A cease and desist plan should include an orderly wind-down and should have been included as part of the firm’s initial application process. This is so that all obligations are addressed.

Regulatory Sandboxes can generate concrete evidence on how new technologies work in practice and can prove a useful tool providing valuable insights to policymakers when used appropriately. However, they are but one tool available to regulators and are not a turnkey recipe for unlocking financial innovation. In fact, other than in cases where it is being used to increase competition, Sandboxes are most useful only in those cases where there is a need to resolve regulatory questions with evidence derived from experimentation. For instance, in Singapore, MAS used their Sandbox to test the predictive accuracy of insurance policy bots and in Malaysia the accuracy and efficiency of digital ID solu-

FIGURE 9: Exit Options at the end of testing period



tions was explored using the Sandbox established by Bank Negara. The ancillary benefits—such as to form better insights into the market, intelligence on trends and emerging risks, signaling by the regulator—can be delivered by programs other than Sandboxes. Sandboxes increase the need for a skillful supervision and as this emerging field develops, supervisory authorities might need to be granted enough power and resources to exercise effective prudential supervision.

Regulators should look to other jurisdictions to understand lessons learned, with the added realization that Sandboxes are context specific. Authorities can, and should, use a combination of regulatory tools and Innovation Facilitators to provide a holistic program to stimulate innovation and growth through a controlled and regulated but not restrictive environment. However, Sandboxes and other structured regulatory approaches should not be a substitute for building effective, permanent regulatory and legal frameworks that may eventually need to be established.

Regulatory Accelerators or Regtech Labs

An Accelerator for regulators enables partnership arrangements between innovators or Fintech firms and government authorities to ‘accelerate’ growth, innovate on shared technologies, and develop use cases that are particular to that authority. The development of Suptech⁷¹ (supervisory technology) or Regtech (Regulatory Technology) solutions often stem from a Regulatory Accelerator or a Regtech Lab. They are used to

improve the familiarity of the regulator with Fintech products, concepts and firms: their strengths and weaknesses, their implications for financial markets, and their potential applications in inward focused operations; while giving Fintech firms some insight into the emerging questions and needs central banks might have, as policymakers, regulators and operators.

A Regulatory Accelerator should not be confused with an Industry Accelerator. The key differences between common facets of the two are highlighted in the table below.

Accelerators adopted by public authorities commonly function by developing specific use cases that are characteristic of challenges faced by the authority, and the private sector is

invited to address these use cases through the use of innovative and emerging technologies. The Bank of England (BoE) launched one of the first central bank run Fintech Accelerators (see Box 14 below) to undertake structured Proofs of Concept (PoCs) for use cases that were relevant for the central bank.

The concept used by the Bank of England was used to develop the Regtech for Regulators or R2A. An initiative by the Bill & Melinda Gates Foundation, Omidyar Network, the US Agency for International Development (USAID) and implemented by Bankable Frontier Associates (BFA). R2A partnered with financial sector authorities to understand key challenges in regulation, market supervision, and policy analysis with the explicit aim to identify technology-based solutions to solve them. The initiative was launched in October 2016 and has thus far partnered with the Bangko Sentral ng Pilipinas (BSP) (See Box 15 below) and with the Mexican Comisión Nacional Bancaria y de Valores (CNBV) to develop and test prototypes of emerging technology solutions to supplement their work as regulators.

Solutions have also been identified using a “hackathon” type process that introduces the idea of a timed competition to solve pre-determined use cases. One illustration of this regulator driven process are the “Tech-Sprints” conducted by the Financial Conduct Authority (FCA). They range from one to three-day events run by the regulator to bring diverse market participants from established firms to technologists, innovators and even academics together to work collaboratively on technology-based solutions to challenges shared by the finan-

TABLE 1: Industry Accelerators versus Regulatory Accelerators.

	INDUSTRY ACCELERATORS	REGULATORY ACCELERATORS
Purpose	To help ventures define and build initial products and identify consumers and investors	To work with innovative firms, helping them understand the central bank/regulator's/policy maker's needs, and support the policymaker to understand emerging technology.
Duration of firm engagement	3-6 months	Usually shorter at 1–3 months
Business model	Investment in successful firms (can also be non-profit)	Non-profit, no equity taken
Selection	Competitive, in cohorts	Competitive, in cohorts
Venture Stage	Range from Early to Late	Generally later stages only
Programme	Structured programme similar for all firms in the cohort, culminating in a demo day	PoCs structured according to use cases and success criteria specific to the public institution. No comparison between firms
Resourcing and Mentorship	Primary resourcing from start-up staff but with support from mentors	Start-up staff work with the public institution's subject matter experts
Venture Location	On-site	Mostly off-site

*Note that details are for illustrative purposes and not all accelerators are designed in exactly this way.

Source: Adapted from Andrew Hauser Speech, BoE. <https://www.bankofengland.co.uk/speech/2017/the-boes-Fintech-accelerator-what-have-we-done-and-what-have-we-learned>.

cial services industry.⁷³ Another example of this kind of timed competition, is the Global Fintech Hackcelerator⁷⁴ launched by the Monetary Authority of Singapore (MAS) which offers a 12-week virtual programme and gives participants the opportunity to win a cash stipend. They do this by partnering with Fintech firms who work competitively to develop market solutions to financial sector challenges.

Such initiatives are useful in breaking down silos, focusing solutions and catalyzing new thinking while keeping in mind regulatory constraints and objectives. Moreover, as solutions are created and deployed in real-time, they are an agile method to prove or disprove a concept quickly. Use cases can range from Regtech questions such as: identifying solutions to improve the efficiency of regulatory reporting, or the use of technology to optimize collateral risk management, or Suptech solutions to support better detection of money laundering and financial terrorism, to consumer facing solutions to increase youth financial literacy.

These initiatives can be used to test solutions in emerging economies and can be useful ways to streamline thinking and solutions. This topic is explored in more detail in the upcoming WBG paper on Suptech solutions to support supervisory functions of both conduct and prudential supervision. Accelerators tend, for the most part to work on solutions that help financial authorities regulate and supervise the marketplace more effectively and efficiently. The solutions can support the authorities implement their mandates while an added benefit is the ability to provide hands on experience for regulators on innovative technology especially as more and more firms in the marketplace begin to use these technologies. It is important to note here that firms that apply to work on an Accelerator are in most cases not regulated by the financial institution they apply to work with, but rather they are providing more of a streamlining of operations. This is preferable to avoid conflicts of interest of regulating a firm that is providing services to the authority.

BOX 14

Fintech Accelerator: Bank of England (BoE)

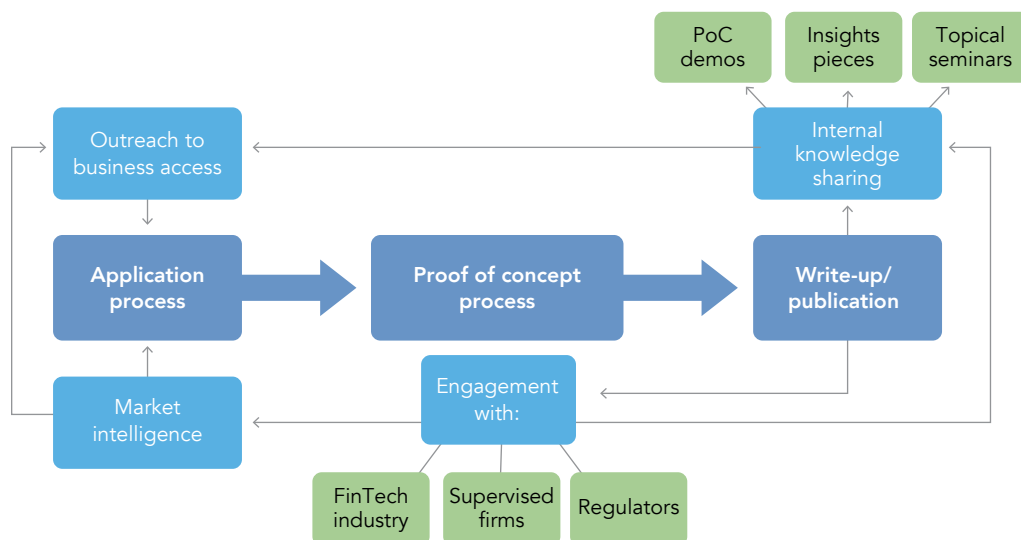
The BoE launched a Fintech Accelerator in June 2016 to help it harness Fintech innovations for central banking purposes. It worked with small cohorts of successful applicants on short Proofs of Concept (PoC) in priority areas, such as cyber-resilience, desensitization of data and the capability of distributed ledger technology.

