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PROCEEDINGS

Fireside Chat on Accelerating Innovation Through Sandboxes: Lessons from Singapore and the ASEAN Financial Innovation Network (AFIN)

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Executive Summary

Singapore has revolutionized and accelerated innovation through the utilization of regulatory sandboxes[1] and various digital platforms. Moreover, the country has learned to rethink regulations and explore best practices in support of the FinTech ecosystem in general, and FinTech in particular

Definition of FinTech

- Singapore is an advanced economy and a large financial center. FinTech is anything in financial services that is transformed or reimagined using technology. Whereas in the Western narrative, FinTech has centered around lending, payments and disruption, in Singapore, the narrative has been how to bring technological innovation into the entire sector, in effect, reimagining the whole FinTech space.

Singapore's FinTech Policies

- Singapore has 10 digital policies or enablers centered around FinTech:
    1. *Trusted digital identity*. This is a starting point for any policy maker. Since the individual cannot be physically seen, there must be a way of building a trusted digital identity. The Indian case of building identity is a good example.
    2. *Trusted digital data hub*. Policy makers should build trusted data around trusted identity.
    3. *Customer consent architecture*. Once some of the data can be trusted and somehow curated by the government, consent must be provided for any data to be

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[1] In the context of financial industry, regulatory sandbox is a framework that allows FinTechs, banks and other companies to experiment with new products, services, business models etc. while working with regulators. It allows regulators to develop adequate regulation and keep up with the pace of innovation.

used by a third party FinTech, or other party.

If these 3 steps are not established from the start, then FinTech becomes a temporary narrative in the space.

4. *Public infrastructure for the digital economy*. Why should banks spend money identifying customers? It could be a public responsibility to have distributed ledgers to verify customers.
5. *Data residency policies (open, privacy, ethics)*. Countries are becoming nationalistic when it comes to sharing data. Data should be open, but privacy must be maintained. Furthermore, ethical standards on how to use the data should be considered. This avoids causing any unanticipated, adverse consequences.
6. *Scaled computing. (cloud, quantum[2] and edge computing[3])* Central banks must think about building policies around the cloud, quantum and edge computing.
7. *Open architecture (Application Programming Interface (API) driven).* SME digitalization can begin when various sectors mix data using pipes.
8. *Talent and entrepreneur growth capital*. The issue of a talent deficit must be addressed. Policy makers, banks and Chief Information Officers (CIOs) may need to work on upgrading their skills. This includes capital provided from the start. For example, MAS gave US$ 25 million in risk capital for startups seeking to innovate.
9. *Policy making t through experimentation and empirical data (Sandbox).* Technology moves at the speed of 6 months, whereas developing public policies (through white papers) may take as long as 3 years. Policy makers need to switch to experimentation.
10. *Cybersecurity.* If there is no strong cybersecurity policy, the whole digital narrative will collapse. It is possible that the next financial crisis may be a cybersecurity crisis.

- Singapore has a very small market of 5.5 million people. FinTech companies move there for policy support and testing of their products. They then use this experience to export to other markets.
- SMEs are small, but they dream big. Only the digital economy platform can help SMEs realize their dreams. The public-sector infrastructure, such as an inclusive marketplace platform, can bring together the entire ecosystem, creating new opportunities for SMEs.
- Globally, 5,000 FinTechs exist, and only 5 percent have gone beyond their domestic market. Even Alibaba, for example, does not run a platform outside of China. FinTechs are all domestically-driven.

The ASEAN[4] Financial Innovation Network (AFIN)

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[2] Quantum computers leverage different physical phenomena — superposition, entanglement, and interference — to manipulate information, relying on quantum bits. IBM Q. "What Is Quantum Computing?" (2018). https://www.research.ibm.com/ibm-q/learn/what-is-quantum-computing/.

[3] Edge computing occurs when data gets processed as close to the source as possible -- the edge of the network -- instead of in a massive, centralized data-storage warehouse. Markman, Jon. "This Is Why You Need To Learn About Edge Computing." Forbes (Apr 3, 2018). https://www.forbes.com/sites/jonmarkman/2018/04/03/this-is-why-you-need-to-learn-about-edge-computing/#415f1add1a56.

