The Irish Advantage

The State of Regtech in APAC

Evaluation of the Landscape & Market Opportunity for Regtech Companies

2021

ENTERPRISE IRELAND

Kapronasia

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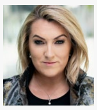

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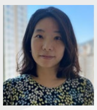

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Foreword

When it comes to advancements in fintech, the world is looking at Ireland. As a global hub for finance, technology and investor activity, Ireland is a hotbed of fintech innovation, helping the industry respond to challenges from the digitization of banking to new payments models and ever-changing compliance requirements.

Irish regtech companies have established a world-class reputation for helping financial services customers to deal with the increasingly complex and rapidly evolving regulation – as well as continuous disruption and transformation – that characterises the industry today. As leaders in this space, they combine deep regulatory expertise, with the technology leadership to be found in one of the world's foremost enterprise software centres.

As a result, global leaders in financial services, who need to balance compliance and risk with the need to transform their business model, choose to work with partners who can quickly design and implement sophisticated regtech solutions as new regulatory requirements emerge. Most of those regtech partners just so happen to be from Ireland.

At Enterprise Ireland, we want our regtech companies to have global ambition. Traditionally, the trajectory of a European regtech company's expansion has been in the UK, Europe and then North America. However, a surge in regulatory requirements across Asia-Pacific in recent years has brought with it an explosion in the use of regtech by financial services firms to maintain compliance. The development of digital economies across Asia-Pacific will also be a boom for regtech in the region. With this, brings opportunities for regtech companies, particularly those established in mature and highly regulated markets.

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A very special thank you to the FinTech Association of Japan for kindly contributing the Japan chapter. A particular thanks to Mr. Takeshi Kito of the FToJ for his help in compiling this chapter. We look forward to our continuing collaboration and bridging East and West fintech ecosystems.

About Enterprise Ireland

Enterprise Ireland is the Irish Government's Investment, Trade and Development Agency.

As one of the world's most active fintech investors, Enterprise Ireland works with over 200 fintech portfolio companies around the world helping them enter and scale new markets.

We proudly invest in, support and partner with the most innovative Irish companies through all stages of their growth and connect them to international customers and ecosystems across multiple industries and markets through our network of over 30 offices around the world.

If you are an organisation based in Asia-Pacific looking for world-class fintech solutions, we are always looking to expand our global partnership network and would be happy to work with you.

How we work

Develop	Understand	Shortlist	Introduce	Partner
We invest in a pipeline of world-class innovation and help develop cutting-edge Irish companies and build global capabilities.	Industry experts in our international offices work with you collaboratively to understand your business challenges.	We assemble a shortlist of qualified Irish partners who match and solve your business problems.	We make direct introductions to the right people in Irish companies, enhancing and simplifying your experience.	We facilitate and progress your business partnership with innovative Irish companies.

Discover what our fintech portfolio can offer you and your business by getting in touch with one of our team. Enterprise Ireland's expert fintech advisers will work to understand your needs and connecting you to the fintech company that can best meet them.

RegTech Map

2021

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- spearline
- SIREN
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Information & CyberSecurity

- Cyber Risk Aware
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- CYBER PRISM
- 4SECURITAS
- Smarttech
- Integrity360
- waratek
- VIGITRUST

If you are interested in learning more about any of the below companies, and Ireland's regtech capability, please visit **www.irishadvantage.com/fintech** or submit your query to **https://irishadvantage.com/contact-us**

AML & KYC Transaction Monitoring & Reporting

DX Compliance Solutions

Leading the market in AML Transaction Monitoring software for B2B Challenger Banks and Payments companies. Their software is designed by compliance professionals, for compliance professionals, regularly tested and updated with working groups. DX Compliance believes in making AML compliance a competitive advantage.

www.dxcompliance.com

iDPal

ID-Pal is an off-the-shelf, end-to-end KYC solution. They enable businesses to verify the identity of customers simply, securely and conveniently. Using advanced mobile technologies, ID-Pal reduces the cost and risk associated with customer onboarding whilst removing friction from the user experience. It's easier, cheaper, faster and more reliable than either manual processing or building a custom solution. With ID-Pal businesses can onboard their customers either in-person or remotely in just a few minutes.

www.id-pal.com

Kyckr

Kyckr offers global company intelligence from the most legally authoritative and compliant sources in the world. They connect to over 180 company registries globally, across 120 countries and more than 170+ million legal entities. Their fully automated corporate customer validation and verification solutions streamline your KYC processes and speed up customer onboarding while ensuring compliance at all times.

www.kyckr.com

ubo service

UBO Service offers an innovative new solution for obliged entities to understand who their ultimate beneficial owners (UBO's) and controllers are. From large corporate entities to start-ups, they help businesses transform customer journeys, reduce fraud, and meet on-going compliance obligations. Their UBO Portal and API identifies and verifies Beneficial Owners in real-time, allowing you to capture legal declarations in line with your compliance obligations. Add an additional layer of security to your compliance process with a globally recognised legal entity identifier (LEI). Connecting financial markets, companies, and regulators.

www.uboservice.com

Know Your Customer

Know Your Customer provides next generation digital on-boarding solutions to financial institutions and regulated organisations around the world. They empower compliance teams to better protect their business and efficiently perform all necessary KYC and AML checks on both corporate and individual customers, centralising the on-boarding process through a uniquely easy-to-use platform. Know Your Customer enables traditional as well as newly established organisations to deliver a fully digital yet completely secure on-boarding experience. Their technology accelerates the time needed to onboard a new corporate client from an industry average of 26 days to 1 day, generating considerable savings for the company.

www.knowyourcustomer.com

Accounts & Audit Compliance

circit

Circit is a financial audit management platform that provides real-time visibility of audit confirmations as well as direct connections to banks, solicitors and fintech services. Circit has created a network of validated professional and financial services firms, all of which benefit from the highly secure software platform. Audit confirmation requests cost each firm thousands of hours in staff time every year, they delay audit sign-off and the client loses out in every respect. Circit fixes this by saving 80% of the cost, reducing risk and bringing a better faster digital experience to each party participating in the network.

www.circit.io

INTEGRALYNX
TAKE CONTROL OF YOUR DATA

Reitigh Software Ltd creates solutions for financial companies in the RegTech space. They solve problems for the insurance, funds, investment administration and banking industry. IFRS 17 - Their IntegraLynx platform is your complete data solution for IFRS 17. Bringing together data from actuarial valuation systems and finance transactional systems, IntegraLynx is an enterprise level data solution that has been designed by actuaries specifically to satisfy your IFRS 17 needs. PRIIPs - Automated KID production and calculation engine. At Reitigh, they have created IntegraLynx, a market leading end-to-end solution for your PRIIPs KID requirements. Their team has spent years working in the financial services industry so they understand your products and the importance of representing them correctly on the KID.

www.reitighltd.com

Taxamo

Taxamo are experts dedicated to resolving the complex issues of global VAT/GST compliance on digital service sales for enterprise-level businesses. Since 2015, 40-plus countries worldwide have applied laws to tax cross-border sales of digital services. More and more countries are adopting this approach to generating revenue, adding complexity to the ensuring of VAT/GST compliance in every local market. By assuming their customers' global VAT/GST liability on their digital service sales, they bring certainty to their tax affairs. Taxamo ensures compliance with all digital VAT/GST regimes. The Taxamo commercial model saves their clients up to 40% of their global VAT/GST compliance costs when compared to managing the process in-house.

www.taxamo.com

Client Life Cycle Management

fenergo

Fenergo is the digital enabler of client and regulatory technology for financial services. It provides Client Lifecycle Management (CLM) software solutions for Financial Institutions including; Corporate & Institutional Banking, Commercial & Retail Banking, Asset Management, Private Banking & Wealth Management. Counting 70 global Financial Institutions as clients, its award-winning CLM suite digitally transforms how Financial Institutions manage clients; from initial onboarding to KYC/AML and regulatory compliance, to data management and ongoing lifecycle KYC reviews and refreshes. Fenergo CLM empowers financial institutions to deliver a faster, compliant and digital customer experience while achieving a single client view across channels, products, business lines and jurisdictions.

www.fenergo.com

Supervisory Tech

vizor

Vizor Software is a global leader trusted across 30 countries in SupTech, supervisory technology for Financial Regulators, RegTech for regulatory reporting across Banking, Insurance, Pensions and cross-border automated exchange of information (AEOI) for Tax Authorities. Founded in Dublin in 2000, Vizor has two decades of successful implementations of unique regulatory and tax reporting platforms architected and developed to provide extremely flexible and extendable solutions. This approach ensures their clients can adapt their systems to meet future needs as global regulations and OECD tax policies evolve.

Vizor's latest innovations for the RegTech ecosystem, Vizor Reporting API and Vizor Reporting Centre, are rolled out in Singapore and Australia markets in 2020 to automate regulatory reporting. This reflects Vizor's commitment to delivering new innovative solutions which digitalise and increase efficiency between regulators and regulated entities.

www.vizorsoftware.com

Communications

JOULICA

Joulica is a multi-award-winning startup that works with multiple Fortune 50 organisations to drive Digital Innovation in the Customer Experience industry. They have decades of experience solving problems for the largest Contact Centers on the planet and excel at the intersection of Realtime Analytics, Customer Experience and Digital Business Innovation.

www.joulica.io

phonovation

Phonovation (www.phonovation.com) has established itself as the leading supplier of value added and innovative voice and SMS solutions. Their reputation is built on the quality of their people, infrastructure, and the understanding of each of their clients' unique requirements. Phonovation's flagship product is InteractSMS (www.interactsms.com), Ireland's largest bulk SMS platform. Clients send over seven million SMS per month in Ireland alone through their interface or API. What separates InteractSMS from their competitors is that they make your customers take action, instantly. PSD2 is changing the payment services landscape. Phonovation can help you to address its requirements by protecting your customers from cyber fraud with PhonoSecure STOP. Identity proofing solutions to help eliminate fraud in financial institutions.

www.phonovation.com

Solgari

Solgari is the Dynamics 365 All-Channel Communications Solution for companies with demanding, secure, multi-channel needs, who are looking to increase efficiency, meet all related compliance requirements, and to delight customers who wish to engage on their preferred communications channel. We are the first global Microsoft ISV to deliver integration across all communication channels, functions, and local number coverage, enabling Dynamics 365 CE businesses to handle all of their inbound and outbound customer conversations seamlessly, providing a single customer view, superior customer service and automatic compliance across multiple regulations.

www.solgari.com

Compliance, Conduct & Risk Management

AQMETRICS

AQMetrics provides integrated compliance and risk management software to fund administrators, asset managers, investment managers and broker/dealer companies. The consolidated platform delivers data management, risk profiling and monitoring, compliance workflows and reports all in one place. Using AQMetrics, customers understand their risks whilst complying with regulations in a way that has never before been possible. They also improve their client experience and reduce operational costs. Risk and regulatory processes addressed by AQMetrics include AML, KYC, CDD and one-off spot checking for cost effective compliance. EU directives include AIFMD, MAD II, UCITS and MiFID II.

www.aqmetrics.com

ARM
AUTOMATED REGULATORY MONITORING

ARM is revolutionizing financial compliance through a fully scalable platform that automates process issue identification, helping financial services firms gain full visibility of their portfolio. With more than 20 years of combined experience in financial services compliance and data analytics, our platform has already monitored more than $1 billion in loans. Financial institutions should be able to analyse operations for up 100% of their customer portfolio. ARM makes this possible. They translate the regulatory body into algorithms that survey all data and communications with customers to automate the identification of compliance vulnerabilities. The result? An expanded reach of your control and improved effectiveness overall.

www.armonitoring.co.uk

CalQRisk

CalQRisk is a fully integrated and end-to-end Governance, Risk & Compliance (GRC) management information system. It features Risk Assessment, Action Management, Incident Management and Complaints Management modules; Control Verification, Compliance Estimation and Audit functionality; as well as configurable Calendars, an interactive Executive-Level Dashboard and a large suite of exportable reports. CalQRisk represents an affordable solution for companies of all sizes. Central to all of this is the CalQRisk knowledgebase of risks and associated controls that informs the Risk Assessment and other elements of CalQRisk.

www.calqrisk.com

CHASINGRETURNS

Chasing Returns provide a suite of risk management tools for traders, both professional and retail. These tools will help minimise risk for traders, increase profitability, higher trading volumes and keep them trading for longer. The Chasing Returns client support portal also offers a real-time solution for supporting your professional traders.

www.chasingreturns.com

GECKO GOVERNANCE

GECKO Governance is a revolutionary RegTech system for financial institutions, providing definitive solutions to meet all compliance pain-points across a multitude of financial service areas on a global basis. GECKO Governance offers a comprehensive suite of optionally Blockchain integrated products which hugely improves their client's operational efficiency, cost-effectiveness, and compliance security. Clients use GECKO to manage Compliance, Operational Due Diligence (ODD), Fund Launches, and Investor On-Boarding. It also re-organises historical information for multi purposes and allows their clients to securely deal with external parties, ensuring transparency, accountability to satisfy global financial regulators. In such a complex and costly regulatory environment, GECKO is changing the working lives of the companies who use it, delivering endless benefits.

www.geckogovernance.com

Governor

Governor enables companies to draw maps of the various regulatory and policy obligations and to define the objective, risks, systems, etc. that are related to that structure. For each item they can define the people in charge and the approach for assessing status. Governor then enables companies to gather metrics and other data and present it to the relevant people so that they can make informed decisions.

www.governorsoftware.com

MCO MyComplianceOffice

MCO provides compliance management software that enables companies around the world to reduce their risk of misconduct. The MyComplianceOffice platform lets compliance professionals demonstrate they are proactively managing the regulated activities of employees, third-party vendors and other agents of the firm. Available as a unified suite or à la carte, their easy-to-use and extensible SaaS-based solutions get clients up and running quickly and cost-efficiently.

mco.mycomplianceoffice.com

miuraregtech
Automating Regulatory Compliance

Miura differentiates itself from other Regtech players as its mission is to Automate Regulatory Compliance. What they mean by this is they scan a firm's policies, procedures, and systems on a daily basis to prove they comply with each line of regulation, and if a regulation changes, Miura workflows those changes to update the firm's policies, procedures, and systems automatically. All of this is monitored in Real-time, by Management, Compliance, Audit, and the Regulator.

www.miura.ie

NeoTutum
New Age Risk Management

NeoTutum is a new age risk management company that helps clients to evidence end to end compliance with regulation & policy. NeoTutum firmly believe they can make the Risk Management World a better place. The clue is in the name – NeoTutum is latin for 'New Safe Journey'. The NeoTutum solution enables a complete end to end approach for building complex risk management assessments and risk management strategies. It differs signficantly from conventional approaches due to the express link to the underlying policies and process of the client entity. With global ambition and application of new age technology and analytics NeoTutum is on a mission to make the world of Risk Management a better place.

www.neotutum.com

Compliance, Conduct & Risk Management

pTools™

pTools Software delivers powerful web applications solutions for critical business initiatives. pTools combines ease-of-use with rich feature functionality and expert partner implementation services to guarantee value driven results. pTools software is used to develop enterprise solutions for customers in private and public sectors with emphasis on mission critical content initiatives for Government, Healthcare, Utilities, Security, Service and Finance sectors. pTools software combines powerful enterprise content management functionality with user-friendly interface and enterprise application architecture. For Financial Services and Governments that require transformation of their information processing procedures, pTools provides software solutions that securely automates tedious processes through proven, proprietary technologies and great applications software design (including Digital Risk Management: Risk mitigation and management, escalation management and real-time reporting dashboards).

www.ptools.com

red flare
Governance Risk Compliance

red flare provides a comprehensive and practical Governance Risk and Compliance (GRC) solution for businesses. Leading companies spanning industry verticals are benefiting from red flare's award winning practical modular approach which covers GRC, GDPR, ISO 27001 and policy document management. red flare is cloud based allowing your team and partners access critical information when it's needed, where it's needed. Dashboard tiles provide a top-level view of strategic objectives, policy reviews, regulatory conformance and risk management. The system is intuitive, easy to use and pre-configured sectoral models can be deployed instantly and then customised to end users specific reporting and organisational needs

www.redflare.co

Regulert is a Dublin, Ireland headquartered Regtech business which specialises in providing instantly deployable information and alerting platforms for the financial services industry to immediately meet their regulation requirements. Regulert was established in 2018 by a group of financial services, compliance and technology specialists to provide best in class solutions to regulatory challenges. Their mission is to help clients to become regulatory compliant through development of regulation specific software products that can be deployed simply in a cost effective and timely manner.

www.regulert.com

Sedicii allows two parties that have access to the same information to prove to each other that they both have exactly the same information, or not as the case may be, without ever exposing the underlying information to each other in the process. The technology can be applied to pieces of private information such as passwords, bank account details, credit card details or other identity attributes so they can be proven without the need to disclose or share the underlying information. Sedicii is applying this patented technology to build an identity exchange where parties that have lots of trusted identity attributes in their databases can help others to confirm individual identity details without exposing, sharing or transmitting any of the information that they hold.

www.sedicii.com

Xiir Frameworks is a highly intuitive next-generation tool for senior managers to create custom frameworks that simplify compliance oversight. Xiir is so simple to use that senior managers across your company can track compliance progress with a single click. This ensures nothing related to compliance falls between the cracks while senior managers continue to focus on direct responsibilities.

www.seniormanagers.com

Identity & Authentication

Daon is an innovator in developing and deploying biometric authentication and identity assurance solutions worldwide. Daon has pioneered methods for securely and conveniently combining biometric and identity capabilities across multiple channels with large-scale deployments that span payments verification, digital banking, wealth, insurance, telcos, and securing borders and critical infrastructure. Daon's IdentityX® platform provides an inclusive, trusted digital security experience, enabling the creation, authentication and recovery of a user's identity and allowing businesses to conduct transactions with any consumer through any medium with total confidence.

www.daon.com

LEI Worldwide reduce the regulatory burden on both the LEI issuers and the Legal Entities applying for their LEI numbers. They make the process accessible and simple for Legal Entities to obtain Legal Entity Identifier numbers from the LEI issuers (LOU's). They do not issue LEI numbers, that is the role of the LOU's, however they have detailed knowledge of the process and they liaise with the LOU's on behalf of their clients and procure the relevant information for them. It is their mission to be the one point of contact globally between Legal Entities & LOU's and ensuring as few people as possible are effected by the MifiD II regulations.

www.lei-worldwide.com

PlanetVerify is a dedicated platform for streamlining your personal data collection. Their unique platform offers enterprises a suite of tools for the secure collection, verification and management of personal data. Everything is always where you need it – easy to collect, transfer and store, and totally secure.

www.planetverify.com

sensipass

SensiPass's 3-factor mobile authentication method augments existing biometric technologies with a simple interactive step to provide better security without passwords or PIN codes. Their patented platform technology can be used for a wide variety of use cases from securing physical access, to mobile cloud IDaaS (ID-as-a-service).

www.sensipass.com

Think Evolve Solve

Think Evolve Solve provides data strategy and advanced analytics solutions for clients. Established in 2012, they are specialists in data, and their clients are global leaders in finance, insurance, aeronautics, media and manufacturing. Knowing what data to get, and how best to gather it internally and from partners, is essential in business today, but not always easy. Recognising this, Think Evolve Solve, created gather360 – a tool designed for business teams to reliably deliver trustable data in a format ready for analysis. Gather360 is a Regtech top 100 solution for 2020. Gather360 = clear, reliable, trusted data.

www.thinkevolvesolve.ie

Information & CyberSecurity

CYBER PRISM

CyberPrism is a multi-award winning cloud based solution that allows you to self assess the cyber security management program of an organisation or their supply chain. It does this via an easy to use survey interface that runs complex algorithms in the background accessing business and cyber intelligence feeds in order to calculate the appropriate results that are then displayed via interactive dashboards and numerous report formats. CyberPrism is used by non cyber experts and expert cyber professional around the world and is a viable alternative to the traditional form of engaging "professional service" teams to perform an assessment.

www.cyberprism.com

Cyber Risk Aware rapidly reduce cyber security risks for companies of all sizes by helping them to create a human firewall through Active Human Error and Phishing Mitigation. Cyber Risk Aware has developed a unique cyber security software product and service that reduces the cyber risk of employee human error, delivers mock phishing and gamified security assessment quizzes, training content, security tips and policy reminders both scheduled and immediately in response to risky user behaviour.

www.cyberriskaware.com

edgescan security-as-a-service provides fullstack vulnerability managed services globally. Combining advanced technology & human expertise, edgescan delivers web application, network & cloud security solutions that help Cyber Security teams reduce risk & cost, across the enterprise. edgescan is PCI ASV and assists with both cybersecurity and compliance. The company is headquartered in Dublin, Ireland.

www.edgescan.com

Now in its 15th year, Integrity360 has grown consistently year on year since its establishment in 2005, highlighting its position as the largest IT security specialist in Ireland, and the fastest growing in the UK. With offices in Dublin, London and New York, the company offers a complete security services offering to its enterprise clients, covering their security from every angle. Its services include Managed Security, Security Testing, Incident Handling, Security Integration and Cyber Risk & Assurance services. Its 300 clients can be found in all business verticals and include some of the largest and most well-known brands in the country.

www.integrity360.com

netwatch

Netwatch is a world leader in proactive visual monitoring. Netwatch was the first company in Europe to combine specialist video processing technologies with satellite communications to provide preventative, immediate and cost-effective protection solutions for clients. The company has prevented thousands of security breaches worldwide and currently protects client locations across the globe. Netwatch deploys the most advanced protection technologies including GPS tracking, audio visual detection, personal protector equipment and wireless perimeter security cordons to protect individuals and premises. Intervention Specialists at the Netwatch Communications Hub direct operations remotely and intervene as soon as a security cordon is breached alerting the intruders to the fact that they are being watched and that the police have been informed.

www.netwatchsystem.com

Smarttech
YOUR 24/7 SECURITY PARTNER

Smarttech247 helps companies of all sizes to secure their networks and their critical assets. Smarttech247 is an award-winning ISO 9001-ISO 27001 NSAI certified company. The ISO 9001:2015 and ISO 27001 standards provide assurance that their customers receive consistently high quality services and that every aspect of their data and information security is protected. They operate world class security operation centres (SOC) with offices located in Ireland, Romania, and Poland. Smarttech247 leverages their partner network and use only the best technical solutions. Their Gold partnerships with leading vendors such as Trend Micro, IBM and Palo Alto Networks allow them to provide the most cutting edge IT security solutions available on the market. Their core services include: Managed SOC (Security Operation Centre) Services, Penetration Testing, Cyber Risk Consultancy, Managed Firewall Services and Compliance & Governance.

www.smarttech247.com

sysnet
global solutions

Established in 1989, Sysnet Global Solutions provides payment card industry, cyber security and compliance solutions that help businesses to improve security and acquiring organisations to reduce risk. Specialising in data security and PCI DSS compliance validation solutions, Sysnet offers a range of services, including its award-winning, proprietary, cyber security and compliance management solution Sysnet.air®, to a wide variety of businesses including acquirers, ISOs, international banks, payment service providers and merchants. Headquartered in Dublin, Ireland, Sysnet has clients in more than 60 countries worldwide.

www.sysnetgs.com

VIGITRUST

VigiOne encompasses VigiTrust's fifteen years of experience in the Information Security Services Industry into one single SaaS solution enabling complex and disparate organisations to make the implementation and management of adherence to Security and Privacy regulations easier and more straightforward. VigiOne utilises VigiTrust's own 5 Pillars of Security Framework™ to enable the key processes for Preparation, Validation and Compliance. VigiOne enable organisations to achieve and maintain compliance with legal, industrial and security standards and frameworks. This includes data protection, data transfer and retention, Protected Health Information (PHI) and Payment Card Industry Data Security Standard (PCI DSS), ISO 27001 compliance programs and corporate governance. VigiTrust ensures global Fortune 500 customers comply with US Federal regulations, State regulations and European directives.

www.vigitrust.com

waratek

Some of the world's leading companies use Waratek to patch, secure and upgrade their mission critical applications. Waratek is a pioneer in the next generation of application security solutions. Using patented technology, Waratek makes it easy for security teams to instantly patch known flaws with no downtime, protect their applications from known and Zero Day attacks, and virtually upgrade out-of-support Java applications – all without time consuming and expensive source code changes or unacceptable performance overhead. Waratek is one of CSO Online's Best Security Software solutions of 2017, a winner of the RSA Innovation Sandbox Award, and more than a dozen other awards and recognitions. Waratek is based in Dublin, Ireland and Atlanta, Georgia.

www.waratek.com

4SECURITAS
PROTECTING YOUR DATA ASSETS

4Securitas is an innovative cyber security firm founded in 2017 focused on protecting critical data at the core of every organisation. The company develops and commercialises Automated Cyber Security Interactive Application (ACSIA) software, based on Open Source technology and affordable to large and SME companies alike. ACSIA it is a 'post-perimeter' security tool which complements a traditional perimeter security model. It resides at the Application or Data layer. It monitors and protects the the platforms (physical/ VM/ Cloud/ Container platforms) where the data is stored which are the ultimate target of every attacker. Using a combined approach, ACSIA does the grunt work of security analysis – monitoring, analysing, profiling and mitigating cybersecurity incidents.

www.netwatchsystem.com

LegalTech

brightflag

Brightflag enables organizations to take control of their legal spend with AI-powered software that's easy to use and backed by proactive customer support. Brightflag processes billions of dollars of legal spend annually on behalf of its customers, resulting in hundreds of millions of dollars in savings and tens of thousands of hours in avoided administrative work. Founded in 2014, Brightflag serves a global community of in-house teams and their vendors from Dublin, New York, and Sydney.

www.brightflag.com

COURTSDESK

Courtsdesk is the news and legal intelligence platform built to bring coverage and structure to the many disparate sources of UK & Irish legal data. Over 70% of court cases in the UK and Ireland generate no publicly accessible record. Courtsdesk is building this record, making it accessible for public interest/ news outlets, legal services, and financial risk managers. By centralising data and providing tools for easy search and analytics, Courtsdesk supports users in their research, monitoring, KYC, and AML functions. Their users benefit from access to data from the UK and Irish Upper Courts, Lower Courts, Company Registers, Government Gazettes and more.

www.courtsdesk.com

PROPYLON

As the world leader in legislative management solutions, Propylon offers the only end-to-end product suite that supports all aspects of the legislative process from idea to law. They also collaborate with leading publishers to deliver intelligent research products that grow your revenue. Driving transformation in the legal world, their innovative software solutions enable their clients to draft, manage, and understand legal content.

www.propylon.com

Regulatory Risk Intelligence, Data and Analytics

AYLIEN

Aylien is an AI, NLP & Machine Learning startup based in Dublin, Ireland. They provide Text Analysis & News API's that allow users to make sense of human-generated content at scale. They provide a range of content analysis solutions to businesses, developers, data scientists, marketers and academics. Their core offerings include packages of Information Retrieval, Machine Learning, and Natural Language Processing APIs. Aylien for Risk Intelligence leverages the world's news to better understand and mitigate risk providing accurate, efficient, and effective news data to augment risk monitoring processes and models.

www.aylien.com

cerebreon

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www.xcelerit.com

Executive Summary The Asian Century

As the Asian century unfolds, the Asia Pacific region now finds itself the centre of global economic activity, becoming a significant growth engine of the world.

To put this in perspective, in the year 2000, Asian economies accounted for just over a third of world output, after adjusting for price differences (PPP). This year, Asia's contribution to world output will be more significant than the rest of the world combined.[1] Driving this rapid growth has been "a winning mix of integration with the global economy via trade and foreign direct investment, high savings rates, large investments in human and physical capital, and sound macroeconomic policies."[2]

Asia, however, is not a homogenous region. It is both home to the world's largest financial centres like Singapore, Hong Kong, Tokyo, and Shanghai and countries with large populations that are still mostly unbanked. This bifurcation is an opportunity and a reason why Asia has become a magnet for fintech. This is a story of two halves, that ultimately both value what fintech and its underlying technologies can contribute to their economies.

The developed Asian jurisdictions, whose financial centres constitute a significant share of their economies, are competing against each other to stay ahead. New technologies are sources of competitive advantage. Governments and regulators are therefore rolling out initiatives to digitalize their economies, supporting technologies and entities that can help them do this.

Developing economies, with their nascent financial centres, face an altogether different challenge, that is, one of financial inclusion for their large, unbanked populations. Here too, however, fintech, with its advances in the likes of blockchain and cryptocurrency innovations, is seen as a way to accelerate the leapfrogging of financial services over bricks and mortar retail networks.

While governments and central banks across Asia are making efforts to digitalize their economies, regulatory regimes across the divide are markedly different. While both sides have their extra-territorial obligations to abide by, the sheer size of the financial systems within the developed markets, with their increasingly complicated ecosystems of new players and new technologies, has the regulators struggling to keep up. The increasingly obfuscated system raises risks to the consumer, to cybercrime, to Money Laundering and Terrorist Financing (ML/TF), and the sustainability of the financial system in general. Entities in these markets face a bewildering increase in onerous regulations and compliance-requirements, and regulators face evermore

1 Asian economies as defined by UNCTAD; data from IMF

2 IMF; Asia at the Forefront: Growth Challenges for the Next Decade and Beyond; 2018

difficulty in trying to supervise the financial system and the entities within it. These challenges, to both the regulator and the regulated, cry out for regtech solutions to ease the burden.

The regulators in the developing countries in the region face a different problem. They appreciate the potential of new technologies and new players in their markets, but they often lack the expertise, know-how, skillsets, and resources to regulate these effectively. Therefore, new regulation ends up being piecemeal, and what does exist is often not fit for purpose. Facing less pressure from the regulators, traditional incumbents and new players, are often then not incentivized to build effective compliance and reporting solutions, doing instead, the bare minimum to meet their extraterritorial obligations.

There are, nevertheless, opportunities for regtechs in these emerging economies. Firstly, regulators in these jurisdictions are crying out for solutions that will help them overcome their resource and skillset constraints. Secondly, there will be a demand from firms where regtech can either help them to cut costs and/or improve their customer service. Thirdly, not all emerging economies are the same. As the likes of Vietnam, Thailand, and the Philippines continue to see outsized growth, their financial systems will mature, whereby drivers for regtech adoption will then start to look similar to those in their more developed counterparts.

Introduction

Asia, with its gleaming skyscrapers dotting some of the world's major financial centres and home to more than half the world's population, is at an inflection point.

Adjusting for price differences, Asia's economies will be larger than the rest of the world combined in 2020.[3] A "winning mix of integration with the global economy via trade and foreign direct investment, high savings rates, large investments in human and physical capital, and sound macroeconomic policies" have contributed to Asia's economic leap forward.[4]

But Asia is not a single homogenous region; it is a complex tapestry of mature and emerging economies that are at varying levels of development. On one side are Japan and the "Four Asian Tigers," comprising Hong Kong, Singapore, South Korea, and Taiwan. On the other, there are developing economies like Laos, Myanmar, and Cambodia. In the middle are the emergent economies like Vietnam, Indonesia, Thailand, and the Philippines, which are growing briskly. This bifurcation of developed and emerging economies gives rise to very different financial and regulatory environments.

Moreover, Asia does not exist in a vacuum; it is part of an ever more interconnected global ecosystem. One which is moving towards global regulatory standards and norms. The global financial crisis ushered in a new era of stricter regulatory oversight, mandating financial institutions to focus on their risk management, controls, practices, and reporting. At the same time, disruptive technologies are emerging that promise to revolutionize financial products and services. Regulators, meanwhile, are on the back foot, struggling to regulate the shifting technologies underpinning the new financial landscape. Facing spiralling compliance costs and a dynamic regulatory environment, financial institutions have turned to regulatory technology (regtech) to help achieve compliance while minimizing risk from misconduct and regulatory investigations.

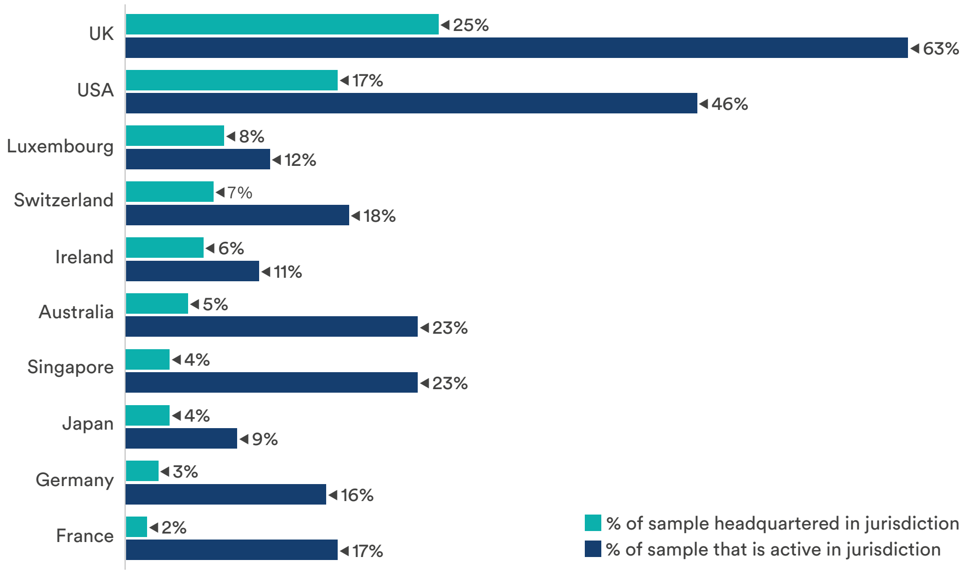
Most regtech firms have been established in the US or Europe (Figure 1). However, Asia-Pacific is expected to become the new engine of regtech growth and innovation in the future, driven by the rapid development of emerging Asian markets and financial systems, increased investment in new technologies and digital transformation, greater regulatory acceptance, and extensive infrastructure development. For the developed Asian economies, regtech uptake is being driven by a convoluted financial ecosystem and a rise in complex regulations. For the emerging Asian economies, regtech uptake is driven more by the business case and under-resourced regulators, but as these emerging economies mature, so too will the technology and compliance standards of its financial markets.[5]

3 Asian economies as defined by UNCTAD; data from IMF

4 IMF; Asia at the Forefront: Growth Challenges for the Next Decade and Beyond; 2018

5 KPMG; There's a revolution coming: Embracing the challenge of the new Regtech era; 2019

Figure 1: Top 10 Regtech markets
By % of regtech firms present (headquartered or significant market share), 2019



Source: Cambridge Centre for Alternative Finance; The Global RegTech Industry Benchmark Report; 2019 [6]

A Developmental Divide

There remain, however, vast differences in the regulatory frameworks across Asia due to the varying stages of financial development in each country, and regulations are continually changing. There are nearly fifty countries within Asia; not only does each country have its own language and culture, but its own regulators, regulations, and unique reporting requirements as well.

The more developed economies hosting the important financial centres of the region such as Singapore, Hong Kong, Tokyo and Sydney, with their deep capital markets, globally integrated financial systems and strong rule of law have vastly different regulatory environments and requirements compared to the emerging economies in the region. In emerging markets, initiatives are more focused on local development needs such as increasing financial inclusion.

While governments in developed financial centres across APAC have been competing against each other to provide a supportive environment for financial innovation, their regulators have been trying to balance the need for facilitating innovative new products and services that will benefit their economies, with the need to guard against any risks that could jeopardize their financial systems or consumers. Thus, as these economies move towards the new digital era, while regulators are providing supportive environments to incubate these technologies, they are also providing the regulatory frameworks within which these technologies can be tested and regulated.

6 The Cambridge Centre for Alternative Finance; The Global Regtech Industry Benchmark Report; 2019

This is a crucial difference between developed and emerging economies. The leading financial centres in the region recognize the need to position themselves as innovation hubs for these new technologies to maintain their competitive edge. The emerging economies, however, while appreciating the development gains to be had by digitalizing their economies, have been a lot slower in introducing the necessary regulation to regulate these innovations and their financial sectors in general. That is not to say, however, that there has been no regulation or that regulation is not being rolled out, it is just that it is often piecemeal and existing regulation is often not fit-for-purpose.

This regulatory fragmentation across APAC is a key driver for the development of regtech across the region, especially in the more developed APAC economies, which often act as regional headquarters for many firms looking for a springboard into the region. The complex regulatory environment is a challenge for these firms operating across the region, which increases the cost of compliance, limits liquidity, and reduces regulatory effectiveness.