Using an open and competitive application process, the BoE Accelerator helped the central bank create a framework to reach an array of Fintechs who could collaborate directly with different business areas within the Bank. The aim was to be agile: testing the solution and the technology fast and if necessary, failing fast, to prove the concept within an average period of 3 months.

Main Functions of the BoE Accelerator

The Accelerator provided the BoE with a number of tangible and intangible benefits; from *enabling* a faster path to engaging with start-ups and streamlining the product and testing environment, to the development of intelligence on growing market trends, and importantly *gaining first-hand experience* of a range of new technologies, while evaluating their application both to the Bank's own functions and in the wider market; through to being a *catalyst* for innovation within the Bank.

FIGURE 10: BoE Accelerator Process



*Adapted from Bank of England website

Bangko Sentral ng Pilipinas Case Study⁷²

The Challenge: Bangko Sentral ng Pilipinas (BSP) constantly dealt with numerous customer complaints making it challenging to ensure that they were all dealt with adequately and in a timely fashion. The central bank was heavily reliant on manual processes and relatively outdated technologies such as direct mail and call centers to field complaints or queries and provide timely resolutions.

The Use Case: To help solve for this problem, R2A worked with the central bank to develop a clear and detailed use case for a chatbot application and a complaints management system. They recognized that Artificial Intelligence (AI) and Big Data could have the potential to even out many of the pain points in complaints aggregation, processing, and analysis. The use case was advertised publicly, and firms were invited to submit a proposal on how they would conduct a Proof of Concept (PoC) to resolve the challenge.

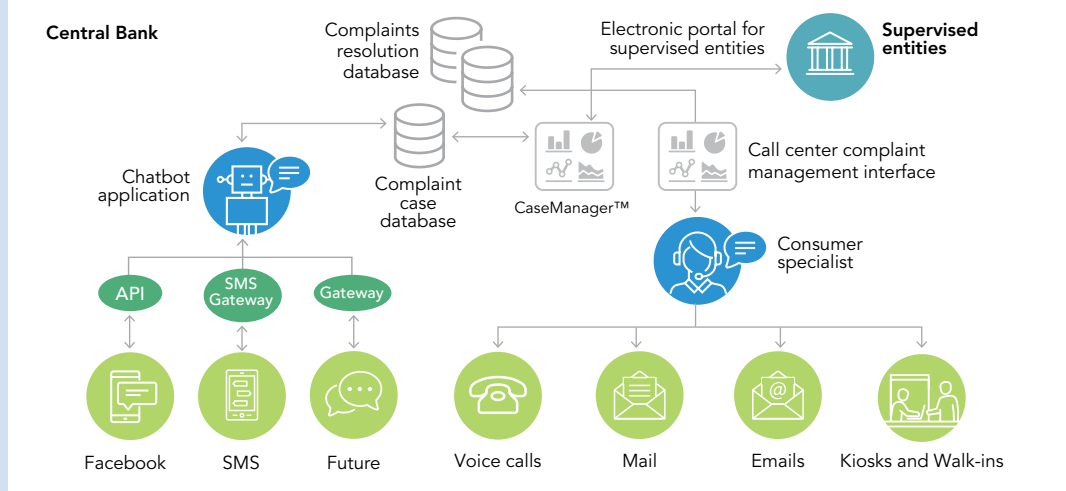
The Solution: A selection committee that drew from global experts selected a vendor that best met the functional and design requirements of the use case. Some of the design elements included allowing consumers to file complaints through their mobile handsets via either an app or SMS and the ability to delegate all routine tasks to the chatbot such as initial screening and directing non-BSP complaints to the right institution. The solution ensured that human interaction and intervention was used for more complex or nuanced tasks such as the analysis of recurrent types of frauds and onsite inspections.

The Outcomes:

- The solution was estimated to have provided a time saving of 1 to 2 weeks per month for complaints analysis;
- It enabled BSP to have visibility over customers' experience, which could then be used to improve experience;
- The data and insights gathered through the chatbot could additionally be used to verify compliance with market conduct regulation and develop policies that are informed by knowledge of users' needs and challenges.

An interesting and unexpected development was that although the chatbot was programmed to be proficient in both English and Tagalog, numerous requests were coming in a mixture of the two languages. The bot has since been teaching itself how to speak "Taglish"—a hybrid of English and Tagalog!

FIGURE 11: BSP Chatbot Application Process



REGULATORY APPROACH 4: REGULATORY LAWS AND REFORMS

The uncertainty of the regulatory framework has oft been cited by firms as a barrier to growth. The need for transformative regulatory change may be considered the goal in order to introduce lasting change and a truly enabling environment that offers Fintech the opportunity to scale.

In jurisdictions where regulators are unable to apply the existing regulatory framework to new innovation, emerging policy responses and regulatory reform most commonly include adjusting or amending regulatory frameworks to accommodate Fintech innovation (Policy response 2) or creating new regulatory frameworks or regulations to include (or prohibit) Fintech activities (Policy response 3). This includes instruments such as laws or new regulations to extend regulatory perimeters, introduce specific requirements for new class of players in the ecosystem or to specifically prohibit certain Fintech activities.

In some cases, jurisdictions have applied a particular regulatory approach like wait-and-see, test-and-learn, an Innovation Facilitator or a combination of these approaches in order to support the implementation of regulatory reform. An example of this is the case when the e-Money license was introduced in Kenya in 2014⁷⁵ following the test-and-learn approach to understand how the innovation would play out in the market (see Box 3). Prior to the regulation being released, the prudential and market conduct requirements and monitoring obligations for mobile money providers were articulated in the letters of no-objection granted by the Central Bank of Kenya (CBK). The National Payment systems regulation 2014 brought certainty to the market and added a necessary layer of consistency and considered consumer protection measures.

Incremental change of policy frameworks overtime is a common policy response towards Fintech. For instance, in 2015, when the EU updated its Payment Services Directive (PSD2)—which governs the payments systems among member countries- to integrate electronic transactions into the existing framework through strict security requirements for e-payments, mandating the protection of consumer data and transparency of requirements for payments services, and setting the rights and obligations of users and providers. The updated Directive also increased competition and opened up the payment services market, allowing Fintech companies to compete on a level playing field and consumers to operate in a more secured envi-

ronment.⁷⁶ In 2016, the EU also adopted the General Data Protection Regulation, which updated data privacy rules⁷⁷ first set in 1995. Another example of incremental change is the case in South Korea where the government enacted two laws giving regulators oversight of mobile payments and establishing consumer protections through their Electronic Financial Transactions Act and the E-Commerce Consumer Protection Act. These laws in essence extend the principles of consumer protection and disclosures to digital financial services and mobile payment systems.

In other cases, however, jurisdictions have applied new laws or regulations in order to support directly the development of the legal and regulatory framework to respond to the contextualized Fintech market and adjust accordingly, particularly in areas where the regulatory framework is either inflexible, unclear or not present. This could take the form of introducing a new license for a specific activity such as the new crowdfunding law in Colombia or even introducing an overarching law for Fintech as a whole as seen in Mexico. This section highlights select examples of new regulations and the introduction of a specialized licenses for Fintechs as a policy approach to support the development of an enabling legal and regulatory environment for Fintech.

Introducing New Regulations, Fintech Licenses and Special Charters

Introducing a new regulation is used by some jurisdictions as a direct response to Fintech. A now familiar example of this is the umbrella Fintech Law (*Ley para Regular las Instituciones de Tecnología Financiera*) issued by the Mexican authorities as their primary approach to Fintech. In the case of Mexico, the jurisdiction operates under a civil law mandate and as a result the regulator is only able to work within the rule-based permissions (conferred upon them by the law under which they operate). The rule-based permissions limited the ability of the regulator to use proportionality and judgement-based supervision as tools when regulating Fintech. In this context, taking into consideration the objective of the regulator and the outcome they intended to achieve, the issuance of an overarching Fintech law was the most suitable approach for the case of Mexico. (See Box 13 for specifics on the law.)

Other jurisdictions have introduced new 'Fintech licenses' to respond to market needs, which is generally a license with simplified requirements and clear limits on its permissions. The license is associated with certain eligibility criteria that is not applied on a case-by-case basis but is

Using a Regulatory Reform as an Approach to Fintech in Mexico

Mexico adopted an umbrella law on Fintech (*Ley para Regular las Instituciones de Tecnología Financiera*) on March 9th, 2018, following months of consultation among public and private sector stakeholders— including banks, non-bank financial institutions, the Mexican Fintech association, banking association, and academic institutions—and the approval from the bicameral legislature of Mexico.