[4] ASEAN is the Association of Southeast Asian Nations.
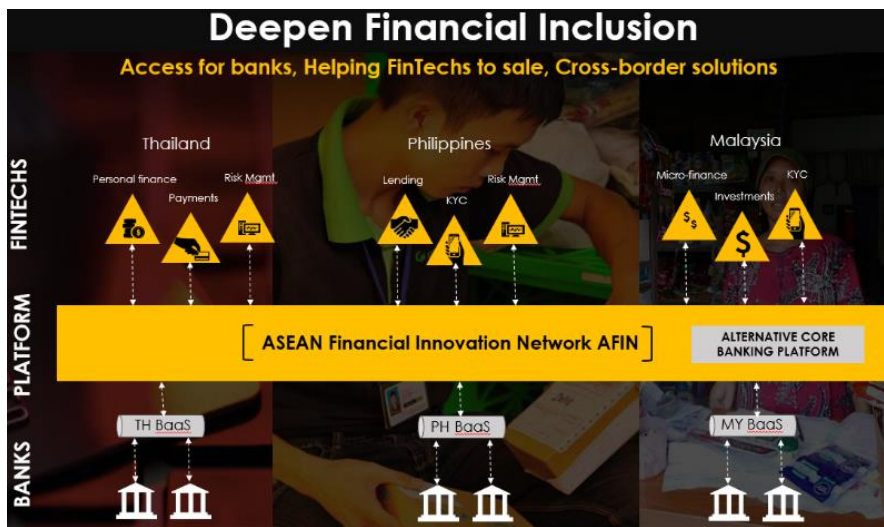
Source: *Monetary Authority of Singapore.*

- In addressing the problem of FinTech companies moving beyond their own jurisdictions, MAS proposes an open platform in the cloud allowing FinTechs from around the world to connect with each other. Indeed, MAS has imagined a platform whereby banks can connect with each other directly, facilitating lending across borders. This soon-to-be launched platform was created by the International Finance Corporation (IFC) and 15 partner banks and will connect 10 Asian countries. This is what is called an "Industry-Partnered Sandbox".
- The platform connects the private FinTech innovators to the banks who have a legacy system and who previously could not connect with FinTech entrepreneurs. As such, this partnership has the potential to transform the ecosystem. It does not crowd out the private sector. Rather, it is helping FinTechs to succeed in this sector. Banks spend US$500 billion on technology annually, and almost 40 to 60 percent of the large technology companies come from the financial sector. However, the financial system has the oldest technology. Thus, FinTech companies will unbundle the legacy companies and create a new ecosystem. The real FinTech disruptors are the technology companies, not the banks. These FinTech companies will unbundle the financial services, write the software, come to the platform and build a new ecosystem.
- Trust, financial instability, cybersecurity issues and cross-country data flows are some of the concerns of regulators with respect to this new platform. MAS has conducted workshops with regulators and invited them as observers to address this issue.

The Sandbox Approach

- The Singapore-based sandbox is a regulatory sandbox[5], not an industry sandbox[6]. Banks and FinTech companies from all over the world are invited to the sandbox when they have compliance risk issues. If no policy barriers are found, they are encouraged to continue

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[5] A Regulatory Sandbox provides a conducive environment for the experimentation of innovative technology where the consequences of failure can be contained and the overall safety and soundness of the financial system maintained. Monetary Authority of Singapore. "MAS Proposes A Regulatory Sandbox for Fintech Experiments." (2018). http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/MAS-Proposes-a-Regulatory-Sandbox-for-FinTech-Experiments.aspx.

[6] An Industry Sandbox provides a cloud-based testing environment through which banks and FinTech players can develop, test and refine digital finance and inclusion solutions. Monetary Authority of Singapore. "IFC And Monetary Authority Of Singapore Collaborate To Advance Fintech Innovation In Asia". 2018. http://www.mas.gov.sg/News-and-Publications/Media-Releases/2017/IFC-and-Monetary-Authority-of-Singapore-Collaborate-to-Advance-FinTech-Innovation-in-Asia.aspx.

with their business. If there are policy challenges, MAS works with them for a period of 6 months and then tests a new approach with them.
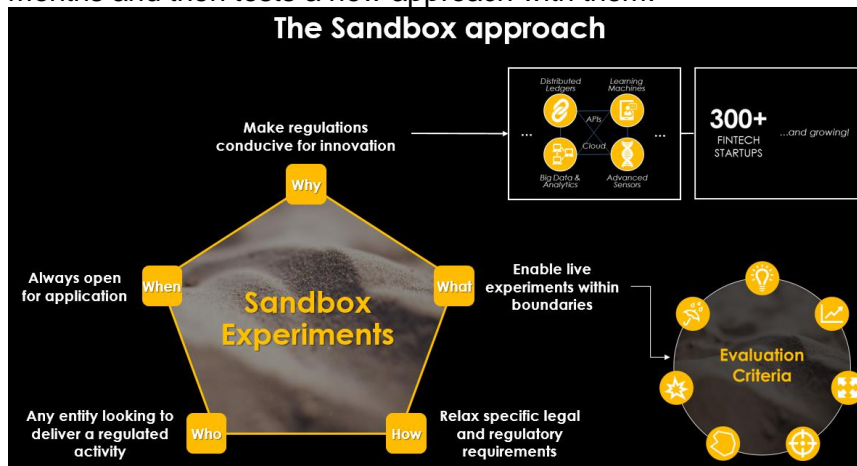
Source: Monetary Authority of Singapore.