These firms need solutions that will help them mitigate against the challenges arising out of operating across a regulatory fragmented region, as well as the increasingly complex regulations arising out of the developed jurisdictions contending with a need to protect their financial systems and consumers amid a rapidly changing technological environment. Within the more developing economies across Asia, however, the imperative for adopting regtech solutions is driven less by regulatory requirements and more by the cost gains and improvements in customer service to be had, that could potentially bestow a competitive advantage.

Extra-territorial Obligations

Jurisdictions in Asia are also not operating in a vacuum; they are subject to global norms and standards as signatories to international conventions. Here too, there is a bifurcation between developed and emerging economies within Asia. The financial centres of the region have been much more stringent in enforcing these standards, lest Money-Laundering and Terrorist Financing (ML/TF), cybercrime, and systemic risks compromise their financial systems. However, the emerging economies' regulators have also had to tighten regulation in these areas too, especially in areas where they stand to directly benefit, such as against tax evasion. Thus, the tightening of regulation across the region, to meet these international obligations, will also increase the demand for regtech across APAC.

Keeping tabs on transactions is, however, uniquely difficult in the region, given the nature of business and movement of funds in Asia is highly crossborder. The region also suffers from high incidences of financial crime, and a fintech boom that is helping a large percentage of the unbanked population to adopt digital payments rapidly is making it harder to track capital flows. In this regard, regulators themselves are looking to leverage innovation to facilitate their supervision over an ever more complex financial environment.

Development of Digital Economies in APAC

The development of digital economies across Asia-Pacific will also be a boom for regtech in the region.

Introducing new technologies and new players to ecosystems brings the potential for significant gains, but also significant risks, with the implosion of P2P lending in China being a pertinent example of the latter. Regulators will want to regulate these new technologies and platforms. They will need help in supervising them, and firms are going to face more compliance obligations.

The World Economic Forum and the G20 define the digital economy as a broad range of economic activities that use digitized information and knowledge as critical factors of production, modern information networks as an essential activity space, as well as information and communications technology to drive productivity growth.

Digital Take-off in Asia

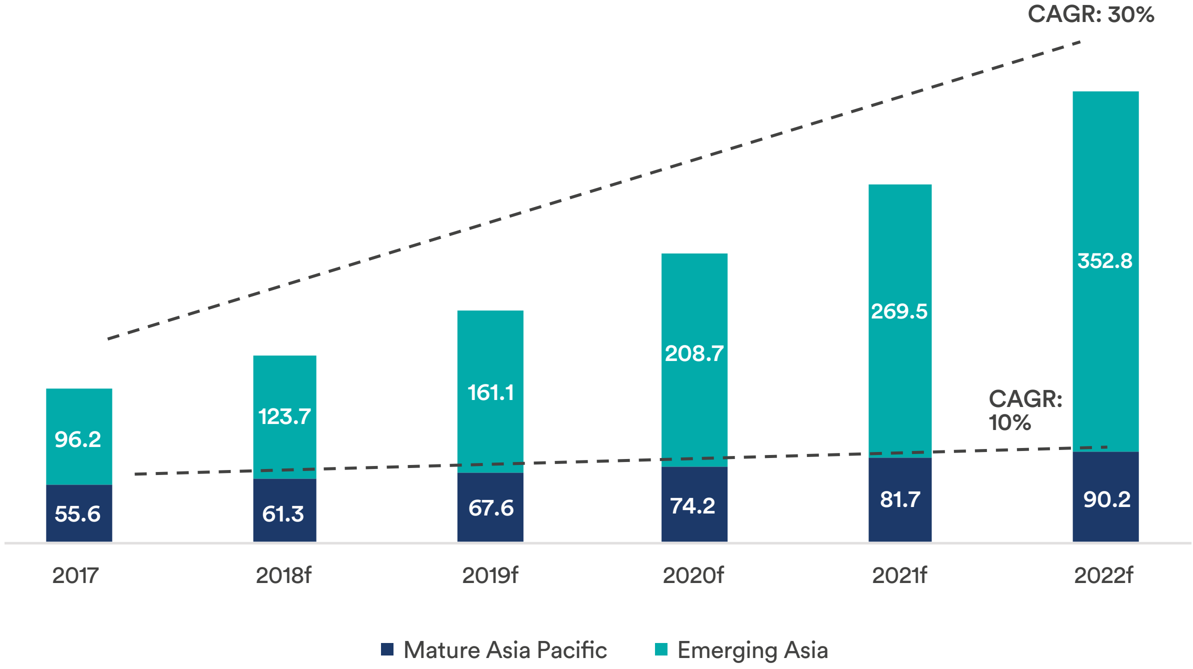
Indeed, the mobile internet is already transforming Southeast Asia. Just over a decade ago, four in five Southeast Asians had no internet connectivity and limited access to the internet. Today, there are 360 million internet users in the region, and 90% of them connect to the internet primarily through their mobile phones.[7] This has spurred an 'internet economy,' which continues to grow at an unprecedented pace.

The internet economy soared to US$ 100 billion for the first time in 2019, more than tripling in size over the last four years, with Malaysia, Thailand, Singapore, and the Philippines seeing a growth of between 20% and 30% annually, and Indonesia and Vietnam seeing growth rates over 40% a year. By 2025, the internet economy of Southeast Asia is expected to grow to US$ 300 billion.[8]

The adoption of digital payments has also finally reached the inflection point and is expected to cross US$ 1 trillion by 2025, accounting for almost one in every two dollars spent in the region.[9] Non-cash transaction volumes grew 12% during 2016-17 to reach 539 billion globally, with Emerging Asia accounting for 32% of the record growth.[10] This was driven by widespread adoption of digital wallets, the increased success of e-commerce platforms, and innovation in mobile payments in the region.[11]

7 e-Conomy SEA; Swipe up and to the right: Southeast Asia's $100 billion Internet economy; 2019
8 Ibid.
9 Ibid.
10 Emerging Asia includes China, Hong Kong, India, and other Asian markets
11 Capgemini; World Payments Report; 2019

Figure 2: Number of non-cash transactions
Billions, 2017–2022F



Source: Capgemini[12]

Emerging Asia is expected to continue its high growth trajectory in non-cash transaction volumes, with an estimated CAGR of 30% from 2017–2022F. Within mature markets, mature APAC is bound to grow the most. It will see a 10% CAGR from 2017–2022F as a result of government initiatives, such as those in Singapore and Australia, as well as the growth of mobile payments in Japan (Figure 2).[13]

Asian Government and Businesses Recognize the Benefits of Digitalization

Governments and institutions across APAC recognize the benefits of digitalizing their economies. Not only can financial technologies support potential growth and poverty reduction by strengthening financial development, inclusion, and efficiency, but they can also make for a more secure and efficient financial system and transform the way governments operate.

Policymakers have greater access to timely and accurate data. With better information, governments can design and implement better policies, such as enhancing the efficiency of government spending and improving public service delivery. Governments can also enhance tax collection and, as a result, revenues by

12 Ibid.
13 Ibid.

introducing e-filing, e-payments, and e-customs initiatives, making it easier to collect data on financial transactions.

Businesses also recognize the potential for these new financial technologies to help them to increase productivity, achieve cost efficiencies, and provide higher customer value. As such Asian businesses are pushing hard to deploy technologies such as cloud, APIs, mobile apps, resiliency, and analytics to reap the rewards of digital transformation. These initiatives are laying the groundwork for organizations to innovate their business models and to derive new revenue streams through digital products and services.

Such are the potential rewards that in 2017, 85% of Asia Pacific organizations surveyed had already embarked on their digital transformation journeys. By 2021, it is estimated that 60% of the Asia Pacific region's GDP will be derived from digital products or services created through digital transformation, a massive jump from just 6% of the region's GDP in 2017.[14] Over the same period, digital transformation will add 0.8% annually to Asia Pacific's GDP, or US$ 1.16 trillion by 2021.[15]

Recognizing the potential, Asian governments are nurturing the growth of these new technologies through supporting regulation and programs. Many jurisdictions in the region have now implemented sandboxes to create a safe space for firms to experiment with new technologies. Many are also supporting accelerators and associations, with collaboration happening across countries.

The Asia-Pacific Fintech Network, which aims to boost regional collaboration and cross-border innovation, was launched by nine fintech associations from the region in January 2019. The signatories include the fintech associations of Australia, Hong Kong, Japan, Malaysia, Philippines, Singapore, Taiwan, Thailand and MENA.

Also launched in January 2019 was the Fintech Cooperation Committee. A pan-Asia network, bringing together Asian fintech start-ups, financial institutions and banks to trade knowledge and expertise. Around 60 financial institutions from 12 countries and regions have already joined the committee, including banks, insurance companies, securities and asset management firms, and financial education institutions.

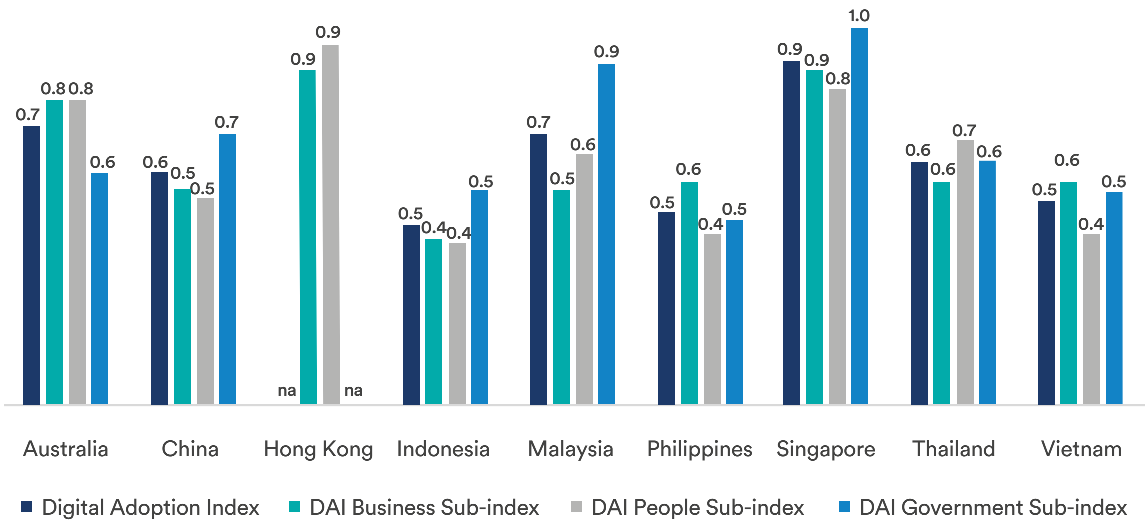
Digitalization is Uneven Across the Region

Looking at the World Bank's Digital Adoption Index (DAI), as expected, the standouts in terms of those jurisdictions that see the highest levels of adoption of digital technologies, are the more developed economies in the region, being Singapore, Hong Kong, and Australia with the more emerging economies still lagging behind. That said, on a sub-index level, both Malaysia and China governments have made impressive strides (Figure 3).

14 Microsoft-IDC Study: Unlocking the Economic Impact of Digital Transformation in Asia Pacific; 2018

15 Ibid.

Figure 3: Digital Adoption Index (DAI)
Normalized 0–1 scale, 2016



Source: World Bank[16]

Asia as a Centre of Fintech

With its robust economic growth, favourable demographics, large unbanked, digitally savvy populations, growing base of consumers and high smartphone and internet penetration, Asia is a natural hub for the Fintech revolution that is currently underway, (Table 1).

Although there was a dip in the number of VC-backed Asian Fintech financing deals in 2019, it would seem to be an anomaly, with the number of deals growing year on year. Likewise, for the amount invested (adjusting for Ant Financial's funding rounds inflating numbers in 2016 and 2018, respectively) (Figure 4).

Southeast Asia (ASEAN), in particular, is an attractive proposition for fintech, being a bright spot in the region with 100+ deals and nearly US$ 1 billion invested in 2019 (Figure 5).[17] With almost 650 million people, the area is home to two-thirds of the world's population, with an urban population that is expected to increase by an estimated 100 million to 373 million people by 2030.[18]

Currently, half the population is under 30 years old, and more than half (53% as of 2018) are still unbanked.[19] ASEAN is both strategically located within the region and dynamic, generating a GDP of almost US$ 3 trillion, with an annual growth of 5.2% and international trade of 2.8 trillion in 2018.[20] The underserved, young, upwardly mobile population in the region is making use of mobile technology with rising smartphone and internet penetration.

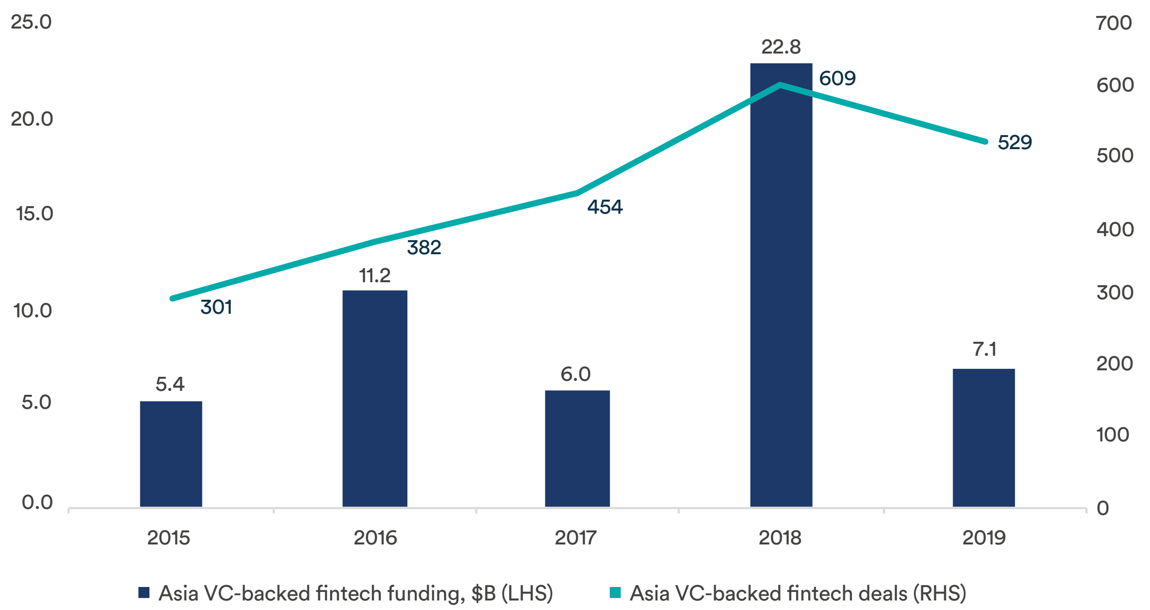
16 https://www.worldbank.org/en/publication/wdr2016/Digital-Adoption-Index
17 Ibid.
18 https://www.uobgroup.com/assets/pdfs/research/ASEAN-Focus_4q15.pdf
19 UOB; State of Fintech in ASEAN; 2017
20 Statistics Division - ASEANstats, ASEAN Secretariat

Table 1

Note: Data as of 2018 unless otherwise stated	Australia	China	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
GDP, constant 2010 US$B	1,421	10,797	289	1,147	382	322	328	442	188
Real GDP growth, %YOY	2.7	6.6	3	5.2	4.7	6.2	3.1	4.1	7.1
Population, total, millions	25	1,393	7	268	32	107	6	69	96
Median age, 2020	37.9	38.4	44.8	29.7	30.3	25.7	42.2	40.1	32.5
Urban population, % of total population	86.0	59.2	100.0	55.3	76.0	46.9	100.0	49.9	35.9
Internet users, millions	22*	756*	7	107	26	64*	5	39	67
Individuals using the Internet, % of population	86.5*	54.3*	90.5	39.9	81.2	60.1*	88.2	56.8	70.3
Fixed-broadband subscriptions, millions	7.6	407.4	2.7	8.9	2.7	3.9	1.6	9.2	13.0
Fixed-broadband subscriptions, per 100 inhabitants	30.7	28.5	36.8	3.3	8.6	3.7	28.0	13.2	13.6
Mobile cellular subscriptions, millions	28	1,649	20	319	42	135	9	125	141
Mobile cellular subscriptions, per 100 people	113.6	115.5	270.0	119.3	134.5	126.2	148.8	180.2	147.2

Sources: World Bank; IMF; International Telecommunication Union; Worldometers

Figure 4: Asia VC-backed fintech financing trends, 2015-2019

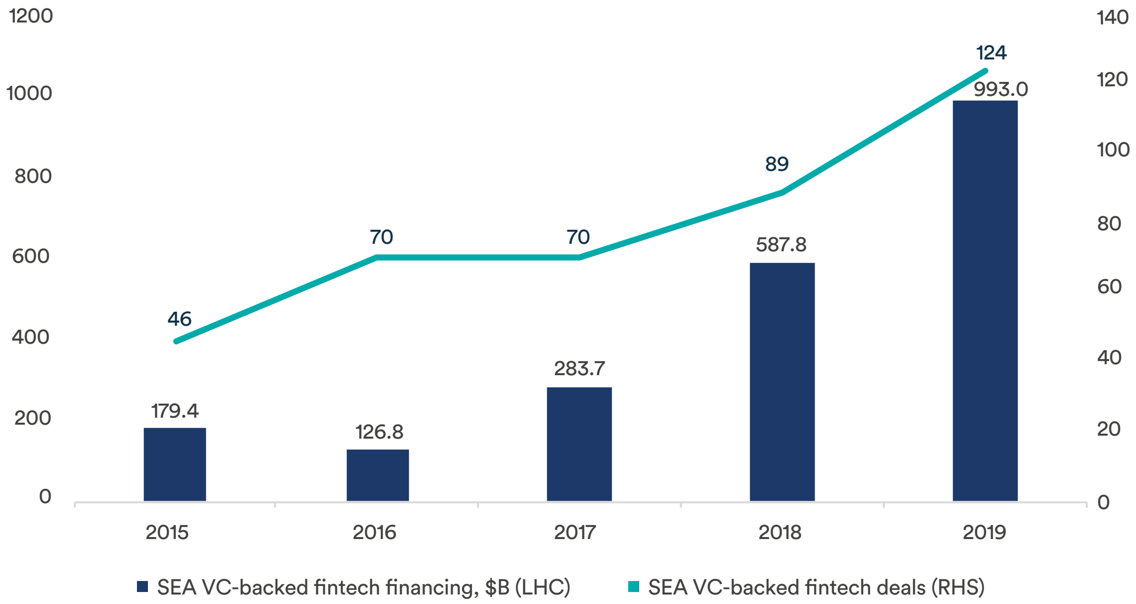


Source: CB Insights [21]

Note: *Ant Financial's $14B Series C in Q2'18 and $4.5B Series B in Q2'16 drove the funding spikes in each respective year; 2019 financing based on Q3'19 Projected Annual Run Rate*

21 CB Insights; State of Fintech: Investment & Sector Trends to Watch; 2019

Figure 5: Southeast Asia (SEA) VC-backed fintech funding and deals, 2015-2019



Source: CB Insights[22]

Note: *Southeast Asia includes Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, and Cambodia*

However, looking at both the Networked Readiness Index (Figure 6) and World Digital Competitiveness Ranking (Figure 7), one can see that there remains a large divide across Asia. Mostly, between the more developed and emerging economies in terms of countries' capabilities to exploit the advantages of the new digital era. [23]

This disparity in digital readiness, along with the vastly divergent markets across the region in terms of levels of development and sets of rules and regulations, explains why the market for fintech is so diverse across the region.

In developed markets such as Singapore's, the focus is on peer-to-peer (P2P) lending, wealth management, microfinancing and cryptocurrencies. This is in part due to a saturated payments market and the traditional banking system being able to meet most, if not all banking needs.

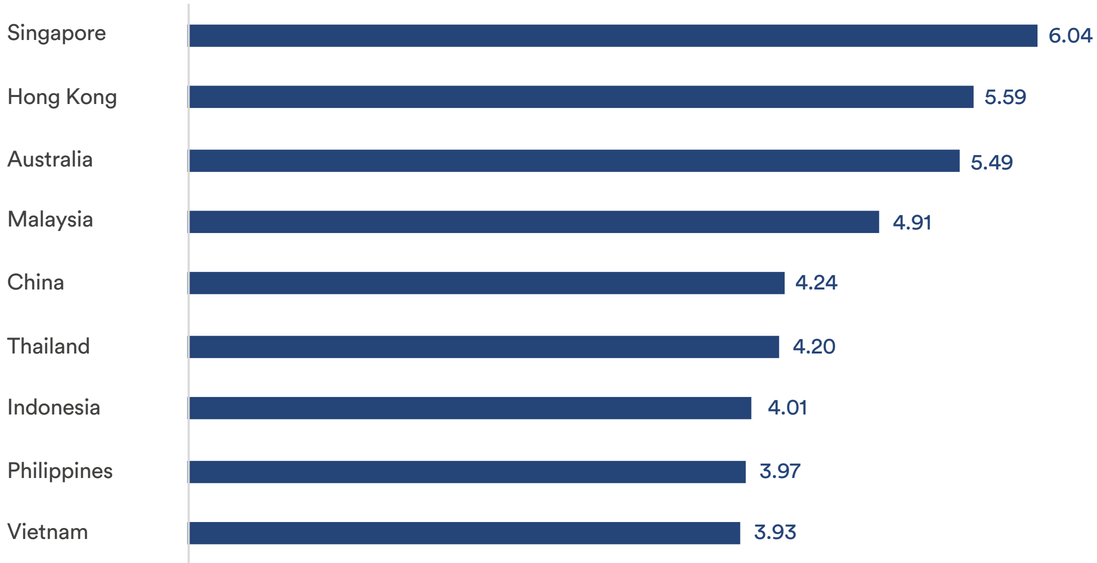
This contrasts with emerging markets, where mobile money and e-payments have been the most popular fintech segments due to fragmented payment platforms and the lack of a unified, national-level real-time interbank payment system into which fintechs would need to connect their platforms. [24]

22 CB Insights; State of Fintech: Investment & Sector Trends to Watch; 2019

23 The Networked Readiness Index measures the propensity for countries to exploit the opportunities offered by information and communications technology (ICT). The World Digital Competitiveness Ranking measures the capacity and readiness of 63 economies to adopt and explore digital technologies as a key driver for economic transformation in business, government and wider society.

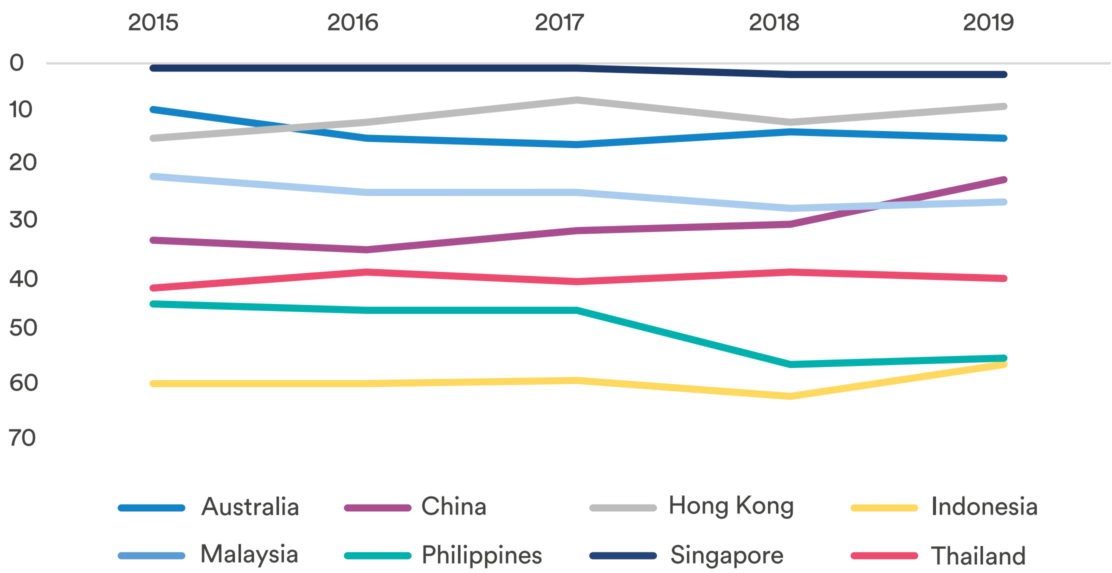
24 Fitch Solutions; Asia Fintech: More Room For Disruption In Both DMs And Ems; 2019

Figure 6: Networked Readiness Index, 2016



Source: World Economic Forum[25]

Figure 7: IMD World Digital Competitiveness Ranking
Study countries, n=63



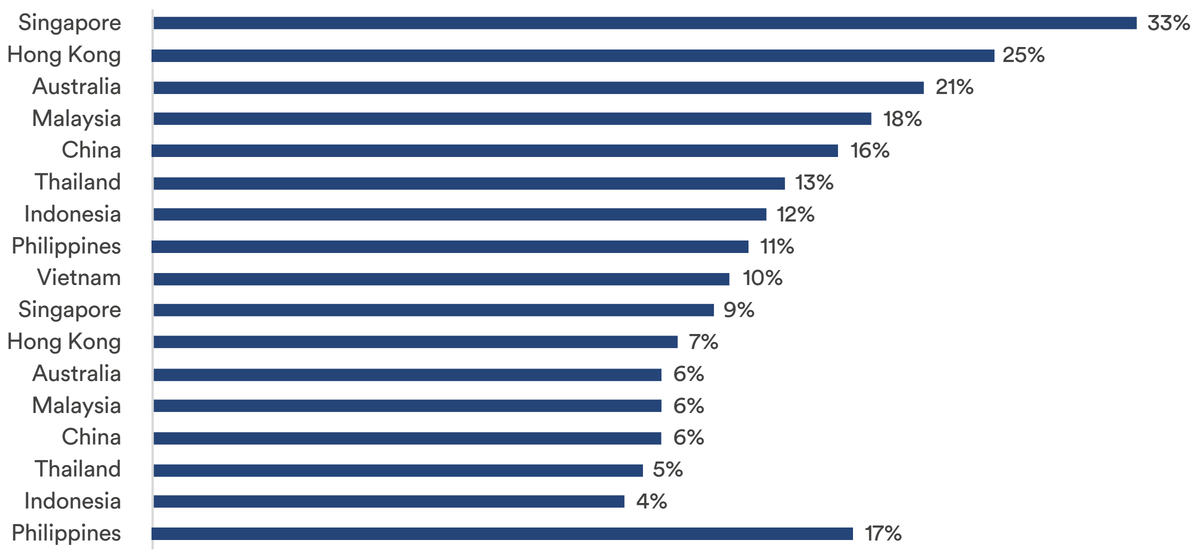
Source: IMD[26]
Note: *Vietnam not included as no data available*

25 https://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/

26 https://www.imd.org/wcc/world-competitiveness-center-rankings/world-digital-competitiveness-rankings-2019/

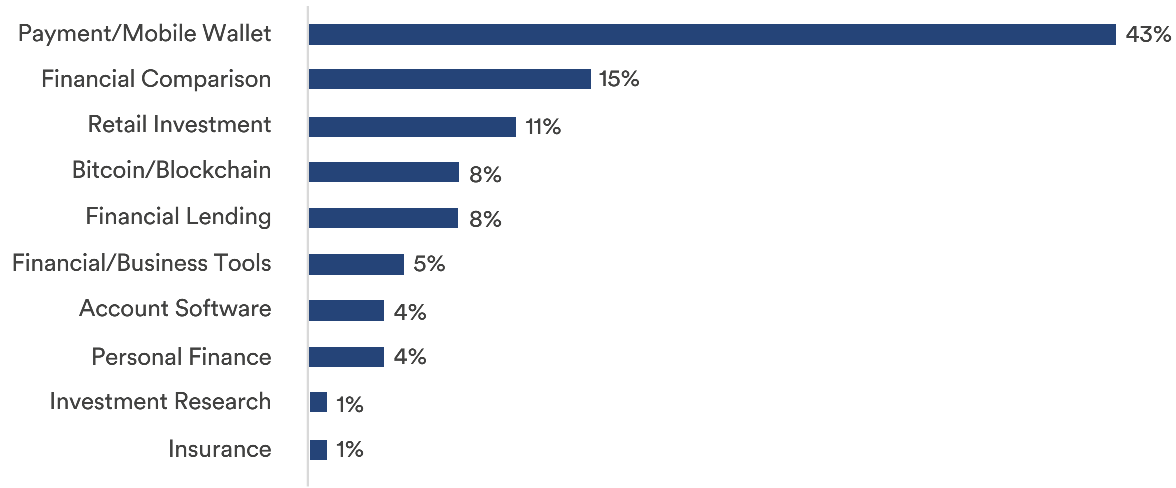
Turning to ASEAN more generally, with more than half the adult population being unbanked, it is probably not surprising that most of the focus of fintechs has up until now been on payments and mobile wallets as the first step towards greater financial inclusion (Figure 8 & 9).

Figure 8: Density of ASEAN Fintech industry by category
%, 2018



Source: EY[27]

Figure 9:Density of ASEAN Fintech industry by category
%, 2017



Source: UOB[28]

27 EY; ASEAN Fintech Census 2018; 2018
28 UOB; State of Fintech in ASEAN; 2017

Key Financial Industry Regulation Drivers in Asia

Risks and Opportunities from New Technologies and Entrants

Regulators in the region are having to contend with many imperatives that are coming together to form a highly complex regulatory environment. These include disruptive technologies such as digitization, artificial intelligence (AI), and distributed ledger technology, and the entry of new market participants.

These technologies and new entrants bring both opportunities, such as Open Banking and real-time payments, and risks. Such risks are manifested, for example, in the number and diversity of organizations gaining ground within the non-bank payment providers/systems market that have grown significantly in recent years.

While online alternative finance activities are still largely unregulated, this mushrooming within the non-bank payments market will lead to the increased global regulation of alternative online finance over the next two years. There is also little evidence of regulators purposefully creating "light-touch" regulatory frameworks for alternative finance as consumer protection and financial stability stay firmly as their top priorities.[29]

AML/CFT and Cybersecurity

Regulators are finding it increasingly challenging to ascertain the impact of these new technologies and players on their financial systems and fret about the increased risks from money laundering, terrorist financing, cybercrime, and to the consumer in the form of data privacy breaches.

Cybercrime is clearly a concern, the global cost of which is estimated at US$ 600 billion annually, with approximately US$ 160 billion coming from the Asia-Pacific region. Asia appears to be the world's most targeted area for cyberattacks. Hackers are 80% more likely to target organizations in Asia, yet Asian organizations take 1.7 times longer than the global average to discover cyber breaches, probably because more than 60% of Asian companies do not have proper cyber threat monitoring systems.[30]

At the same time, recent events such as the 1MDB scandal in Malaysia have led regulators to become more focused on more substantial regulatory reporting regionally and to put increasing pressure on financial institutions to determine beneficial ownership and improve overall screening requirements.

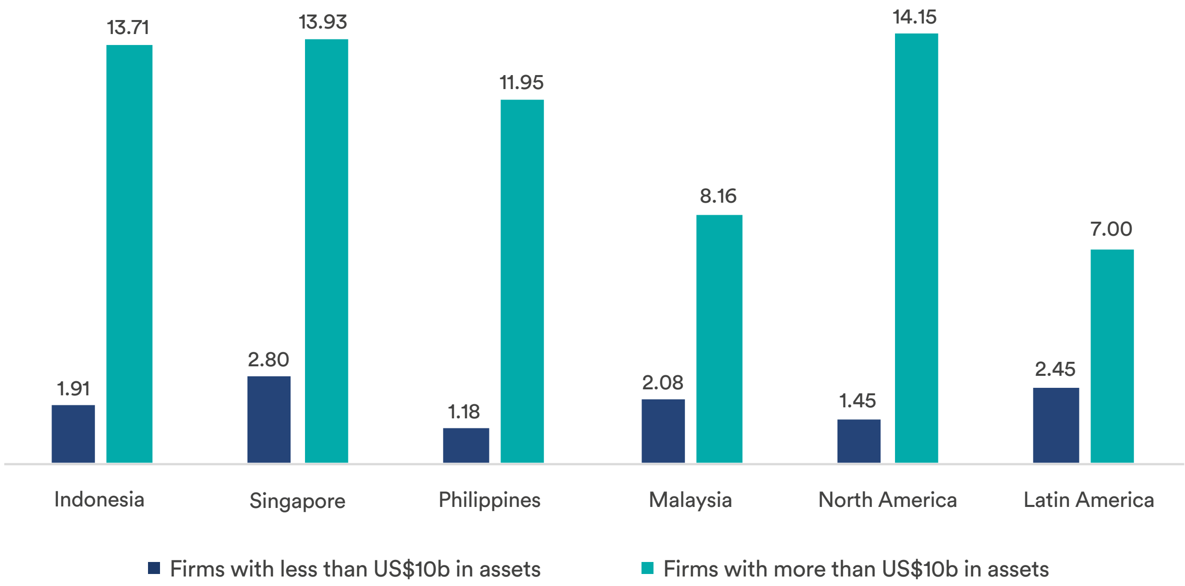
Such has been the fallout from the scandal that in 2019, executives at mid/large asset-sized financial institutions across Indonesia, Malaysia, the Philippines, and Singapore said that they had faced average annual AML compliance cost increases of 9%-10% during the past two years. They also said that they expected these

29 World Bank and CCAF; Regulating Alternative Finance: Results from a Global Regulator Survey; 2019
30 Deloitte; Asia-Pacific financial services regulatory outlook; 2019

costs to continue to rise at a similar rate during the next year (Figure 10). The projected cost of AML compliance across Indonesia, Malaysia, the Philippines, and Singapore combined is estimated at US$ 6.09 billion annually, with more than half of it in Singapore. Fearing risks to their financial institutions, Singapore regulators have become more focused on stronger regulatory reporting regionally in light of the scandal (Figure 11).[31]

Average compliance costs are expected to rise in ASEAN by 9%-10% in 2020.

Figure 10: AML compliance costs for financial companies
US$m, 2019



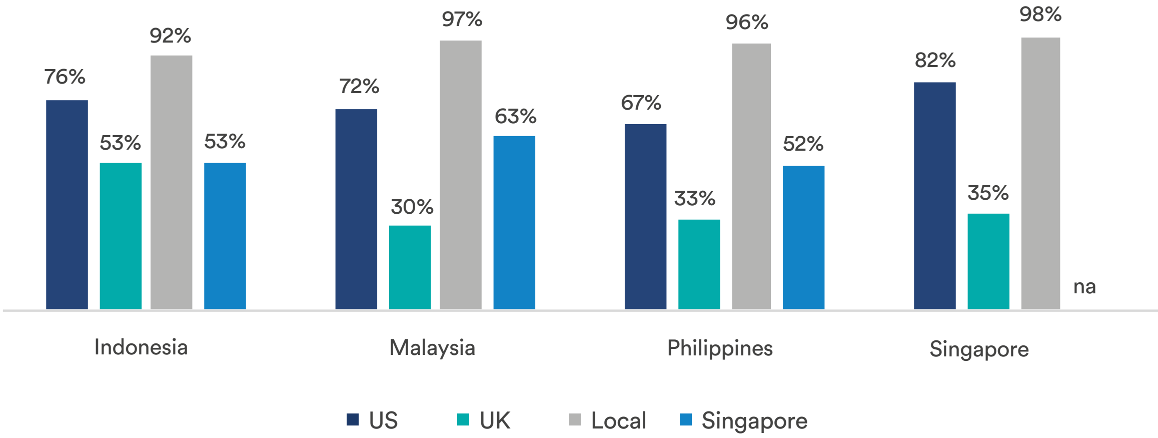
Source: LexisNexis Risk Solutions[32]

31 LexisNexis; Risk Solutions True Cost of AML Compliance Study; 2019

32 Ibid.

Figure 11: Country-specific regulators have the most impact on regulatory compliance. But Singapore regulators also have substantial impact across APAC study countries
Selected regulators having greatest impact on AML compliance, research study March 2019

Singapore regulators focused on stronger regional regulation following the 1MDB scandal in Malaysia.