The Law sought to give further framing (and restriction) to Fintechs focused on certain activities—particularly in payments, crowdfunding, and those using virtual assets as part of their business model. The Law itself introduces a general regulatory framework, which is intended to be adapted to the constantly evolving sector using secondary regulation to cover the detail of the implementation. The Mexican Banking and Securities Commission (CNBV), the Mexican Central Bank (Banxico), the Ministry of Finance and Public Credit (SHCP) and other financial regulators were required to publish the corresponding enabling regulations within the 6, 12 and 24 month periods following the Fintech Law's effective date.

This approach was adopted due to the civil law mandate under which Mexico operates. The secondary legislation provides the flexibility necessary to adapt regulation to the changing environment without necessitating a change in law. Its introduction has positioned Mexico as a progressive and attractive environment encouraging for Fintechs, which can develop in a considered manner.

The Law builds on six governing principles: (i) facilitating financial inclusion and innovation, (ii) ensuring consumer protection, (iii) safeguarding financial stability, (iv) fostering competition, and (v) protect against anti-money laundering and combating the financing of terrorism (vi) neutral approach to supervision via technology. To this end it has introduced:

- A legal framework for the authorization, operation and supervision of Fintech institutions domiciled in Mexico (*Instituciones de Tecnología Financiera, ITFs*) focusing on two particular types: crowdfunding institutions (IFCs) and electronic payment funds institutions (IFPEs).
- The legal basis for a Regulatory Sandbox environment for innovative companies, outside the established frameworks included in the law and regulations.
- The introduction of the concept of open sharing of data for non-confidential aggregate data and for transactional data with consumers' consent through the Application Programming Interfaces (APIs).
- A provision to recognize virtual assets and regulate their conditions and restrictions of transactions and operations in Mexico.

provided for all similar activities within the market that meet the authorization criteria set up the regulator. One such example is the Swiss Fintech License introduced in 2017 into the Banking Act, which was introduced with the specific intention of attracting innovative Fintech businesses to Switzerland. The license allows licensees to accept deposits from the public up to CHF 100 million, but it does not allow them to invest the deposits or to pay interest on them— which are reserved for the banking community.

Another example is the national administrative law in the European Union which gives competent authorities of Member States the power to grant restricted licenses. This is demonstrated in Germany, where supplemented by a provision within its own national law, BaFin— the national regulator, is permitted to grant authorizations for selected banking activities and financial services, without the need for entities to have a full banking license. Although firms holding this type of license are restricted in terms of their business activities, the requirements they must meet are scaled down proportionally as dependent on the risk and complexity of their business.

BOX 17

The OCC Fintech Charter

The OCC gets its authority from the National Bank Act (NBA) and is responsible for supervising national banks that fall under federal jurisdiction and are hence exempt from state laws. The US Office of the Comptroller of the Currency (OCC) has a long-standing practice of granting special national bank charters for banks limiting their activities to fiduciary services, including trust banks and credit card banks.

The rise of Fintechs that were involved in the “three core banking functions”: receiving deposits, paying checks, and lending money posed a gap for the OCC who proposed the idea of a special purpose national bank (SPNB) charter also called the ‘Fintech charter’ in 2016 for those firms. In practise, this meant that those that applied for this federally regulated charter would benefit from the preemption of many state laws and regulations hence potentially easing the regulatory burden by consolidating a company’s responsibilities.

Due to the turf lines it crossed, this charter has been fraught with hurdles and lawsuits and at the time of writing no OCC Fintech charter had yet been granted since it opened for applications in July 2018. This is largely attributable to the fact that the relationship with state regulators as well as other federal regulators has not been made clear.

Yet, the legal context alone does not suffice to ensure that the authorities use dispensation policy effectively and it should be effectively overlaid by capacity and supervisory knowledge.

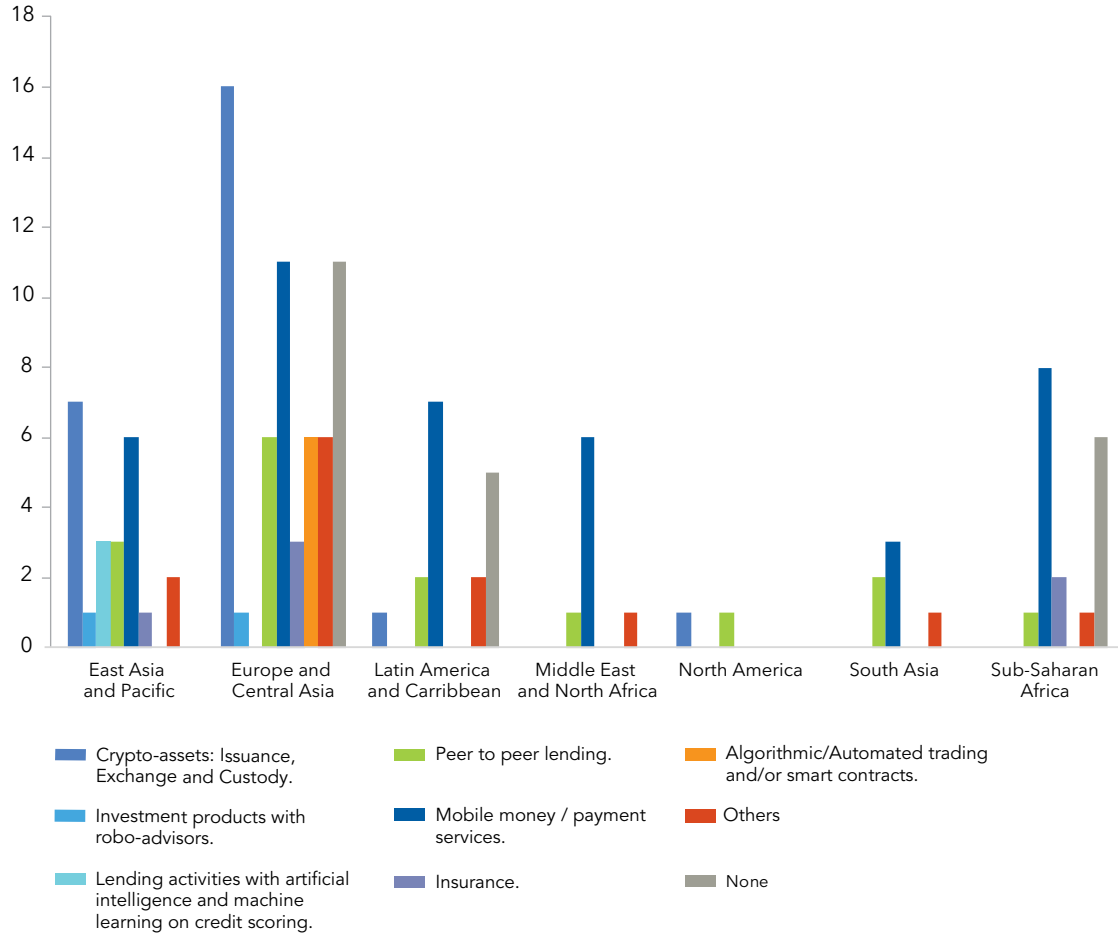
Other jurisdictions that have explored the route of the Fintech license include the US Office of Comptroller of the Currency (OCC) through its Fintech Charter (see box below) and the Autorite de Controle Prudentiel (ACPR) and the Autorite des Marches Financiers (AMF) in France who offer simplified licensing processes for Fintech firms and may also waive particular, non-essential reporting and compliance requirements.

While regulatory reform might eventually be required to bring about transformational change, approaches should be allied with the jurisdictional framework. For instance, if a jurisdiction can adequately apply or amend existing regulatory frameworks to new innovations and their business models, often by focusing on the underlying

economic function and activity rather than the entity itself, there may not be sufficient need to introduce a new law, license or charter.

In addition, there can be challenges to introducing new regulations without fully understanding the legal and regulatory implications, and the process may not always be suitable for jurisdictions that require a more timely, agile approach. The capacity of the regulator to calibrate new regulations effectively is critical, as suboptimal or excessive regulation may lead to inadequate innovation or, even worse, cause highly unacceptable risks to consumers as well as the financial system more broadly. In addition, when introducing new laws and regulations, substantial coordination is required, which often requires months of consultation with public and private sector stakeholders, industry specific focus groups and committees, and wide communication across key stakeholders like Fintech associations, banking association, and academic institutions which is quite time consuming.

FIGURE 12: Areas in Which Authorities Have Modified Their Regulatory Framework (i.e. Expanding the Perimeter or Introducing a New Regulation) to Address Emerging Risks from Fintech activities



Source: IMF-WBG BFA Survey 2019

IV

EVALUATING THE RIGHT REGULATORY APPROACH

Financial sector policymakers worldwide are finding themselves in a regulatory dilemma when trying to achieve the right balance between enabling innovative Fintech and safeguarding the financial system. The IMF-WBG Global Fintech Survey revealed that, roughly 73%⁷⁸ of surveyed jurisdictions indicated that they were reviewing and amending their policy framework to enable Fintech investment, innovation, and adoption. This sentiment was echoed in the WBG-CGAP survey on Innovation Facilitators.⁷⁹ Understanding an appropriate approach to Fintech can be difficult, and prior to assessing the best approach for Fintech, policymakers should spend sufficient time and resources understanding and assessing the current Fintech landscape, its regulatory implications and overall supervisory expectations for Fintech developments.