- This FinTech platform will help each of the countries in adopting best practices, and the data collected from it will be used to educate policy makers.
- Many central bankers are very progressive. In ASEAN countries, for example, no policy barriers are expected for now.
- The biggest challenge of the banking sector concerns the middle office. The FinTech platform will address this risk management component in the middle office function by improving credit-discerning practices.
- The sandbox allows banks of all sizes from any country to experiment without risk of failure. Indeed, it is a collective effort to select the best opportunities in connecting this platform.
- The role of public infrastructure is fundamental, and a Fintech company cannot provide an e-Know Your Customer (KYC) facility for every bank
- In Singapore, 70 percent of the population — and soon 100 percent of the population — can open a bank account in less than five minutes. This works because of a combination of the following: a trusted ID; a trusted data hub; and electronic consent architecture. People can click on any account opening page of a bank, and then their national ID from a trusted government database is verified through an API with electronic consent. This is achieved using a live platform that connects the public database with the banking system. Singapore provides 30 real-time verified data items. It is shared with everyone, but a basic protection is ensured.

Know Your Customer (KYC)

- An estimate shows that almost 30 percent of banks' expenses are attributable to verifying the customer's identity. As such, banks have created the e-KYC function.
- Singapore's next effort entails the building of a shared private-public partnership for corporate KYC.
- To date, Ubin is the largest blockchain experiment conducted by any central bank. Eleven financial institutions, blockchain platform providers (including Hyperledger, Corda and Quorum) and MAS are working together on this project. The main focus is on how to tokenize[7] the Singapore dollar, and once tokenized how to use it for domestic wholesale payments, as well as overseas. It could also be used to buy securities. The team of 40

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[7] According to Wikipedia, tokenization, when applied to data security, is the process of substituting a sensitive data element with a non-sensitive equivalent, referred to as a token, that has no extrinsic or exploitable meaning or value. (October 5, 2018). https://en.wikipedia.org/wiki/Tokenization_(data_security).

people is in the third phase of conducting cross-border transfers using the tokenized Singapore dollar.

- MAS is the only central bank that has contributed to developing code for the public infrastructure GitHub.[8] MAS can now empirically prove that blockchain is the best option for cross-border payments. If policy makers do not participate in this activity, then poor policy choices may result. This experiment allows for the flexibility and opportunity to work with the industry in a much more thoughtful way.
- MAS has started to establish the only production blockchain platform in Hong Kong SAR, China and Singapore, called Global Trade Connectivity. It uses data from companies and inputs it into a blockchain platform using customs, logistics, and supply data. Banks can then directly plug into the platform, in real-time, and conduct trade finance.
- In Singapore, a free payment system in now available — even faster than Alipay — using public infrastructure. It involves the following steps: entering the sender's mobile phone number, entering the recipient's phone number, the payment amount and the password. Singapore is also looking at deregulating the entire payment infrastructure payment policy.

Re-Thinking Payment Regulation

- MAS proposes the re-thinking of payment regulation by breaking down the regulation according to the activity. Any company doing performing that particular activity will follow a limited regulatory obligation. This brings down the cost, helps better manage the risk, and captures a bigger canvas of unregulated activities. Furthermore, it will allow FinTechs to raise more capital.
- Having run the sandbox for three years, MAS has found that 95 percent of the FinTech companies who come to it do not need any regulatory guidance. Indeed, what the companies are doing is already within the regulatory expectations of Singapore.

Recommendations

- Most regulators are quite open to the idea of experimentation. However, the people interpreting the regulation, including the lawyers or compliance officers, are not.
- There are concerns about the overreliance on models with flawed assumptions since it is believed to have been one of the contributors to the financial crisis. However, there was no sandbox when the global financial crisis happened. Also, the current practice of testing the model before it becomes large and unsustainable can help mitigate such risks.
- The history of the sandbox comes from the pharmaceutical industry. It is now using the sandbox process to quickly release drugs and save millions of lives.
- Singapore's recommendation for other countries is to start their own revolution by helping the bankers associations to work together, building a partnership with the regulators, and bringing the regulators to a confidence level where they can start to experiment and integrate FinTechs and young people into the discussion. Sharing best practices among all stakeholders is also important.
- The Singapore FinTech Festival brings about 30,000 regulators, policy makers and technology companies together every year. They can accept another 20,000 from Africa.
- Unless policy makers build a trusted data hub, allow for APIs, and put the right policies in place, the digital economy and digital platforms will remain just a dream.
- Women central bankers tend to be more sympathetic to these issues. More women are needed to join the discussion and provide more diverse thinking.

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[8] GitHub is an online community where more than 28 million people learn, share, and work together to build software. Github. "About." (October 5, 2018). https://github.com/about.