Source: LexisNexis Risk Solutions[33]

Governance and Accountability

Managing risky behaviors remains high on regulators' agendas. Culture and Governance have long been a focus area in light of issues globally in recent years. Still, a spotlight is being shone in the Asia-Pacific region through the Australian Royal Commission and has drawn significant attention. The Australian situation will prompt other regulators to take a close look at sales practices, incentives, product design and risk management, and the roles of senior executives and Boards. Individual accountability is already a reality in some countries and is likely to figure prominently across the region going forwards.[34]

Within the Asia-Pacific region, Australia and Hong Kong have already fully implemented programs through their Banking Executive Accountability Regime (BEAR) and Managers in Charge Regime, respectively. Further, Malaysia maintains plans for their own "Responsibility Mapping" system and Singapore has voiced efforts to strengthen individual accountability for senior managers as a key part of MAS' broader efforts to foster a culture of ethical behaviour and responsible risk-taking in the financial industry. Asia Pacific's regional regulators are stepping up the pressure on banks by intensifying reporting requirements and moving more aggressively to address governance failures.

Extra-territorial Obligations

Finally, regulators are subject to extra-territorial obligations (Appendix 1). In terms of global initiatives, interoperability and standardization have become key focus areas of importance among regulators amid disparate payment standards, systems, and scope of regulators. While pushing for innovation through open banking and real-time payments, regulators are also working to mitigate risks. With the proliferation of disruptive technologies and the rise of new entrants, regulators now expect banks and other

33 Ibid.
34 Deloitte; Asia-Pacific financial services regulatory outlook; 2019

financial institutions to act as gatekeepers in the fight against fraud, money laundering/terrorism financing, and cybercrime.

Regulators in Asia Pacific countries also recognize the need for data privacy and protection to mitigate payments risk and boost digital payment volumes and are introducing data protection regulatory frameworks based on initiatives in Western countries. Australia, the Philippines, New Zealand, and Singapore have introduced mandatory data breach notification laws, following the implementation of the European Union's General Data Protection Regulation (GDPR) in May 2018.[35] At the same time, regulators in the region continue to embed global post-crisis reforms such as Basel III requirements to help secure the global financial system.

Developed/Emerging Economy Divide

It is important, however, to note that regulatory imperatives are not homogenous throughout the region as there is a developed/emerging economy divide. Within the emerging economies, while regulators are keen to manage risks associated with technology-enabled activities such as crowdfunding, peer-to-peer lending, and initial coin offerings (ICO), they also want to facilitate the promise of the sector in terms of financial inclusion. The reality is that regulators in these economies are often held back by a lack of resources, expertise, and data, meaning that they have been slow to regulate these new activities, and what does exist is often not fit for purpose. However, some emerging market economies have been better than others in this regard, with piecemeal regulations coming out in drips and drabs.

As technology-enabled activities are increasingly being regulated, many regulators are learning from their peers, seeking external assistance, and aiming to strike a balance between managing harmful risks and enabling useful innovations. Moreover, regulators are also looking to leverage innovation themselves to overcome their limitations. Other than regulatory "sandboxes" and innovation offices, technology itself is being harnessed to improve compliance and supervision. While traditionally, supervision has been enforced through a mix of offsite and onsite frameworks, i.e., point-in-time or static regulation, there has been a regulatory shift toward dynamic supervision, which is a move away from the traditional model to a more proactive, fluid and real-time manner.

35 Capgemini; World Payments Report; 2019

Roadblocks and Challenges for Regtechs in APAC

The challenges and barriers faced by regtechs in APAC vary by market and by their area of focus, but broadly speaking, these can be divided into those of developed economies and the more emerging economies.

Developed Economies

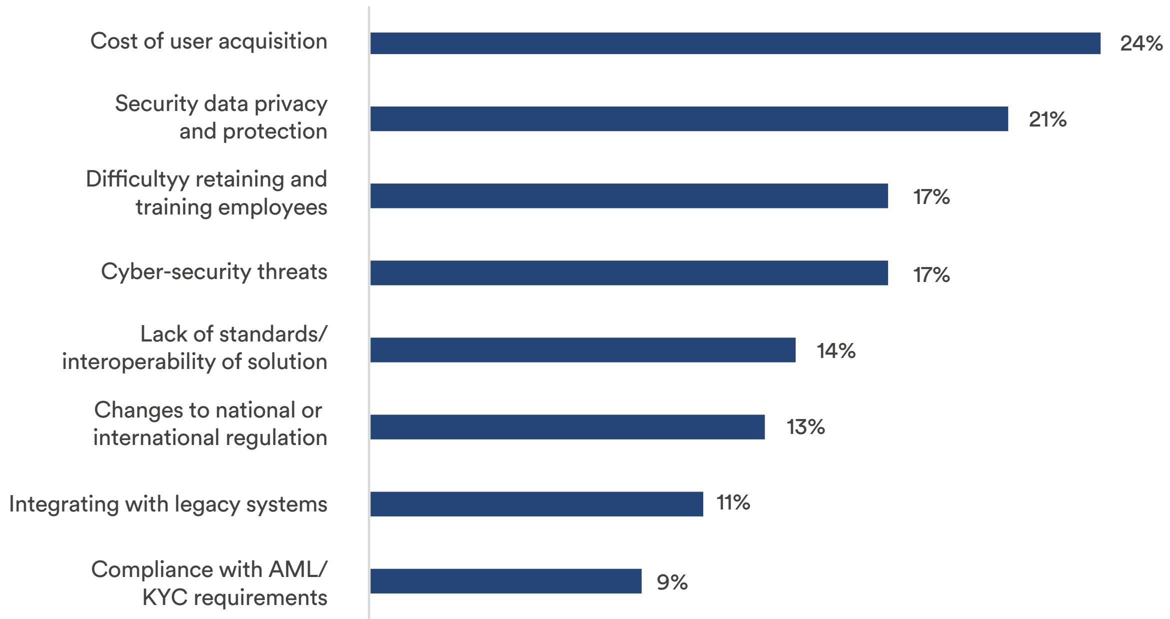
Singapore and Hong Kong, with their vast pools of investor capital and deep financial markets, have been a magnet for new financial products and services. This has led to increased regulatory supervision and an opening for regtech vendors, which have gravitated to these financial centres to help clients and indeed regulators themselves manage this increasingly complicated environment.

Long Sales Cycles

In APAC's more developed economies it's not the regulatory environment that poses a roadblock for regtechs, quite the contrary, regulators in the region are increasingly supportive of regtech and the benefits it can bring to help financial institutions meet their regulatory and compliance obligations more efficiently. The issue is instead more one of long sales cycles, lengthy procurement processes, and cumbersome IT and security approvals.

Given that most regtechs are relatively small startups a sales cycle of 12 to 18 months can be prohibitively expensive. A quarter of regtechs globally point to acquiring clients as being an acute risk, which would presumably also be the case for regtechs in Asia (Figure 12). The problem that regtechs face is that they are often dealing with large and complex firms that are naturally conservative and averse to change.

Figure 12: Self-reported ratings of threats to regtech firms' business models
% of firms acutely affected, Global RegTech Industry Benchmarking Survey, 2019



Source: The Cambridge Centre for Alternative Finance (CCAF)[36]

Lengthy Procurement Processes

When it comes to procurement in these financial institutions, vendors require the buy-in from numerous stakeholders across divisions, from compliance, IT, to legal departments. Not only does procurement tend to have long and hierarchal decision cycles in these firms, but there is often a lack of collaboration between these silos, which makes it hard to get approval.

These financial institutions also tend to focus on revenue-generating activities for major technology updates, seeing compliance more as a cost function. That means that budget holders are often apprehensive about investing. Especially as they might question the sustainability and financial stability of regtech startups. Concerns around long-term service availability and upgrades will often hold them back, with many banks only wanting to deal with well-established vendors.

Because many of the solutions are new, it is also hard for regtechs to prove their credibility, an essential prerequisite for financial institutions that seek a clear demonstration of the impact a regtech solution can provide. Regtech implementation often relies on specific technologies such as Artificial Intelligence/Machine Learning (AI/ML) and Robotic Process Automation (RPA), which are often untested applications with high-cost proofs-of-concept (POCs).

Challenges to Successful Implementation

Regtech solutions require comprehensive change management and transformation efforts at an organizational level, which stakeholders often fail to appreciate, making its implementation complicated, especially as functional silos also make collaboration, an essential element of any successful regtech implementation, difficult.

36 CCAF; The Global Regtech Industry Benchmark Report; 2019

The lack of shared standards and interoperability is also a significant obstacle to industry growth. Though most regtech solutions are capable of reading data from banks' legacy systems, the lack of standardization limits their capability for seamless integration with other newly implemented third-party or in-house applications.

Also, regtech solutions are only as good as the data provided to them. If a bank's data is noisy or inaccurate, then the output will not be insightful either. Furthermore, the modular, point solutions offered by regtech providers are often challenging to scale across various departments of a financial institution. For multinational organizations, this challenge gets compounded with the need to comply with regulations across multiple geographies.

At a more general level, banks, as well as regulators, find it challenging to find people with relevant technology skillsets, as well as deep domain-specific knowledge of regulations. Since regtech deals with both these aspects, hiring suitable resources becomes one of the most challenging aspects of regtech implementation. Inevitably, the additional cost and strategic effort required for specific upskilling of banks' compliance functions become an impediment to regtech implementation.

As a general summary, regtechs face the following risks and obstacles:

- Procurement cycles across Asia-Pacific can be slow and complicated: 12-18 months. Some buyers favor preferred suppliers/technologies and have a stricter onboarding process for fintechs and regtechs.
- Regulated industries across Asia-Pacific have a risk-averse culture; buyers fear losing control of processes and information.
- As a back-office function, compliance is at risk of underinvestment. Buyers in Asia-Pacific see compliance more as a cost function and fail to appreciate that regtech could be a driver of competitive advantage.
- Many regtech firms within the APAC region struggle to challenge incumbent vendors. Others cite high costs in integrating the legacy tech stack and replicating in-house, even manual solutions.
- Some regtechs see their market segments as highly contested and possibly saturated, with insufficiently differentiated product offerings.[37]

37 Ibid.

Case Study: Australia

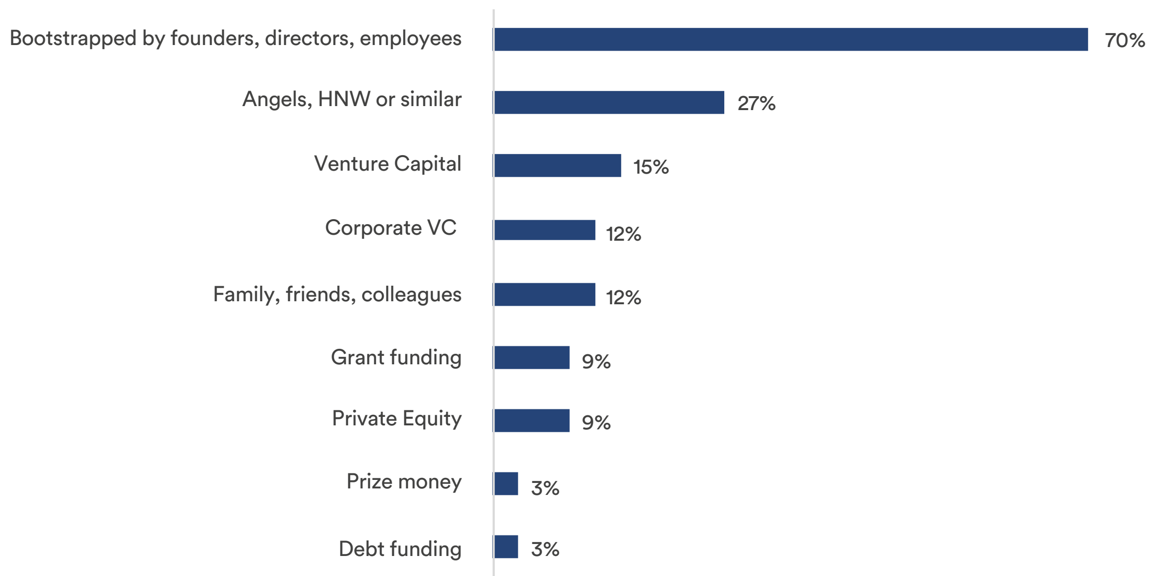
Despite having everything needed to be a global player in regtech, Australia's piecemeal domestic investment is preventing regtech's growth in the market. The majority of the industry is being self-funded by Angels and High Net Worth Individuals, but venture capital and corporate venture capital are lagging behind. This results in 70% of regtech firms being bootstrapped by their funders, directors, or employees (Figure 13).

This investment gap is preventing mainstream adoption of regtech despite an increase in global demand—which is predicted to rise from US$ 25 billion in 2019 to US$ 127 billion by 2024.[38] The Australian government, however, is supportive. In September 2019, the Senate resolved to establish a Select Committee on Financial Technology and Regulatory Technology to investigate:

- The size and scope of the opportunity for Australian consumers and businesses arising from financial technology and regulatory technology.
- Barriers to the uptake of new technologies in the financial sector.
- The progress of fintech facilitation reform and the benchmarking of comparable global regimes.
- Current regtech practices and the opportunities for the regtech industry to strengthen compliance but also reduce costs.
- The effectiveness of current initiatives in promoting a positive environment for fintech and regtech start-ups.
- Any related matters.[40]

In October 2020, a report on the industry's opportunities, barriers and future trends was published by RegTech Australia and BCG entitled "Australia's global RegTech hub poised for growth- A perspective on supporting the local RegTech sector to scale".[41]

Figure 13: Where capital investment for Australian Regtech is coming from
Australian Regtech Association survey, Oct-Nov 2019, n=33



Source: Australian Regtech Association[39]

38 Ibid.
39 Australian Regtech Association; Regtech Industry Report: The Founders Perspective; 2019
40 https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Financial_Technology_and_Regulatory_Technology
41 https://web-assets.bcg.com/8b/b9/586c442b411d89c46f571bc4d5ae/australia-global-regtech-hub-poised-for-growth.pdf

Underinvestment in funding, nevertheless, risks leading to a "brain drain" as regtech firms, frustrated by a long 'time to value' in the domestic market, move overseas. On average, 59% of regtechs in the Australian market rated lengthy procurement cycles as the greatest adoption challenge from initial discussion to Proof-of-Concept (POC), then again from POC to full deployment. The process can take up to 13 months on average (Table 2). Indeed, decision making from the client and procurement challenges were rated as the most significant two challenges between key milestones, according to Australian regtech firms (Table 3).[43]

Regtech Ease of Customer Acquisition in Australia

Table 2: Three milestones across all customer types

Initial conversation	Duration (months)	Signed POC Trial	Duration (months)	Full production
	9.4		9.3	

Time to value across all customers

Initial conversation	Duration (months)	Full production
	13.3	

Time to value Tier 1 and Tier 2 financial services

Initial conversation	Duration (months)	Full production
	13.7	

Source: Australian Regtech Association[42]

42 Ibid.

43 Australian Regtech Association; Regtech Industry Report: The Founders Perspective; 2019

Table 3: Challenges Between Key Milestones
Australian RegTech Association survey, Oct-Nov 2019, n=33

	Initial conversation	Signed POC or trial	Full production deployment
Decision making from the client (delays, lack of clarity incl. budget)	81%	19%	67%
Procurement processes (incl. lack of understanding on client side)	58%	59%	60%
Changing business priorities		37%	47%
Achieving agreed contract terms with legal			37%
Getting a united view from the client	26%	19%	30%
Info security due diligence (incl. ISO27001 compliance)	26%	19%	27%
No internal business case (ROI of new technology, technical readiness, cost)			7%
Understanding the intricacies of their business	6%	7%	
Client budget constraints/client under-resourced	26%	37%	
Expectations of free services	42%	15%	
Prioritization of client resources	32%	15%	
Technology constraints	3%	4%	
Bureaucratic blockages/stakeholder issues		4%	
Lack of client feedback		19%	
Competing solutions (either in-house or competitor)		30%	

Source: Australian Regtech Association[44]

Developing Economies

In APAC's developing economies, regtechs face a different set of challenges and roadblocks, which mainly stem from regulatory inertia and a marked difference in behaviors and attitudes, which results in a lack of general interest in the market for regtech solutions.

Emerging Asia with its much smaller, nascent financial markets and less sophisticated regulatory regimes, still struggles to get the processes right for fundamental things. Looking at the potential customers for regtech solutions in these markets, such as banks for example, attitudes towards AML controls will be more governed by a desire to meet the basic minimum, using technologies that have been around for a long time, to demonstrate that they are able to meet global standards of compliance and improve their ability to strike up new business relationships with financial institutions around the world. The incentive is not to adopt the latest in AI or blockchain.

That is, however, a generalization, and there are certain nuances between the emerging markets and signs that regulators are moving to regulate alternative finance and the players involved and that financial institutions are exploring ways to optimize their operations, including in areas such as compliance.

In this light, emerging APAC should be seen as an attractive proposition in many regards and regtechs would be advised to explore opportunities in these markets. The rapid development of emerging Asian markets and their financial systems is already leading to a proliferation of fintechs, with their new financial instruments and business models, heightening regulatory complexity and risk. This, in turn, will push regulators in these markets to implement regulations lest their financial systems are compromised. As these emerging economies mature, so too will the technology and compliance standards of their financial markets, increasing the value proposition offered by regtech product offerings.

44 Ibid.

Another challenge facing regtechs in the emerging APAC markets is language. Not all technologies can be deployed as readily across all markets. For example, firms will find it harder to deploy Natural Language Processing (NLP) in non-English speaking countries. In this case firms utilising NLP as part of their offering might be more likely to enter markets successfully where the language of business (and regulation) is English–if this gives them easier access to training data and applicable language models. [45]

Case Study: Philippines

As emerging Asian markets mature and fintech-type companies become a part of the system, regulators will have to find ways to effectively fulfil their mandate related to oversight and enforcement. This is why regulators will need to become significant users of regtech themselves if they want to keep up.

The Philippines is an excellent example of how regulators in emerging economies can improve their effectiveness through technology. The Bangko Sentral ng Pilipinas (BSP), the central bank of the Philippines, partnered with the Regtech for Regulators Accelerator (R2A), established in 2016 by the Gates Foundation, Omidyar Network, and the US Agency for International Development (USAID). The program helps regulators experiment with regtech through a process that is similar to a Fintech accelerator. The BSP was one of the first regulators to join R2A in 2016 and is using the partnership to test two regtech ideas.

The first is supervisory reporting. The central bank currently receives 144 Excel-based reports from regulated institutions; validation requires the resources of an entire office within BSP. Also, due to data quality issues, there is a significant time lag in identifying risks. BSP is testing APIs to connect data systems between the reporting institutions and the central bank.

The goal is to improve supervision and reduce costs for BSP and the industry. Other objectives are to:

- Allow financial institutions to submit data digitally and automatically to the monetary authority.
- Increase the volume, granularity, and frequency—and improve the quality—of data submitted to the central bank.
- Enable BSP staff to improve data validation and analysis and generate customized reports for supervisory and policy development purposes.[46]

BSP believes that data collection can be more efficient, with data directly fed into customized dashboards for timely analysis. Reduced compliance costs are a positive result as well, with the number of reporting schemes moving from 29 to one. Following successful prototype testing, BSP is developing competencies to support longer-term integration and on-boarding of additional financial institutions. Key performance metrics demonstrate early evidence of benefits. Datapoint submissions have decreased from around 107,000 to approximately 50,000. Compliance costs have been reduced via a single reporting package that is automatically submitted with no human intervention. Processing time has been reduced from over 30 minutes to just 10 seconds.

BSP is also in the early phases of experimenting with a consumer complaints chatbot. The bank currently receives tens of thousands of complaints annually; a team of fewer than 10 responds to each manually. In addition to being labour intensive, the system is limited to calls and emails. BSP believes that the chatbot can widen consumer access to the grievance redress system. This technology has the potential to provide automatic responses

45 Ibid.

46 https://www.r2accelerator.org/insightsr2a

to common inquiries, which frees up resources for more complicated cases. The BSP can also use collected data to learn more about consumer sentiment and trends, which can improve supervision.

Using regtech for this purpose can build consumer trust and ensure that new technologies are safe to use.

The BSP hopes that a chatbot will enable:

- Financial consumers to file complaints through their mobile handsets via either a [messaging] app or SMS, thereby creating new channels for them to correspond with BSP.
- BSP to (a) address queries and complaints through the chatbot; (b) manage the structure and flow of automated conversations based on expertise and historical data; and (c) use data and insights gathered through the chatbot for oversight and policy development purposes.
- Reduce employee workload and response time by delegating mundane and routine tasks (e.g., directing non-BSP complaints to the right institution) to chatbots, saving human labor for more complex or nuanced tasks.[47]

Building on the success of these two regtech ideas, BSP has identified other areas of focus, including an internal R2A-style program. While still early in its regtech journey, BSP notes several factors important to progress: executive sponsorship and championship, buy-in from technical offices, and the ability of staff to see how regtech can benefit their work. The BSP's ability to engage new types of vendors has also been crucial. When asked about advice for regulators considering regtech, BSP noted that external support is critical to getting started. Regulators can also learn from the experience of others when designing their own programs. BSP also added that, overall, regtech can help build consumer trust and ensure that new technologies are safe to use.[48]

Most countries have committees or organizations focused on the development of core technologies including blockchain, RPA, data analytics, biometrics, cloud, and artificial intelligence / machine learning. Educational institutions in most of the developed markets across the region have at least a course on fintech if not a certificate or degree program and would also cover the underlying technologies. Governments also see fintech as an economic enabler and are focused on enabling the ecosystem with grants, tax-rebates, etc. to encourage the growth and sustainability of the industry.

The variability comes into play around regulations, which differ greatly across the region. In general, technologies are regulated at the application level rather than the technology level. As an example, blockchain technology itself is largely unregulated as an underlying technology, however applications of the technology, for example, crypto-currencies or DLT-based settlement systems, are.

47 Ibid.
48 UNSGSA Fintech Working Group and CCAF; Early Lessons on Regulatory Innovations to Enable Inclusive Fintech, 2019

Asian Regtech Solutions and Technology Review

To a large extent, the development of technology in general and specifically regtech technology is not entirely different in Asia Pacific as it is in other regions globally.

Cloud computing

The exception to this rule is cloud computing which is regulated as a technology. Asia Pacific has embraced cloud-computing and in general, regulators are open to the idea of using cloud for data storage, compute power, or some form of SaaS/PaaS. However, data localization is important. Most countries require customer data to be stored in the country where business is being conducted.

In addition, some countries, such as China, require a bank's core systems be located in-country. This means that many banks will have a mainland China core system that runs somewhat independently of any other regional or global system. China also does not allow foreign-owned cloud providers to operate in mainland China, so providers like AWS or Microsoft Azure, have had to partner with local providers. This is also the case in a few other countries in Southeast Asia.

APIs / Open banking

Open banking and APIs are starting to take shape in Asia as well. While the rise of APIs in Europe was largely government driven through PSD2, in APAC only Hong Kong and Australia through its Customer Data Right (CDR) legislation, have mandated it so far.[49]

Australia's CDR effectively allows individuals to "own" their data by granting them open access to their banking, energy, phone, and internet transactions, as well as the right to control who can have it and use it. CDR was implemented, after some delay, on July 1st, 2020 and should enable individuals to be able to better monitor and manage their finances, utilities, and other services, and compare and switch between different offerings more easily. The system also aims to encourage innovation and competition between service providers, including startups. The CDR is initially focused on banking but telecommunications and energy will follow.

Hong Kong is another jurisdiction that has a regulator-driven approach to open banking. The city launched a framework in July 2018 to support

49 https://www.accc.gov.au/focus-areas/consumer-data-right-cdr-0

the development of open banking and so far the 20 participating banks have published over 500 APIs.[50]

Most of the rest of the region is relying on a market driven implementation of APIs and open banking with some guidance from regulators themselves. As an example, the MAS in Singapore has detailed some guiding principles for open banking but has not mandated it. Despite this, some banks, like DBS, have published several hundred APIs. Singapore is also working on the APIX exchange, which is discussed later in the report.

Despite most of the region being market driven, we may see this shift to a regulator driven model soon. Although there is no framework similar to PSD2 that would require this, as most jurisdictions are launching digital banking licensing, regulations around APIs and open banking may be a sensible next step, taking lessons from Australia and Hong Kong.

AI/ML

Finally, although artificial intelligence / machine learning is not yet regulated as a technology, governments are also starting to provide guidance around “responsible AI.” The MAS, for example, is working with the financial industry on an Artificial Intelligence Data Analytics (AIDA) framework. The framework, known as Veritas, will enable financial industry players to evaluate their AIDA-driven solutions against the principles of fairness, ethics, accountability, and transparency. The goal is to strengthen the governance around the application of AI and the management and use of data.[51]

50 https://www.hkma.gov.hk/eng/news-and-media/press-releases/2019/07/20190731-3/

51 https://www.mas.gov.sg/news/media-releases/2019/mas-partners-financial-industry-to-create-framework-for-responsible-use-of-ai

Impact of Covid-19

Few events in recent history have impacted the world as much as the Covid-19 pandemic.

With billions of individuals and businesses around the world on a limited or full lockdown, economies are struggling to stay afloat as governments around the world chart their own path through the pandemic trying to mitigate the inevitable economic damage. As much of the global population is either voluntarily or involuntarily staying home, the financial industry has also had to make a dramatic shift away from their traditional business model, to a digital one.

The industry trend towards greater efficiency has accelerated under Covid-19. Revenue margins at the banks, which were already under pressure, are being squeezed further and there is now a race to digitalize services. Covid-19 has accelerated the agenda and "brought in around ten years of digitalization in a period of two months." Because of this, and despite the economic and social challenges that the pandemic has created, the fintech industry seems to be, for the most part, faring well and indeed helping the financial industry and economies around the world get back on their feet.

This has helped fintech but regtech in particular. The shift to digital business models for payments, wealth management, and otherwise has meant that companies have had to focus on new digital platforms, technologies, and processes that they may have not had to in the past. Many organizations have had to accelerate their go to market strategies, including those for digital, which puts them head to head with fintechs, but also puts them squarely in the digital space, so they are being exposed to new vectors of financial crime.

Remote onboarding of clients has driven demand for robust KYC solutions. Increased usage of both POS and online digital payments has corresponded with an increase in fraud. Money laundering as well has moved nearly completely online, which has increased the number and frequency of online crimes. Interviewees reported seeing a rise in impersonation scams, or cyber activity to hack health systems etc. Singapore announced a 1,000% increase in cybercrime in the wake of Covid-19; understandable as criminals will inevitably gravitate to where the money is moving: online.

As respondents mentioned, too often for FIs and fintechs across the region, KYC and compliance in general has been an afterthought and tends to be overly manual and time-consuming. With the onset of greater digitalization and the associated threats, compliance and financial crime prevention has moved to the top of the agenda for both FIs and regulators. This new business paradigm is and will continue to drive demand for regtech solutions.

As well, at a macro level, as the general economy struggles, the financial industry needs to ensure it is on top of systemic risks, which means more attention to risk and compliance solutions. Many of the economic recovery programs, such as the Coronavirus Aid, Relief, and Economic Security (CARES) Act in the U.S. rely on distributing loans and other disbursements to millions of businesses and individuals across the economy. Even the governments themselves have been challenged. The U.S. government recently dispersed over US$ 1.4 billion to 1.1 deceased citizens.[52]

52 https://www.washingtonpost.com/us-policy/2020/06/25/irs-stimulus-checks-dead-people-gao/

Covid-19 in Asia Pacific

The impact of Covid-19 on Asia Pacific has been mixed. On one hand, severe disruptions in supply chains, manufacturing, and migrant movement have hindered economic output. However, as the region has a bit of a head-start on digital payments, many countries have moved to digital finance rapidly.

As an example, in India, usage of the UPI dropped nearly 60% in April as the country went into lockdown. By the end of June, transactions had rebounded and surpassed the April volumes.[53] In China, the digital payment platforms Alipay and WeChat Pay have been important distribution channels for government subsidies and lending.

Yet, Asia Pacific is still at the start of what could be a challenging few years ahead. Many risk models were not built with a pandemic in mind, nor one that has impacted employment and economies so sharply. For this reason, the future is very unclear as there could be many detrimental knock-on effects that just have not been considered.

An example is mortgages. As unemployment across Asia has risen so sharply, banks need to more frequently and strenuously stress check their mortgage portfolios. In every economic cycle, there will always be peaks and troughs in terms of the percentage of customers that have problems keeping up with their payments, but this pandemic is so unprecedented, the models that have been applied in the past have had to be thrown out of the window.

The Future for Fintechs in Asia Pacific in the post-Covid world

Whilst the pandemic has largely been positive for fintechs as demand for mission-critical or needed systems increases, understanding each market remains key. Regulators and FIs in many jurisdictions have put many regulations on hold until the situation stabilizes. For example, final decisions on digital bank licensing in Singapore were due in June, but the government has delayed decisions until later in the year; many regulations are passed in economically growing or stable times, not in a recession.

Regulators and FIs in Asia also have their work cut out for them dealing with potential lending and liquidity problems – arguably more urgent than licensing digital banks. For this reason, many are not looking at spending a lot of money on a state-of-the-art regtech solution, especially one for a regulation that may have stalled.

The challenges of Covid-19 will also likely lead to an acceleration in fintech industry consolidation, which was already underway before the pandemic hit. Singapore, Hong Kong, and Australia have been providing emergency funding for their fintech and regtech ecosystems, which will likely continue for the remainder of 2020 as needed. However, there is a lack of clarity on what will happen in other Southeast Asian countries. Other innovation hubs such as Indonesia, Vietnam, and Thailand, will lose a lot of fintech players.

In many ways, fintech had been preparing for just this moment enabling individuals and companies to move closer to digital finance, but now it is a clear test of how ready they actually are.

53 https://tech.economictimes.indiatimes.com/news/mobile/digital-payments-bounce-back-to-pre-covid-19-levels/76701102

Conclusions

Asia, home to over half the world's population, is soon set to house half of the globe's middle class. As incomes and living standards rise, so too does demand for durable goods, such as luxury goods and automobiles.

Corporations, that used to see the continent as a hub to build things cheaply, are now investing heavily in the region in order to capture a slice of the growing demand.

Mature APAC Economies

Governments in the more mature APAC economies like Singapore and Hong Kong, with no resources other than their people, realized long ago that their comparative advantage lies in building up a conducive environment for business and finance to thrive. These policies are at the core of why these enclaves are a magnet for multinationals looking for a springboard into the region and why they have become leading financial centres. They act as oases in an otherwise "Wild West" of a region.

At the same time, disruptive new technologies, platforms, and players are emerging in the financial realm that offer both enormous opportunities and risks. These have found a natural home in the more mature APAC economies, with their deep financial ecosystems. Governments in these jurisdictions are cautiously embracing these disruptions, recognizing the need to do so in order to maintain their leads as thriving financial centre hubs. Incumbent financial institutions, meanwhile, have also recognized the need to adopt these technologies if they want to stay ahead.

As the interlinkages within these financial ecosystems become ever more convoluted, regulators in these economies are all too acutely aware of the need to regulate this moving target. At the same time, they have also sought to improve their supervision and mandate more stringent compliance and risk management regimes over their charges.

This regulatory scrutiny has not occurred within a vacuum either. It has occurred in a region that has been beset by recent financial wrongdoing, such as the 1MDB affair in Malaysia and the misdeeds of the Big Four in Australia that culminated in the Royal Commission there. It has also occurred in a world that has been beset by such malpractices by its financial institutions, is vulnerable to an increase in cybercrimes, and is still recovering from the global financial crisis.

In this more complex environment, welcoming yet cautious regulators within the mature APAC economies recognize the power of regtech to assist them in these untested waters. Firms within these economies, meanwhile, facing ever more onerous demands from their regulators, recognize the need for technological solutions to help them manage these demands.

Emerging APAC Economies

Emerging economies within the region, while being buffeted by the same regional and global regulatory challenges as their more developed counterparts, are nevertheless in a slightly different situation. That is because they are at very different levels of development and host relatively small and nascent financial ecosystems. Many of the emerging economies in the region are growing rapidly and host large, young populations. As these populations have grown wealthier so too has their need for financial services. Lacking the basic infrastructure to serve them, fintech solutions have proliferated to meet this growing demand.

In the same way the more mature economies within the region have embraced these new technologies, so too have the developing APAC economies, as governments there recognize the great potential for these to boost financial inclusion. At the same time, however, due to a lack of resources, skillsets, and knowhow, regulators in these emerging economies have been slow to regulate these new technologies. Here, there is a real need for regtech type solutions to assist regulators in mitigating against their constraints.

Firms in these jurisdictions meanwhile, feeling less pressure from their regulators, see regtech as less of a solution to help them meet their regulatory compliance requirements and more as a source of competitive advantage to help them reduce costs or improve their customer service. That will change over time, however, as these emerging economies' financial systems and concomitant compliance regimes grow to meet the demands of their larger economies. As that happens firms operating in these jurisdictions, like those in the mature APAC economies, will turn to regtech to help them manage their regulatory compliance and risk management obligations.

Australia Overview

2021

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Main Regulators and Key Initiatives

The Reserve Bank of Australia (RBA):

The central bank whose functions include responsibility for most payment systems and setting of monetary policy.

Recent / Active RBA Key Initiatives:

- Digitizing the Country's Payments Systems
- New Payments Platform (NPP)
- Open Banking and Consumer Data Right

The Australian Regulation Prudential Authority (APRA):

A statutory authority of the Australian Government and the prudential regulator of the Australian financial services industry.

Recent / Active APRA Key Initiatives:

- Banking Executive Accountability Regime (BEAR)
- Financial Accountability Regime (FAR)
- Corporate Plan for 2019-2023
- Program Athena
- APRA Connect
- Governance, Culture, Remuneration, and Accountability (GCRA)
- Prudential Standard CPS 234 Information Security
- Outsourcing Prudential Standard CPS 231
- Guidance on the Management of Risks Arising from Cloud Computing
- APS110 Standard on Capital Adequacy

Australian Securities and Investments Commission (ASIC):

An independent Australian government body that acts as Australia's corporate regulator. ASIC's role is to enforce and regulate company and financial services laws to protect Australian consumers, investors, and creditors.

Recent / Active ASIC Key Initiatives:

- Design and Distribution Obligations (DDO)
- Product Intervention Powers (PIP)
- Market Analysis and Intelligence (MAI)
- Innovation Hub
- Regulatory Sandbox
- Regtech Liaison Forums
- Regtech Initiative Series
- Guidance on ICOs and Crypto-Assets (Information Sheet 225)

Trends, Initiatives, and Implications for Regtechs in Australia

While the regtech market is small, Australia is further along the maturity curve than most, with increasing activity expanding beyond the traditional banking and finance sectors.

There are a number of drivers behind regtech's development in Australia. These are namely a robust regulatory and compliance culture and an increase in regulatory scrutiny and fines resulting from the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry. Moving forwards, a number of initiatives will help shape the market further. These include increased regulator and government support, as well as the upcoming new Consumer Data Right regime and an extension of the AML/CFT regulations to bring in non-bank entities.

Government Initiatives

The Royal Commission

Domestically, there had been a growing perception among the public of systemic misconduct within the financial services sector, particularly with the “Big Four” local banks that have endured multiple allegations and scandals of misconduct in recent years. These range from charging fees for no service and unethical methods in avoiding insurance payouts, to breaches of AML regulations and rigging inter-bank interest rates.

Other headlines include the Big Four colluding to “effectively boycott” Apple Pay, while credit card interchange fees have also become a hot topic. In the latter case, this follows the record US$ 6.2 billion settlement reached last year in the class-action suit that was filed against Visa and Mastercard in the US. The Australian Government Productivity Commission subsequently recommended that interchange fees be abolished by the end of 2019.

The growing anti-financial backlash finally culminated in calls for a formal public inquiry, which led to the Governor-General establishing the “Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry” (the Royal Commission) in December 2017. Commissioner Kenneth Hayne, who headed the inquiry, tabled his final report in Parliament in February 2019.

The Royal Commission’s findings highlighted instances where banks had failed their customers, failed to obey the law, and failed to meet community standards. The report made 76 recommendations, 54 directed to the federal government (more than 40 of them needing legislation), 12 to the regulators, and 10 to the industry. Five of the recommendations made to financial institutions involved changing culture and governance.

The Royal Commission’s findings and AUSTRAC’s, the AML/CTF regulator, subsequent cases against Westpac and Commonwealth Bank which, in the case of Westpac alleges that it contravened the AML/CTF Act on over 23 million occasions, highlighted the need for incumbents to improve legacy technology systems, along with the cultures that failed to identify and nip in the bud non-financial risks.