When deciding which approach or sequence of approaches to adopt in order to inform subsequent policy responses, there are a number of considerations that need to be made by the policymaker such as the objectives they are trying to achieve, how Fintech plays into the overarching strategy for the country, considerations of the critical success factors, and importantly, the country circumstance. The section below highlights some of those variables.

Assessing Objectives, Conditions and Feasibility

Country circumstance is one of the most important considerations when debating the suitability of a regulatory approach. Before a jurisdiction decides to embark down the route of choosing an approach(s), authorities should step back and objectively review their existing legal and regulatory framework, the stakeholder ecosystem including the private sector and other regulatory or supervisory bodies, the capacity and resources available to the regulator, as well as the market conditions including competition criteria and the maturity of the Fintech market. This assessment will help policymakers understand and identify key objectives and priorities, the feasibility of undertaking particular approaches (given capacity and resources) and the appropriateness of that approach given the country context and its alignment to policy objectives. Variables to assess include:

The institutional mission and policy priorities: The level of experimentation that a regulator is willing to allow is ultimately dependent on their statutory objectives. In the context of individual jurisdictions, where different regulatory objectives (e.g., financial stability, consumer protection, market conduct, competition) are mandated to different agencies, the adoption of an approach to Fintech will also require intra-agency coordination. Policy priorities also play a role here. For some jurisdictions, approaches to

Fintech were instituted with a focus on supporting market development objectives, such as economic growth, productivity and financial inclusion. While others seek to understand and mitigate the potential risks from emerging financial innovation to consumer protection, financial integrity and financial stability.

Legal and Regulatory Framework: Regulatory innovation initiatives have been most successful when aligned with a regulator’s mandate and underpinned by a sound legal basis. Consideration should be given to the legal and regulatory framework, i.e. Civil Law, Common Law, Hybrid or other; and what powers are available to the regulator under that framework. Typically, the case is that a civil law jurisdiction subscribes to a rules-based approach where rules are encoded in law, whereas the alternative principles-based approach establishes broad but articulated principles allowing for supervisory discretion. However, it should be noted that now there has been significant convergence between the two major legal systems and many countries now have a combination of their features. Notwithstanding, a jurisdiction’s legal framework will determine the flexibility available to regulators and will define the extent to which regulators can implement legislative action such as amendment of laws or grant exemptions. For example, some legislations allow for “letters of no objection” or “restricted authorization/licensing” or “special charters”—all of which can be used by regulators on a case-by-case basis. Undertaking an assessment of the legal and regulatory framework is a crucial first step in that it helps to clarify if jurisdictions can apply existing regulatory frameworks to new innovations and their business models, (often by focusing on the underlying economic function rather than the entity) or if there is a need to initiate new laws.

Maturity of Fintech segment: Understanding the maturity of the Fintech market is critical to understand the appropriateness of a particular regulatory approach. For instance, in the case where the market may have only a few Fintechs in operation, applying a resource intensive Regulatory Sandbox, may not be appropriate. For approaches such as a Regulatory Sandbox to function effectively, the existence of a functioning and mature entrepreneurial environment is vital. There are many jurisdictions that have set up Sandboxes but fail to have many, or any, applicants. For those markets where the Fintech ecosystem is still nascent, other Fintech tools might be a better fit.

Capacity: Different approaches to Fintech make different demands on regulator capacity. In principle, structured Innovation Facilitators can be challenging and resource

intensive to design and implement. Of the facilitators, Innovation hubs, will likely not require the substantial resources and capacity needed for other frameworks such as a Sandbox, and are useful to help jurisdictions with limited resources to engage meaningfully in the sector and inform their regulatory responses.

Market conditions and Feasibility: The market conditions include the inherent competition in the sector as well as the gaps in the appropriateness of financial products available, especially to certain segments of the market such as the underserved or financial excluded. Understanding the feasibility of undertaking a particular regulatory approach will help determine whether benefits outweigh costs. In addition to informing the initiative design, a feasibility assessment can provide an opportunity for the regulator to engage in substantive dialogue with other regulatory stakeholders, international peers, and industry and market participants.⁸⁰

Stakeholder Ecosystem: The number, objectives and relationships between the stakeholders in the ecosystem should also be carefully considered. Stakeholders include other regulatory bodies, industry groups and incumbents among others. Often, there are several regulators within the same jurisdiction who are responsible for related but distinct supervisory activities. With the new business models introduced by Fintechs, there is often uncertainty regarding the remit they fall into which can potentially be exacerbated if there is a lack of co-ordination between the separate regulators.

Risks: Fintech can strengthen financial development, competition, inclusion, and efficiency. But it may also pose risks to consumers and investors; operational and cyber resilience; and financial stability and integrity. These risks can manifest in different ways in different country contexts—for example the impact of new payment system providers (PSP) in a country that is highly bank centric will be decidedly different to market reactions in a country that is unbanked or under-banked. A thorough assessment of risks is also vital in being able to develop and apply a sound measurement system to monitor and evaluate outcomes for various policy approaches and its implications on resulting policy responses.

In light of the considerations noted above, the table below measures the implications of the country circumstance against the regulatory approaches laid out in this paper. The table below is not exhaustive and is intended as an initial tool to help policymakers consider the different regulatory approaches and assess which approach is most appropriate given their country context.

TABLE 2: Policy Assessment and Implications with Regulatory Approaches to Fintech

	WAIT-AND- SEE	TEST-AND-LEARN			INNOVATION FACILITATORS			REGULATORY REFORM
		LETTERS OF NO OBJECTION	WAIVERS/ EXEMPTIONS	RESTRICTED AUTHORIZATION	INNOVATION HUBS	REGULATORY SANDBOXES *	ACCELERATORS	
Legal and Regulatory Framework	Needs to be within the scope of the regulator to permit postponing decisions until all valid contingencies have occurred.	Require powers to interpret law	Usually codified in law, therefore no need for subjective decisions from the regulator	Usually codified in law, but subjective decisions from the regulator required.	No additional legal powers required to set up a point of contact	Require wide scope of powers to provide restricted authorization, proportionate requirements or waivers if required.	No additional legal powers required. Provides the ability to test, demo, and generate Proofs of Concept around emerging technologies, however procurement laws might need to be considered.	The efficiency with which this can be conducted depends on the overarching legal system in which the jurisdiction operates.
Capacity and Resources	Minimal additional resources required, however monitoring of the activity should be conducted	No additional resources for implementation or maintenance are required after dispensation is provided.	Require resources for establishment No special resources for maintenance are required	Require resources for establishment No special resources for maintenance are required	Requires dedicated resources for establishment and operation	Requires substantial resources for establishment, continuous design, maintenance and monitoring.	Requires dedicated resources for establishment and operation.	Resources dedicated to Fintech might not be needed, however supervisory capacity will need to be increased.
Market Conditions (incl. Maturity)	Relevant for markets with limited capacity, but keen not to hinder innovation. Useful as an initial step before embarking on other more involved approaches.	Relevant for smaller markets, with a more contained scope of innovative services. Also useful for non-traditional firms entering the financial sector.	Relevant for developed markets, with active non-licensed players.	Relevant for smaller markets, with a contained scope of innovative services.	Relevant for those markets where a need for regulator input is observed but the approach is undecided. It is a good precursor to a Sandbox model.	Relevant for developed markets, with active non-licensed players.	Relevant for those regulators who want to improve their functioning and streamline compliance.	Relevant for those markets where a clear gap in the regulatory environment is noted.
Stakeholder Ecosystem	Requires trust from the market as decisions are discretionary.	Requires trust from the market, as letters of objection can be contested	As regulators do not make arbitrary decisions, trust from the market is not of primary relevance	As regulators do not make arbitrary decisions, trust from the market is not of primary relevance	Market trust not a key factor but a useful value-add to ensure the success of the hub.	Requires high levels of trust from the market, as regulator's decisions are discretionary and could be contested	Requires trust and market participation to ensure success.	Regulators do not make arbitrary decisions and policies are often put out to consultation before being passed by law underlining the importance of stakeholder buy-in.

* Often Regulatory Sandboxes also make use of the dispensations allowed under the test-and-learn approach.



V

GUIDANCE FOR POLICYMAKERS & CONCLUSION

The rise of Fintech has connected global financial markets and presents significant opportunities as well challenges requiring policymakers to adapt to this rapidly metamorphosing sector. While policymakers have aligned on the strategic importance and challenges, authorities now face the task of implementing practical, appropriate measures in their markets to further enable stable and orderly adoption of new technologies and business models by the market and by regulators themselves.

In this report, we laid out the common regulatory approaches seen around the world, the table below outlines some of the pros and cons of each regulatory approach and is one tool to support policymakers' decisions as they define their approach and ensuing policy response.

There exists a fine balance and a number of pieces at play when debating and deciding the regulatory approaches to be considered. The important point to note is that there is no 'perfect solution' and like the process of iteration needed to hone a perfect business model, the approaches regulators adopt will undergo refinement over time and adapt to the context in which it is operating.

Before embarking on any policy approach towards Fintech, regulators should ask themselves (in addition to undertaking a comprehensive assessment—see Section IV):

1. Is this approach really the right tool to achieve your regulatory objective?
2. Do you have the powers and flexibility to operate this approach under the existing legal framework?
3. Does the licensing regime allow you to grant temporary licenses/waivers (subject to restrictions and conditions) if needed?
4. Is there interest from the market to participate in this approach?
5. Do you have the necessary data protection laws in place to protect consumers?
6. Do you have the necessary resources and supervisory capacity to set up this approach?
7. Have you sufficiently considered implications post-approach? Would restrictions be removed if applicable? Will regulatory change be initiated?

Undertaking an assessment of the landscape (see Section IV), taking into consideration the country context, prior to selecting an approach to Fintech is a necessary first step for all regulators. It is then the outcomes and lessons distilled from the use of

TABLE 3: Evaluating the Benefits and Risks of Different Regulatory Approaches

REGULATORY APPROACHES	BENEFITS	RISKS
"Wait and See"	<ol style="list-style-type: none"> 1. Allows regulators to understand technology and its possible application(s) in the financial market prior to regulatory changes 2. Regulators can informally monitor trends to determine when and where formal intervention is performed/ required 3. No legislative reform required; existing regulation continues to be upheld. 	<ol style="list-style-type: none"> 1. Risks around consumer protection and financial stability are high if left unhampered 2. Has a short shelf life and should not be allowed to carry on indefinitely. 3. Needs to be carefully used for select products 4. Regulators need to monitor the market carefully to ensure product doesn't develop unchecked and cause impacts on the statutory objectives.
"Test and Learn"	<ol style="list-style-type: none"> 1. An agile approach, where regulators grant restricted licenses or partial exemptions for new-entrants or established intermediaries testing new technologies while still providing oversight 2. Provides an active learning environment for regulators 3. Sufficient data and experience for regulators to adjust regulation or apply it accordingly 4. Regulators can understand risks and observe how the market is evolving to develop a targeted regulatory strategy better suited to the innovative product and business model. 5. Builds capacity through testing and evaluation which supports appropriate regulatory reform. 6. Suitable for most Fintech ecosystems and includes degree of regulatory oversight. 	<ol style="list-style-type: none"> 1. Not designed to be used indefinitely 2. Scalability is difficult for mature Fintech markets due to capacity constraints on oversight 3. Difficult to ensure equal treatment of participants and a level playing field; competition issues may arise 4. Insufficient monitoring and oversight, or inadequate usage of dispensation can create risks around consumers or restrict innovation
Innovation Facilitators: <i>Innovation Hubs:</i>	<ol style="list-style-type: none"> 1. Allows regulators to better understand the Fintech market and builds capacity to support subsequent regulatory reform 2. Guides interactions with firms while allowing regulators to have oversight of emerging financial products and trends. 3. Supports the Fintech ecosystem and fosters an open dialogue with industry. 4. Allows the policymaker to understand and identify trends before embarking on a more resource intensive approach towards Fintech. 5. Assist regulators by informing them of potential issues around Fintech that could be relevant for policy development. 6. Less resource intensive relative to other innovation facilitators 7. Suitable for all Fintech markets 	<ol style="list-style-type: none"> 1. Requires some dedicated resources- but less than other approaches and skillset can be varied as dependent on the function. 2. Regulators should be cautious to not provide "legal" advice to firms and define the limits of the Innovation
Innovation Facilitators: <i>Regulatory Sandboxes:</i>	<ol style="list-style-type: none"> 1. Allows innovators to test on a small scale, innovative products, services, business models and delivery mechanisms 2. Provides insight into the market; providing the regulator with intelligence on developments, trends and emerging risks. 3. Creates open and active dialogue between regulators and firms and brings agility to the regulatory and supervisory framework 4. More direct control over risks 5. Ability to review the existing regulations to purpose 6. Provide a dynamic, evidence-based regulatory environment to learn from, and evolve with emerging technologies 8. Suitable for larger and more developed Fintech markets where a clear objective has been determined. 	<ol style="list-style-type: none"> 1. Requires substantial resources and capacity to implement a Sandbox approach, as well as engagement with multiple stakeholders through various committees 2. Not suitable for small Fintech markets and risks include that few applicants apply to the Sandbox 3. Risk of seen to be picking winners. 4. Risk of inappropriately designed framework without a clear objective in mind might result in limited or inappropriate applications. 5. Outcomes might be difficult to measure if objectives not defined at the outset. 6. Can be deeply labor intensive

TABLE 3, continued

REGULATORY APPROACHES	BENEFITS	RISKS
Innovation Facilitators: Regulatory Accelerators or Regtech Labs:	<ol style="list-style-type: none"> 1. Enables partnership arrangements between innovators or Fintech firms and government authorities to ‘accelerate’ growth, innovate on shared technologies, and develop use cases that are particular to that authority 2. Allows regulators to improve familiarity with Fintech products, concepts and firms by getting “their hands dirty”. 3. Increased collaboration between the regulators and stakeholders to develop market solutions to financial sector challenges 4. Assist financial authorities to regulate and supervise the marketplace more effectively and efficiently 5. Suitable for more developed Fintech markets where authorities are keen to test some of the Fintech tools themselves. 	<ol style="list-style-type: none"> 1. Requires substantial, dedicated resources to work and develop Proofs of Concept with firms. 2. In-house knowledge to use and develop use cases is required. 3. Issues of maintaining a level playing field and a transparent process.
New regulatory reform	<ol style="list-style-type: none"> 1. To note that all the approaches described above can potentially result in regulatory reform. 2. Transformative market change might only be possible with supporting regulation to support the Fintech industry. 3. Suitable as an initial step for more rules-based regimes 4. Provides clarity and focus and reduces the potential for creating an unlevel playing field 	<ol style="list-style-type: none"> 1. Introduction of regulation prior to understanding market movements might lead to inappropriately designed regulation. 2. More time-consuming a process and might not be able to respond to rapidly changing market movements.

approaches and the associated regulatory tools that will help define a regulatory response for the country (i.e. regulatory reforms).

There is still a call for international cooperation to revise existing international standards or develop new standards related to Fintech developments. Some authorities use combinations of regulatory tools and Innovation Facilitators to provide a holistic program to stimulate innovation and growth through a controlled, regulated environment.

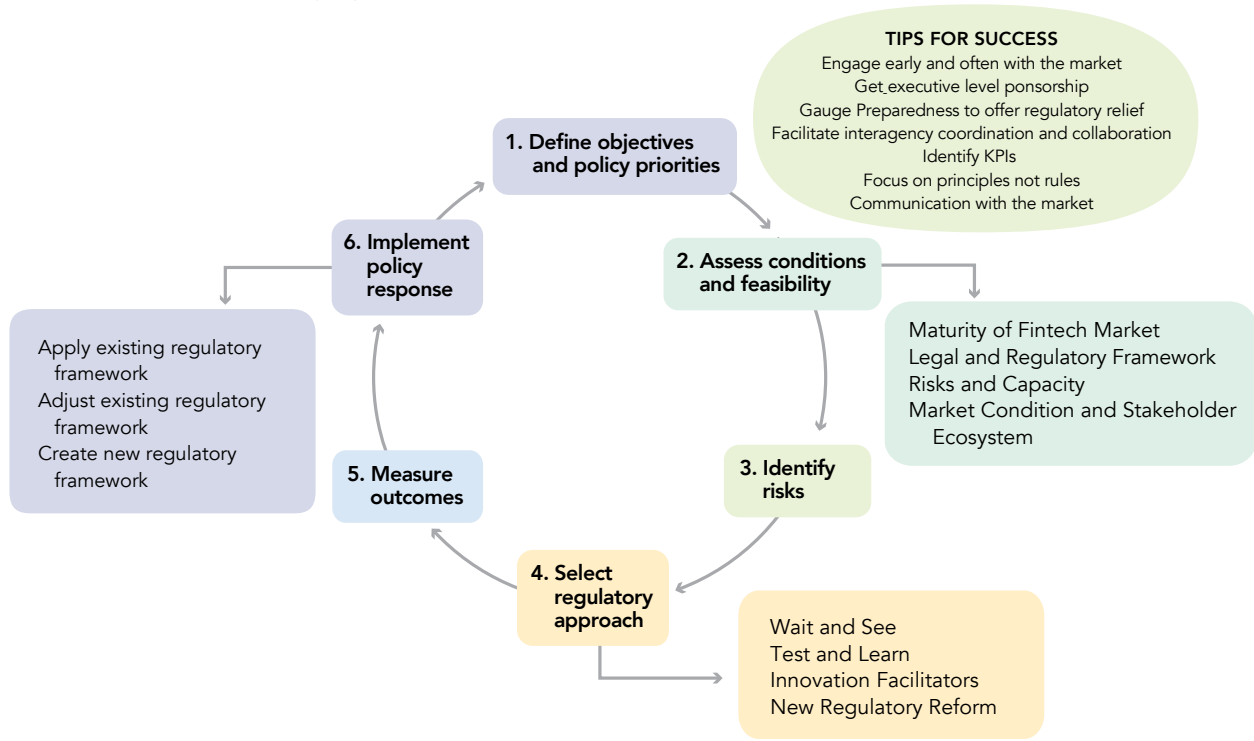
In order for Fintech to thrive a multi-dimensional approach needs to be adopted. Our experience has revealed that a detailed review and updating of existing laws and regulations, combined with a defined means of communication with the regulator (such as an Innovation Hub to serve as point of contact) and in very promising cases a “test-and-learn” methodology has worked best. This requires in-depth consideration of strategy and constantly fine-tuning it to suit the changing environment and emerging business models.