The fallout from the Royal Commission’s findings and AUSTRAC’s cases have been driving an ongoing shift in the regulatory regime towards increased governance and accountability within the financial services sector. This has now put conduct and culture at the top of the agenda, while also opening the door to increased competition.

The Banking Executive Accountability Regime (BEAR)

The Royal Commission’s final report recommended extending the Banking Executive Accountability Regime (BEAR) to all financial services entities, including superannuation and insurance, which fall within the Australian Securities and Investments Commission’s (ASIC) regulatory remit.

The BEAR, which places extra obligations on bank bosses and more significant penalties, including clawback of bonuses and pay for those who fail to meet their requirements, was introduced for large authorized deposit-taking institutions (ADIs) and their directors and senior executives in July

2018. It was extended to small and medium-sized institutions on 1 July 2019. These entities need to register with the Australian Prudential Regulation Authority (APRA) those senior executives and directors who are "accountable persons".[1]

In January 2020, the Australian Government released its proposal paper for extending the BEAR to all entities regulated by APRA. The extension, known as the Financial Accountability Regime (FAR), now includes all APRA-regulated financial service institutions including superannuation and insurers. The Government has also said that the regime will extend to all other regulated entities (e.g. those solely regulated by Australia's conduct regulator, ASIC) in due course.[2]

Accountable persons and their respective organizations face a long list of responsibilities including end-to-end product responsibility, which will include all steps in the design, delivery and maintenance of all products offered to customers and any necessary remediation for customers in respect of any of those products. Given that larger maximum penalties will apply under the FAR, many entities will now be scrambling to update their compliance processes and that is going to include demand for reasonable product governance solutions.

The repercussions from the Royal Commission are still reverberating around the country, with increased scrutiny of authorities and customers on governance and conduct failures in the financial services industry. The Government's response has been billed as the most comprehensive corporate and financial services law reform since the 1990s, when the Corporate Law Economic Reform Program (CLERP) was introduced.

The Struggle to Remain Compliant

Following the Royal Commission report and recent scandals within the financial sector, corporate governance will be top of the agenda for regulators. This includes a focus on product governance and quality, including the management of non-financial risk in a product lifecycle. A key issue currently facing institutions is the ability to audit products post-launch, with banks and other companies struggling to manage the governance and improvement of their products in the market.

Wishing to avoid the increase in hefty non-compliance penalties, many financial institutions will be looking to implement structures to remove inherent conflicts of interest and prevent the reoccurrence of these issues. Citibank Australia, Westpac, and Commonwealth Bank of Australia have each announced that they are looking at regtech solutions to help solve compliance-related problems.

It is in this context of increasingly complex regulations, which impose severe non-compliance penalties, that many Australian banks are still using an Excel spreadsheet and Word document to coordinate compliance. The existing system of siloed and unstructured manual compliance processes is a recipe for non-compliance and provides bank boards with very little visibility on core compliance requirements. Monitoring and reporting solutions are sorely required.

Banks' archaic back-end processes are further at risk of tripping them up as Australia pushes ahead with its Australian Tech Future initiative. This was released at the end of 2018, outlining priorities for delivering a strong, safe, and inclusive economy, enabled by digital technology. As part of the initiative, the government has embarked on ambitious policy reform to liberate data flows

1 https://globalcompliancenews.com/bite-size-briefings-individual-accountability-regimes-driving-improvements-culture-20190725/

2 https://treasury.gov.au/sites/default/files/2020-01/c2020-24974.pdf

across the economy, creating more seamless digital interactions at the consumer front-end.[3,4] Increased data flows will require banks to double-down on efforts to introduce suitable solutions in order not just to manage and record these flows, but to remain compliant.

In general terms, regtech vendors are advised to familiarize themselves with and align with the Government and regulators' critical strategic goals and objectives as outlined above and below. There will also likely be opportunities for partnerships, should that help authorities achieve their aims. Indeed, according to Australia's Regtech Association, the government is the third-highest adopter of regtech awarding 38% of regtech firms with contracts.

Vendors should also look into the government's Accelerating Commercialisation program, which provides small and medium businesses, entrepreneurs, and researchers with access to expert advice and funding to help get a novel product, process, or service to market.

The Senate Select Committee on Financial Technology and Regulatory Technology Regtech Report

The Senate Select Committee on Financial Technology and Regulatory Technology, established by the Senate in September 2019, is investigating how regtech might strengthen compliance, while reducing costs. It is due to present its final report on or before the first sitting day in October 2020. The committee will inquire and report on the following matters:

- The size and scope of the opportunity for Australian consumers and business arising from financial technology and regulatory technology.
- Barriers to the uptake of new technologies in the financial sector.
- The progress of fintech facilitation reform and the benchmarking of comparable global regimes.
- Current regtech practices and the opportunities for the regtech industry to strengthen compliance but also reduce costs.
- The effectiveness of current initiatives in promoting a positive environment for fintech and regtech startups.
- Any related matters.[5]

The government's efforts in this regard are a positive signpost for the further development of the regtech market in Australia. It is an indication that the government is aware of the benefits that regtech can bestow and is looking to remove barriers to its healthy development within the market. Such government support will help raise awareness of regtech and could result in the government adding its weight behind encouraging regtech's uptake in various sectors.

3 https://www.industry.gov.au/sites/default/files/2018-12/australias-tech-future.pdf
4 https://www.industry.gov.au/data-and-publications/australias-tech-future/data/what-is-the-government-doing-in-data
5 https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Financial_Technology_and_Regulatory_Technology

Regulator Initiatives

The Reserve Bank of Australia (RBA)

Digitalizing the Economy

The RBA, the country's central bank, is making digitizing the country's payments systems a priority. To that end, the Bank launched, in February 2018, the New Payments Platform (NPP), a real-time fast payment system that allows customers to make instant payments both during and after regular business hours.

The RBA also plans to introduce new technologies like cloud computing, artificial intelligence, and cryptography to shape its retail payment structure in the coming years. The Bank has also been considering the concept of a "Central Bank Digital Currency" on a blockchain. However, currently, it does not have any strong case to either accept or reject the usage of cryptocurrencies, determining to keep an open mind on the subject.

Open Banking and Consumer Data Right

Another opportunity for regtech in Australia will be in Open Banking, where Australia was the first country in Asia-Pacific to legislate. In the report of the Review into Open Banking (the Farrell Report) released in February 2018, Open Banking is described as the first step of a broader Consumer Data Right legislative program that will "give customers greater control over their data."

Since the 1 July 2020, the four major banks have been obligated to share consumer data under Phase 1 APIs. In November 2020, the remaining information will be due for products in Phase 2 and Phase 3. Non-major banks have an opportunity to respond to a consultation about their start dates for CDR.[6,7,8]

The Government considers that this will promote competition and innovation in the affected sectors as customers will be able to change their suppliers more easily if they can direct their current supplier to provide their data to other suppliers or comparison services. The CDR regime will impose significant additional privacy and data sharing obligations and penalties for breach. The geographic scope of the proposed law is broad as it will apply to CDR data generated or collected both in Australia and outside Australia.

Moves to encourage Open Banking will shake up the country's financing industry pushing banks to up their game. This in turn is also an opportunity for regtechs in Australia to help incumbents maintain competitive advantage.

The CDR also adds two additional verticals under its umbrella, namely, energy and telecoms. These two verticals will be looking to reduce their compliance burden and provide more transparency to service their customers better. An additional opportunity area for regtechs to focus on.

6 https://www.dentons.com/en/insights/alerts/2020/january/13/australian-government-delays-implementation-of-open-banking
7 https://www.lexology.com/library/detail.aspx?g=5ef38e32-edf3-4f28-b0e3-bb117872fa36
8 https://blog.truelayer.com/consumer-data-right-australias-take-on-open-banking-60720b4ed2aa

Virtual Banking

Neobanks became a possibility in Australia in 2018 after a change in legislation opened the floodgates. Since late 2019, a wave of digital banks have arrived in Australia, seeing competition in banking heat up for the first time in decades.

This competition is only set to increase. Under current CDR rules, Australia's Big Four must share up-to-date product reference data, which includes interest rates, fees and charges, eligibility information and more. Since July 2020, banks also, banks also need to provide consumer data, such as credit card details and deposit account information, to accredited recipients. Data-sharing for mortgages and loans followed in November 2020

Each part of the CDR is expected to spur neobank activity in the region. Once these companies (Table 4) can access open financial data, they'll be able to use it to build out their own propositions.[12]

The rise of Virtual Banking in Australia, is a boon to regtech as these companies, are, by definition, purely digital, which means that they require purely digital solutions, including regtech. As open banking further facilities their rise, more players will enter the market, who will require regtech to be built into their platforms. Facing increased competition, incumbents will be looking at regtech as they attempt to lower their costs and offer more digital services to remain competitive.

Table 4:

Bank Brand	Consortium/Investors	Focus Market Segment	Launch Date
86 400	Cuscal Morgan Stanley	Retail	Sept 2019 (full ADI license issued in July 2019).
Archa	Fintech startup based in Melbourne.	Retail	NA (currently applying for a restricted ADI license)
Judo Bank	Australian consortium of family offices. Ironbridge Capital, OPTrust, Myer Family Investments, Abu Dhabi Capital Group etc own shares. [9]	SME banking	April 2019 (full ADI license issued in April 2019).
Up	Bendigo and Adelaide Bank	Retail banking	Oct 2018 (covered by Bendigo and Adelaide Bank ADI license).
Volt	Collection House Group Australian high-net-worth, family offices, and private investors in the UK, Hong Kong and Singapore.	Retail banking	January 2019 (full ADI license also acquired on this date)
Xinja	World Investments (Dubai) Private and institutional investors.	Retail banking	Jan 2020 (full ADI license issued in Sept 2019)

*Not included: ING, ME and UBank, as these are not 100% digital banks.

Source: Mozo[10,11]

9 https://en.wikipedia.org/wiki/Judo_Capital
10 https://mozo.com.au/fintech/digital-banking-and-neobanks
11 https://mozo.com.au/neobanks/guides/neobanks-and-digital-banks-licences-explained
12 https://11fs.com/blog/whats-happening-with-australian-neobanks-in-2020

Australian Securities and Investments Commission (ASIC)

Regtech Initiatives

ASIC considers the regtech sector to have enormous potential to help organisations build a culture of compliance, identify learning opportunities, and save time and money relating to regulatory matters. The regulator has even gone so far as to take an “if not, why not” approach. So, if banks aren’t using the latest technology in the compliance space, the regulator will want to know why. This includes regtech offered by startups.

Such is the interest that ASIC has established a dedicated regtech team, introducing new software to augment its regulatory policies. It was an early pioneer in adopting suptech, launching in 2013 its Market Analysis and Intelligence (MAI), a market surveillance system. The suptech platform allows for real-time monitoring of the Australian primary and secondary capital markets (ASX and Chi-X), providing real-time alerts and identifying anomalies that may be investigated or detected upon execution.[13]

In addition, ASIC established its Innovation Hub in March 2015 to help fintech and regtech businesses navigate Australia’s regulatory system in the financial services sector. In so doing, the Innovation Hub streamlines ASIC’s engagement with the fintech and regtech sectors and removes red tape where possible.[14]

In 2016, ASIC introduced a regulatory sandbox regime for fintechs, allowing eligible businesses to test particular financial services or credit activities in a less onerous regulatory environment. The Australian government has recently passed the Treasury Laws Amendment (2018 Measures No. 2) Bill 2019 that expands the time that fintech companies can spend in a regulatory sandbox—while also expanding their scope. Novel products can be tested for 24 months, without needing to obtain a financial services or credit license from ASIC.[15]

ASIC has also taken a leading role in promoting networking, collaboration and information sharing in the regtech sector, convening quarterly Regtech Liaison Forums. APRA, AUSTRAC, the Regtech Association and Fintech Australia regularly provide insights into their regtech initiatives and the state of the sector at these forums.

ASIC has also received federal government funding to promote Australia as a leader in regtech, which it hopes could become an export industry. This additional funding has been used to develop a series of regtech initiatives. These initiatives focus on the potential use of technology to help businesses deal with conduct of business compliance issues, thereby promoting better outcomes for consumers and market integrity. [16]

After undertaking four regtech initiatives during the 2019 fiscal year, ASIC has concluded that regtech solutions can be used to help:

- Detect potential breaches of mandatory disclosure requirements with high rates of accuracy in near real-time.
- Detect potential conduct breaches in financial advice files, such as statements of advice.
- Identify cases of poor sales practice and tactics in phone calls; and
- Help ASIC provide guidance on licensing using a chatbot.

However, ASIC's report also identified that while there are benefits of adopting regtech, the flipside to it would be the exposure the financial sector

13 https://fintechnews.ch/regtech/what-is-suptech-an-overview/31289/

14 https://asic.gov.au/regulatory-resources/find-a-document/reports/rep-523-asic-s-innovation-hub-and-our-approach-to-regulatory-technology/

15 https://techwireasia.com/2020/02/australian-government-makes-amendments-to-fintech-regulatory-sandbox/

16 https://asic.gov.au/for-business/innovation-hub/asic-and-regtech/

would have to greater cybersecurity and privacy risks, pointing to how cloud-based systems for storing, monitoring, tracking, and processing data will "require financial services firms and regulators to consider the risks involved".[17]

ASIC developed additional regtech initiatives for FY2019–20 with the nature and scale of these initiatives designed in light of the evolving situation surrounding the novel coronavirus (Covid-19).

Initiatives under consideration include machine learning to monitor compliance in regards to responsible lending; developing a report on the state of digital record keeping within the financial services industry; a showcase on the publication of structured financial information in public companies; and a demonstration and panel discussion event on the potential for regtech to assist boards and senior executives in identifying and overseeing non-financial risk.[18]

Beyond 2020

ASIC has also laid out some of the initiatives that it may consider beyond 2020, which include:

- Leading the narrative on the application of regtech.
- Hosting further regtech showcase events and playing a larger role as observer to regtech trials by firms.
- Providing more guidance on good practices on engaging, implementing and maintaining regtech, including applying AI and ML; and
- Leading the way through ASIC's own adoption of regtech in its supervisory work.

In addition, ASIC has also strongly encouraged the financial services industry and related stakeholders to take more of a lead in developing the regtech sector. It has put forward suggestions that the industry may wish to consider, which include, enhanced channels for general information sharing on regtech between firms, regtech firms, and regulators; standards on digital record keeping of financial service provision and regtech procurement practices; and minimum terms and expectations to be used by stakeholders in conducting regtech trials.[19]

Out of all of Australia's regulators, ASIC has probably been the most proactive in driving development of regtech forwards, being very engaged within the regtech space. Their initiatives, which include, for example, the issuance of problem statements and inviting regtechs in to work on these with a view to taking on their solutions to use within the regulator, attract a level of endorsement that will only benefit the regtech sector and its uptake within the market.

Design and Distribution Obligations (DDO) and Product Intervention Powers (PIP)

Related to the focus on governance will be the imminent "Design and Distribution Obligations (DDO) and Product Intervention Powers (PIP)" legislation, which will come into effect in April 2021. The obligations require financial product firms to develop products that meet the needs of the consumers in their intended target market.

The regime requires issuers and distributors to have an adequate product governance framework to ensure products are targeted at the right people. ASIC will have the power to impose civil and criminal penalties for any breach of DDO or PIP.

17 https://www.zdnet.com/article/asic-wants-to-see-more-adoption-of-regtech-by-australias-financial-sector/
18 https://asic.gov.au/for-business/innovation-hub/asic-and-regtech/asic-regtech-initiative-series-2019-20/
19 https://asic.gov.au/for-business/innovation-hub/asic-and-regtech/asic-regtech-initiative-series-2018-19/regtech-approach-and-next-steps/

Such a product governance framework would likely benefit from a regtech solution to ensure compliance. The risk of civil and criminal penalties will be a big incentive driver in the uptake of such solutions.

Virtual Assets

Cryptocurrencies and exchanges are legal in Australia, and the country has been progressive in its implementation of cryptocurrency regulations. In 2017, Australia's government declared that cryptocurrencies were legal and specifically stated that Bitcoin (and cryptocurrencies that shared its characteristics) should be treated as property, and subject to Capital Gains Tax (CGT).

In 2018, AUSTRAC announced the implementation of more robust cryptocurrency exchange regulations. The new crypto regulations require exchanges operating in Australia to register with AUSTRAC, identify and verify users, maintain records, and comply with government AML/CFT reporting obligations. Going forward, unregistered exchanges will be subject to criminal charges and financial penalties.

Australia has established a pattern of proactive cryptocurrency regulation. Beyond cryptocurrency exchanges, ICOs are also being scrutinized: guidelines from ASIC, issued in 2017, advise that the natural structure of the tokens (security or utility) will determine their legal treatment under general consumer law and the Corporations Act.[20]

With virtual assets and the services behind them being regulated in Australia, firms will be under regulatory scrutiny to remain compliant. Such firms will be looking to regtech solutions to enable them to do so, especially those firms that are looking to build credibility with the regulator and the public.

The Australian Regulation Prudential Authority (APRA)

Corporate Plan for 2019-2023

APRA's updated Corporate Plan for 2019-2023, with a sharpened focus on regulating non-financial risks and improving outcomes for superannuation members, sets out a roadmap for safeguarding financial stability, while lifting its capabilities in other key areas to better address emerging and future challenges. The 2019-2023 strategy identifies four strategic focus areas and five capabilities to uplift in order to achieve these (Table 5).[21]

Like ASIC, APRA also recognizes the potential of regtech to benefit APRA's own operations. One of APRA's 2019-2023 strategic initiatives is to transform its data-enabled decision-making and the regulator is exploring ways of using technology to assist with this. APRA intends to transform its data into a strategic asset by further developing its data strategy to facilitate greater and more effective use and sharing of data in the oversight of the Australian financial system and defining and implementing the data sources required.

The intention is to continue a multi-year transformation program (Program Athena) to modernize the way APRA collects, stores and accesses data by creating a new data collection solution that adapts quickly to changes in data and is efficient for APRA's regulated industries to use.[22]

The regulator is moving to replace its ageing core financial data system, dubbed Direct to APRA (D2A), which is currently used to determine the financial health and capital resilience of banks, insurers and superannuation funds with a new data collection platform called APRA Connect.

20 https://complyadvantage.com/knowledgebase/crypto-regulations/cryptocurrency-regulations-australia/

21 APRA; Corporate Plan 2019-2023; 2019

22 Ibid.

The system allows financial institutions to securely connect with APRA to complete and submit financial data forms for prudential reporting and compliance. However, under pressure from industry practitioners and the wider financial community, APRA has delayed the go-live date for its new Data Collection Solution to the second half of 2020. APRA said the further temporary suspension of six months would “allow financial institutions to concentrate on their businesses and assist their customers” in light of Covid-19.[23]

Such initiatives by the regulator will demand that its regulated entities adapt their own internal processes to align with these changes at the regulator. Not only will these entities have to ensure that the format and the data they are collecting are in line with requirements, but they will also need to build APIs to connect with the regulator to transfer such data.

Table 5: APRA’s 2019-2023 Strategy

Source: APRA’s Corporate Plan, 2019-2023

23 https://www.itnews.com.au/news/apra-delays-core-data-platform-overhaul-by-six-months-539806

Governance, Culture, Remuneration, and Accountability (GCRA)

In light of the banking sector's recent scandals, APRA is also intensifying reporting requirements and moving more aggressively to address governance failures. This is apparent in its updating of core reporting forms such as ARF 320, 391, and 392.

In its Corporate Plan 2019-2023, one of APRA's key strategic focus areas is to transform governance, culture, remuneration, and accountability (GCRA) across APRA-regulated institutions' management of non-financial risks.

APRA has said that it will be "constructively tough" with regulated institutions where practices fall below prudential expectations. The overarching objective of this work, as stated by APRA, is to enhance the resilience of APRA-regulated institutions and contribute to rebuilding the Australian community's trust and confidence in the fairness of the financial system.[24]

APRA has signaled that a significant uplift will be required in APRA-regulated institutions' management of GCRA. This involves lifting Board and senior management governance of non-financial risk, reinforcing the importance of "tone from the top" to articulate and foster the desired risk culture, strengthening the alignment of remuneration with performance and risk outcomes, and enhancing accountability by extending the executive accountability regime across all APRA-regulated industries.

These moves will push firms to develop better methods for centralizing their data and improving their monitoring and internal reporting methods. Such requirements will, by their nature, require regtech solutions to address them. Institutions are severely challenged by a legacy of data siloes and have little visibility on the whereabouts of a large portion of their data. Solutions that enable them to track and aggregate this data are sorely required.

Additional APRA Standards and Guidelines Relevant to Regtech

As the financial system ecosystem introduces new fintech and regtech offerings, many institutions will rely on an increasing array of service providers. APRA's outsourcing prudential standard, CPS 231, outlines requirements for prudentially regulated institutions in managing risks related to outsourcing. This standard is currently being reviewed to reflect the changing environment for service providers. The revised standard, to be consulted on in 2020, will require entities to conduct appropriate due diligence when entering into service provision arrangements and to manage these arrangements on an ongoing basis appropriately.[25]

24 APRA; Corporate Plan 2019-2023; 2019

25 APRA; Senate Select Committee on Financial Technology and Regulatory Technology; 2020

Cross-Regulator Focus Areas

AML/CFT

In response to its FATF obligations, the Australian Government introduced the Anti Money Laundering and Counter Terrorism Financing and Other Legislation Amendment Bill to Parliament in October 2019. The Bill implements the second phase of reforms arising from the recommendations of the Report on the Statutory Review of the Anti-Money Laundering and Counter-Terrorism Financing Act 2006.[26] Among other items, the bill includes amendments to:

- Expand the circumstances in which reporting entities may rely on customer identification and verification procedures undertaken by a third party.
- Explicitly prohibit reporting entities from providing a designated service if customer identification procedures cannot be performed.

As major banks modernize their KYC operating models, criminals will seek softer targets. The Australian Superannuation sector, which manages AU$ 2.5 trillion of retirement funds for the nation, will be forced to adapt to a changing world and strengthen their defenses. Inevitably, super funds will strengthen their KYC operating models and invest in similar approaches, including regtech, to those adopted by the banks. Superannuation could be a key regtech beneficiary, both via improved efficiency as a buyer of solutions, plus via investment returns. Yet, currently, only 14% of regtechs have superannuation customers.[27]

Another area for regtechs to focus on will be the real estate sector, which has continually been identified as a weak spot in Australia's AML regime, with financial intelligence agency AUSTRAC estimating that AU$ 1 billion in suspicious transactions came into the Australian property market from China in the 2016 financial year. In December 2020, the Australian Government enacted legislation commonly referred to as "Tranche II," the Government will broaden the reach of AML laws to include lawyers, conveyancers, accountants, real estate agents, trust and company service providers and high-value dealers, creating new markets for regtech.[28]

Indeed, the extension of the AML/CTF regime to certain non-financial business will almost certainly have regtech implications. Under current AML regulations, there are around 14,000 regulated entities. Under the new regulations, that will be expanded by a factor of ten, to around 130,000 regulated entities. There will be a lot of pressure on those entities to become compliant very quickly, presenting opportunities for the likes of identity services, AML risk services, and online training services. There will be a huge spike in demand for qualified AML/CTF compliance personnel, which should also be looked at in the international context, where everyone will be looking for qualified financial crime people. Given how hard and expensive it will be then to hire enough qualified people at both the regulator-end and the regulated entity-end, these organizations are going to have to adopt technology solutions as the only feasible way forward.

26 https://www.brightlaw.com.au/anti-money-laundering-and-counter-terrorism-financing-and-other-legislation-amendment-bill-2019/

27 https://www.cio.com/article/3490406/australia-s-piecemeal-domestic-investment-is-preventing-regtechs-growth.html

28 https://www.encompasscorporation.com/blog/get-ahead-with-regtech-we-explore-four-key-themes-for-the-australian-market/

Furthermore, the uptake of regtech solutions in these fields would be facilitated, given that the AML/CTF Amendment Bill would expand the circumstances in which reporting entities may rely on customer identification and verification procedures undertaken by a third party, offering up opportunities for regtechs to partner with these entities.

Modern Slavery Act

Another opportunity for regtech involves Australia's Modern Slavery Act, which came into force at the beginning of 2019. Large companies operating in Australia now have a mandatory obligation to report their efforts in responding to the risks of modern slavery in their own operations and their supply chains. Concepts, including organizing as three lines of defense, now standard in financial services, will prove invaluable to companies covered by the Modern Slavery Act.

The due diligence and continuous screening of digital media that create the foundations of a modern KYC process are directly applicable to the needs of Know Your Supplier. Regtech capable of creating a digital profile that persists throughout the lifetime of a business relationship and can be shared by all three lines of defense, and out to the fourth line of external audit and the fifth line comprising the regulator, will deliver operational efficiencies.[29]

Cybersecurity

Another strategic focus area in APRA's Corporate Plan is to improve cyber resilience across the financial system by ensuring that APRA-regulated financial institutions are proactively undertaking continual actions to strengthen their cyber resilience. APRA's key outcomes are for institutions to improve their ability to deter, detect, and defend against cyber incidents; and to develop cyber resilience benchmarks against which regulated institutions and critical service providers can report.

To achieve these outcomes, APRA will refresh and execute its multi-year cyber strategy, which will include supervising the adoption of the new prudential standard CPS 234 Information Security and targeting areas of weakness with clear guidance to industry. Active supervision will ensure APRA-regulated institutions address fundamental cyber-hygiene issues and maintain "fit for purpose" response plans for plausible cyber incidents.

APRA will also use data-driven insights to interrogate cyber resilience data to prioritize and tailor supervisory activities. In the longer term, this will inform baseline metrics against which APRA regulated institutions will be benchmarked and held to account for maintaining sound cyber defenses.[30]

As more companies move to cloud technologies for tasks such as security analytics, KYC verifications, consumer payments, and credit scoring, financial services firms and regulators will be required to consider the potential cybersecurity and privacy risks involved in the cloud-based systems.

APRA has already published guidance on the management of risks arising from cloud computing services. This guidance was most recently revised in September 2018, reflecting the growing adoption of these services and the developing risk management practices among financial institutions. APRA's recommendations within the revised guidance changed to be less restrictive on the use of cloud computing services while reinforcing the obligation for entities to manage the associated risks.[31]

The Office of the Australian Information Commissioner (OAIC), meanwhile, will be focused

29 Ibid.

30 APRA; Corporate Plan 2019-2023; 2019

31 Ibid.

on privacy. The Privacy Act 1988 was amended in 2017 to include mandatory data breach notification provisions that require certain entities to notify individuals and the regulator of 'eligible' breaches, i.e., those that pose a serious harm to an individual or individuals.

Regtech firms that can provide either cybersecurity and/or privacy solutions for cloud-based tasks will find opportunities here.

Moving Towards Global Standards & Norms and International Obligations

External forces are also acting on the Australian regulatory regime. There has been a shift towards global standards in recent years, with jurisdictions adopting their versions of directives such as the European Union's (EU) revised Payment Services Directive (PSD2) and MiFID II, an EU packet of financial industry reform legislation increasing transparency of costs and improving record-keeping of transactions.

There are also obligations under and related to the post-crisis Basel initiatives such as Basel III's Net stable funding ratio (NSFR), a liquidity standard requiring banks to hold enough stable funding to cover the duration of their long-term assets and Capital Adequacy Requirements (CAR), stipulating that the minimum capital adequacy ratio that banks must maintain is 8%, the latter being governed by APRA's APS110 standard on capital adequacy.

There are also ongoing efforts to move institutions towards the International Financial Reporting Standard 9 (IFRS 9), which replaces the earlier IFRS for financial instruments, IAS 39. The latest standard was designed to address criticism of financial institutions having recognized impairment losses "too little, too late" during the global financial crisis.

Further international obligations speak to the need to firm up financial systems against tax evasion, such as the Common Reporting Standard (CRS), where Australian FIs' reports must be lodged by 31 July each year in the approved CRS XML Schema format. From 1 January 2021, CRS reports must be created using the updated V2.0 of the CRS XML Schema.

Such moves to comply with international regulations will continue to increase the costs of compliance for firms. As these firms look to remain competitive and manage their increased regulatory burdens, they will increasingly look towards regtech solutions to help them remain compliant.

Private Sector

The RegTech Association in Australia has been the key private player in driving regtech forwards. It runs a proactive program with AUSTRAC and ASIC. It has also been proactive in curating regtechs and their solutions around FIs problem statements in a way that enables these to see what's available without being overwhelmed.

The Regtech Association also organizes regular forums, bringing together both the banks and the vendors, to foster understanding of buyers' and sellers' points of view. These forums enable regtechs to discuss the challenges that they face when they deal with the big banks, helping to educate these in a way that would not be possible in a one-to-one procurement environment. An obvious example of this would be around unpaid POCs and the strain this puts on regtechs' cashflows. By acting as a mediator, the RegTech Association enables free and frank conversations, which help to break down vendor-buyer tensions.

The Regtech Association is also doing a lot of work around educating VC buyers. There is a common misconception among these that regtech is fintech. But a regtech company is never going to have 100,000 users. It will have several large clients at the most. However, on the other hand, the risk profile is also very different. It's unlikely, for example, that a regtech will implode, making them a nice addition to balance out a VC's risk portfolio.

Another issue with the VCs is their understanding of the size of the market. On the one hand you have US investors coming in wanting to deploy AU$ 25 million and above. That is disproportionate to the size of the market. At the other end of the scale there are the Angel investors. These each, for example, put in their AU$ 10,000 to get to the AU$ 2 million capital-raise, but then expect a seat on the board, to learn the firm's technology. They have become a management overhead. Currently, the sweet spot is the AU$ 2 million to AU$ 10 million dollar-raise.

Private Sector Associations and Regional Initiatives

In addition to the government and regulator initiatives there are also a number of private initiatives supporting fintech/regtech in the country. These include:

Logo	Name	Description
AIMA THE ALTERNATIVE INVESTMENT MANAGEMENT ASSOCIATION	The Alternative Investment Management Association (AIMA) Australia	The global representative of the alternative investment industry, with around 2,000 corporate members in over 60 countries. AIMA's fund manager members collectively manage more than US$ 2 trillion in hedge fund and private credit assets.
Australian Banking Association	Australian Banking Association	The trade association for the Australian banking industry. With its forebears going back to the late 1940s, the ABA was founded in 1985 and is based in Sydney, New South Wales.
AFIA	Australian Finance Industry Association Limited (AFIA)	AFIA is the voice of a diverse Australian finance sector. They represent over 150 providers of consumer, commercial and wholesale finance that operate across Australia (banks and non-banks), as well as entities that provide services to the industry.
Blockchain Australia	Blockchain Australia	Blockchain Australia is the peak body representing businesses and individuals enthusiastic about the potential for blockchain technology to improve our economy and society.
	Fintech Australia	The voice of the Australian fintech community. A member-driven organization that is building an ecosystem of Australian fintechs to advance the global economy and culture. Its mission is to build a strong community, foster connections while supporting innovation and regulation that its members require.
INSURANCE COUNCIL OF AUSTRALIA	Insurance Council of Australia	The Insurance Council of Australia is the representative body of the general insurance industry in Australia. Its members represent about 95% of total premium income written by private sector general insurers. Insurance Council members, both insurers and reinsurers, are a significant part of the financial services system.
muru D	Muru-D	A startup accelerator running programs in Australia that helps tech founders scale their business smarter and faster.
RegTech	RegTech Association	A non-profit organization that focuses on what is needed to support the growth of the sector and to accelerate regtech adoption.
slingshot	Slingshot	A corporate accelerator that provides seed funding, a corporate partner, and a mentoring program.
NSW GOVERNMENT sydney startup HUB	Sydney Startup Hub	A globally significant innovation centre that cements the city's role as Australia's startup capital.

Mapping of Potential Ecosystem Cooperation and Partnerships

*Association (A); Government (G); Incubator/Accelerator (I/A); Private (P); Regulator (R)

Institution	Type*
Alternative Investment Management Association (AIMA) Australia	A
Australian Banking Association	A
Australian Finance Industry Association (AFIA)	A
Blockchain Australia	A
Fintech Australia	A
The Insurance Council of Australia	A
The RegTech Association	A
Sydney Startup Hub	A
CSIRO's Data61	G
CyRise	I/A
H2 Ventures	I/A
Incubate	I/A
Innovation Bay	I/A
Muru-D	I/A
Slingshot	I/A

Institution	Type*
SparkLabs Cultiv8	I/A
Startmate	I/A
Stone&Chalk	I/A
Accenture	P
ANZ	P
CommBank	P
KPMG	P
Macquarie Group	P
National Australia Bank	P
Westpac	P
APRA	R
ASIC	R
AUSTRAC	R
RBA	R

Market Activity

Key Australia Financial Institutions and their Recent Regtech Initiatives

Institution	**ANZ**			
Innovation Lab	ANZi New Business Lab and ANZ BlueSpace (Singapore)			
VC Arm	ANZi (New Business Lab and Ventures)			
VC Arm Details	ANZi is comprised of ANZi Ventures - which invests in emerging growth companies and ANZi New Business Lab - a business incubation group lab, designing, building, and launching new digital platform businesses.			
Venture Investments				
Company	**Type**	**Deal Date**	**Deal Type**	**Company description**
Airwallex	Financial services	Apr 2020	Series D	A HK-based, international financial services platform committed to building global financial infrastructure to scale the digital economy.
Valient	Marketplace	Oct 2019	Series B	A marketplace that offers business and commercial financial services online.
DiviPay	Payments	Sept 2019	Series A	An expense management & virtual card platform that helps businesses control their spending & automate their expense reporting.
Lendi	Financial Services	Jan 2019	Venture – Series Unknown	A home loan platform that matches borrowers and lenders.
Data Republic	Data	Feb 2018	Series A	A platform and network for enterprise data collaboration.