Innovation Hubs which have been used instead of, or as a complement to, a Regulatory Sandbox have shown promise of being more effective and suitable to most business needs. They are in particular—often seen as the first step along a regulatory journey—providing support, advice, guidance and even, in some cases, physical office

space, to either regulated or unregulated firms to help them identify opportunities for growth, and navigate the regulatory, supervisory, policy or legal environment. However, the results are still developing, and it is too early to draw a definitive conclusion on the outcomes.

In parallel, policymakers should engage with the broader ecosystem such as infrastructure and platforms needed to support Fintech. Infrastructure includes areas such as interoperability and the development of data repositories. With a growing digital economy, the role and importance of information and cybersecurity also increases, adding security functions to protect critical information and infrastructure. Adaptation of policy, legal and institutional contexts should be complemented by knowledge exchange. The interdependence of our financial systems demand that we collectively strengthen our efforts in knowledge sharing and coordination. As the financial sector moves on from bilateral to networked business models, so too must international institutions and domestic authorities enhance mechanisms through which to co-innovate, share experience and coordinate their efforts to promote an orderly adoption and integration of innovation. The healthy development of such an ecosystem will result in mutually beneficial cooperation among stakeholders, and eventually, help financial services be delivered at lower cost, higher speed and at better quality to more consumers.

FIGURE 13: Process for applying an approach towards Fintech



BOX 18

Tips for Success

Engage early and often with the market: Regulators can benefit from engaging with stakeholders such as new-entrants, incumbents, individual experts, academics, industry associations and other regulatory authorities.

Undertake a feasibility assessment: Regulatory innovation initiatives can be challenging and resource intensive to design and implement. A feasibility assessment may help determine whether benefits outweigh costs, and whether the existing regulatory framework is fit for the purpose or if changes are needed.⁸¹ In addition to informing the initiative design, the feasibility assessment is intended to provide an opportunity for the regulator to engage in substantive dialogue with other regulatory stakeholders, international peers, and industry and market participants.

Get an executive-level sponsor: Fintech cuts across a number of departments and developing a rounded approach to it requires a different skills and perspectives. A senior internal champion to set and direct the strategy and get senior management and industry buy-in is invaluable.

Preparedness to offer regulatory relief: Before investing significant resources in consultations and framework preparation, the regulator should confirm: how the initiative fits within its statutory mandate and the discretionary boundaries within its statutory mandate and regulatory framework. Evidence from other industries have indicated that regulatory uncertainty can increase time-to-market by nearly 33%, reduce lifetime product revenue by 8%, and reduce startups' valuations by 15% due to investors' and venture capitalists' wariness associated with regulatory uncertainty.⁸² A sentiment we have seen reflected by innovators and regulators in the financial industry alike.

Facilitate inter-agency coordination and collaboration: Strong inter-agency coordination—at the national, cross-regional, and international level—can deliver effective regulatory innovation.

Identify KPIs (Key Performance Indicators): Regulators should be clear how success will be measured and employ feedback loops to fine tune their regulatory approaches.

Focus on principles not rules: Where possible, regulators should focus on principles as opposed to rules-based regulation. They should look towards regulating the activity and not the entity.

Consider your communication with the market: Several regulators use dedicated webpages as Sandbox portals, including for application, to help raise awareness, circulate relevant documents or provide information to firms.



Annex 1: Elements of the Bali Fintech Agenda

The 2018 Bali Fintech Agenda

Regulators are keen to facilitate innovation and encourage suitable business models in their markets, while ensuring that the local environment is conducive but not adversely affected by technological developments. There have been calls for greater international cooperation and guidance about how to address emerging issues, with some also cautioning against premature policy responses. The BFA was created in response to this and highlights 12 elements arising from the experiences of member countries. The Agenda aims to provide guidance on Fintech issues, inform dialogue with national authorities, and help shape contributions to the work of the standard-setting bodies (SSBs) and other relevant international institutions on Fintech issues.

The 12 elements are grouped into 4 objectives:

OBJECTIVE 1: Foster enabling environment to harness opportunities



(I) **Embrace** the Fintech revolution

Key issues: strengthen institutional capacity; improve communication with stakeholders and across agencies; and expand consumer education



(II) **Enable** New Technologies to Enhance Financial Service Provision

Key issues: facilitate development of and fair access to telecom and Internet infrastructure; financial infrastructure, digital IDs; digitize Government data repositories; and leverage technology to make cross-border payments efficient.



(III) Reinforce **Competition** and Commitment to Open, Free, and Contestable Markets

Key issues: treat similar risks equally, apply laws and regulations proportionately; avoid market concentration and abuse; foster standardization and interoperability



(IV) Foster Fintech to Promote **Financial Inclusion and Develop Financial Markets**

Key issues: embed Fintech in national financial inclusion and literacy strategies; foster knowledge exchange; digitize government payments; leverage Fintech to advance financial sector development.

OBJECTIVE 2: Strengthen financial sector policy framework



- (V) Monitor Developments** Closely to Deepen Understanding of Evolving Financial Systems
Key issues: enable flexible data gathering frameworks to identify obstacles to innovation and new risks

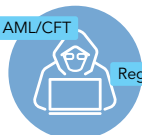


- (VI) Adapt Regulatory Framework and Supervisory Practices** for Orderly Development and Stability of the Financial System
Key issues: ensure regulation remains adaptable and conducive to development, inclusion, and competition; consider new approaches like Regulatory Sandbox; address new risks and (cross-border) arbitrage.



- (VIII) Modernize Legal Frameworks** to Provide an Enabling Legal Landscape
Key issues: legal predictability to spur investment; legal basis for smart contracts and electronic signatures; address legal gaps

OBJECTIVE 3: Address potential risks and improve resilience



AML/CFT

Regtech

- (VII) Safeguard Financial Integrity**
Key issues: mitigate AML/CFT risks that crypto-assets and other Fintech developments may pose, potential of Regtech to strengthen AML/CFT compliance



- (IX) Ensure the Stability of Monetary and Financial systems**
Key issues: Digital currencies, distributed ledger applications to payments, lender of Last Resort and other safety net arrangements.



- (X) Develop Robust Financial and Data Infrastructure** to Sustain Fintech Benefits
Key issues: Cyber security and operational risk management, risk of concentration in third-party service providers, data governance frameworks

OBJECTIVE 4: Promote international collaboration



- (XI) Encourage internal Cooperation**
Key issues: to avoid regulatory arbitrage and a “race to the bottom”, to monitor global risks, to facilitate a global enabling regulatory and legal environment for Fintech, and to stimulate sharing of opportunities



- (XII) Enhance Collective Surveillance** and Assessment of Financial Sector Risks
IMF and World Bank can provide capacity development in the areas of financial inclusion, consumer protection, statistics gaps, financial integrity, regulatory and legal frameworks, and cyber security.

Annex 2: List of Known Innovation Facilitators

(as of Sept 2019)

COUNTRY	TYPE OF INITIATIVE	NAME OF INITIATIVE	INDUSTRY/ AREA	NAME OF OPERATOR
Abu Dhabi (UAE)	Innovation Hub	Plug and Play		Abu Dhabi Global Market (ADGM) Financial Services Regulatory Authority
Abu Dhabi (UAE)	Sandbox	Fintech RegLab		Abu Dhabi Global Market Financial Services Regulatory Authority (ADGM)
Abu Dhabi (UAE)	Sandbox	Digital Regulatory Sandbox		Abu Dhabi Global Market Financial Services Regulatory Authority (ADGM)
Australia	Regtech (Incl Accelerators)			Australian Securities and Investments Commission (ASIC)
Australia	Regtech (Incl Accelerators)			Australian Transaction Reports and Analysis Center (AUSTRAC)
Australia	Innovation Hub	ASIC Innovation Hub		Australian Securities and Investments Commission (ASIC)
Australia	Sandbox	Regulatory Sandbox		Australian Securities and Investments Commission (ASIC) and Australian Prudential Regulation Authority (APRA)
Austria	Regtech (Incl Accelerators)			Oesterreichische Nationalbank (OeNB)
Austria	Innovation Hub	FMA FinTech Point of Contact and FMA FinTech Navigator	Banking, Insurance, Securities and Markets	Finanzmarktaufsicht (FMA)
Bahrain	Sandbox	Regulatory Sandbox	Financial Inclusion	Central bank of Bahrain (CBB)
Bahrain	Innovation Hub	FinTech Unit		Central bank of Bahrain (CBB)
Bahrain	Innovation Hub	Flat6Labs		Tamkeen
Barbados	Sandbox	FinTech Regulatory Sandbox	Financial Inclusion	Barbados Central Bank and Financial Services Commission (CBB & FSC)
Belgium	Innovation Hub	NBB Contact Point for FinTech and FSMA FinTech Contact Point	Banking, Insurance, Securities and Markets	Financial Services and Market Authority (FSMA) and National Bank of Belgium (NBB)
Bermuda	Sandbox	Insurance Regulatory Sandbox		Bermuda Monetary Authority (BMA)
Brazil	Sandbox	Laboratory of Financial and Technological Innovations	Financial Inclusion	Banco Central do Brazil (BCB)
Brunei	Regtech (Incl Accelerators)			Autoriti Monetari Brunei Darussalam (AMBD)

COUNTRY	TYPE OF INITIATIVE	NAME OF INITIATIVE	INDUSTRY/ AREA	NAME OF OPERATOR
Brunei	Sandbox	Regulatory Sandbox		Autoriti Monetari Brunei Darussalam (AMBD)
Bulgaria	Innovation Hub		Insurance, Securities and Markets	Financial Supervision Commission (FSC)
Canada	Sandbox	Regulatory Sandbox		Canadian Securities Administrators (CSA)
Canada	Innovation Hub	OSC LaunchPad		Ontario Securities Commission (OSC)
China	Sandbox	Regulatory Sandbox		China Banking Regulatory Commission (CBRC)
Cyprus	Innovation Hub	CySEC Innovation Hub	Securities and Markets	Cyprus Securities and Exchange Commission (CySEC)
Denmark	Sandbox	FTLab	Banking, Insurance, Securities and Markets	Danish Financial Supervisory Authority (Finanstilsynet)
Denmark	Innovation Hub	FinTech Forum	Banking, Insurance, Securities and Markets	Danish Financial Supervisory Authority (Finanstilsynet)
Dubai (UAE)	Innovation Hub	FinTech Hive		Dubai International Financial
Centre (DIFC)	Sandbox	Innovation Testing Licence		Dubai Financial Services Authority
Dubai (UAE)	Sandbox	Innovation Testing Licence		Dubai Financial Services Authority (DIFC)
Egypt	Sandbox	FinTech Application Lab		Central Bank of Egypt (CBE)
Estonia	Innovation Hub		Banking, Insurance, Securities and Markets	Estonian Financial Services Authority —Finantsinspektsioon (EFSA)
Eswatini	Sandbox	FinTech Regulatory Sandbox		Central Bank of Eswatini
EU	Sandbox	Regulatory Sandbox		European Banking Authority (EBA) and European Commission (EC)
Fiji	Sandbox	Regulatory Sandbox	Financial Inclusion	Reserve Bank of Fiji (RBF)
Finland	Innovation Hub	Innovation Helpdesk	Banking, Insurance, Securities and Markets	FIN-SA (Fianssivalvonta)
France	Innovation Hub	AMF FinTech, Innovation and Competitiveness division and ACPR FinTech-Innovation Unit	Banking, Insurance, Securities and Markets	Autorité de Contrôle Prudentiel et de Résolution (ACPR), Autorité des Marchés Financiers (AMF)
France	Innovation Hub	Le Lab Banque de France	Securities and Markets	Banque de France
Germany	Innovation Hub	BaFin FinTech	Banking, Insurance, Securities and Markets	Bundesanstalt für Finanzdienstleistungsaufsicht (BaFIN)
Hong Kong (China)	Sandbox	FinTech Supervisory Sandbox	Financial Inclusion	Hong Kong Monetary Authority (HKMA) and Securities and Futures Commission of Hong Kong (SFC)
Hong Kong (China)	Sandbox	Insuretech Sandbox		Insurance Authority
Hong Kong (China)	Innovation Hub	SFC FinTech Contact Point		Securities and Futures Commission of Hong Kong (SFC)
Hong Kong (China)	Innovation Hub	HKMA FinTech Facilitation Office		Hong Kong Monetary Authority (HKMA)
Hong Kong (China)	Regtech (Incl Accelerators)			Securities and Futures Commission of Hong Kong (SFC)
Hungary	Sandbox	Regulatory Sandbox	Banking, Insurance, Securities and Markets	Central Bank of Hungary (MNB)
Hungary	Innovation Hub	MNB Innovation Hub		Central Bank of Hungary (MNB)
Hungary	Innovation Hub	MKB FinTech Lab		Magyar Külkereskedelmi Bank

COUNTRY	TYPE OF INITIATIVE	NAME OF INITIATIVE	INDUSTRY/ AREA	NAME OF OPERATOR
Iceland	Innovation Hub		Banking, Insurance, Securities and Markets	Financial Supervisory Authority (FME)
India	Sandbox	Regulatory Sandbox	Financial Inclusion	Reserve Bank of India (RBI)
India	Sandbox	Regulatory Sandbox	Financial Inclusion	Insurance Regulatory and Development Authority of India (IRDAI)
India	Sandbox	Regulatory Sandbox	E-Governance	State of Maharashtra
India	Regtech (Incl Accelerators)	Regulatory Sandbox	Financial Inclusion	Unique Identification Authority of India (UIDAI)
India	Sandbox	Regulatory Sandbox	Capital markets	Securities and Exchange Board of India (SEBI)
Indonesia	Sandbox	Regulatory Sandbox	Financial Inclusion	Otoritas Jasa Keuangan (OJK)— Financial Services Authority
Indonesia	Innovation Hub	OJK Infinity		Otoritas Jasa Keuangan (OJK)— Financial Services Authority
Indonesia	Sandbox	Regulatory Sandbox		Bank Indonesia
Ireland	Innovation Hub		Banking, Insurance, Securities and Markets	Central Bank of Ireland (CBI)
Israel	Sandbox	Regulatory Sandbox		Israel Securities Authority (ISA) , Bank of Israel, and Ministry of Finance
Italy	Innovation Hub	Canale FinTech	Banking	Banca D'Italia
Italy	Regtech (Incl Accelerators)		Insurance, Securities and Markets	Institute for insurance supervision (IVASS)
Jamaica	Sandbox	Regulatory Sandbox		Bank of Jamaica
Japan	Innovation Hub	FSA FinTech Support Desk		Japan Financial Services Agency
Japan	Innovation Hub	BoJ FinTech Center		Bank of Japan (BoJ)
Japan	Sandbox	Regulatory Sandbox		Tokyo Metropolitan Government
Japan	Regtech (Incl Accelerators)			Bank of Japan (BoJ)
Japan	Sandbox	FinTech Proof of Concept Hub		Japan Financial Services Agency and Government
Jordan	Sandbox	FinTech Regulatory Sandbox	Financial Inclusion	Central Bank of Jordan (CBJ)
Kazakhstan	Sandbox	FinTech Regulatory Sandbox	Financial Inclusion	Astana Financial Services Authority (AFSA)
Kenya	Sandbox	FinTech Sandbox	Financial Inclusion	Kenya Capital Markets Authority (CMA)
Kenya	Regtech (Incl Accelerators)			Kenya Capital Markets Authority (CMA)
Kuwait	Sandbox	Regulatory Sandbox		Central Bank of Kuwait
Latvia	Innovation Hub	Innovation Centre	Banking, Insurance, Securities and Markets	Financial and Capital market Commission (FCMC)
Liechtenstein	Innovation Hub	Regulierungslabor	Banking, Insurance, Securities and Markets	Financial Market Authority (FMA)
Lithuania	Sandbox	Regulatory Sandbox	Banking, Insurance, Securities and Markets, (Financial Inclusion?)	Bank of Lithuania
Lithuania	Innovation Hub			Bank of Lithuania
Lithuania	Regtech (Incl Accelerators)			Bank of Lithuania
Lithuania	Sandbox	LB Chain	Banking, Insurance, Securities and Markets (Financial Inclusion?)	Bank of Lithuania