Partnerships		
Company	**Date**	**Description**
Soul Machines	July 2018	The Bank launched its "digital assistant" called Jamie, which was initially programmed to answer questions on the 30 most frequently searched topics on the Bank's website. ANZ sees AI eventually carrying out banking tasks for customers.[32]
Nuance	Sept. 2017	The Bank rolled out Nuance's voice identification technology on its Grow by ANZ banking app. The Bank's customers can make "Pay Anyone" payments of more than AU$ 1,000 automatically, bypassing usual security measures. Voice ID can also be used to make BPAY payments of over AU$ 10,000. [33]
Red Marker	2017	The Bank worked with Red Marker to develop new software for a POC that will monitor content on the Bank's websites to ensure it complies with regulations. [34]

32 https://www.soulmachines.com/news/2018/11/19/press-anzs-artificial-intelligence-entity-jamie-took-12000-customer-inquiries-in-its-first-100-days/

33 https://www.zdnet.com/article/anz-bank-rolls-out-voice-id-for-mobile-banking/

34 https://www.afr.com/companies/financial-services/startups-form-regtech-industry-association-20170402-gvbq1c

Automation Anywhere	Early 2015	The Bank implements AA's RPA program in a range of areas across the Bank's institutional and retail banking businesses, including processes such as transaction investigations, tracing funds, recalling funds, audit certificates, and funds disbursements for construction loan mortgages. The Bank is also working with AA to deploy "meta-bots", which will allow a broader portion of the organization to develop basic automations.[35]

Institution	**Commonwealth Bank (CBA)**			
Innovation Lab	CommBank Innovation Labs (Sydney and Brisbane)			
VC Arm	X15 Ventures (Incubator)			
VC Arm Details	An Australian technology venture building entity, designed to deliver new digital solutions to benefit Australian consumers and businesses (in partnership with Microsoft and KPMG High Growth Ventures).			
Venture Investments				
Company	**Type**	**Deal Date**	**Deal Type**	**Company description**
Home-in	Property	NA	X15 Ventures	A digital tool to assist with purchasing residential property.
Vonto	Business Services	NA	X15 Ventures	An aggregation tool for business insights.
Credit Savvy	Financial Services	NA	X15 Ventures	Gives users free and instant access to their credit score and credit file information.
Klarna	Payments	Jan. 2020 & Aug. 2019	Venture – Series Unknown	An e-commerce payment solutions platform for merchants and shoppers.
Lifestyle Communities	Property	March 2019	Debt Financing	Provides resort style housing for individuals in their fifties and older.
PEXA	Property	Nov. 2018	Venture – Series Unknown	A secure online platform that allows property transactions to be completed quickly and easily.
R3	Enterprise Blockchain	May 2017	Venture – Series Unknown	A financial innovation firm dedicated to the design and deployment of DLT to build the new operating system for financial services.
Partnerships				
Company	**Date**	**Description**		
Ascent	March 2020	Completion of Australian trials to digitize end-to-end regulatory change detection and management processes using an integration between Ascent and the Bank's risk management platform. The Bank first trialed the technology in the UK in 2018. IBM, which supplies CBA's GRC platform, were a partner to the local POC, co-developing an API with Ascent to have data from Ascent's platform flow into a test instance of their GRC platform.[36]		

35 https://bunchdg.com/wp-content/uploads/2019/03/BunchDigital_CaseStudies_ANZ.pdf
36 https://www.itnews.com.au/news/cba-runs-ai-over-230000-words-of-asic-regulation-539687

Regtech Association	March 2020	The Bank won RegTech Innovator of the Year at the RegTech 2020 Awards. This award recognizes the outstanding results achieved by a member organization for innovation, nurturing, developing, adopting and adapting RegTech for their own organizations, for their clients or key stakeholders. In the previous year, the Bank won the Regulated Entity of the Year award.[37,38]
Unknown	August 2019	CBA launches "CommBank app 4.0," which runs the location associated with a transaction against a customer's phone's location to see if there is any discrepancy. The Bank also announced plans to link with government biometric data holdings to "make sure we know who we're talking to." CBA, has also been in initial POCs using smartphones to read ePassport data to enable them to do a real time comparison with customers.[39]
Ascent	February 2018	Completed a project in the UK with ING and Ascent Technologies, which used NLP and AI to interpret and convert 1.5 million paragraphs of regulation on the EU's latest markets in financial instruments directive. It created a series of bite-sized, actionable tasks appropriate for the banks to help them simplify and meet their compliance obligations.[40]
Unknown	January 2018	Launched a chatbot called Ceba, which uses AI to assist customers with more than 200 banking tasks such as activating their card, checking account balance, making payments, or getting cardless cash.
Unknown	Unknown	CBA is also experimenting with voice detection technologies. The Bank's data scientists have built an engine that can run sequences based on existing data sets to identify compliance trends and issues.[41]

Institution	**National Australia Bank (NAB)**			
Innovation Lab	NAB Labs			
VC Arm	NAB Ventures			
VC Arm Details	A global initiative supporting entrepreneurs in Australia and offshore in their quest to build leading technology companies.			
Venture Investments				
Company	**Type**	**Deal Date**	**Deal Type**	**Company description**
Edstart	Education	Nov 2019	Series A	A funding platform for education fees.
Hometime	Property	Nov 2019	Venture Round	An Airbnb Property Management startup.
Athena	Loans	Oct 2019	Series C	An Australian home loan platform that helps to get better home loans.
Digital Shadows	Risk	July 2019	strategic funding round	Digital risk protection. Identifies unwanted exposure, protects against external threats, and minimizes digital risk.

37 https://regtech.org.au/resources/Documents/Media%20release%20award%20winners%20final.pdf
38 https://regtech.org.au/resources/Documents/MEDIA%20RELEASE_RegTech%20Awards%20Winners%20Announced.pdf
39 https://www.cio.com/article/3499399/cba-app-wants-your-location-biometrics-in-name-of-security.html
40 https://www.afr.com/technology/regtech-still-finding-its-feet-as-banks-and-regulators-do-delicate-dance-20180223-h0wkbr
41 https://www.zdnet.com/article/australian-banks-piloting-regtech-solutions-to-solve-compliance-problems/

Amitree	Business Services	Mar 2019	Series B	Transforms the chaos of business email into an AI-powered deal organizer, project manager, and virtual assistant.
Earnd	Financial Services	Mar 2019	Seed Round	The financial wellness benefit that helps employees avoid debt, late fees, and expensive predatory credit. (Exited, acquired by Greensill).
Poynt	Infrastructure, Payments	Nov 2018	Series C	A technology company that builds hardware and software tools for businesses. Poynt OS is an open operating system that can power any smart payment terminal worldwide.
Slyp	Financial Services	Oct 2018	Seed Round	Creates smart receipt that links receipts to customers through their bank account and banking apps.
BRICKX	Financial Services	Feb 2018	Series A	Offers all investors access to the real estate industry, whilst providing liquidity through its secondary market. (Exited, acquired by Thundering Herd).
ActivePipe	Marketing	Feb 2018	Series A	Marketing automation, lead nurturing and predictive data SaaS platform for real estate and mortgage industries.
Data Republic	Data	Feb 2018	Series A	A platform and network for enterprise data collaboration.
Veem	Payments	March 2017	Series B	A next-generation payment service provider (PSP) for global commerce.
Basiq	Banking	Jun 2017	Seed Round	An aggregation platform for acquiring financial data that provides access to financial institutions through APIs.
Medipass	Health	Feb 2017	Seed Round	Health-tech payment start-up.

Partnerships

Company	Date	Description
Nuance	May 2020	NAB selects the Nuance Gatekeeper biometrics solution for authenticating customers and enabling fraud detection. This is expected to improve the customer experience and strengthen the bank's security standards around customers' authentication processes.[42]

42 https://findbiometrics.com/national-australia-bank-secures-contact-center-nuance-voice-biometrics-052702/

Bank Leumi of Israel & Canadian Imperial Bank of Commerce (CIBC)	May 2019	Bank Leumi of Israel, CIBC and NAB introduced their Global Alliance Fintech Link as part of an international banking alliance. This is a global online portal developed to help drive client-focused innovation by facilitating collaboration between the banks and fintechs.[43]
Microsoft	Oct 2018	NAB and Microsoft have collaborated to create a cardless ATM concept that uses facial recognition software. The companies designed a POC ATM using cloud and AI technology. The cloud-based application, developed using Azure Cognitive Services, has been designed to improve the customer experience by removing the need for physical cards or devices to access cash from ATMs.[44]
Unknown	Sept 2017	NAB's "virtual banker" can recognize 13,000 variations of 200 common questions from its business banking customers, while NAB's digital bank UBank has created RoboChat with IBM Watson to respond to questions on home loans.[45,46]
Medipass Solutions	Feb 2017	NAB Ventures announced a JV with Medipass on a mobile solution for the Bank's Health Insurance Claims and Payment Solutions (HICAPS) system. The new platform enables a seamless digital experience for booking a healthcare practitioner, obtaining a quote, claiming any out of pocket insurance and making a payment.[47]

Institution	Westpac			
Innovation Lab	co.labs in Singapore and Shanghai			
VC Arm	Reinventure			
VC Arm Details	Reinventure is an independent Venture Capital firm with a strong corporate partnership with Westpac.			
Venture Investments (Selected)[48]				
Company	Type	Deal Date	Deal Type	Company description
Flybits	Contextual Data	2019	Series C	Flybits uses AI and contextual data to deliver personalized product recommendations for customers through their banking app.
Kepler Analytics	Retail AI	2019	Series A	AI advisor for brick-and-mortar retail managers that collects and analyses customer behavior data to recommend actions that effectively grow sales.
ZestMoney	Consumer loans	2019	Series B	Enables payment using digital EMI, without the need of a credit card or a credit score.

43 https://www.bankingtech.com/files/2019/06/Banking-Technology-June-2019.pdf
44 https://pacetoday.com.au/nab-microsoft-facial-recognition/
45 https://www.afr.com/technology/chatbots-just-the-beginning-for-ai-in-banking-20180302-h0wxtn
46 https://news.nab.com.au/australias-first-virtual-banker-for-business-customers/
47 https://www.startupdaily.net/2017/02/nab-labs-launches-telehealth-platform-medipass-solutions/
48 https://reinventure.com.au/portfolio-listing/

Akin	Personal AI	2018	Seed	An AI company that integrates neuroscience into their AI platforms.
Curious Thing	Conversational AI	2018	Seed	A conversational voice-based AI company for Digital Interviewing powered by ML and NLP technologies
Everproof	Digital Identity	2018	Seed	A background screening and verification platform that is creating greater trust and transparency in regulated industries. (Exited)
Kasada	Cyber-security	2018	Seed	A cyber-security company, leading the fight against malicious automation (bad bots) on websites and web apps.
Slyp	Financial Services	2018	Seed Round	Creates smart receipt that links receipts to customers through their bank account and banking apps. (Co-investors with NAB Ventures).
Basiq	Banking	2017	Seed	An aggregation platform for acquiring financial data that provides access to financial institutions through APIs. (Co-investors with NAB Ventures)
BRICKX	Property	2017	Series A	Offers all investors access to the real estate industry, whilst providing liquidity through its secondary market. (Exited).
CodeLingo	Property	2017	Seed	A platform which enables users to scale end-to-end software development processes that improve code quality.
Doshii	Enterprise Blockchain	2017	Seed	A marketplace that connects all hospitality & retail apps to venues via the Point of Sale.
InDebted	Conversational AI	2017	Seed, Series A, Series B	A platform helping businesses of all sizes collect more debts, in less time, by leveraging modern communications, automation and ML.
Hyper Anna	AI, Data	2016, 2017	Seed, Series A	A NLP driven AI data analytics solution that enables businesses to interact with and understand their data collections and derive strategic insights.
Fillr	Autofill Technology, Buy Now Pay Later	2016	Series A	Fillr has developed 'Autofill as a Service', an autofill platform that seamlessly integrates into third-party apps, enabling their users to transact faster, boosting conversions and revenue.

Auror	Crime Prevention	2015	Seed, Series A	A software company transforming how businesses and police prevent and solve crime.
Coinbase	Cryptocurrency	2015	Series C	A bitcoin wallet and platform where merchants and consumers can transact with bitcoin.
Data Republic	Data	2014, 2016	Seed, Series A, Series B	A platform and network for enterprise data collaboration.

Partnerships

Company	Date	Description
Daisee	Dec 2018	Daisee wins the Westpac Innovation Challenge. The startup created and pitched a product called 'Lisa' which uses NLP to improve call centre compliance through an automated quality assurance scorecard, as well as other customer experience and performance insights and recommendations.[49]
NA	September 2018	The Bank established a dedicated "lab" to focus on partnering with regtech startups. It is also rolling out the concept of "minimum viable procurement" in the regulatory technology space, having developed it to make it easier for startups owned by its corporate venture capital fund Reinventure to work with the Bank.[50]
Red Marker	Nov 2016	The Bank teamed up with Red Marker to use its Artemis system, which uses proprietary NLP techniques to detect risky content as it is being created. Westpac has also worked with Red Marker to introduce the Bank's marketing and compliance teams to a real-time compliance tool that has been applied to 700 rules for its credit card advertisements. The focus between the Bank and the regtech is on managing real-time information. For example, in fraud prevention. Now Westpac's customers can be alerted to potential fraud in real-time purchases.[51,52,53]
Hyper Anna	c. 2016	The Bank is using Hyper Anna's AI technology to lift productivity by crunching big data. The startup uses AI to conduct data analytics and visualization. The Bank's VC fund, Reinventure Group, has a strategic stake in Hyper Anna.[54]

Active Regtechs in Australia[55]

Arctic Intelligence*

(https://arctic-intelligence.com/) – Australian firm providing financial crime audit, risk assessment and AML compliance solutions to help regulated businesses assess risk and deploy effective controls for risk mitigation. Each solution is designed to meet regulatory compliance obligations and apply industry best practice.

See also AML Accelerate*, a JV between Arctic Intelligence and Initialism, which provides AML/CTF solutions.

49 https://www.finextra.com/pressarticle/76751/artificial-intelligence-company-daisee-wins-westpac-innovation-challenge

50 https://www.afr.com/companies/financial-services/commonwealth-bank-and-westpac-cautious-on-using-ai-for-compliance-20190306-h1c1ox

51 https://www.afr.com/technology/red-marker-shows-banks-the-regtech-way-20161113-gso2z6

52 https://www.zdnet.com/article/australian-banks-piloting-regtech-solutions-to-solve-compliance-problems/

53 https://www.rfigroup.com/australian-banking-and-finance/news/regtech-eyed-banks

54 https://www.afr.com/technology/chatbots-just-the-beginning-for-ai-in-banking-20180302-h0wxtn

55 Regtechs chosen from Deloitte's RegTech Universe 2020 and the foundation members of the RegTech Association, with the latter members denoted with a "*".

Auraya

(https://aurayasystems.com/) – Auraya is a world leader in voice biometric technology with the mission of empowering people and organizations to interact and engage with convenience and security in all channels and languages. The firm's next-gen AI voice biometric engine "ArmorVox" delivers easy to use yet highly secure voice biometric capabilities for on-premise or cloud-based service solutions.

Complii*

(https://www.complii.com.au/) – Headquartered in Australia, Complii FinTech Solutions is a secure digital platform that removes the need for paper-based compliance. Their customizable software has been designed to automate, record, and report on an AFS Licensee's and Brokers compliance obligations.

Daisee

(https://www.daisee.com/) – Daisee develops AI software applications; their unstructured data product Lisa converts voice to text and then applies AI and NLP to analyze, categorize and deliver deep insight into customer contact through calls, email and chat interactions. Lisa has a proprietary semantic engine that derives meaning from words and facilitates search and discovery. The primary use cases are Compliance, Customer Experience and Agent Performance.

Dysrupt Labs*

(http://www.dysruptlabs.com/) – Australian-based startup specializing in collective intelligence, business forecasting software, innovation software, financial forecasting, and geo-political forecasting.

Identitii*

(https://identitii.com/) – Australian FinTech using tokenization to connect banks and businesses with the data they need to process, reconcile and report on payments, reducing last mile hold ups.

Red Marker*

(https://www.redmarker.ai/) – Australian company whose cloud-based SaaS platform automatically analyses digital content for probabilistic compliance risk using AI, ML and NLP.

Riskflo

(https://riskflo.com/) – Provides built-in question flow logic, evidence capture, multi-stakeholder input and collaboration, simplified approval processes, real-time monitoring and rich reporting to help your enterprise meet your GRC obligations.

Simple KYC*

(https://www.simplekyc.com/) – An end-to-end workflow solution for KYC. Automate "know your customer" for all client types including individuals, complex companies, and trusts.

Verifier*

(https://www.verifier.me/) – Verifier quickly and independently verifies income for consumers applying for loans, credit, rentals and more.

Overview of Private Investor Activity in Regtech in Australia

Investor deals

- **May 2020 –** Judo Bank, an Australian neobank for SMEs, has joined the Unicorn club after closing a third-round capital raise of AU$ 230 million from existing investors. Judo Bank's existing investors include Bain Capital Credit, Myer Family Investments, the Abu Dhabi Capital Group, Ironbridge, SPF Investment Management, OPTrust, and Tikehau Capital. [56]
- **March 2018 –** AI-focused startup Daisee announced the raising of AU$ 8.8 million in a Series A round led by Alium Capital, with participation from investors including Thorney Opportunities. [57]

56 https://www.finextra.com/newsarticle/35797/judo-bank-achieves-unicorn-status-on-230-million-fund-raise

57 https://www.startupdaily.net/2018/03/artificial-intelligence-startup-daisee-raises-8-8-million-series-round/

- **August 2017 –** Hyper Anna attracted investment from one of the biggest names in technology venture capital, with Sequoia China leading a AU$ 16 million round aimed at fueling international expansion.[58]

Vendor deals/Partnerships

- **August 2019 –** Citibank partnered with Kaplan-owned regtech firm Red Marker to pilot technology that will remove duplication, which frequently arises when the compliance team is required to approve advertising campaigns developed by the marketing team.[59]
- **March 2019 –** WorleyParsons has said that they are investing millions of dollars in AI and automation, in data analytics, and predictive safety. The company created Advisian Digital, the digital strategy and technology consulting arm of WorleyParsons, to co-ordinate a new, data-led strategy with AI systems at its heart, which the company is using to reduce risks of workplace injuries. In March 2018, WorleyParsons announced a collaboration with Arundo Analytics (Arundo), a software company enabling advanced machine learning.[60,61]
- **December 2018 –** In partnership with the University of Sydney's Australian Centre for Field Robotics, Qantas has designed from scratch a new bespoke system called Constellation. The system, applying "narrow" AI, evaluates thousands of possible routes by modelling millions of data points to determine the best flight path, based on aircraft capability and weather constraints.[62,63]
- **February 2017 –** American Express has partnered with Simple KYC to export its cloud-based technology platform around the region. This followed the global financial services giant's adoption of the technology in Australia in February 2017. The plan is to expand it into Singapore and Hong Kong, and perhaps Japan. That will be followed by the UK and Canada potentially further afield.[64]
- **July 2015 –** The Australian Taxation Office (ATO) selected Nuance's biometric security solution Gatekeeper to authenticate customers using their voice, face or other biometric modalities across channels and stop fraudsters. The ATO requires users to repeat the phrase "In Australia, my voice identifies me" three times—making it obvious that a voiceprint is being collected and processed.[65,66,67]

58 https://www.afr.com/technology/vc-giant-sequoia-china-backs-ai-data-scientist-startup-hyper-anna-in-16m-round-20170816-gxx5kc
59 https://www.zdnet.com/article/australian-banks-piloting-regtech-solutions-to-solve-compliance-problems/
60 https://www.afr.com/technology/companies-prepare-for-an-aipowered-future-20190315-h1cegr
61 https://www.worley.com/news-and-media/2018/12-03-2018
62 https://www.afr.com/technology/companies-prepare-for-an-aipowered-future-20190315-h1cegr
63 https://www.airlineratings.com/news/qantas-launches-worlds-sophisticated-flight-planner/
64 https://www.afr.com/companies/financial-services/american-express-exporting-simple-kyc-regtech-to-asia-20170621-gwvfk7
65 https://www.businesswire.com/news/home/20150714005227/en/Australian-Taxation-Office-Deploys-Nuance-Voice-Biometrics
66 https://techwireasia.com/2020/06/ai-contact-center-omnichannel-chatbot-enterprise-ml-review-virtual-assistant/
67 https://www.csoonline.com/article/3546188/voiceprint-authentication-starts-to-go-mainstream-in-australia.html?

Potential Future Scenario for Australia's RegTech Ecosystem

While currently the majority of offerings in the marketplace are at a relatively low level of maturity, with a lot of the focus around automating compliance processes, the landscape is beginning to change significantly.

Back in 2016, regtech was just another name for compliance technology. There has since been a step change in the way regtech is viewed. That is partially down to the huge focus on regulatory compliance since the Royal Commission, which heightened awareness around compliance and cultural issues. Globally too, there's been a lot of focus around AML, with a step up in the issuance of international rules and standards as well. The rising cost of compliance is now really starting to effect businesses, which is forcing them to look at alternative solutions.

The new players coming in, which build regtech into their platforms before launching, will also increase the demand for regtech, given that their solutions are purely digital. Such competition should also further spur on incumbents to up their game to remain competitive. Australia's regulators have also been very supportive, doing much to promote the regtech sector and to incorporate regtech into their own processes. The Australian government too is starting to play its part by commissioning the Senate Committee to look into fintech and regtech to see, in the case of the latter, where the opportunities lie for the regtech industry to not only strengthen compliance, but also reduce costs.

With these developments, regtech is now on everybody's radar. There has been a lot more interest from investors and a lot more discussion in the press. As awareness has grown, the Time to Value, which measures the time that it takes from the initial conversation a regtech has with a potential buyer to full production deployment, has reduced from an average of around two years to approximately 13.3 months.

The government does, however, have a bigger role to play. Not only investing in regtech for themselves, but in exerting influence on others that they have influence over. Superannuation is a prime example. Due to Covid-19, superannuation funds have faced a host of issues around KYC and digital identity, but there is little evidence that there has been a large take-up of regtech by these funds. This is an area where the government can add its weight.

While momentum is positive, it must be remembered that the Australian market is still, however, relatively small, which makes it hard for regtechs to scale. While people's minds are opening up to the technology, which is out there, it's not happening fast enough for Australian regtechs to survive without export. As the market continues to develop, Australian regtechs will continue to look further afield, competing with other regtechs on their own turf or in third-party markets.

Nonetheless, the Australian market, with its mature regulatory and compliance ecosystem and forward-looking regulators will continue to remain attractive for regtechs looking to enter. Broadly speaking, these firms will find successes where they are able to enhance customer outcomes. That is where the budget will be to spend on regtech.

At the moment FIs' branches are closed due to Covid-19. As more people move to digital banking, there will be a push from banks to keep branches closed. As this happens there are/will be requirements for digital identity services, for better security, as well as a need to verify income without creating risk. The quickest way to judge what will be successful, from a regtech perspective, will be through the customer focused lens. If the solution enables entities to service customers better or reduces the friction with customer onboarding, or selling to customers, then it will gain traction with the buyer.

Australia is also further along the development curve than most. Unlike in other jurisdictions, regtech in Australia exists in a much broader context. Where in the rest of the world, regtech tends to be seen as a subsector of fintech, in Australia, a much wider range of associations are starting to take a broader view. A lot of that has to do with Australia's vigorous regulatory and compliance environment.

That means that the opportunities aren't necessarily all in banking. There will be opportunities for products aimed at the bigger organizations within other regulated sectors, where these have exposure to the public, and so will fall under the spotlight of the regulator. For example, while the new Consumer Data Right regime will firstly apply to finance, through an open banking regime, the telecommunications and energy sectors will soon follow. Such open regimes will require APIs and regtech solutions to support them.

As the Australian regtech market moves further up the maturity curve, with the emergence of open banking and new players, and as other regulated sectors open up and fall under the regulatory spotlight, Australia's developed regulatory ecosystem will stand the development of the regtech sector in good stead. Especially given the support that the sector is receiving from the regulators and increasingly, from the government.

The State of Regtech in APAC
Evaluation of the Landscape & Market Opportunity for Regtech Companies

Hong Kong Overview

2021

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Main Regulators and Key Initiatives

The Hong Kong Monetary Authority (HKMA):

Hong Kong's currency board and de facto central bank.

Recent / Active HKMA Key Initiatives:

- Banking Made Easy
- Open API Framework
- Bank Culture Reform Program
- Management Accountability Initiative (MAI)
- Circular on Customer Data Protection
- Supervisory Policy Manual on Risk Management of E-banking
- Cyber Fortification Initiative (CFI)
- Granular Data Repository (GDR) Pilot
- Revised Guidelines on AML/CFT for Authorized Institutions and SVFs
- HKMA's Banking Data Collection System
- RegTech Roadmap

The Securities and Futures Commission (SFC):

The independent statutory body charged with regulating the securities and futures markets in Hong Kong.

Recent / Active SFC Key Initiatives:

- Regulatory Standards for Virtual Asset Portfolio Managers and Distributors of Virtual Asset Funds
- Regulations Allowing Virtual Asset Trading Platforms to Receive Operating Licenses
- Manager-in-Charge (MIC) Regime
- Fund Manager Code of Conduct (New FMCC)
- Revised AML/CFT Guideline
- Guidelines for Reducing and Mitigating Hacking Risks Associated with Internet Trading

The Insurance Authority (IA):

The statutory body set up to regulate and supervise the insurance industry.

Recent / Active IA Key Initiatives:

- Guideline on Cybersecurity
- Guideline on Enterprise Risk Management
- Guideline on the Use of the Internet for Insurance Activities
- Guideline on Outsourcing
- Guideline on AML/CTF
- Guideline on the Corporate Governance of Authorized Insurers

The Mandatory Provident Fund Schemes Authority (MPFA):

The statutory body set up to regulate and supervise the operations of mandatory provident fund (MPF) schemes and the occupational retirement schemes ordinance (ORSO).

Recent / Active MPFA Key Initiatives [1]:

- Primary Legislation
- Subsidiary Legislation
- Codes
- Guidelines
- Circulars
- Standards
- Memorandum of Understanding
- Best Practice Note

1 MPFA initiatives fall outside the scope of this report, for a list of primary legislation, codes, and guidelines etc please use the links provided.

Trends, Initiatives, and Implications for Regtechs in Hong Kong

Under the vision to "embrace innovation and technology to build a world-famed Smart Hong Kong," technology is rapidly transforming the territory's financial services landscape.

As it does so the need for regtech to enhance regulatory compliance and risk management will grow.

Several government and regulatory initiatives have occurred in recent years that will have implications for regtech service providers.

Government Initiatives

Cyberport

In operation since 2004, Cyberport is a business park in Hong Kong, committed to driving the development of innovation and technology (I&T). Cyberport focuses on the development of six key digital technology clusters, namely fintech, smart living, digital entertainment and esports, AI and big data, blockchain, and cybersecurity. Cyberport is managed by Hong Kong Cyberport Management Company Limited, which is wholly owned by the Hong Kong Government.

As of September 2019, the Cyberport Incubation Program had incubated and funded over 600 technology startups since its inception in 2005. The HK$ 200 million (US$ 25.8 million) Cyberport Macro Fund, which was announced in 2016 to support local startups after seed stage but generally before or around a Series A stage of funding, has, as of October 2019, invested in 14 startups totalling about HK$ 106 million (US$ 13.7 million).[2,3]

Cyberport has established and is promoting a regtech hub for overseas regtechs, as a place where foreign regtechs can land and grow when they get to Hong Kong.

The Greater Bay Area Initiative

The Greater Bay Area (GBA) initiative is a plan to integrate the economic cluster that includes the 11 cities of the Guangdong-Hong Kong-Macau regions. The synergy is intended to combine Hong Kong's financial system together with China's human capital resources, technological ecosystem, efficient supply chains and large-scale consumer markets, transforming the region into a new Silicon Valley-type technology and innovation hub.

With many bilingual professionals who are experienced in the Chinese market, Hong Kong-based regtech firms will be well equipped to expand their business to the mainland and explore the many opportunities there. As initiatives to provide more seamless banking experiences for corporates and individuals within the region picks up, there will also undoubtedly be opportunities for regtechs to provide solutions to these.

Such initiatives to further integrate the financial systems of the region are already underway. In March 2019, the Bank of China (Hong Kong) launched a pilot scheme for Hong Kong permanent residents to open mainland personal bank accounts in the GBA remotely.[4] Also, since 2018, individual Hong Kong e-wallet operators have launched cross-boundary payment services on a pilot basis, and their coverage has been expanding gradually.[5]

2 https://en.wikipedia.org/wiki/Cyberport
3 https://www.cyberport.hk/en/about_cyberport/about_overview
4 https://www.scmp.com/business/banking-finance/article/3002454/bank-china-offers-first-one-stop-account-hong-kong
5 https://www.hkma.gov.hk/eng/news-and-media/press-releases/2019/03/20190320-4/

As Hong Kong authorities continue to work with their Chinese mainland counterparts to further implement other financial measures in support of the GBA development, the opportunities for regtech to work alongside stakeholders will increase.

Furthermore, regtech firms can also leverage on the technology development capabilities of technology firms on the mainland. Shenzhen, in particular, has a plentiful supply of software programmers and private equity investors ready to invest in regtech development projects.

Hong Kong Science and Technology Parks (HKSTP)

The HKSTP is a public corporation set up by the Hong Kong Government in 2001 to foster the development of innovation and technology in Hong Kong. HKSTP manages facilities and provides value-added services for the technology, research and development sector. These facilities include Hong Kong Science Park (for technology companies), InnoCentre (for design enterprises), and three industrial estates at Tai Po, Yuen Long and Tseung Kwan O (for a range of skill-intensive business sectors).[6]

InvestHK

InvestHK is the department of the Hong Kong Government responsible for Foreign Direct Investment, supporting overseas businesses to set up and expand in Hong Kong. The department provides free advice and customized services to help businesses succeed in the city's economy.[7]

Regtech is now a priority for InvestHK. The agency is positively encouraging overseas regtechs to come to Hong Kong. Hong Kong is a net user of regtech rather than net producer, which is good news for vendors coming in.

6 https://en.wikipedia.org/wiki/Hong_Kong_Science_and_Technology_Parks_Corporation

7 https://en.wikipedia.org/wiki/InvestHK

Regulator Initiatives

Regulator Sandboxes

The HKMA, SFC, and IA have all three launched their respective sandboxes.
The HKMA has since upgraded its Fintech Supervisory Sandbox (FSS) to FSS 2.0, which has the following new features:

- A Fintech Supervisory Chatroom to provide feedback to banks and tech firms at an early stage of their fintech projects. Tech firms can access the Sandbox by seeking feedback from the HKMA through the Chatroom without going through a bank.[8]
- The sandboxes of the HKMA, the SFC, and the IA are linked up so that there is a single point of entry, if needed, for pilot trials of cross-sector fintech products.
- To help develop the regtech ecosystem, the FSS (including the Chatroom) has subsequently been opened up to regtech projects or ideas raised by banks or tech firms.[9]

The HKMA is also one of 17 global regulators that are participating in the Global Financial Innovation Network (GFIN). Launched in January 2019, the GFIN is a global "sandbox" which aims to facilitate cross-border testing of fintech and regtech offerings.[10]

For regtechs wishing to enter the market, the sandbox makes for a useful launch platform, allowing them to conduct pilot trials of their initiatives involving a limited number of participating customers without the need to achieve full compliance with the regulator's supervisory requirements. This arrangement enables them to gather data and user feedback so that they can make refinements to their new initiatives, thereby expediting the launch of their products, and reducing the development cost.

HKMA Initiatives

Banking Made Easy

The HKMA's Banking Made Easy initiative, announced in September 2017, aims at reducing regulatory frictions hindering technological innovations. In September 2018, the scope of the Banking Made Easy initiative was expanded to facilitate regtech development in Hong Kong, focusing on:

- AML/CFT surveillance technologies.
- Regtech for prudential risk management and compliance.
- Study on machine-readable regulations.[11]

The HKMA has since established a workstream to reach out to AI firms, technology firms, and consulting firms to understand the latest initiatives and ideas in the regtech space. There have also been over twenty pilot trials of regtech use cases, including remote onboarding technologies allowed under the HKMA's sandbox. In addition, about seventy discussion sessions have been held through the Fintech Supervisory Chatroom. In the process, the HKMA has picked up a broad

8 Previously the sandbox was only open for licensed banks and not to startups
9 https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech/fintech-supervisory-sandbox-fss/
10 https://www.thegfin.com/crossborder-testing
11 https://www.hkma.gov.hk/eng/key-functions/banking/banking-regulatory-and-supervisory-regime/banking-made-easy-initiative/

range of local and overseas regtech use cases on prudential risk management and regulatory compliance.[12]

The HKMA has also highlighted that remote onboarding will be an area for streamlined regulation under the initiative. Steps so far taken to address what has been a significant bottleneck include:

- The soon to be rolled out iAM Smart initiative, whereby local Hong Kong citizens will be able to use the system to prove their identity.
- An updated circular released by the HKMA in February 2019 on "remote onboarding of individual customers." While the new guidance does not provide a specific checklist of actions to follow, it does state that technology adopted for remote onboarding purposes should cover both identity authentication/verification and identity matching (e.g., facial recognition, liveness detection).[13]

In a nod towards its conviction in regtech, the HKMA also updated its credit risk management guidelines in September 2019. The revisions push for greater application of analytic tools when giving loans. Lenders can now further expand personal lending based on credit analytics tools, such as big data analysis, to evaluate and approve applications.

Another initiative by the HKMA is Regtech Watch, a newsletter first published in November 2019, whose objective is to assist authorized institutions (AIs) in adopting innovative technology to enhance their risk management and regulatory compliance, providing information on actual or potential regtech use cases rolled out or being explored in Hong Kong or elsewhere.

The HKMA has, moreover, expressed interest in exploring suptech for supervision and analysis and has already implemented a banking data collection system—where banks with robust IT systems can submit banking return data directly from their database into the HKMA's through straight-through processing.

Open API

The HKMA published an Open API Framework for its banking sector in July 2018, aiming to encourage banks to share their API infrastructure with third-party service providers (TSPs) to develop innovative banking services and improve customer experience.[14] The framework takes a risk-based principle and a four-phase approach to implement various Open API functions and recommends prevailing international technical and security standards to ensure fast and safe adoption. It also lays out detailed expectations on how banks should onboard and maintain relationships with TSPs in a manner that ensures consumer protection.

In January 2019, JETCO (Joint Electronic Teller Services Limited), a bank consortium chartered to develop innovative and secure financial technology services for its member banks, launched APIX, the city's first Open API exchange platform, providing access to over 200 APIs from 13 banks.[15] It also provides a sandbox for users to test their products, allowing for shorter time-to-market and reduced development costs.[16]

With the rollout of Open Banking in Hong Kong, the regulator is going to be scrutinizing how banks onboard and maintain relationships with TSPs in a manner that ensures consumer protection. Banks will require regtech solutions to ensure that they remain compliant. In addition, FIs and their TSPs

12 HKMA; Regtech Watch Issue No.1; November 2019

13 https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2019/20190201e1.pdf

14 https://www.hkma.gov.hk/eng/news-and-media/press-releases/2018/07/20180718-5/

15 The 13 banks are: Bank of East Asia, Bank of Communications, Citibank, China Construction Bank, Chong Hing Bank, China CITIC Bank, CMB Wing Lung Bank, Dah Sing Bank, Fubon Bank, ICBC, OCBC Wing Hang Bank, Public Bank and Shanghai Commercial Bank.

16 https://www.regulationasia.com/hong-kong-gets-first-api-exchange-platform-in-open-banking-push/

will need help building the APIs that will connect them, while the FIs themselves will also need help to build APIs connecting their disparate internal systems.

Virtual Banking

In 2019, the HKMA issued the first batch of eight digital banking licenses. ZhongAn was the first to launch a digital bank pilot, with virtual banking licenses also issued to companies including Ant Financial, and consortia involving Standard Chartered and Tencent (Table 6).[17]

RegTech Roadmap

In November 2020, the HKMA announced the development of a two-year roadmap to promote Regtech adoption in the Hong Kong banking sector, as laid out in a White Paper entitled "Transforming Risk Management and Compliance: Harnessing the Power of Regtech".

The HKMA's Regtech roadmap is developed with reference to the recommendations in the white paper. The 16 recommendations span five core areas: -

1. boosting awareness by issuing practical guidance and organising targeted events;
2. promoting innovation among the local and global Regtech community and facilitating access to infrastructure;
3. enhancing regulatory engagement with the Regtech ecosystem through ongoing dialogue and collaboration;
4. developing the talent pool by formalising a Regtech training and skills framework; and
5. sustaining adoption via continued industry engagement and effective tracking of progress.

To implement the recommendations, the HKMA will roll out a series of events and initiatives in the coming two years, including: -

- hosting a large-scale event to raise the banking sector's awareness of the potential of Regtech;
- launching a Regtech Adoption Index;
- organising a Global Regtech Challenge to stimulate innovation;
- publishing a "Regtech Adoption Practice Guides" series;
- creating a centralised "Regtech Knowledge Hub" to encourage information sharing; and
- establishing a Regtech skills framework to develop talents.

The HKMA's two-year roadmap is designed to help to build a thriving ecosystem, transforming Hong Kong into a Regtech hub. Implementation of the 16 recommendations will reinforce the HKMA's earlier work in promoting Regtech development such as opening up the Fintech Supervisory Sandbox and Chatroom to Regtech projects and ideas in 2018, the "Regtech Watch" newsletter series and the "AML/CFT RegTech Forum" in 2019.

17 https://fintechnews.hk/8951/virtual-banking/hkma-virtual-bank-license-sc-digital-livi-zhongan-za/

Table 6

Bank Brand	Consortium	Stake	Focus Market Segment	Launch Date
Ant SME Services (Ant Bank)	Ant Financial	100%	SMEs (anticipated)	Started pilot trials in April 2020
Insight Fintech (Airstar Bank)	Xiaomi	90%	Capital markets and advisory, asset management, insurance brokerage, and strategic investment services	Started pilot trials in April 2020
	AMTD Group	10%		
Fusion Bank (Infinium)	Tencent	NA	Full-service virtual banking experience, particularly highlighting small-value deposit services to the under-banked	TBD
	Industrial and Commercial Bank			
	Hong Kong Exchanges and Clearing (HKEX)			
	Hillhouse Capital			
	Perfect Ridge Limited			
Livi VB	Bank of China (Hong Kong)	44%	The bank plans to use fintech solutions to deliver a seamless digital experience comparable to some of the leading European virtual banks	TBD
	Jingdong Digits	36%		
	Jardine Matheson	20%		
SC Digital Solutions (Mox Bank)	Standard Chartered	65.1%	Retail, the virtual bank is looking to also offer retailers and shoppers better ways of spending and transferring money	Started pilot trials in April 2020
	HKT	15%		
	PCCW Limited	10%		
	Ctrip Hong Kong	9.9%		
PingAn One Connect Bank	PingAn Insurance	100%	Will initially offer lending to individuals and SMEs, and will subsequently develop new products and markets overseas	TBD
WeLab Virtual Bank	WeLab	100%	Retail	TBD
WeLab Virtual Bank	ZhongAn Online	51%	Retail	Launched pilot program in March 2020
	Sinolink Worldwide	49%		

Sources: SCMP, FinTech magazine[18,19]

18 https://www.scmp.com/business/banking-finance/article/3078972/five-hong-kongs-virtual-banks-miss-target-launch-date

19 https://www.fintechmagazine.com/fintech/eight-virtual-banks-transforming-hong-kongs-fintech-sector

As the number of virtual banks proliferates within Hong Kong, there will be a concomitant increase in the demand for regtech solutions, as new licensees invest in areas like KYC and digital onboarding. At the same time, increased competition from virtual banks will encourage existing banks to consider how to upgrade their services further and make better use of tech, including regtech, which could help them to cut costs through efficiency gains and improve their customer service offerings.