COUNTRY	TYPE OF INITIATIVE	NAME OF INITIATIVE	INDUSTRY/ AREA	NAME OF OPERATOR
Luxembourg	Innovation Hub		Banking, Securities and Markets	Commission de Surveillance Du Secteur Financier (CSSF)
Malaysia	Sandbox	FinTech Regulatory Sandbox	Financial Inclusion	Bank Negara Malaysia (BNM)
Malaysia	Innovation Hub	Financial Technology Enabler Group		Bank Negara Malaysia (BNM)
Malta	Sandbox	Cryptocurrency Sandbox		Malta Gaming Authority
Mauritius	Sandbox	Regulatory Sandbox	Financial Inclusion	Economic Development Board
Mexico	Sandbox	Regulatory Sandbox	Financial Inclusion	National Banking and Securities Commission (CNBV), Ministry of Finance, and Bank of Mexico (Banxico)
Mexico	Regtech (Incl Accelerators)			Comisión Nacional Bancaria y de Valores (CNBV)
Mexico	Regtech (Incl Accelerators)			Comisión Nacional del Sistema de Ahorro para el Retiro (CON SAR)
Mozambique	Sandbox	Regulatory Sandbox		Central Bank of Mozambique and Financial Sector Deepening Mozambique (FSDMoc)
Netherlands	Sandbox	Regulatory Sandbox	Banking, Insurance, Securities and Markets	Autoriteit Financiële Markten (AFM) and De Nederlandsche Bank (DNB)
Netherlands	Innovation Hub	InnovationHub AMF and DNB		Autoriteit Financiële Markten (AFM) and De Nederlandsche Bank (DNB)
Netherlands	Regtech (Incl Accelerators)		Banking, Insurance, Securities and Markets	De Nederlandsche Bank (DNB)
Nigeria	Regtech (Incl Accelerators)			Central Bank of Nigeria (CBN)
Nigeria	Regtech (Incl Accelerators)			Nigeria Inter-Bank Settlement System
Nigeria	Sandbox	Financial Industry Sandbox	Financial Inclusion	Central Bank of Nigeria and Nigeria Inter-Bank Settlement System (NIBSS)
Norway	Innovation Hub	Regulatory Sandbox	Banking, Insurance, Securities and Markets	Norwegian Parliament and Norgess Bank
Norway	Sandbox	Regulatory Sandbox		Norway Finance Ministry
Peru	Regtech (Incl Accelerators)			Superintendencia de Banca y Seguros del Perú (SBS)
Philippines	Sandbox	Regulatory Sandbox	Financial Inclusion	Bangko Sentral Ng Philipinas (BSP)
Philippines	Regtech (Incl Accelerators)			Bangko Sentral Ng Philipinas (BSP)
Poland	Sandbox	Regulatory Sandbox	Banking, Insurance, Securities and Markets	Komisja Nadzoru Finansowego (KNF)
Poland	Innovation Hub		Banking, Insurance, Securities and Markets	Komisja Nadzoru Finansowego (KNF)
Portugal	Innovation Hub	InsurTech—Portugal FinLab		Insurance regulator, Banking regulator, securities market commission, and Portugal fintech
Portugal	Innovation Hub	Startup Lisboa	Banking, Insurance, Securities and Markets	Banco de Portugal (BdP), Comissão do Mercado de Valores Mobiliários (CMVM), Autoridade de Supervisão de Seguros de fundos se Pensões (ASF)
Republic of Korea	Innovation Hub			Seoul Metropolitan Government
Republic of Korea	Sandbox	Regulatory Sandbox	loans, insurance, capital market, credit, banking and data	Financial Supervisory Service (FSS)

COUNTRY	TYPE OF INITIATIVE	NAME OF INITIATIVE	INDUSTRY/ AREA	NAME OF OPERATOR
Romania	Innovation Hub	InsureTech Innovation Hub	Insurance, Securities and Markets	Fianncial Supervisory Authority (ASF)
Russia	Regtech (Incl Accelerators)			Central Bank of Russia (CBR)
Russia	Sandbox	Regulatory Sandbox	Financial Inclusion	Central Bank of Russia (CBR)
Rwanda	Regtech (Incl Accelerators)			National Bank of Rwanda (BNR)
Saudi Arabia	Sandbox	Regulatory Sandbox		Saudi Arabian Monetary Authority (SAMA)
Serbia	Sandbox	Regulatory Sandbox		National Bank of Serbia (NBS)
Sierra Leone	Sandbox	Regulatory Sandbox	Financial Inclusion	Bank of Sierra Leone (BSL)
Singapore	Sandbox	FinTech Regulatory Sandbox	Financial Inclusion	Monetary Authority of Singapore (MAS)
Singapore	Innovation Hub	MAS Financial Technology and Innovation Group		Monetary Authority of Singapore (MAS)
Singapore	Innovation Hub	Global FinTech Hackcelerator		Monetary Authority of Singapore (MAS)
Singapore	Regtech (Incl Accelerators)			Monetary Authority of Singapore (MAS)
Spain	Sandbox		Banking, Insurance, Securities and Markets	Ministerio de Economia y Empresa
Spain	Sandbox	Regulatory Sandbox		Spanish FinTech and InsureTech Association (AEFI)
Spain	Innovation Hub	FinTech/Innovation Portal	Securities and Markets	Comission Nacional del Mercado de Valores (CNMV)
Sri Lanka	Sandbox	Regulatory Sandbox		Central Bank of Sri Lanka (CBSL)
Sweden	Innovation Hub	Finansinspektionen's Innovation Hub	Banking, Insurance, Securities and Markets	Financial Supervision Authority (FI)—Finansinspektionen
Sweden	Regtech (Incl Accelerators)			Sveriges Riksbank
Switzerland	Sandbox	Regulatory Sandbox		Swiss Federal Council and Swiss Financial Markets Supervisory Authority (FINMA)
Switzerland	Innovation Hub	FINMA FinTEch		Swiss Federal Council and Swiss Financial Markets Supervisory Authority (FINMA)
Taiwan	Sandbox	Regulatory Sandbox		Financial Supervisory Commission
Thailand	Sandbox	Regulatory Sandbox	Financial Inclusion	Bank of Thailand (BoT)
Thailand	Innovation Hub			Securities and Exchange Commission
Thailand	Regtech (Incl Accelerators)			Bank of Thailand (BoT)
Turkey	Sandbox			
Uganda	Sandbox	Regulatory Sandbox		Operator(s) To Be Confirmed
UK	Sandbox	Regulatory Sandbox	Banking, Insurance, Securities and Markets	Financial Conduct Authority (FCA)
UK	Innovation Hub	FCA Innovate	Banking, Insurance, Securities and Markets	Financial Conduct Authority (FCA)
UK	Regtech (Incl Accelerators)			Financial Conduct Authority (FCA)
UK	Regtech (Incl Accelerators)			Bank of England (BoE)
USA	Sandbox	FinTech Sandbox	Financial Inclusion	Arizona State Regulators
USA	Sandbox	No-Action Letters and (proposed) BCFP Product Sandbox		Bureau of Consumer Financial Protection (BCFP)

COUNTRY	TYPE OF INITIATIVE	NAME OF INITIATIVE	INDUSTRY/ AREA	NAME OF OPERATOR
USA	Sandbox	InsurTech Regulatory Sandbox		Department of Insurance, Kentucky
USA	Sandbox	Regulatory Sandbox	peer-to-peer lending, credit extending services, money transmission and certain block chain or cryptocurrency products	Utah Department of Commerce
USA	Innovation Hub	OCC Office of Innovation		Office of the Comptroller of the Currency (OCC)
USA	Innovation Hub	LabCFTC		Commodities and Futures Trading Commission (CFTC)
USA	Innovation Hub	BCFP Project Catalyst		Bureau of Consumer Financial Protection (BCFP)
USA	Regtech (Incl Accelerators)			Securities and Exchange Commission (SEC)
USA	Regtech (Incl Accelerators)			Bureau of Consumer Financial Protection (BCFP)
USA	Regtech (Incl Accelerators)			Federal Reserve Board (FRB)
USA	Regtech (Incl Accelerators)			Financial Industry Regulatory Authority (FINRA)

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