As Hong Kong moves further into the era of virtual and online banking, the HKMA and the Privacy Commissioner for Personal Data will be focusing heavily on remote onboarding and data-related controls, spurring the demand for regtech solutions in these areas.

AI Insurtech Initiatives

The IA has established the:

- **Fast-Track scheme:** Provides a dedicated queue for applicants which would own and operate solely digital distribution channels, without the use of any conventional channels involving agents, banks, or brokers. In December 2018, IA granted the first online-only insurance license under the Fast Track to Bowtie Life Insurance, a company backed by Sun Life Financial's HK unit. In October 2019, the IA granted the first virtual general license to Avo insurance, an online-only non-life insurer. In April 2020, OneDegree was granted HK's third virtual insurer license by the IA, under the Fast Track. Then, in May 2020, the IA granted authorization under Fast Track to a fourth virtual insurer ZA Life, a subsidiary of Zhongan Online P&C Insurance.[20,21,22,23]
- **Insurtech Facilitation Team:** Objectives are to facilitate the insurtech community's understanding of the current regulatory regime, act as a platform for exchanging ideas of innovative insurtech initiatives among key stakeholders and provide advice on insurtech-related topics as appropriate.
- **Future Task Force (FTF) of the Insurance Industry:** Set up to explore the future of the insurance sector and provide recommendations. Its "Embracing Fintech in HK" working group focuses on promoting the application of fintech in insurance.[24]

Further initiatives with implications for regtech include two insurtech projects launched by Hong Kong's insurance sector in December 2018, namely:

- **The Insurance Fraud Prevention Claims Database (IFPCD):** Uses big data and AI technology to help detect patterns of fraudulent insurance claims, especially those involving multiple claims and syndicates.
- **The Motor Insurance DLT-based Authentication System (MIDAS):** Leverages DLT to monitor validity of motor insurance policies, to help address insurance scams.[25]

SFC Initiatives

The SFC has established the:

- **Fintech Contact Point:** Whose purpose is to facilitate the fintech community's understanding of the current regulatory regime and to enable the SFC to stay abreast of the development of fintech in Hong Kong.
- **Fintech Advisory Group:** Formed alongside to facilitate the Fintech Contact Point's ability

20 https://www.reuters.com/article/us-hongkong-insurance/hong-kong-gives-first-online-only-insurance-license-to-sun-life-backed-firm-idUSKCN1OJ0LE
21 https://fintechnews.hk/10230/insurtech/avo-virtual-insurance-general/
22 https://www.insurancebusinessmag.com/asia/news/breaking-news/onedegree-granted-hong-kongs-third-virtual-insurer-licence-219899.aspx
23 https://www.thestandard.com.hk/breaking-news/section/2/146641/Nod-for-virtual-insurer-ZA-Life
24 https://www.ia.org.hk/en/aboutus/insurtech_corner.html
25 https://www.cryptoblk.io/zh-hk/news/cryptoblk-and-hkfi-announce-the-first-industry-wide-use-of-blockchain-based-authentication-in-motor-insurance

to obtain information on the latest trends of fintech; collect stakeholders' input on specific fintech themes; identify the opportunities, risks, and regulatory perimeter implications of fintech; and broaden the understanding of fintech as an evolution of the financial services industry.[26]

- In a similar move to the HKMA that could be relevant to virtual banks, the SFC also issued its own updated circular in June 2019, setting out a new approach to remote onboarding overseas individual clients.[27]

Virtual Assets

In line with the regulators' welcoming, yet cautious approach, the SFC published, in November 2018, new regulatory standards that apply to virtual asset portfolio managers and distributors of virtual asset funds that are already required to be licensed.

In November 2019, the SFC announced new rules that allow virtual asset trading platforms to receive operating licenses if they meet stringent requirements. The new regulatory framework draws heavily on the standards set for conventional securities brokers and automated trading systems, but it also adapts those standards to deal specifically with the technology on which the industry is based.[28]

As the SFC continues to update and amend its regulatory standards for virtual asset portfolio managers and distributors of virtual asset funds and virtual asset trading platforms, the need to balance innovation with risk will be paramount. There is already a great deal of concern within the SFC regarding virtual asset trading platforms. The regulator will therefore be heavily focused on significant investor protection concerns, including the safe custody of assets, KYC requirements, AML, and market manipulation.

As such, there will surely be a demand for regtech solutions from fund distributors of third-party virtual asset funds given the onerous and extensive due diligence they must perform on funds, their fund managers, and counterparties. The same applies to trade platforms and exchanges that decide to become licensed, given that regulatory requirements are burdensome. Finally, the SFC itself will be interested in solutions that enable it to monitor the players within the ecosystem and the sector more generally, to ensure compliance and consumer protection.

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Regtech providers looking to enter the market should reach out to the appropriate regulator via any one of the contact points discussed above to discuss how their solutions might be aligned with the regulator's key focus areas. The HKMA has explicitly highlighted the key areas that it wants to develop, indicating also its desire to adopt suptech solutions, while the IA has also made clear that it is looking for insurtech solutions that are able to disintermediate conventional channels involving agents, banks, or brokers. The SFC, for its part, will be keen to keep a close eye on the virtual assets sector.

Cross-Regulator Focus Areas

AML/CFT

The HKMA has said that the number of suspicious transactions reported by Hong Kong banks has grown on average by 40% annually over the past five years. However, despite this increased risk, many banks are still using highly manual AML/CTF processes and are still grappling with large numbers of false positives. There remains a need for RPA and NLP to automate existing processes,

26 https://www.sfc.hk/web/EN/sfc-fintech-contact-point/
27 https://www.sfc.hk/edistributionWeb/gateway/EN/circular/intermediaries/supervision/doc?refNo=19EC46
28 http://www.hongkong-fintech.hk/en/web_assets/files/FintechHK%20Factsheet_ENG_20200228.pdf

and machine learning to reduce false positives in monitoring and screening.

Facing such increased risks to ML/TF the HKMA released a Supervisory Policy Manual, in October 2018, setting out the regulator's overall policy and supervisory approach in its AML/CFT policies, procedures, and controls of authorized institutions.[29] The HKMA's policy and supervisory approach for Stored Value Facility (SVF) licensees was released concurrently.[30] The SFC also released a revised version of its own AML/CFT guideline, which took effect in November 2018.[31]

As a Financial Action Task Force (FATF) member since 1991, Hong Kong is also subject to strictly enforce FATF's guidelines under its AML/CTF obligations. It is in this context that the HKMA revised its "Guidelines on AML/CFT for authorized institutions and SVFs, which took effect in November 2018.

FATF has also been focused on building an AML/CFT regime for the virtual asset industry and has published a significant range of recommendations and guidance. Of particular note is its latest "Travel Rule" guidance, which concerns cross-border and domestic wire transfers. The update is intended to address the AML/CFT challenges associated with the increasing global use of cryptocurrency and to help law enforcement agencies better track criminals who use cryptocurrency to launder money. This new guidance is likely to have a significant impact on Hong Kong, a global cryptocurrency hub.

With both the HKMA and the SFC revising their guidelines on AML/CTF in 2018 and releasing updated circulars on remote onboarding of individual customers in 2019, there will be opportunities for regtech solutions. Especially as regulators will also be working to reduce unintentional barriers to the use of technology in AML/CTF systems. Removing such barriers was a specific aim in the HKMA's revised "Guidelines on AML/CFT for authorized institutions and SVFs," which allows the use of different methods to mitigate the risk during non-face-to-face account opening.[32]

A note of caution is required, however. Publicly available information is still regulated as personal data under Hong Kong's Personal Data (Privacy) Ordinance (PDPO), meaning that data-driven solutions that involve, for example, leveraging data from social media or public registries will need to take account of the fact that consent may be required. The PDPO must therefore be navigated when evaluating the fitness for purpose of regtech solutions in Hong Kong.

What is certain is that regulators will be getting a lot tougher on the implementation of AML/CFT risk-based requirements at authorized institutions and SVFs. That will include provisions for the identity verification of customers. The regulators moves to reduce unintentional barriers to the use of technology in AML/CTF systems, will make regtech solutions an increasingly attractive proposition.

With the roll-out of iAM Smart, there could also be additional opportunities for regtechs to work with authorities on its KYC utility, to enhance the efficiency of customer due diligence processes and customer experience.

FATF's latest "Travel Rule" guidance is also likely to have a significant impact on Hong Kong, a global cryptocurrency hub. Virtual asset service providers (VASPs) are already monitored by the HKMA, which in December 2019 recommended that VASPs stay vigilant in self-regulating their

29 https://www.hkma.gov.hk/media/eng/doc/key-functions/banking-stability/supervisory-policy-manual/SPM-AML-1.pdf

30 https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2018/20181019e4.pdf

31 https://www.sfc.hk/-/media/EN/assets/components/codes/files-current/web/guidelines/guideline-on-anti-money-laundering-and-counter-financing-of-terrorism-for-licensed-corporations/guidelineonantimoneylaunderingandcounterfinancingofterrorismforlicensedcorporations.pdf

32 https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2018/20181019e2.pdf

customers' goings-on. Such entities will also require regtech solutions if they want to stay on the right side of the regulators.

Compliance

Regtech is gaining traction among financial institutions in Hong Kong, namely because there are now nearly five times as many regulations for compliance professionals to familiarize themselves with in comparison to the pre-2008 financial crisis era, including more stringent requirements in relation to Basel III, GDPR, and AML.

It is not just compliance professionals that have seen their workload increase. As a result of stringent private banking regulations, relationship managers have had to spend up to half their working time covering off compliance-related issues and client due diligence using cumbersome IT systems.[33] Efficiency has been seriously hampered, while the need for transparent and efficient collaboration between different teams has also never been greater.

The pendulum has clearly swung towards increased regulatory scrutiny. It is in this context that the HKMA implemented its Granular Data Repository (GDR) pilot in the first quarter of 2019, which is expected to be finalized before the end of 2020 and introduces more detailed transaction reporting for banks.

The eventual rollout of the HKMA's GDR initiative is a case in point of where regtech solutions will be sorely required. Early indications, from participants who have just started filing reports, suggest that banks are struggling to populate even half of the 250 data fields required for the HKMA GDR's transaction reports, with the expectation that it will take them several months to fill the gaps in their data sets.[34]

Another area that has seen increased regulatory scrutiny is in Fund Management. In line with global norms and standards, the SFC instituted a new Fund Manager Code of Conduct (FMCC), which became effective in November 2018.[35]

In what is sure to ring alarm bells, a survey and inspections conducted by the SFC in 2019 to assess fund managers' compliance with liquidity and enhanced FMCC requirements found deficiencies from some authorized fund managers in maintaining proper liquidity risk management systems and controls in areas such as governance, asset and liability liquidity profiling, stress testing, reporting and other documentation.[36]

Given these findings, fund managers are going to be under increased pressure to find technological solutions that will enable them to remain compliant, especially since these are already facing enhanced requirements under the FMCC.

Another area of concern for regulators will be the finding that almost half (48%) of companies in Hong Kong and China have acquired or made investments in firms they knew to have serious compliance issues. Also, 60% of Hong Kong and Chinese companies said that they relied on their supply chain partners to police themselves.[37]

The finding, also suggests opportunities for regtechs to provide digital data solutions to corporates, for example, to aggregate the necessary data on a company's vendors in a centralized location, to help companies to more quickly find the information regulators are looking for, if inquired, about possible non-compliance.

33 https://www.lewissanders.com/index.php/the-rising-influence-of-reg-tech-in-financial-services-compliance/
34 https://www.regulationasia.com/exploring-apacs-emerging-data-intensive-regulatory-environment/
35 https://www.sfc.hk/-/media/EN/assets/components/codes/files-current/web/codes/fund-manager-code-of-conduct/fund-manager-code-of-conduct.pdf
36 https://www.finews.asia/finance/29461-sfc-some-fund-managers-have-inadequate-liquidity-risk-management-2
37 https://www.scmp.com/business/companies/article/2182879/nearly-half-chinese-hong-kong-companies-have-gone-ahead-deals

Finally, in October 2019, the SFC published a circular addressing the use of external electronic data storage (EDSP). The circular explains what records a licensed corporation must keep under the Securities and Futures Ordinance and the AML/CTF Ordinance with a cloud service provider or in a data centre in Hong Kong.[38,39]

Here, also, there may be a need for regtech solutions. There will clearly be requirements for effective solutions that will enable firms to quickly access offsite records in a timely manner to ensure that the SFC continues to have access to regulatory records during investigations.

Cybersecurity

Hong Kong's position as a leading financial centre also exposes it to an increased risk of cybercrimes. Cyber incidents, or cyber threats have now been ranked as the most important business risk, according to just over a third (35%) of Asia-Pacific risk-management executives.[40] And just as the awareness of cybersecurity issues has risen, so have the costs, with the average cost per data breach about US$ 4 million.[41]

The threat to cybersecurity for Hong Kong is only mounting, as virtual banks get underway this year and residents sign up for the HKMA's Faster Payment System (FPS). Unfortunately for Hong Kong, just as risks are rising, the territory faces an acute shortage of cybersecurity personnel.[42]

It is in this context that, in December 2016, the HKMA implemented its Cyber Fortification Initiative (CFI) with a view to raising the cyber resilience of Hong Kong's banking system. The initiative is underpinned by three pillars, namely the Cyber Resilience Assessment Framework (C-RAF), the Professional Development Program (PDP), and the Cyber Intelligence Sharing Platform (CISP).[43]

In a sign of how seriously the HKMA views the cyber threat and of how it sees regtech as being able to help, the first issue of its Regtech Watch newsletter outlined three regtech use cases in the area of cyber defense. The three use cases outlined in the newsletter involved behavioral biometric techniques, analytics of activity logs, and automation of cyber-security routine tasks.[44]

In October 2017, the SFC posted its "Guidelines for Reducing and Mitigating Hacking Risks Associated with Internet Trading." The rules require all licensed or registered entities engaged in online trading to implement 20 baseline requirements to enhance their cybersecurity and to minimize hacking risks.[45]

Given the increased cybersecurity risk faced by Hong Kong and the lack of available talent to help mitigate against this, the demand by firms to incorporate regtech solutions will be great.

Regtech firms would also be well advised to look at opportunities arising out of the HKMA's Cyber Fortification Initiative. The CFI will involve a cyber-readiness benchmarking exercise and the development of cyber incident information-sharing protocols for banks.

In addition, there may also be an opportunity for

38 https://www.sfc.hk/edistributionWeb/gateway/EN/circular/intermediaries/supervision/doc?refNo=19EC59
39 https://www.lexology.com/library/detail.aspx?g=243c3a65-46a8-48b6-bba5-ff0269110cdf
40 https://www.agcs.allianz.com/content/dam/onemarketing/agcs/agcs/reports/Allianz-Risk-Barometer-2020.pdf
41 https://www.ibm.com/security/data-breach
42 https://www.isc2.org/Research/Workforce-Study
43 https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech/research-and-applications/cybersecurity-fortification-initiative-cfi/
44 https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2019/20191112e1a1.pdf
45 https://financefeeds.com/hong-kong-regulator-tells-online-trading-firms-implement-two-factor-authentication-april-2018/

providers to get involved in amending existing HKMA or SFC guidelines if this means that their solutions can be more readily implemented. The regulators might also have contacts within the private sector that would be interested in incorporating the provider's solutions. Certainly, the SFC and trading platforms regulated by the SFC would be interested in any solution that could help these firms meet the SFC's guidelines for reducing and mitigating hacking risks associated with internet trading.

Private Sector

Private Sector Concerns

Hong Kong's financial services industry has raised concerns about the use of technology such as machine learning and artificial intelligence as part of regulatory compliance efforts. These measures will, it is felt by some, have the effect of reducing the ability of these institutions to meet their accountability commitments, to customers as well as regulators. Financial institutions are cautious about the fact that they will be accountable for the decisions made by AI, and there are concerns around the potential for data tampering and breaches of privacy in cloud computing.

If regtech providers are able to credibly answer these objections they will likely find an increase in demand for their solutions.

Private Sector Associations and Regional Initiatives

It is not merely the regulators that have taken an active role in developing the regtech ecosystem in Hong Kong. There also exist several associations and regional initiatives. These include:

Logo	Name	Description
	Alliance for Financial Stability with Information Technology (AFS-IT)	Established in Hong Kong in May 2018. The AFS-IT includes top-level representation across the banking, financial, technology and regulatory sectors, as well as government officials from mainland China, Hong Kong, Macau, the Philippines, Thailand, Cambodia, Myanmar, Vietnam, Brunei and Laos, with a key focus being to foster innovation in regtech.
	APAC RegTech Network	Jointly launched by the regtech committees of the fintech associations of Hong Kong, Singapore, and Japan in May 2019. An initiative to enhance cross-border collaboration on regtech education and implementation across the Asia Pacific region.
	APIX JETCO	Joint Electronic Teller Services Limited (JETCO), a bank consortium chartered to develop innovative and secure financial technology services for its member banks, launched APIX in January 2019 – the first-ever open API exchange platform which connects numerous Third-party Service Providers to APIs.
	Asia Capital Markets Institute (ACMI)	Curator of the World RegTech Summit and an industry-wide capital markets educational initiative that promotes professionalism, efficiency, and innovation for excellence in client service and in the long-term best interests of corporate issuers and capital markets integrity. ACMI's areas of focus include Regtech, Online Capital Marketplaces and Artificial Intelligence.
	Asia Securities Industry & Financial Markets Association (ASIFMA)	An independent, regional trade association with over 100 member firms comprising a diverse range of leading financial institutions from both the buy and sell side.
	DBS Accelerator	The DBS Accelerator, powered by NEST, is a unique program run by a full-time, dedicated team. Up to 8 startups will be selected to come to Hong Kong to accelerate their FinTech businesses. The "always-on" accelerator program is housed in "The Vault", a state-of-the-art 5,000-square foot workspace in the heart of Wan Chai.
	DBS Xchange	A program matching the bank and its enterprise clients with startups and their new technologies so as to find solutions to business problems.
	FinTech Association of Hong Kong's (FTAHK) Regtech Committee	The FTAHK convenes monthly meetings, regularly organizes curated demos from regtech firms (Regtech Live events), co-organized the first legaltech and regtech hackathons in Hong Kong, and organized the World Regtech Summit at the end of 2019.
	FinTech Innovation Lab Asia-Pacific	Accenture's highly competitive 12-week program helps early to growth stage startups refine and test their value proposition with the support of the world's leading financial service firms.
	The Hong Kong Association of Banks (HKAB)	In 1981 the association was established and replaced the Exchange Bank Association. The ordinance provides a framework for the Hong Kong Government to exchange views with the banking sector for the further development of the industry.

Logo	Name	Description
	Hong Kong Green Finance Association (HKGFA)	HKGFA's main goal is to position Hong Kong as a leading international green finance hub by providing greater access and opportunities for Hong Kong's financial institutions to participate in green financing transactions locally, in Mainland China, and in markets along the Belt & Road.
	The Hong Kong Institute of Bankers (HKIB)	A non-profit institution that provides training and certification services to the banking community in Hong Kong. The HKIB also offers a comprehensive range of events for current banking practitioners or potential joiners to keep abreast of the latest industry developments and build capacity.
	Hong Kong International Blockchain and Financial Association (HKIBFA)	A non-profit, established in 2018 to position Hong Kong as a leader in Asia and the world in blockchain and FinTech.
	Hong Kong Private Equity Finance Association (HKPEFA)	A platform for finance and legal professionals in the VC/PE industry for sharing information and networking. One of the largest organizations in Hong Kong consisting of CFOs, COOs, controllers, finance managers and legal counsels from the industry.
	Moment Fintech	Bills itself as Asia's first regtech focused accelerator. A last-mile accelerator which seeks to help startups to navigate the onboarding process with financial institutions.
	NEST	Nest operates corporate accelerator programs, invests in startups and runs a global entrepreneurial community called Mettā.
	RegTech Association Asia (RTAA)	The RTAA is a non-profit organization promoting the adoption of technology in all aspects of compliance. Established in Hong Kong, the association focuses on Asia's regulatory and legal landscape.
	RegTech Association of Hong Kong (RTAHK)	A group born in the Cyberport community that aims to become an interface between the future regtech leaders and the regulators, organizing a peer-friendly ecosystem.
	Standard Chartered eXellerator	The eXellerator lab is a collaboration space for clients, fintechs and other partners to come together and solve business problems.
	SuperCharger	Strategically located in Hong Kong and Kuala Lumpur, SuperCharger is the first fintech accelerator dedicated to both early-stage and growth-stage startup companies.

Regtech firms wishing to enter the market should reach out to these entities as a first port of call. These may be able to provide valuable advice, contacts, and exposure in the market.

Mapping of Potential Ecosystem Cooperation and Partnerships

* Association (A); Government (G); Incubator/Accelerator (I/A); Private (P); Regulator (R)

Institution	Type*
ACMI	A
AFS-IT	A
APAC RegTech Network	A
FTAHK	A
FTAHK RegTech Committee	A
HK Institute of Bankers	A
JETCO and APIX	A
RTAHK	A
Cyberport	G
HKSTP	G
InvestHK	G
Cyberport Incubation Programme	I/A
FinTech Innovation Lab APAC (Accenture)	I/A
NEST (see DBS Accelerator)	I/A
SCB eXellerator	I/A
SuperCharger	I/A
Bank of China HK (BOCHK)	P

Institution	Type*
BEA	P
CMB Wing Lung Bank	P
CNCBI	P
Dah Sing Bank	P
DBS Bank HK	P
Fubon Life	P
Hang Seng	P
HSBC	P
HSBC Ventures: Strategic Innovation Investments	P
ICBC Asia	P
NCB	P
OCBC Wing Hang Bank	P
Standard Chartered	P
SC Ventures	P
HKMA	R
IA	R
SFC	R

Market Activity

Key HK Financial Institutions and their Recent Tech Initiatives

Institution	**Bank of East Asia (BEA)**	
Innovation Lab	BEA Innovation Centre	
Partnerships		
Company	**Date**	**Description**
Alliance with five HK companies	Oct. 2019	BEA formed an alliance with five HK companies to allow its customers to access digital banking through API. API collaborations are with Mastercard, Blue Cross (Asia-Pacific) Insurance, Octopus Holdings, mReferral Corporation (HK), and Price.com.hk Limited. Background: In Jan. 2019 BEA was announced as one of the 13 banks providing the APIs for the Joint Electronic Teller Services Limited (JETCO)'s APIX system.[46,47]
HKSTP	June 2019	As part of its centenary celebrations, BEA teamed up with Hong Kong Science Park to organize the BEA 100 FinTech Challenge, to foster creativity in the development of FinTech solutions.[48]
Finastra	Nov. 2018	BEA extended its partnership with Finastra to enhance its end-to-end digital trade capabilities and customer services for its corporate and personal banking services.[49]

46 https://asianbankingandfinance.net/cards-payments/more-news/bank-east-asia-forges-digital-banking-partnership-five-firms
47 https://www.hkbea.com/pdf/en/about-bea/new-release/2019/20191023en.pdf
48 https://www.hkbea.com/pdf/en/about-bea/new-release/2019/20190620en.pdf
49 https://www.finews.asia/finance/27836-bank-of-east-asia-finastra-trade-finance-hong-kong

Institution	China CITIC Bank International (CNCBI)	
Partnerships		
Company	**Date**	**Description**
Quantifeed	Dec 2019	CNCBI and Quantifeed co-developed a new robo-investment service, Robo 360, making CNCBI the first HK bank to offer a robo-advisory service to customers. With the advice bolted on to the core private-wealth operating system, the Bank will take its high-net-worth offering to its mass retail customer base.[50,51]
First Data	Dec 2018	CNCBI announced partnership with First Data with the launch of a comprehensive range of merchant acquiring solutions including POS terminals, eCommerce solutions, and other VAS in HK.[52]
Avaloq	Oct 2018	CNCBI launched Avaloq's CRM and processing system, giving the Bank a full view of its customers. Wealth management represents the biggest source of revenues for the Bank. The system will support private-bank operations and other businesses including corporate banking. Will also support branches and subsidiaries outside of HK, including Singapore and the US.[53]
Murex	June 2017	Murex's MX.3 platform, a cross-asset, multi-function, open platform, replaced five systems at CNCBI, giving the Bank a consolidated view across FX cash, Money Markets, Fixed Income, FX and IR derivatives for managing trading, market risk, credit risk (including PFE, CVA and SA-CCR), ops and finance.[54]

Institution	CMB Wing Lung Bank	
Partnerships		
Company	**Date**	**Description**
Magnum Research Limited	Dec 2019	The Bank partnered with Magnum Research Limited (AQUMON) to launch WealthTech, Hong Kong's first retail bank based robo-advisory. It allows investors access to an automated mutual fund portfolio solution. After completing a risk assessment, and answering investment preference questions, clients are automatically recommended a tailor-made portfolio investing into approximately 8-12 mutual funds.[55]
GBST	Feb 2019	The Bank went live with a new solution for its custody banking business, Syn~Ops Custody from GBST. The solution enables the Bank to efficiently and securely clear, settle and account for its global custody activity in a single system.[56]

50 Ibid.
51 https://hubbis.com/news/quantifeed-and-china-citic-bank-international-co-develop-robo-investment-service
52 https://www.businesswire.com/news/home/20181211006014/en/Data-China-CITIC-Bank-International-Join-Forces
53 https://www.digfingroup.com/china-citic/
54 https://www.businesswire.com/news/home/20170616005192/en/Murex-Awarded-%E2%80%9CBest-Integrated-Treasury-Capital-Markets
55 https://innovationhongkong.com/gallery/hong-kongs-first-retail-bank-based-robo-advisor-launched/
56 https://www.fintechfutures.com/2019/02/cmb-wing-lung-bank-live-with-new-custody-banking-tech-from-gbst/

Institution	Dah Sing Bank	
Partnerships		
Company	**Date**	**Description**
Daon/Tradelink	March 2019	Phase 2 deployment of the biometric authentication solution developed for the Bank's mobile banking services (see entry below). Biometric authentication extended for use from secure login to transaction authentication.[57]
Daon/Tradelink	June 2018	Biometric authentication specialist Daon teamed up with Tradelink to give customers of the Bank the option of biometric authentication when accessing bank services. The Bank leverages Daon's IdentityX platform to offer both fingerprint and facial authentication.[58]

Institution	DBS Bank (Hong Kong)	
Innovation Lab	DBS Accelerator (see also Startup Xchange)	
Partnerships		
Company	**Date**	**Description**
Startup Xchange	Oct 2018	The Bank launched a new Startup Xchange program designed to exclusively match the Bank's problem statements to FinTech startups. Rolled out in both Hong Kong and Singapore. Startup Xchange will source the world's best and most suitable startups to co-create solutions with the Bank on a continuous basis to address business problem statements in real time.[59]
DBS Accelerator	April 2018	Six FinTech startups from across Asia and around the world admitted to the DBS Accelerator in Hong Kong. These were CUBE, cyberProductivity, DOV-E, Fractal Labs, Hyper Anna, and Privé Technologies. That brought the total number of DBS Accelerator participants to over 30 since the DBS Bank (Hong Kong) program's launch in 2015. The DBS Accelerator is a collaborative initiative between DBS Bank (Hong Kong) and Nest, a global innovation platform supporting entrepreneurs.[60]

Institution	Hang Seng Bank	
Innovation Lab	Inno Booster@HKSTP	
Partnerships		
Company	**Date**	**Description**
HKSTP	Jan 2019	The Bank formed a strategic alliance with HKSTP to help accelerate the development and deployment of fintech solutions for the banking sector in Hong Kong.[61]

57 https://www.biometricupdate.com/201903/dah-sing-bank-roll-out-of-daons-biometric-authentication-solution-continues
58 https://www.fintechfutures.com/2018/06/daon-and-tradelink-bring-biometric-tech-to-dah-sing-bank/
59 https://hubbis.com/news/dbs-hong-kong-launches-startup-xchange-to-partner-startups-for-fintech-future
60 https://www.dbs.com/hongkong/newsroom/DBS_accelerator_expanding_digital_innovation_horizon
61 https://www.finextra.com/pressarticle/77147/hang-seng-bank-and-hkstp-forge-fintech-alliance

Tencent	Dec 2018	The Bank formed a strategic fintech partnership with Tencent. The parties are initially collaborating on various aspects of technology application, account-opening procedures, and retail payment.[62]
IBM	Jan 2018	The Bank rolled out two AI chatbots for retail banking services named "HARO" and "DORI." Using ML and NLP, the virtual assistants are equipped with the ability to simulate human-like contextual conversations to address customer enquiries. They can also communicate in Chinese, English and understand Cantonese. HARO, powered by IBM Watson's ML and NLP technologies, can now be accessed through the WhatsApp messaging platform.[63,64]

Institution	**HSBC**			
Innovation Lab	HSBC Singapore Innovation Lab (Singapore)			
VC Arm	HSBC Ventures: Strategic Innovation Investments (SII) (London)			
VC Arm Details	The Corporate VC arm of HSBC Bank. Based in London, UK and it generally invests in the Financial Technology and Enterprise Technology sectors.			
Venture Investments (Global)[65]				
Company	**Type**	**Deal Date**	**Deal Type**	**Description**
CXA Group	Employee Health and Wellbeing Platform	May 2020	Later stage VC	Platform to match employees and employers with personalized health/ wellbeing employee benefits.
Kenna Security	Vulnerability Risk Management	Nov 2019	Series D	Predicts attacks and prioritizes vulnerabilities to enable security and IT operations to collaborate and proactively manage cyber risk.
OpenFin	Operating System for Financial Desktops	Nov 2019	Series C	Allows seamless deployment, interaction, and interoperability between applications to enhance workflows and increase efficiency.
CloudBees	Enterprise Jenkins Platform for DevOps	May 2019	Series E	Extends the functionality of the most popular open source DevOps tools, "Jenkins," with the functionality required for large enterprises.
Menlo Security	Phishing Attack and Malware Prevention	May 2019	Series D	Protects organizations from cyber-attacks by seeking to eliminate the threat of malware from the web, documents and email through isolation.
Consortium Investments (Global)[66]				
Company	**Type**	**Deal Date**	**Deal Type**	**Description**
Trade Information Network	GTRF Data Exchange	Sept 2019	Consortium Round 1	Centralized platform for banks & corporates to access transactional data facilitating interactions across banks, buyers, and suppliers.

62 https://fintechnews.hk/7815/various/fintech-collaboration-between-hang-seng-bank-and-tencent/
63 https://financefeeds.com/hang-seng-bank-enables-ai-chatbot-haro-assist-management-customers-personal-finances/
64 https://www.finextra.com/newsarticle/35585/hang-seng-banks-virtual-assistant-haro-joins-whatsapp
65 https://www.ventures.hsbc.com/portfolio
66 Ibid.

Visible Alpha	Market Data & Research Platform	May 2019	Consortium Round 2	Platform and tools for institutional investors to understand analyst models, underlying data, and assumptions.

Partnerships		
Company	**Date**	**Description**
Cainiao Network Technology	March 2020	Logistics arm of Chinese e-commerce giant Alibaba; partnership will offer quick trade finance approvals to online merchants. Cainiao will pass on info on customer background, real-time inventory and operation status to HSBC for credit assessment. First time HSBC will use 3rd party data to approve trade loans. Will explore expanding service to other e-commerce platforms.[67]
NA	December 2019	HSBC is using robotics and AI to help it make decisions on credit card approvals in HK as it looks to compete against virtual and challenger banks to deliver on customer expectations. Approvals can now be made instantly, instead of up to six days previously.[68]

Institution	**Industrial and Commercial Bank of China (Asia)**	
Partnerships		
Company	**Date**	**Description**
Huawei	May 2018	The Bank tapped on Huawei for its growing IT infrastructure needs. Huawei has provided the Bank with digital cross-border finance solutions including the Digital Multimedia Banking Solution, Safe Financial Cloud Solution, and the CloudFabric Cloud Data Center Network Solution.[69,70]
ASTRI	June 2017	The Bank signed an MoU with the Hong Kong Applied Science and Technology Research Institute Company Limited (ASTRI) and launched the ICBC (Asia)-ASTRI FinTech Innovation Laboratory, aiming to develop the latest FinTech applications in banking and promote the development of FinTech in Hong Kong.[71]

Institution	**Nanyang Commercial Bank (NCB)**	
Partnerships		
Company	**Date**	**Description**
Accuity	April 2019	NCB selected Accuity, a global provider of financial crime compliance, payments, and KYC solutions, and Lyodssoft, its implementation partner, to enhance the Bank's financial crime compliance screening capability.[72]

67 https://www.scmp.com/business/banking-finance/article/3076007/hsbc-teams-alibabas-cainiao-logistics-unit-offer-quick
68 https://techwireasia.com/2019/12/hsbc-invests-to-boost-digital-capabilities-instead-of-building-a-virtual-bank/
69 https://asianbankingandfinance.net/financial-technology/more-news/icbc-asia-ramps-digital-investments-cross-border-finance
70 https://fintechnews.hk/5274/remittance/icbc-leverages-technology-to-drive-cross-border-development/
71 https://www.astri.org/news-detail/icbc-asia-astri-fintech-innovation-laboratory-promotes-the-development-of-fintech-in-hong-kong/
72 https://www.bobsguide.com/guide/news/2019/Apr/23/nanyang-commercial-bank-teams-with-accuity-and-lyodssoft-to-improve-its-financial-crime-compliance-screening-operations/

Institution	Standard Chartered Bank (SCB)			
Innovation Lab	eXellerator (Singapore/HK)			
VC Arm	SC Ventures (Singapore)			
VC Arm Details	SC Ventures is a platform and a catalyst for SCB to promote innovation, invest in disruptive financial technology and explore alternative business models.			
Consortium Investments (Global)[73]				
Company	**Type**	**Deal Date**	**Deal Type**	**Description**
Silent Eight	Business/ Productivity Software	Nov 2019	Series A	Uses AI to help financial institutions manage their compliance and risk obligations.[74]
Instabase	Business/ Productivity Software	Oct 2019	Series B	A US platform startup that helps banks and other firms build business applications from the ground up.[75]
Socash	Financial Software	July 2019	Series B	Allows seamless deployment, interaction, and interoperability between applications to enhance workflows and increase efficiency.[76]

Partnerships		
Company	**Date**	**Description**
Mox	March 2020	The Bank launched Mox, its virtual bank to help it reach a broader spectrum of customers. Backed by SCB in partnership with PCCW, HKT and Trip.com. SCB will hold 65.1% in the joint venture, while PCCW, HKT and Ctrip Finance will hold 10%, 15% and 9.9% respectively. No-branch banking means completely digital regtech solutions will be required to meet all KYC, AML and due diligence obligations.[77]
Quantexa	Nov 2019	SCB announced partnership with Quantexa, a contextual decision intelligence software company. Quantexa will support SCB's Financial Crime team using dynamic entity resolution, network analytics and contextual data. Enables SCB to conduct complex financial thematic investigations more efficiently.[78]
BearingPoint	Oct 2019	SCB deployed BearingPoint RegTech's tax reporting solution FiTAX to fulfill CRS (Common Reporting Standard), FATCA (Foreign Account Tax Compliance Act) and QI (Qualified Intermediaries) reporting obligations in 63 countries globally.[79]

73 https://fintechbridge.scventures.io/public/our-partners
74 https://www.techinasia.com/silent-eight-bags-6m
75 https://www.finextra.com/newsarticle/34616/instabase-raises-105m
76 https://www.straitstimes.com/business/banking/singapore-based-fintech-socash-raises-us6m-to-expand-to-indonesia-malaysia-hong
77 https://www.sc.com/en/media/press-release/weve-partnered-with-pccw-hkt-and-ctrip-finance-to-build-a-new-virtual-bank-in-hong-kong/
78 https://thefintechtimes.com/standard-chartered-quantexa/
79 https://www.bearingpoint.com/en/about-us/news-and-media/press-releases/standard-chartered-chooses-bearingpoint-regtech/

IBM	May 2019	SCB in partnership with IBM, has launched a service to automate the retrieval of information from trade documents. Trade AI Engine is now live in 30 markets across Asia, Africa and the Middle East, with a further nine to follow shortly. The solution aims to tackle the perennial issue of cumbersome manual processing in traditional documentary trade through a combination of optical character recognition (OCR), machine learning and natural language processing (NLP).[80]

Active Regtechs in Hong Kong[81]

Blockpass

(https://www.blockpass.org/) – A HK-based company offering digital identity verification for businesses that participate in regulated industries, including crypto wallets and exchanges, virtual banks, traditional financial institutions, and gaming.

Blue Umbrella

(https://www.blueumbrella.com/) – A HK-based company specializing in due diligence research and third-party compliance management solutions through a cloud-based software platform.

Certizen

(https://www.certizen.com/) – A HK-based company focused on providing electronic identity and electronic signature solutions and services. The Hong Kong Post Certification Authority (HKPCA) has outsourced the operating of its Post e-Cert services to Certizen for the period from 1 January 2020 to 30 June 2022.

Chekk

(https://www.chekk.me/) – A HK-based company providing businesses with a one stop shop to manage their digital identity, AML, and KYC journeys. The company's corporate clients receive validated and up-to-date digital identity and KYC information in a fully automated fashion, providing the right means to be fully compliant with internal policies and regulatory requirements.

Gekko Labs

(https://www.gekko.ai) – A HK and Shenzhen-based company providing solutions to empower investment research, due diligence, and regulatory monitoring for Hong Kong and China financial markets, powered by a search and visualization engine.

Ignite Vision

(http://www.ignite-vision.com/) – A HK-based company working with clients to combat fraud in marketing campaigns. Allows partners to visualize the quality of their marketing channels and to accurately gauge their actual ROI. It offers both fraud detection and fraud prevention capability for a range of various campaigns and scenarios.

Know Your Customer

(https://knowyourcustomer.com/) – A HK-based company that aims to reinvent the client onboarding process by offering an efficient identity verification solution that helps institutions meet regulations, generate new revenue streams, and reduce costs. The company's high-tech solution can reduce the average industry client onboarding time from 26 days to 1 day using its technology to verify original source documentation.

Korum

(https://www.korumlegal.com/) – A HK-based company delivering flexible, value driven People, Process, and LegalTech solutions. Korumlegal helps C-Suite, General Counsels and law firms identify new technology solutions to automate and enhance their legal workflows and processes.

80 https://www.gtreview.com/news/fintech/standard-chartered-partners-with-ibm-to-automate-trade-document-processing/

81 Regtechs identified through various sources, including InvestHK Fintech Map, FTAHK Member Directory, and Crunchbase

KYC Chain

(https://kyc-chain.com/) – A HK-based company providing a B2B managed workflow application built on distributed ledger technology (DLT) that enables organizations to better manage their KYC processes for both individuals and corporates. It is a white labelled end-to-end solution that streamlines the onboarding process for businesses' customers and improves efficiency of their compliance teams.

Regtics

(https://www.regtics.com/) – A HK-based company developing a compliance solution to assist financial institutions in complying with international and local AML and CFT regulations using AI and big data technology.

Overview of private investors activity in regtech in Hong Kong

Investment Deals

- **March 2020 –** AMTD Digital, the digital finance arm of AMTD Group, announced that it will acquire a controlling stake of Singapore's PolicyPal which will act as AMTD Digital's operating vehicle to develop and expand in the Southeast Asia insurtech sector. AMTD Risk Solution is Hong Kong's largest corporate insurance brokerage.[82]
- **January 2020 –** AngelHub, a startup funding platform based in Hong Kong and the first and still only crowdfunding platform to be licensed by Hong Kong's SFC, closed its first two fundraising rounds with local startups Know Your Customer and Singapore-based mobile robotics firm Botsync. The rounds came to a total of US$ 2.5 million. The rounds were part of a larger US$ 50 million Series C round.[83]

Vendor Deals/Partnerships

- **April 2020 –** ZA Bank, the first virtual bank in Hong Kong, chose Wolters Kluwer's OneSumX for Regulatory Reporting as its regulatory reporting software. ZA Bank became Hong Kong's first fully operational virtual bank in March 2020.[84]
- **March 2020 –** SIX Group, the consortium that operates the infrastructure for the Swiss financial centre, selected Know Your Customer to strengthen its procurement process and better assess the risk associated with its international suppliers.[85]
- **January 2020 –** Gateway Private Markets, a Hong Kong-headquartered FI that specializes in facilitating direct secondary market transactions, selected Know Your Customer to deliver digital onboarding to its clients.[86]
- **November 2018 –** FWD Group, the HK-based insurance arm of Pacific Century, purchased Bloomberg's risk management solutions including Bloomberg's Multi-Asset Risk System (MARS), Asset and Investment Manager (AIM), the enhanced Portfolio and Risk Analytics solution (PORT+) and the latest IFRS 9 solution.[87]

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82 https://fintechnews.sg/38448/insurtech/hk-based-amtd-acquires-insurtech-startup-policypal/
83 https://www.fintechfutures.com/2020/01/know-your-customer-and-botsync-close-first-2-5m-on-hong-kongs-angelhub/
84 https://www.businesswire.com/news/home/20200413005472/en/Hong-Kong%E2%80%99s-Virtual-Bank-Selects-Wolters-Kluwer%E2%80%99s
85 https://www.finextra.com/pressarticle/81717/six-selects-know-your-customer-platform-to-better-assess-supplier-risk
86 https://knowyourcustomer.com/gateway-selects-know-your-customer-for-investor-onboarding/
87 https://fintechnews.hk/7740/various/fwd-group-bloomberg-risk-management/

Potential Future Scenario for Hong Kong's RegTech Ecosystem

The future for regtech in Hong Kong is bright. As a key financial hub, known for its investment and commercial banking and as a gateway to China, the HK financial ecosystem is now awash with new fintech players taking on the market's incumbents as the latter adopt the latest tech to remain competitive against these new players.

As Hong Kong shifts to the digital domain, with the recent passing of the territory's virtual banking regulations, purely digital firms are going to demand purely digital solutions. Incumbents are also moving to the digital sphere. One silver lining with regards to Covid-19, as far as regtech is concerned, has been the boost in banking transactions online, which has increased FIs focus on the regtech space.

With cautious regulators taking an active role in guiding the development and uptake of new technologies, players, and platforms, they will be very proactive in developing the regtech sector in order to mitigate against the increased risks presented by an increasingly complex financial system. This is already being borne out. From the top-down, over the last year, there has been increasing support from the regulators and the government as they get onboard. For example, HKMA's AML department organized the HKMA AML/CFT RegTech Forum at the end of last year. Regtech is also a priority for InvestHK, which is positively encouraging overseas regtechs to come to Hong Kong. Cyberport is also promoting its regtech hub.

There is also a lot of support from the bottom-up, with FTAHK's RegTech Sub-Committee organizing RegTech Live events and hosting legaltech and regtech hackathons. There has also been the recent launch of the APAC RegTech Network to facilitate increased cross-jurisdictional collaboration. The traditional associations are also stepping forwards, where, for example, ASIFMA has a conference on operations, of which regtech is a part. In terms of private firms, Standard Chartered has launched a Regtech Flywheel industry collaboration, for FIs that are using regtech, to share what they are doing among their peers.

With both bottom-up and top-down support, leading to increased awareness, we are likely to see an increase in demand for regtech solutions within the territory over the next few years as the regulators encourage the development of the regtech space and as incumbents and new players adopt regtech solutions in order to remain compliant and to compete against each other for market share.

The State of Regtech in APAC

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Main Regulators and Key Initiatives

The Monetary Authority of Singapore (MAS):

The sole regulator in Singapore having regulatory oversight of the financial services industry across various sectors. The MAS is also the central bank of Singapore.

Recent / Active MAS Key Initiatives:

- API Exchange (APIX)
- Codifying (Digitalizing) Regulations
- Cross-Border Payments
- Digital Identity Verification (MyInfo)
- Finance-as-a-Service: API Playbook
- Financial Services Industry Transformation Map
- Fintech Festival
- Guidance to Capital Markets Intermediaries on Enhancing AML/CFT Frameworks and Controls
- Guidelines on Individual Accountability and Conduct
- Overhaul of MAS 610 (Reporting)
- Payment Services Act
- Regulatory Sandbox
- Smart Financial Centre
- Suptech Office
- Technology Risk Management (TRM) Guidelines
- The Notice on Cyber Hygiene
- Veritas and FEAT Principles (AI)
- Virtual Banking Licenses

Trends, Initiatives, and Implications for Regtechs in Singapore

Singapore, one of the world's largest financial centres, like London, is a natural hub for fintech, offering five key elements: markets, talent, capital, progressive regulation, and strong government support, which synergize to drive fintech development.

However, now that Brexit has become a reality, Singapore is well-positioned to surpass London to become the global fintech leader in the near future.[1]

Not only is Singapore a natural hub for fintech, but it is also a natural hub for regtech, given that the country serves as the regional headquarters for many financial institutions that require a higher degree of technology to run their multiple operations efficiently across APAC's numerous regulatory jurisdictions. Indeed, as an international financial centre with a presence of over 200 banks and over 600 fintech firms, Singapore has become one of the Top 10 regtech markets.

1 ISCA- ICAEW; Fintech Innovation: Perspectives from Singapore and London; 2018

Government Initiative

Smart Nation

Singapore aims to position itself as a global leader in the digital sphere. In November 2014, it launched its Smart Nation initiative, which aims to transform and better Singapore's government, businesses, and society with digital technology. To that end, the government has put in place a plethora of measures to help it achieve its objectives.[2]

Such measures include investments in digital infrastructure, technologies, and initiatives to incubate new ideas, facilitate cooperation, and nudge businesses to digitalize. Moves towards digital transformation include a National Digital Identity system, which enables citizens and businesses to transact online more seamlessly (e.g., by using e-government services or signing digital documents) and a National Artificial Intelligence strategy to drive AI innovation.

Given its aim to become a Smart Nation with a Smart Financial Centre, Singapore is adopting an open legal framework and forward-looking position towards fintech, with the goal of both promoting the creative economy, protecting customers, and taking precautions against money laundering and tax evasion.

To that end, the Committee on the Future Economy (CFE), which was convened in January 2016 to develop economic strategies for the next decade, has highlighted the need to keep pace with technology in Singapore's regulatory practices. Saying:

"the Government should identify and focus on areas with high potential for technological and industry innovation... providing clear and updated regulations will be particularly important for the development of these emerging industries, such as MedTech, Fintech, and food and nutrition. The regulatory agencies should then systematically collaborate to review existing regulations."[3]

With the supportive government and regulatory environment towards the adoption of regtech initiatives, opportunities for regtechs entering the market abound. Regtechs looking for opportunities should first familiarize themselves with the government's and regulator's initiatives and look for areas where they think they can add value. With all that the authorities are doing around e-government, e-KYC, and the national identity scheme, there are opportunities for regtechs to get involved.

2 The Government Technology Agency of Singapore (GovTech) is the agency responsible for the delivery of the Singapore government's digital services to the public. It is also the agency that provides the infrastructure to support the implementation of the country's Smart Nation initiative.

3 CFE; Report of the Committee on the Future Economy; 2017

Regulator Initiatives

The Monetary Authority of Singapore (MAS)

A key pillar of Singapore's Smart Nation goals is the digital economy. The MAS was an early adopter of a digital transformation strategy, with the release of its Financial Services Industry Transformation Map in 2017. This is a roadmap to make Singapore a leading global "smart" financial centre in Asia over the course of five years.

A key focus area for the MAS has been to establish cross-border linkages of payment systems to offer affordable, secure, and instant cross-border payments to drive e-commerce trade flows within APAC. The Banking Associations of Singapore and Thailand are working together to link their payments systems, PayNow and PromptPay respectively, to facilitate the low-cost transfer of payments by tourists, migrants, and professionals. There has also been a collaborative project with the Bank of England (BoE), and the Bank of Canada (BoC) to explore how wholesale Central Bank Digital Currency can address inefficiencies in cross-border payments, trade finance, and foreign exchange.

The regulator is also broadening its geographical reach. In March 2017, the MAS and Autorité de Contrôle Prudentiel et de Résolution (ACPR) and the Autorité des Marchés Financiers (AMF) of France signed an agreement which provides a framework under which ACPR, AMF, and the MAS will share information about emerging fintech trends, potential joint innovation projects, and regulatory issues pertaining to innovative financial services.[4]

Then in April 2018, the MAS and the State Bank of Vietnam (SBV) agreed to form a new partnership to encourage fintech innovation, while simultaneously strengthening cooperation in banking supervision. The MoU was intended to help fintech companies in one jurisdiction better understand the regulatory regime and opportunities in the other and encourage the sharing of information on emerging fintech trends and developments.[5]

Finally, in September 2018, the MAS-backed ASEAN Financial Innovation Network (AFIN) launched the API Exchange (APIX), an online Global Fintech Marketplace and Sandbox platform for FIs. Billing itself as the world's first cross-border, open-architecture platform, it promises to matchmake FIs with fintech ventures and accelerate collaboration and partnership formation regionally.[6]

4 https://www.mas.gov.sg/news/media-releases/2017/singapore-and-france-bolster-fintech-ties-with-cooperation-agreements

5 https://www.mas.gov.sg/news/media-releases/2018/singapore-and-viet-nam-enhance-cooperation-in-financial-innovation-and-banking-supervision

6 https://www.mas.gov.sg/news/media-releases/2018/worlds-first-cross-border-open-architecture-platform-to-improve-financial-inclusion

Support for Regtech

The MAS is actively guiding the development of the fintech ecosystem to ensure the right balance of innovation and risk mitigation. Not only has it been proactive in employing suptech to streamline and enhance its regulatory capacity, but the MAS has initiated a number of initiatives to nurture the development of the regtech sector in Singapore.

For example, it has merged money exchange and remittance systems law into one legislation (the Payment Services Act) to enable the comprehensive regulation of old and new payments services. Such legislation is often a significant obstacle in other jurisdictions looking to boost regulatory rigor, and this simplification of regulations will benefit the regtech landscape in the country.

Other supportive initiatives include the MAS hosting Asia's first regtech-focused event in 2016 as part of the Singapore Fintech Festival to bring together regulators, startups, and entrepreneurs to explore the latest regtech developments. The MAS has also introduced two regulatory sandboxes, including the Sandbox Express, launched in August 2019 for accelerated market testing of innovative financial products and services.

Suptech Initiatives

The MAS, itself, is leveraging technology to improve its own supervision. In February 2017, the MAS set up a Data Analytics Group (DAG) as part of its broader efforts to help position itself and the financial sector for the digital economy of the future. The aim was to have DAG lead the MAS' efforts to harness the power of data analytics to unlock insights, enhance the supervision of financial institutions, make regulatory compliance more efficient for financial institutions, and improve work efficiency across the organization.[7]

In the same month, the MAS also established a dedicated "Suptech Office" to serve as a hub of expertise to make regulatory supervision more efficient and effective. The office is currently looking to incorporate AI and machine learning (ML) to support Big Data and network analytics used in supervision and enforcement. The office may also implement a Data Application Programing Interface (API) to "streamline the submission of regulatory data and [enable] 'live dashboards' for better visualization of trends and analyses."[8]

The MAS has also been transforming its data collection approach and requests to financial institutions (FIs). This has included measures to progressively reduce duplication and automate data submission by FIs. All new regulatory returns from FIs to the MAS from 1 April 2018 onwards are now required to be in machine-readable formats, i.e., in a form that allows data to be automatically read and processed by computers.[9]

The Singapore Exchange (SGX) Suptech Initiatives

In September 2016, the Singapore Exchange (SGX) launched two initiatives in collaboration with member firms to "detect and stop market misconduct, foster good trading practices and maintain a fair, orderly and transparent marketplace." One of the initiatives, called the Members Surveillance Dashboard, allows the reporting of data which "could be related to market misconduct," including details of alerts from SGX's surveillance system. SGX has also bolstered its surveillance system with AI technology, with surveillance of markets at SGX upgraded to include AI allowing the exchange to filter out the noise and hone-in-on potential unusual trading activity.[10,11]

7 https://www.mas.gov.sg/news/media-releases/2017/mas-sets-up-data-analytics-group
8 https://www.mas.gov.sg/news/speeches/2018/keynote-speech-at-asifma-annual-conference-2018
9 https://www.opengovasia.com/monetary-authority-of-singapore-unveils-roadmap-to-transform-its-data-collection-approach/
10 https://www.fia.org/articles/compliance-collaboration
11 https://www.thetradenews.com/sgx-bolsters-surveillance-system-ai-technology/

AML/CFT

The MAS issued its Guidance on Anti-Money Laundering and Countering the Financing of Terrorism Controls in Trade Finance and Correspondent Banking in October 2015 and its Best Practices for Countering Trade-Based Money Laundering in May 2018.[12,13]

Then, following the reverberations of Malaysia's 1MDB scandal, which led to the MAS shutting down the local branch of Swiss bank BSI SA due to AML non-compliance, the regulator has vowed even stronger action against regulatory lapses, including more intrusive inspections and "naming and shaming" rule breakers.

In this context, the MAS issued its Guidance to Capital Markets Intermediaries on Enhancing AML/CFT Frameworks and Controls in January 2019, laying out its findings from recent AML/CFT inspections on capital markets intermediaries (CMIs). The report was damning.

MAS applies a three-pillar framework comprising Governance, Risk Awareness and Execution in their AML/CFT inspections (Table 7).

Table 7:

Governance	Risk Awareness	Execution
• **Right tone from the top** that emphasises AML/CFT as organisational priority • **Active oversight** of AML/CFT framework, risk management and tailored training initiatives • **Clear lines of responsibilty** • **Active involvement** in the deliberation and resolution of AML/CFT issues	• **Sound understanding of key ML/TF risks** • **Appropriately handle and mitigate risks** arising from basic and complex AML/CFT issues • **Clear** understanding of **individual ownership and accountabilty** for managing ML/TF risks	• **Proper implementation** of policies, procedures and controls that comply with Notice requirements • **Effective risk assessment** and **mitigation** measures • **Timely escalation and resolution** of **red flags** • **Timely and effective resolution** of **past issues**

Source: MAS

12 https://www.mas.gov.sg/-/media/MAS/News-and-Publications/Monographs-and-Information-Papers/Guidance-on-AML-CFT-Controls-in-Trade-Finance-and-Correspondent-Banking.pdf

13 https://abs.org.sg/docs/library/best-practices-for-countering-trade-based-money-laundering.pdf

The inspectors found serious shortcomings under each of the pillars that CMIs were assessed on, which can be summarized as follows:

Governance

- Insufficient appreciation of AML/CFT by the Board and Senior Management (BSM).
- Failure by the BSM to ensure the adequacy of AML/CFT frameworks, processes, and controls:
    - Room for improvement in enterprise-wide risk assessment.
    - Inadequate BSM oversight of the effectiveness of AML/CFT controls.
- Failure to ensure appropriate compliance management and resourcing arrangements.
- The BSM did not establish appropriate independent audit arrangements; or monitor remediation of audit findings.

Risk Awareness

- The inability of the first line of defense to detect ML/TF red flags.
- Lack of awareness concerning suspicious transaction report (STR) reporting obligations.
- Inadequate awareness of tax-related ML risk.

Execution

- KYC: A reliance on third parties to conduct Customer Due Diligence (CDD).
- Inadequacies in the source of wealth (SOW) and source of funds (SOF).
- Deficiencies in the ongoing monitoring framework:
    - Improvements required in respect of continuing monitoring
    - Enhancements needed in risk assessment and risk mitigation measures for complex structures.[14]

Data Analytics

Recognizing key weaknesses with the current AML/CFT approaches, the AML/CFT Industry Partnership (ACIP), a public-private partnership addressing ML/TF risks facing Singapore, has identified data analytics as a key area of interest, going so far as to say that there is wide consensus about the promise of new data analytics methods in the field of AML/CFT.[15]

To focus on data analytics, ACIP set up the Data Analytics Working Group for member banks to share their respective journeys of adoption and implementation of AML/CFT analytics, and to provide practical insights for FIs at different stages in their journeys. However, ACIP says:

> *"Despite the potential for data analytics to add value to or solve problems within the AML/CFT functions of the financial services sector, adoption is, at the time of this paper, still relatively immature across the industry. This may, in part, be attributable to a reluctance to confront legacy approaches to AML/CFT or fear of diluting the focus on what are perceived to be core processes and controls. In certain FIs, there may also be a misconception that data analytics solutions are invariably novel, highly complex, require high-risk appetite and heavy investment, and are therefore only suitable for larger FIs."*[16]

With combating proliferation financing and detecting the abuse of legal persons being core risk concerns for Singapore's financial sector, the MAS has adopted a new data analytics initiative to identify networks of suspicious activity across the entire financial industry.[17]

In preparation for new digital payment tokens (DPT) licensees this year, the MAS enhanced its supervisory and surveillance capabilities to

14 MAS; Guidance to Capital Markets Intermediaries on Enhancing AML/CFT Frameworks and Controls; 2019

15 Established in April 2017, ACIP brings together both stakeholders from industry and government and provides a dedicated platform to discuss key transnational illicit finance risks confronting Singapore's financial and non-financial sectors as well as identify and promote areas to uplift ML/TF risk understanding in Singapore

16 ACIP; Industry Perspectives – Adopting Data Analytics Methods for AML/CFT; 2018

17 https://www.int-comp.org/about-ica/ica-press-room/singapore-regulator-says-technology-is-creating-both-new-challenges-and-new-opportunities/

facilitate the proactive detection of unlicensed DPT activities, and to use "real-time" data gathering to enhance its assessment of ML/TF risks for licensed entities.[18]

It is clear that authorities recognize the huge potential of Data Analytics, especially with the recent AML/CFT inspections on capital markets intermediaries. ACIP has been clear about the promise of data analytics methods in the field of AML/CFT, but also about the obstacles preventing its widespread adoption. Regtech providers that are able to address these concerns and shortcomings will find opportunities.

e-KYC

On the e-KYC front, Singapore has shown leadership in its MyInfo initiative, which is a digital service that enables citizens to authorize third-party access to their data. Working off the back of this initiative, the MAS and GovTech started a pilot with four banks last year to enable consumers to open bank accounts using the service. Today, Singaporeans can open bank accounts or apply for credit cards online instantly thanks to this initiative. According to the MAS, more than 20 financial institutions are now using MyInfo to provide more than 110 digital financial services.[19]

In further moves that will have implications for electronic verification, under the National Digital Identity (NDI) project, it appears that Singapore is establishing "a framework for public digital infrastructures on identity, consent and data sharing," whereby NDI will be the backbone of a system that will combine access, data, and services to consumers in Singapore.

Within this scheme, all government services, as well as some private-sector financial services, will be available based on NDI biometric authentication and will interface with private sector protocols. In more practical terms, this means that a variety of functions will be completed directly via the system, e.g., KYC, when applying for a new account, data transfer from one institution to another, and even transaction initiation.[20]

Should this initiative become reality, regtech providers will have the opportunity to build tools that utilize the infrastructure to offer a broader range of solutions to firms, including those around identity, consent and data sharing.

Cybersecurity

The Cybersecurity Bill was passed in February 2018 and received the President's assent in March 2018 to become the Cybersecurity Act. The Act establishes a legal framework for the oversight and maintenance of national cybersecurity in Singapore. Its four key objectives are to strengthen the protection of Critical Information Infrastructure (CII) against cyber-attacks; authorize the Cyber Security Agency (CSA) to prevent and respond to cybersecurity threats and incidents; establish a framework for sharing cybersecurity information, and establish a light-touch licensing framework for cybersecurity service providers.[21]

In August 2019, the MAS issued a set of legally binding requirements to raise the cybersecurity standards and strengthen the cyber resilience of the financial sector. The Notice on Cyber Hygiene sets out the measures that financial institutions must take to mitigate the growing risk of cyber threats.[22]

18 Ibid.
19 https://fintechnews.sg/25967/regtech/regtech-singapore/
20 Ibid.
21 https://www.mci.gov.sg/portfolios/cyber-security/cybersecurity-act
22 https://www.mas.gov.sg/news/media-releases/2019/mas-issues-new-rules-to-strengthen-cyber-resilience-of-financial-industry

The Notice makes compulsory critical elements in the existing MAS Technology Risk Management (TRM) Guidelines (a set of best practices that provide financial institutions with guidance on the oversight of technology risk management, security practices and controls to address technology risks). Specifically, it is mandatory for financial institutions to comply with the following requirements:

- Establish and implement robust security for IT systems.
- Ensure updates are applied to address system security flaws promptly.
- Deploy security devices to restrict unauthorized network traffic.
- Implement measures to mitigate the risk of malware infection.
- Secure the use of system accounts with special privileges to prevent unauthorized access.
- Strengthen user authentication for critical systems as well as systems used to access customer information.[23]

Financial institutions had 12 months to put these measures in place before the requirements came into effect on 6 August 2020.[24]

FIs will be looking for regtech solutions to help them to effectively implement compliance requirements pertaining to the critical elements in the existing MAS TRM Guidelines. Regtech providers that are able to assist in the items listed above should engage with FIs to understand where they have gaps in their oversight of technology risk management, security practices, and controls to address these risks.

Regtechs should also look into funding opportunities offered by the Singaporean authorities. For example, vendors offering cybersecurity solutions should look into applying for a Cybersecurity Capability Grant (CCG), which offers up to 50% support for Singapore-based financial institutions that intend to set up or expand cybersecurity operations capabilities in Singapore.[25,26]

Data Privacy

The Personal Data Protection Act 2012 (PDPA) governs the collection, use, and disclosure of personal data by organizations. Due to KYC compliance in Singapore, financial services companies, including fintech companies, must collect personal data to verify the identity of their customers. Therefore, fintech companies are required to comply with PDPA regulations.[27]

Under the PDPA, fintech companies are required to comply with eight obligations:

- **Consent, Purpose Limitation, and Notification Obligation:** Fintech companies must notify their customers of the purpose for which their data is being disclosed, and they must receive consent.
- **Access and Correction Obligation:** Fintech companies must allow their customers to access their data as well as inform the customer how their data has been used or disclosed. Fintech companies are also required to correct or update personal data upon request from a customer.
- **Accuracy Obligation:** Fintech companies should take reasonable steps to verify the accuracy of the personal data they use or disclose.
- **Protection Obligation:** Fintech companies are required to take reasonable security measures to prevent unauthorized access, collection, use, disclosure, copying, modification, or disposal of personal data.

23 Ibid.

24 Ibid.

25 https://www.mas.gov.sg/development/fintech/grants-for-innovation

26 https://www.mas.gov.sg/-/media/MAS/Smart-Financial-Centre/Fact-Sheet-on-FSTI-CCG.pdf?la=en&hash=A8972BEDA02F-CD535151B960D72058CF5E63F7FC

27 https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Advisory-Guidelines/the-notification-obligation---ch-14-(270717).pdf

- **Transfer Limitation Obligation:** Fintech companies cannot transfer personal data outside of Singapore.
- **Openness Obligation:** Fintech companies are required to implement policies and procedures that meet all eight PDPA obligations and are required to make such policies available to the public.
- **Do Not Call Provisions:** If a fintech company wishes to send marketing material to a Singapore telephone number they must first verify that the number has not been registered on a Do-Not-Call list or receive clear and unambiguous consent from the customer to send marketing messages direct to their phone.[28]

Data Protection Trustmark Scheme (DPTM)

In July 2018, following the theft of the personal data of 1.5 million SingHealth patients, the government announced the Data Protection Trustmark Scheme (DPTM). The DPTM allows for official certification of a company's data protection methods and is unique in the Asia-Pacific region.

While the DPTM is a Singapore trustmark, it also incorporates relevant international data protection principles, including that of the OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data; and the APEC Privacy Framework. This enables organizations to, in the future, more seamlessly attain both the DPTM and the APEC Cross Border Privacy Rules (CBPR) or Privacy Recognition for Processors (PRP) system certifications.

Organizations certified under the APEC CBPR or PRP systems will enjoy another mechanism to legitimately transfer data across borders with other certified organizations operating in participating APEC economies.[29]

From a regtech perspective, organizations can expect Singaporean authorities to tighten requirements on protecting customers' data. Not only will this be informed by the shift in global norms and standards, but also by the recent personal data breach of SingHealth patients. There will also be further opportunities for regtechs to help fintechs meet their data protection obligations under their KYC compliance requirements.

Framework for Responsible Use of AI

As part of Singapore's National AI Strategy and to help build a progressive and trusted environment for AI adoption within the financial sector, in November 2018, the MAS released a set of principles to promote fairness, ethics, accountability and transparency (FEAT) in the use of AI and data analytics in finance.

The MAS sees the FEAT Principles laying the foundation for a thriving AI and data analytics ecosystem, stating:

> *"As the financial industry harnesses the potential of AI and data analytics on an increasing scale, we need to be cognizant of using these technologies responsibly and ethically."*[30]

In November 2019, the MAS followed up by announcing that it was working with financial industry partners to create a framework for FIs to promote the responsible adoption of Artificial

28 https://www.startupdecisions.com.sg/blog/fintech-regulations-and-compliance-in-singapore/

29 https://www.imda.gov.sg/news-and-events/Media-Room/Media-Releases/2018/imda-and-pdpc-launch--pilot-of-data-protection-trustmark-certification-scheme

30 https://www.mas.gov.sg/news/media-releases/2018/mas-introduces-new-feat-principles-to-promote-responsible-use-of-ai-and-data-analytics

Intelligence and Data Analytics (AIDA). This framework, known as Veritas, will enable FIs to evaluate their AI and Data Analytics-driven solutions against the principles of FEAT. The MAS has said that:

> *"Proper governance around the use of AIDA is critical to fostering trust and confidence in AIDA-driven decisions and financial services. Veritas aims to provide financial institutions with a verifiable way to incorporate the FEAT principles into their AIDA solutions."*[31]

The Veritas consortium is currently made up of 25 members, comprising the MAS, SGInnovate, EY, FIs and large tech companies. In December 2020, the consortium produced a report on its findings and conclusions, addressing "Implementation Challenges in the Responsible Use of Artificial Intelligence and Data Analytics".[32]

Singapore sees the great potential for AI, as evidenced by the fact that the country has a national strategy catering to it. Still, authorities also want to balance that with the requirement that AI and Data Analytics' technologies are being used responsibly and ethically. There will be tremendous opportunities for regtechs to help firms implement the Veritas framework.

Regtechs that use AI to underpin their solutions should also look at Singapore's National Artificial Intelligence strategy, to see where their solutions might align. They should also work with prospective clients to see if they are eligible for the current Digital Acceleration grant, which offers 80% co-funding to adopt digital solutions to improve productivity, increase efficiency, enhance operational resilience, manage risks better, and/or serve customers better.[33]

Individual Accountability

There is a greater spotlight on executive accountability as well as culture and conduct. Singapore has voiced efforts to strengthen individual accountability for senior managers as a crucial part of the MAS' broader efforts to foster a culture of ethical behavior and responsible risk-taking in the financial industry.

In April 2018, the MAS issued a consultation paper "the Guidelines on Individual Accountability and Conduct" (IAC Guidelines) to seek feedback on a proposed set of guidelines to strengthen accountability and standards of conduct across the financial industry. Specifically, the aim is to "promote the individual accountability of senior managers, strengthen oversight of material risk personnel, and reinforce standards of proper conduct among all employees." In June 2019, the MAS issued an extension of the 26 April 2018 consultation paper to seek additional feedback on the revised scope of FIs on which the IAC Guidelines will be applied. The MAS is now proposing to extend the Guidelines to all FIs regulated by the MAS.[34]

On 10 September 2020, the MAS issued Guidelines on Individual Accountability and Conduct, FAQs on the IAC Guidelines and the MAS Information Paper on Culture and Conduct Practices of Financial Institutions on good practices in these areas.

With effect from 10 September 2021, all FIs regulated by the MAS (unless excepted) should implement appropriate policies and processes to achieve five accountability and conduct outcomes set out in the Guidelines. The five outcomes and specific guidance underpinning each outcome aim to reinforce FIs' responsibilities in three key areas: (i) promote the individual accountability of senior managers, (ii) strengthen oversight over material risk personnel, and (iii) reinforce conduct standards among all employees.[35]

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31 https://www.mas.gov.sg/news/media-releases/2019/mas-partners-financial-industry-to-create-framework-for-responsible-use-of-ai

32 https://www.mas.gov.sg/news/media-releases/2021/veritas-initiative-addresses-implementation-challenges

33 https://www.mas.gov.sg/development/fintech/digital-acceleration-grant

34 MAS; Guidelines on Individual Accountability and Conduct–Proposed Scope of Application; 2019

35 https://www.mas.gov.sg/regulation/guidelines/guidelines-on-individual-accountability-and-conduct

Open API

As part of the initiative towards becoming a smart financial centre, the MAS is aiming to foster a mature Open API and data infrastructure to facilitate Open Banking. The MAS took an early lead in the region with its issuance of the Finance-as-a-Service: API Playbook with the Association of Banks of Singapore in 2016 to facilitate widespread adoption.

With Covid-19 accelerating the move to online, the requirement for both external and internal APIs will grow, as FIs are forced to build capabilities to offer real-time, digital services. There will be a demand for regtechs to help build these APIs. The growth of linkages within the ecosystem will then further correlate to increased demand for regtech solutions to manage the complex compliance implications that will invariably arise.

Overhaul of Financial Position Report, MAS 610

The MAS 610 is the core set of reporting requirements within Singapore's financial services space and contains the balance sheet and off-balance sheet information of banks and their underlying details. The MAS 610 applies to all banks in Singapore, including foreign-owned entities. Banks incorporated in Singapore need to submit information at both individual and group levels and report separately for their Singapore operations, overseas bank subsidiaries, and overseas banks.

In line with global norms, the MAS is placing greater emphasis on the qualitative aspect of report automation. It is no longer sufficient just to have the right answer; banks must also explain how the answer was derived. To that end, the MAS is completely overhauling the critical financial position report, MAS 610, for the first time in years to glean more data points and details from banks. The MAS 610/1003 represents an overhaul of reporting requirements that will require a sharp increase in the granularity and frequency of data reporting, encompassing over 300,000 data points, up from the around 4,000 currently required.

The changes will impact all supporting forms and require multiple new attributes, calculations, and aggregations. It will apply to all banks in Singapore, including those that are foreign-owned, and took effect on 1 October 2020. Banks are, however, struggling to prepare for the new requirements, with 76% of Singapore banks found to be in the "data gap analysis" stage in their preparation for the changes.[36]

Given that banks are still woefully underprepared, they clearly will require assistance in helping them to get ready for the new measures. More generally speaking, with the MAS moves to transform its data collection approach and requests to financial institutions, for example, in its requirements for all regulatory returns to be now in machine-readable formats, firms and the MAS itself will have increased demand for regtech and suptech solutions respectively.

Payment Services

The MAS finalized a new regulatory framework for payment services in Singapore at the end of 2018. The Payment Services Bill streamlines the regulation of payment services within a single activity-based legislation and comprises two parallel regulatory frameworks, (i) a designation regime that enables the MAS to regulate systemically important payment systems for financial stability as well as efficiency reasons, and (ii) a licensing regime that focuses on retail payment services provided to customers and merchants.[37]

36 https://www.regulationasia.com/singapore-banks-still-analysing-data-gaps-for-mas-610/

37 https://www.mas.gov.sg/news/media-releases/2018/new-regulatory-framework-to-enhance-payment-services-in-singapore

The Payment Services Bill was then subsequently followed up with the Payment Services Act (PSA), which Parliament passed in January 2019. The PSA is a forward-looking and flexible framework for the regulation of payment systems and payment service providers in Singapore, providing for regulatory certainty and consumer safeguards, while encouraging innovation and growth of payment services and fintech.

The PSA, which came into effect on 28 January 2020, regulates seven activities: (1) account issuance services, (2) domestic money transfer services, (3) cross-border money transfer services, (4) merchant acquisition, (5) electronic money issuance, (6) digital payment token services, and (7) money-changing services.

Key Implications of the PSA:

1. Broadens the scope of regulated activities to a wider range of payment services and activities, domestic money transfers, inward remittances, merchant acquisition, and digital payment token services.
2. Calibrates regulations to specific risks posed by activities through a new modular approach.
3. Increases competition by preventing formation of walled gardens.
4. Brings digital payment tokens into the mainstream. Regulation may also promote greater use of payment tokens, which can reduce settlement time and costs.[38]

The MAS intends to amend the PSA to fully align with the most recent enhancements to the FATF Standards. A consultation paper, released in December 2019, highlights amendments to expand the definition and guidelines relating to DPT service, and virtual asset service providers (VASPs).[39]

The PSA also updates the MAS' definition of "e-money" to now include e-wallets. Previously, the term "e-money" was confined to stored value and pre-paid services. Now, "e-money" requires issuers to protect the value stored in major e-wallets for both consumers and merchants.[40]

The MAS' amended E-payments user protection guidelines, under the PSA, set out the expectations of the MAS of any responsible financial institution that issues or operates a protected account, as well as duties of account holders and account users of protected accounts and provides guidance on the liability for losses arising from unauthorized and erroneous transactions. Another subsequent amendment came into effect from 5 September 2020.[41]

With the new regulatory framework under the PS Bill and Act, the broadened scope of regulated activities to a wider range of payment services, activities, and entities will mean that both the regulator and the private sector will be looking for technological solutions to help them supervise, in the case of the former and maintain compliance, in the case of the latter. Not least as there will be an upcoming amendment to the PSA to fully align with the most recent enhancements to the FATF Standards.

On 21 July 2020, the MAS launched its Consultation Paper on the New Omnibus Act for the Financial Sector, setting out proposals for an expansion and consolidation of its regulatory powers. The proposal will have significant consequences for financial services firms operating in Singapore and especially for service providers working with digital assets (cryptocurrencies). Accordingly, banks, financial service providers, and other obligated institutions that will be affected by these new rules are reviewing their AML/CFT response to maintain compliance.[42]

38 https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/financial-services/sg-fsi-payment-services-act-2019-wns.pdf

39 https://www.mas.gov.sg/-/media/MAS/News-and-Publications/Consultation-Papers/2019-Consultation-Paper-on-Proposed-Amendments-to-PS-Act/Consultation-on-Proposed-Amendments-to-Payment-Services-Actdocx.pdf

40 https://www.mas.gov.sg/regulation/acts/payment-services-act

41 https://www.mas.gov.sg/regulation/guidelines/guidelines-for-e-payments-user-protection

42 https://www.mas.gov.sg/publications/consultations/2020/consultation-paper-on-the-new-omnibus-act-for-the-financial-sector

Virtual Assets

As digital currency has gained momentum, Singapore has emerged as a key hub in Asia with its welcoming attitude towards emerging technologies such as cryptocurrencies and blockchain. The Singapore government has reinforced this perception through its willingness to experiment, with the MAS exploring the use of distributed ledger technology for clearing and settling payments and securities, since late 2016.[43]

The new PSA, which came into effect in January, regulates cryptocurrency payments and trading enterprises under certain aspects of the regulatory regime that governs traditional payment services and requires them to hold a license. Crypto payment services, which are under the oversight of the MAS, must also comply with the Financial Advisers Act, Insurance Act, Securities and Futures Act and the Trust Companies Act.[44]

Under the PSA, new regulations require cryptocurrency-related firms to first register and then apply for operating licenses such as a money-changing license, a standard payment institution license, and a major payment institution license to operate legally in the jurisdiction.[45]

Their operators will also be obliged to meet AML/CTF regulations, which are in line with FATF recommendations, first made in October 2018 and then updated in June 2019. That means that payment data relating to the originator and beneficiary of a crypto transaction has to travel with the payment, guidance known as FATF's "travel rule." Other inclusions within the PSA widen rules to include the transfer of DPTs (as well as them being exchanged); the provision of custodial wallets for or on behalf of customers; and the brokering of DPT transactions.[46]

With Singapore now regulating cryptocurrency payments and trading enterprises, new players entering the market will be under the watchful eye of the regulator. To get licensed these players are going to have to be whiter than white, proving to the regulator that they have all the necessary controls in place to meet AML/CTF requirements. With a purely digital service, will come purely digital processes, raising the demand for regtech services around identification and transactions monitoring.

Virtual Banking

The MAS offered up five digital banking licenses at the end of 2019, which included two digital full bank (DFB) licenses and three digital wholesale bank (DWB) licenses to enable non-bank players with strong value propositions and innovative digital business models to offer banking services.

The requirements for a DFB, which can serve retail customers, are more onerous than for a DWB. DFB licensees must meet a minimum paid-up capital requirement of S$ 1.5 billion, be based in Singapore, and be controlled by Singaporeans. A DWB licensee, whose customers are limited to SMEs and other non-retail segments, need S$ 100 million in capital and can be majority-owned by foreign entities.[47]

After much anticipation, in December 2020, the MAS announced that it had awarded four virtual-banking licenses, two for retail (or full banking licenses) and two for wholesale-business only. The retail licenses went to a Grab-Singtel partnership and to Sea Group. Although three wholesale licenses were in play, MAS only handed out two, to Ant Group and to a consortium led by Chinese developer Greenland Holdings.

Like traditional banks, these players will provide retail customers with services such as opening accounts, deposits as well as issuing debit and credit cards but without the physical branches. Digital wholesale banks will be able to serve corporates and small and medium-sized enterprises.

43 https://www.lexology.com/library/detail.aspx?g=ca374a13-ed9f-4705-9a7a-e3fea8901429
44 https://cointelegraph.com/news/singapore-act-to-license-cryptocurrency-firms-comes-into-effect
45 Ibid.
46 https://www.coindesk.com/singapore-announces-new-aml-rules-for-crypto-businesses
47 https://www.straitstimes.com/singapore/mas-says-14-of-21-digital-bank-applicants-eligible-for-next-stage-of-assessment

Consortium/Bank Brand	Consortium Members	Focus Market Segment
DFB (known applicants)[48]		
Grab-Singtel	Grab (60%) Singtel (40%)	Retail and SMEs
Sea	Sea	focus on addressing the unmet needs of millennials and small businesses
DWB (known applicants)[49]		
Ant Financial	Ant Financial	
Greenland Financial-led consortium	Greenland Financial MinIPO	SMEs

MAS said in a statement that the successful applicants must meet all relevant prudential requirements and licensing preconditions before MAS grants them their banking licences. The four successful applicants beat 10 other contenders, such as Razer Youth Bank; and a consortium led by Osim founder Ron Sim's V3 Group and EZ-Link. MAS added that it will review whether to grant more DWB licences in the future as the licences are being introduced as a pilot.[50] [51]

With the winners for Singapore's new virtual banking licenses announced, demand for regtech services by these new challenger banks, and incumbents looking to up their game, will grow over time.

Private Sector

Singapore's private sector is very active in the regtech space. The dominant player would be the Singapore Fintech Association (SFA), which is not altogether independent of the MAS. The strength of that relationship facilitates strong collaboration between the regulator and the sector, enabling the push to move fintech and regtech forward.

There are also multiple supporting associations, which are starting to step forwards. These include the Association of Banks in Singapore (ABS), the Investment Management Association of Singapore (IMAS), the Association of Independent Asset Managers (AIAM), the Blockchain Association Singapore (BAS), and ACCESS, the Singapore Cryptocurrency and Blockchain Industry Association.

ACCESS has been relatively active in the regtech space. It recently had an initiative that would enable FIs to conduct due diligence on blockchain. They are also currently running an initiative on the implementation of KYC and transactions monitoring in the blockchain space. IMAS, for its part, ran a fintech accelerator program.

Since Covid-19, an interesting development has been the type of support coming from private organizations that would normally be associated with the government. For example, there are now two private companies that are providing grants. These are Razer Fintech, an offline to online (O2O) digital payment network in Southeast Asia, which is providing financial support for fintechs and AMTD, a non-bank financial institution group, which has joined forces with the MAS and the SFA to offer a Fintech Solidarity Grant to support Singapore-based fintechs.

48 https://fintechnews.sg/35820/virtual-banking/digital-bank-singapore-list-applicant/

49 Ibid.

50 https://www.mas.gov.sg/news/media-releases/2020/mas-announces-successful-applicants-of-licences-to-operate-new-digital-banks-in-singapore

51 https://fintechnews.sg/45754/virtual-banking/grab-sea-and-ant-among-those-who-secured-singapores-digital-banking-license/

Private Sector Associations and Regional Initiatives

In addition to the government and regulator initiatives there are also a number of private initiatives supporting fintech/regtech in the country. These include:

Logo	Name	Description
	The Association of Banks in Singapore (ABS)	A non-profit organization (NPO) that represents the interests of the commercial and investment banking community. As of January 2020, its membership comprised 154 local and foreign banks/institutions and representative offices operating in Singapore. See also, the AML/CFT Industry Partnership (ACIP), a private public partnership established in April 2017.
	The Singapore Cryptocurrency and Blockchain Industry Association (ACCESS)	ACCESS envisions Singapore as a premier global hub for businesses driven by digital currencies and blockchain technologies.
	Association of Independent Asset Managers (AIAM)	AIAM is a voluntary commitment by a team of professionals united by the same dedication to build a local community for fellow IAM practitioners.
	ASEAN Financial Innovation Network's (AFIN) API Exchange (APIX)	AFIN was established as an NPO in 2018 by the ASEAN Bankers Association (ABA), International Finance Corporation (IFC), and the MAS. Its mission is to facilitate innovation and cooperation between financial institutions and fintechs. APIX is an initiative of AFIN. It is billed as the world's first cross-border, open architecture API marketplace and sandbox platform for collaboration between fintechs and FIs in which participants can integrate and test solutions with each other via a cloud-based architecture.
	Blockchain Association Singapore (BAS)	A setup to facilitate collaboration between all market participants and stakeholders in the Blockchain ecosystem.
	DBS Startup Xchange	A program matching the bank and its enterprise clients with startups and their new technologies so as to find solutions to business problems.
	FinTech Hub SG	Co-working space and event space dedicated to serving fintechs in Singapore, located within the CBD.
	Ice71	ICE71 'Innovation Cybersecurity Ecosystem at Block71' is the region's first cybersecurity startup hub. Founded by Singtel Innov8, the corporate venture capital unit of Singtel, and NUS through its entrepreneurial arm NUS Enterprise, it aims to strengthen Singapore's growing cybersecurity ecosystem.
	Insurance and Financial Practitioners Association	IFPAS represents the interest of its members by being the leading voice of the industry on legislative, regulatory, and policy-related matters.

COMPLIANCE	International Compliance Association (ICA)	The provider of training and education in the field of AML and Governance, Risk and Compliance, accredited under Singapore's Institute of Banking & Finance Standards (IBF Standards).
imas INVESTMENT MANAGEMENT ASSOCIATION OF SINGAPORE	Investment Management Association of Singapore (IMAS)	A representative body of investment managers in Singapore
Standard Chartered eXellerator	SC Ventures eXellerator	The eXellerator lab is a collaboration space for clients, fintechs and other partners to come together and solve business problems. SC Ventures by Standard Chartered promotes innovation, invests in disruptive financial technology, and explores alternative business models.
SGINNOVATE	SGInnovate	A private organization wholly owned by the Singapore Government. Their function is to help scientists build Deep Tech startups.
SGTECH	SGTech	A premier trade association for the tech industry in Singapore. SGTech strives to create an ecosystem that anticipates trends and develops sustainable initiatives to strengthen the community and help the industry grow.
SFA SINGAPORE FINTECH ASSOCIATION	Singapore Fintech Association (SFA)	A cross-industry, non-profit initiative, intended to be a platform designed to facilitate collaboration between all market participants and stakeholders in the FinTech ecosystem.
SFA SINGAPORE FINTECH ASSOCIATION	SFA RegTech Sub-Committee	Aims to promote the invention and adoption of technologies to overcome regulatory challenges in Singapore. The sub-committee recently inked an MoU with the Australia-based Regtech Association to better engage with the regtech ecosystem in the region.
startup/angels	Startup&Angels	Bringing together the most innovative business founders with curious investors, VC's, and angels over a fully catered event series.
startupbootcamp FinTech	Startupbootcamp FinTech	The leading accelerator of startups supporting and scaling companies innovating and disrupting the financial sector.
STARTUP SG	Startup SG	Created to showcase Singapore's vibrant startup ecosystem both locally and overseas. In 2018, Startup SG Network was launched to bring Singapore's tech startup ecosystem even closer together and encourage the proliferation of innovative and collaborative partnerships.
SVCA	The Singapore Venture Capital & Private Equity Association (SVCA)	Promotes venture capital development and private equity in Singapore through business workshops, events, and membership programs.

Mapping of Potential Ecosystem Cooperation and Partnerships

* Association (A); Government (G); Incubator/Accelerator (I/A); Private (P); Regulator (R)

Institution	Type*
ABS	A
ACCESS	A
AFIN (APIX)	A
AIAM	A
BIS Innovation Hub (BISIH)	A
Crime Stoppers Asia	A
IFPAS	A
IMAS	A
International Finance Corporation (IFC)	A
SFA	A
SFA Sub-Committee	A
SGTech	A
SVCA	A
SGInnovate	G
Temasek (Vertex Ventures)	G
Found8	I/A
ICE71	I/A
Mastercard Start Path	I/A
NTUitive	I/A
Red Dot Ventures	I/A
Singapore Fintech Bay	I/A
SCB eXellerator	I/A
Citi	P
DBS	P
Deutsche Bank Singapore	P
EY	P
Maybank	P
Monk's Hill Ventures	P
OCBC	P
Openspace Ventures	P
Protiviti	P
Standard Chartered	
SC Ventures (by Standard Chartered	P
UBS	P
UOB	P
Wavemaker Partners (VC)	P
UOB	P

Market Activity

Key Singapore Financial Institutions and their Recent Regtech Initiatives

Institution	Citi			
Innovation Lab	Citi Global Innovation Labs (Singapore, Global Transaction Services (GTS))			
VC Arm	Citi Ventures			
VC Arm Details	Citi Ventures harnesses the power of Citi to help people, businesses, and communities thrive in a world of technological change.			
Venture Investments				
Company	Type	Deal Date	Deal Type	Company description
Nylas	API	Jun 2020	Series B	Nylas provides an API platform that enables developers to quickly and securely access and process user data from any email and calendar.
Immuta	Data Governance	Jun 2020	Series C	Immuta provides a cloud-native data governance platform for organizations to automate data access control, security, and privacy compliance.
Anvil	Business Services	June 2020	Series A	Anvil is a low-code paperwork automation platform that helps businesses build simple online experiences for paperwork processes.
UJET	Business Services	June 2020	Series C	UJET's cloud contact centre solutions help organizations meet customers across all endpoints and channels.
BlueVine	Financial Services	Nov 2019	Series F	BlueVine is an advanced, online platform providing SMEs access to financial products.
Datameer	Business Intelligence	Oct 2019	Venture – Series Unknown	An agile analytics lifecycle platform that allows enterprises to decipher the value of all their data.
Second Measure	Analytics	Feb 2019	Series A	A technology company that analyzes billions of everyday purchases to an-swer real-time questions about con-sumer behavior.
Anaconda	Analytics	August 2018	Venture – Series Unknown	A Python data science platform with more than 15 million users and 150+ enterprise customers.
Contguard	Business Intelligence	April 2018	Venture –Series Unknown	Provides an Internet of Things (IoT) shipment monitoring solution to pro-vide supply chain managers with data and business intelligence for manufac-turers and suppliers.

Kinetica	Analytics	June 2017	Series A	A next-gen database platform for analytics and AI accelerated by GPUs.
Feedzai	Analytics	2016	Strategic Investment	A leader in AI for real-time risk management across banking and commerce.
Pepperdata	Application Performance Management	April 2015	Series B	A leader in Hadoop cluster optimization software

Partnerships		
Company	**Date**	**Description**
EY & SAS	April 2019	The Bank announced a next-gen project, with EY and SAS, using AI to develop an advanced risk analytics scoring engine. The initiative was created to help streamline the time-consuming, highly manual processes associated with reviewing high volumes of global trade transactions while ensuring regulatory compliance.[52]
NA	April 2019	The Bank introduced fingerprint or facial recognition for its institutional clients in China, India, Singapore, Thailand, and Vietnam to access their CitiDirect BE Mobile App, Citi's digital banking platform for institutions on mobile.[53]
Feedzai	2019	Citi's Treasury and Trade Solutions entered into a strategic partnership with Feedzai. Citi will be integrating Feedzai's transaction monitoring platform powered by advanced ML technology, into its own proprietary services and platforms to provide clients with enhanced control and risk management for payments transactions. Citi expected to be live with a new solution leveraging Feedzai's technology in 2019.[54]
NA	March 2018	Citi rolled out Citi Bot SG, the Bank's natural-language chatbot on Facebook Messenger, to all consumer banking customers. The bot was developed in and first launched in Singapore. In July of 2019, Citi Bot SG was replaced with Citigroup's new mobile app aimed at global consumer banking customers.[55]
NA	Aug 2017	Singapore-based Sanjeev Behl, Asia Pacific Head of Treasury and Trade Solutions Client Operations, said that Citi is actively involved with multiple automation initiatives, including RPA/AI evaluation with its operations processes. One of the initiatives launched, for example, was an RPA pilot automating trade import payments in India and China.[56]

52 https://www.sas.com/en_in/news/press-releases/2019/april/citi-global-trade-ey-artificial-intelligence-sgf19.html
53 https://www.citigroup.com/citi/news/2019/190416a.htm
54 https://www.citibank.com/tts/about/press/2018/2018-1219.html
55 https://www.citigroup.com/citi/news/2018/180319b.htm
56 https://news.efinancialcareers.com/sg-en/292742/citi-ai-robotics-technology-sc

Institution	DBS Bank (POSB)	
Innovation Lab	DBS Asia X (DAX) (see also Startup Xchange program (SG & HK) and DBS Accelerator (HK))	
VC Arm	DBS Venture Debt Financing	
VC Arm Details	A form of debt financing offered to start-ups that are backed by venture capital investors.	
Partnerships		
Company	Date	Description
6Estates	May 2020	The Bank is working with 6Estates on a POC for the Automated Financial Analysis (AFA) project through the DBS Startup Xchange. The tool harnesses the power of NLP to quickly read, understand and correlate information from annual reports into financial analysis write-ups.[57]
Exiger	Nov 2019	DBS partnered with Exiger, a provider of risk and compliance solutions to fight financial crime, to implement an AI-powered due diligence solution to streamline and boost its screening processes. The solution – called DDIQ – is designed by Exiger to analyze content with cognitive reasoning to accelerate and enhance risk assessments of clients, investments, transactions, third parties, and counterparties.[58]
NA	Oct 2018	The Bank launched its Startup Xchange program, aimed at matching DBS and its corporate and SME clients' problem statements to startups. The program is focused on four areas of frontier technology that will help businesses stay relevant in the long run. These are: AI, data science, immersive media and the IoT.[59,60]
IBM	Nov 2017	The Bank announced that they are working with IBM to scale an enterprise-wide Centre of Excellence (COE) in RPA, making it the first-of-its-kind large-scale implementation in the financial services sector in Singapore and the region. IBM helped to set up the COE in June 2017, which by Nov. of that year had helped to optimize more than 50 complex business processes across the Bank.[61]
Pivotal Cloud Foundry	Nov 2017	The Bank launched a banking API developer platform that is the largest by a bank anywhere in the world. At launch more than 50 companies had already hopped onto the platform to develop solutions that will bring more convenience and value to customers. DBS built its API platform on Pivotal Cloud Foundry.[62]

57 https://medium.com/reimagine-banking/injecting-artificial-intelligence-into-financial-analysis-54718fbd5949
58 https://www.businesstimes.com.sg/companies-markets/dbs-partners-exiger-to-roll-out-ai-powered-risk-assessment-solution
59 https://www.dbs.com/newsroom/DBS_launches_startup_matching_platform_to_help_the_bank_and_its_customers_harness_the_power_of_emerging_technologies
60 https://www.dbs.com/startupxchange/index.html
61 https://www.dbs.com/newsroom/DBS_Bank_accelerates_digitalisation_transformation_with_robotics_programme
62 https://www.dbs.com/newsroom/Reimagining_banking_DBS_launches_worlds_largest_banking_API_developer_platform

Equinix	Nov 2017	The Bank worked with datacentre service provider Equinix to transform one of its traditional datacentres in Singapore into a cloud-optimized one. The private cloud datacentre is a quarter the size of the previous datacentre and 75% cheaper to run.[63]
Kasisto	Jan 2017	POSB launched its Kasisto enabled "digibank" AI-powered Virtual Assistant, making DBS the first financial institution in the country to enable consumers to bank conversationally on social media platforms. POSB is part of the DBS Group.[64]

63 https://www.dbs.com/newsroom/First_bank_in_Singapore_to_launch_new_cloud_based_data_centre

64 https://www.dbs.com/newsroom/Chat_with_POSB_via_Facebook_Messenger_POSB_digibank_Virtual_Assistant

Institution	OCBC Bank (and Bank of Singapore)	
Innovation Lab	The Open Vault (see also AI Lab@TOV)	
VC Arm	OCBC Venture Debt	
VC Arm Details	A form of debt financing structured for young companies which have earlier raised capital from venture capitalists or angel investors.	
Partnerships		
Company	Date	Description
Finda	Unknown	The Bank worked with Finda, a HK-based firm providing financial security, risk monitoring and control solutions, to test the use of facial recognition technology for customer verification at ATMs to reduce the risk of fraud in developing countries. The collaboration occurred as a POC under the MAS Financial Sector Technology & Innovation grant scheme.[65]
Touché	May 2018	Singapore-based start-up Touché signed an agreement with the Bank to offer its biometrics-based payment device and services to the Bank's credit card merchant customers with physical outlets. The physical payment device, which incorporates a fingerprint sensor, eliminates the need for multiple payment devices. Receipts are emailed to the customer's account which eliminates paper and makes the reconciliation process more efficient.[66]
Agency for Science, Technology and Research (A*STAR)	March 2018	The Bank set up an in-house unit to develop AI capabilities, with an initial investment of S$10 million over three years. AI Lab@TOV, which operates under OCBC's Fintech and Innovation Group, aims to drive the adoption of AI across banking services such as wealth advisory and loans financing. The Lab uses research and technology from Singapore's A*STAR to develop NLP services that can be used to respond to customer queries using voice messaging. It also deploys Amazon Web Services (AWS) DeepLens, a video-based ML technique that uses neural networks to learn and make predictions. This is expected to lead to breakthroughs in facial recognition technology for use at the branch and across the Bank's ATM estate.[67,68]
Unknown	2017	The Bank of Singapore rolled out an RPA project to create technological tools to take over the more mundane jobs that their people have to do. One such initiative, nicknamed Sky, generates daily or monthly credit monitoring reports, freeing up credit services officers, while also eliminating the chance of human errors and enabling better decision making.[69]

65 https://www.mas.gov.sg/development/fintech/fintech-in-banking
66 https://www.biometricupdate.com/201805/ocbc-works-with-touche-to-offer-fingerprint-based-credit-card-payments
67 https://www.finextra.com/newsarticle/31804/singapores-ocbc-establishes-dedicated-ai-lab
68 https://www.straitstimes.com/business/banking/ocbc-sets-up-in-house-ai-unit-with-initial-injection-of-s10m-over-3-years
69 https://www.bankofsingapore.com/research/Mapping-out-a-digital-future-for-private-wealth.html?

ThetaRay	Nov 2017	The Bank joined with Thetaray to use AI to identify potential suspicious transactions, slashing the volume of transactions going to manual review by 35% and increasing accuracy four-fold.[70,71]
Apple	Nov 2017	The Bank offers its retail and business banking customers the ability to log into the Bank's app via a selfie, if they use Apple iPhone X. The Bank had earlier introduced the OneTouch fingerprint authentication, which was developed using Apple's Touch ID technology. Both offerings were developed entirely by the Bank's in-house mobile developer team.[72]
Unknown	Oct 2017	OCBC launched two "robots", nicknamed Bob and Zac. Bob assists the consumer secured lending team with home loans restructuring and has slashed processing time by 97%. Zac is assigned to the finance team to help with sales performance reporting – a task that took 120 minutes when handled by one bank employee. The robot needs just 12 minutes.[73,74,75]
Consortium	Oct 2017	OCBC Bank, HSBC, Mitsubishi UFJ Financial Group (MUFG), along with the Infocomm Media Development Authority (IMDA), became the first in South-East Asia to develop a prototype of a blockchain-based KYC solution.[76]
CogniCor	Jan 2017	The Bank launched its first AI-powered chatbot, Emma, to respond to customers' queries on home and renovation loans and as of March 2018 had raked in more than S$100 million in home loans. Emma is jointly developed by OCBC Bank's home loans team and CogniCor, one of the start-ups from "The Open Vault at OCBC."[77,78]
Nest	May 2016	The Bank launched its OCBC FinTech Accelerator (Open Vault), powered by Nest, a mentor-driven program designed to help entrepreneurs build the financial technology companies of the future, faster and more efficiently. Run from a dedicated space in Singapore, up to eight startups are selected to join the full-time 12-week program.[79]
NA	May 2016	The Bank became the first bank in SE Asia to launch an open API platform with the rollout of its own developer portal, Connect2OCBC, to enable open banking services.[80]

70 https://www.finextra.com/newsarticle/31804/singapores-ocbc-establishes-dedicated-ai-lab

71 https://fintechnews.sg/14047/fintech/ocbc-bank-first-singapore-bank-tap-artificial-intelligence-machine-learning-combat-financial-crime/

72 https://www.fintechfutures.com/2017/11/ocbc-bank-first-in-singapore-to-launch-face-id-recognition-for-mobile-app/

73 https://www.straitstimes.com/business/banking/uobs-2-new-robot-employees-cut-data-processing-time-by-over-half-0

74 https://perfectial.com/blog/rpa-ai-in-banking/

75 https://www.finextra.com/newsarticle/31366/robots-outpacing-back-end-number-crunchers-at-ocbc

76 https://www.ocbc.com/group/media/release/2017/ocbc-hsbc-mufg-kyc-blockchain.html

77 https://www.ocbc.com/group/media/release/2017/home-and-renovation-loan-specialist-ai-emma.html

78 https://www.finextra.com/newsarticle/31804/singapores-ocbc-establishes-dedicated-ai-lab

79 https://angel.co/company/ocbc-accelerator-powered-by-nest

80 https://www.ocbc.com/assets/pdf/media/2016/may/media%20release%20-%20ocbc%20is%201st%20bank%20in%20south-

Institution	United Overseas Bank			
Innovation Lab	The FinLab			
VC Arm	UOB Venture Management			
VC Arm Details	UOB's investment arm, which finances privately-held companies through direct equity investment, mainly in Southeast Asia and China.			
Venture Investments				
Company	**Type**	**Deal Date**	**Deal Type**	**Description**
TaniHub	B2B platform	Apr 2020	Series A	A B2B agri marketplace that connects farmers with food, hotel, restaurant, and catering businesses. (Indonesia)
Lightnet	Blockchain	Jan 2020	Series A	Lightnet uses blockchain technology to provide cross-border payment capabilities for its partners. (Thailand)
Kedu Healthcare Tech	Health	Dec 2019	Series C	A China-based medical equipment services provider.
Happyeasygo Group	Travel	Dec 2019	Series B	An online travel domain. (India)
Amartha	Financial Services	Nov 2019	Series B	A financial technology company that connects micro and SME business partners with investors. (Indonesia)
Partnerships				
Company	**Date**		**Description**	
Unknown	Dec 2019		TMRW by UOB (in Thailand), the first mobile-only bank for ASEAN's digital generation, announced that it had enabled fingerprint and facial biometrics to make it speedier and safer for customers to open their TMRW accounts.[81]	
Intel	Nov 2018		UOB collaborated with Intel to successfully test how federated advanced data analytics can enhance cross-border AML efforts. UOB and Intel explored a federated analytics model to enable FIs to have an expanded view of a customer's banking activities across borders without breaching customers' privacy and data protection regulations. The project was co-funded by the MAS' Artificial Intelligence and Data Analytics (AIDA) Grant under the Financial Sector Technology and Innovation Scheme.[82]	

east%20asia%20to%20launch%20open%20api%20platform.pdf

81 https://www.finextra.com/pressarticle/80880/uob-app-only-bank-tmrw-introduces-fingerprint-and-facial-recognition-for-account-opening?utm_source=cloudquant&utm_campaign=nlp&utm_content=machinelearning

82 https://www.finextra.com/pressarticle/76330/uob-collaborates-with-intel-on-aml-analytics-project

Tookitaki	August 2018	The Bank teamed up with Tookitaki to co-create ML features for Tookitaki's AML software (via the FinLab) to better analyze and track high-risk individuals and companies as well as suspicious activities. For transaction monitoring the Bank saw a 5% increase in true positives and a 40% decrease in false positives. Furthermore, in individual/corporate name screenings, the Bank observed a 50%-60% drop in false positives. Operational efficiency rose by 40%.[83]
Unknown	Nov 2017	The Bank launched Amy, an RPA powered robot to process requests for letters of credit from the Bank's corporate clients. The Bank has also launched Eve, which helps to comb through info on an applicant's Central Provident Fund statement to compute one's annual income. With the ability to handle up to 1,800 applications/day, she is 3.5x faster than humans.[84]

Active Regtechs in Singapore[85]

6Estates

(https://www.6estates.com/) – Singapore-based startup focused on using AI technology to deliver back office intelligent process automation solutions in the finance domain.

AIDA

(https://www.aidatech.io/) – Singapore-based, AIDA designs and develops an AI platform that uses predictive analytics and intelligent systems.

Compliy

(https://compliy.com/) – Singapore-based collaborative AI web-platform with centralized data that simplifies and automates regulatory change processes for compliance teams in APAC.

Dathena

(https://www.dathena.io/) – Singapore-based AI-powered data protection and privacy management company.

Cynopsis Solutions

(https://www.cynopsis-solutions.com/) – Singapore-based startup offering AML Software and reducing the cost of regulatory compliance for the financial and professional services industries.

Datarama

(https://datarama.com/) – Singapore-based startup streamlining the traditional risk-consulting model to make compliance-driven due diligence cheaper and faster. Their risk management platform also provides the business intelligence investors need to identify targets.

Merkle Science

(https://merklescience.com/) – Singapore-based startup providing blockchain transaction monitoring and intelligence solutions for crypto-asset service providers, financial institutions, and government agencies to detect, investigate, and prevent money laundering, terrorist financing and other criminal activities.

83 https://citywireasia.com/news/uob-intel-partner-for-cross-border-aml-checks/a1174738
84 https://www.straitstimes.com/business/banking/uobs-2-new-robot-employees-cut-data-processing-time-by-over-half-0
85 Based on references during one-on-one interviews

Silent Eight
(https://silenteight.com/) – Singapore-based startup helping FIs manage their compliance and risk obligations using AI.

Tookitaki
(https://www.tookitaki.ai/) – Singapore-based startup providing enterprise software solutions to enable sustainable regulatory compliance programs in the financial services industry.

V-Key
(https://www.v-key.com/) – Singapore-based startup offering software based digital security, with solutions for mobile identity, authentication, authorization, and payments.

Overview of Private Investors Activity in Regtech in Singapore

Investment Deals

- **May 2020 –** London-based IHS Markit, a global information provider established in 2016 with the merger of IHS Inc. and Markit Ltd., acquired Catena Technologies, a Singapore-based regulatory trade reporting company. Catena's TRACE Reporting platform automates and manages trade reporting, providing cross-asset coverage, valuation and collateral reporting, and reconciliation. TRACE Reporting covers G20 jurisdictions, such as ASIC, MAS, HKMA, and EMIR, as well as MiFID II reporting.[86]
- **January 2020 –** Soul Machines, an AI research company, announced that it has raised US$ 40 million in a series B financing round led by Singapore's Temasek. Lakestar and Salesforce Ventures, along with existing investors Horizons Ventures and University of Auckland Inventors Fund, also participated in the round.[87]
- **November 2019 –** Tookitaki, a Singapore-based regtech that enables FIs to develop sustainable compliance programs, raised an additional US$ 11.7 million for its Series A funding round, bringing the total round to US$ 19.2 million. The round was co-led by Viola Fintech and SIG, followed by Nomura Holdings through its venture capital arm Nomura Incubation Investment Limited Partnership. Also joining the round were existing investors Illuminate Financial, Jungle Ventures and SEEDs Capital, an investment arm of the Singapore government. In March 2019, Tookitaki raised US$ 7.5 million in the Series A round, which was co-led by London-based Illuminate Financial along with Jungle Ventures, Enterprise Singapore, Supply Chain Angels and VWX Capital.[88,89]
- **November 2019 –** Singapore-based startup Silent Eight, which uses AI to help FIs manage their compliance and risk obligations, raised US$ 6.2 million in a series A round led by existing investor Wavemaker Partners. OTB Ventures, SC Ventures (Standard Chartered's investment arm), and other existing investors also participated in the round.[90]
- **September 2019 –** Singapore AI startup ADVANCE.AI raised US$ 80 million in Series C funds led by Gaorong Capital and Pavilion Capital to drive its expansion in Asia. Other investors in the round included Unicorn Venture, eGarden Ventures and the startup's existing investors GSR Ventures and Vision Plus Capital.[91]

86 https://www.businesswire.com/news/home/20200503005041/en/IHS-Markit-Acquires-Catena-Technologies
87 https://www.techinasia.com/temasek-leads-40m-round-soul-machines
88 https://www.tookitaki.ai/news-views/tookitaki-raises-series-a/
89 https://www.businesstimes.com.sg/garage/regtech-startup-tookitaki-raises-extra-us117m-in-series-a-funding
90 https://www.techinasia.com/silent-eight-bags-6m
91 https://www.businesstimes.com.sg/garage/ai-startup-advanceai-raises-us80m-in-series-c-funding

- **January 2019 –** Aureus Analytics, a Singapore-based provider of AI and a predictive analytics platform for the insurance industry, closed a US$ 750,000 investment with Connecticut Innovations, part of a total fundraise of US$ 3.1 million, which also included participation from other funds including Multi-Act, Alpine Meridian and additional investment by existing investors.[92]
- **March 2018 –** Singapore-based data analytics startup, Tuple Tech, announced that it had raised a US$ 1 million seed funding round from Johnson Chng, Venture Partner and Managing Director at Silk Road Finance Corporation, with other undisclosed angel investors.[93]
- **November 2017 –** Active.Ai, a Singapore-based Fintech platform with an innovation lab in Bengaluru, that delivers conversational banking through AI, announced a US$ 8.25 million Series A financing led by Vertex Ventures, Creditease Holdings and Dream Incubator. Existing investors Kalaari and IDG Ventures India also participated in the round.[94]

Vendor Deals/Partnerships

- **May 2020 –** Anquan Capital Pte. Ltd, a Singapore-based group of technology companies partnered with the FinTech arm of the German WEG Bank AG, which operates under the brand name TEN31. This collaboration will explore opportunities between Anquan Capital through Anqlave and Zilliqa. Anqlave develops custody and secure data storage solutions for enterprises, while Zilliqa is a high-throughput, high-performance blockchain for next-generation enterprises and applications.[95]
- **April 2020 –** The SFA and Razer Fintech, Razer Inc's financial technology arm, announced their collaboration to address the key issues facing the FinTech industry in Singapore as a result of the Covid-19 pandemic. This includes business continuity concerns, high business costs, funding and employment. This follows the announcement on April 10, 2020, by Razer of a US$ 50 million Covid-19 Support Fund.[96]
- **January 2020 –** Singapore-based Cynopsis Solutions, which provides solutions designed to automate KYC processes, announced its partnership with Ethikom Consultancy, a compliance-focused organization operating in the SEA region which assists a broad range of global financial services firms to navigate the ocean of regulatory requirements in Asia.[97]
- **June 2019 –** Ingenia, a Singapore-based service provider for financial institutions, partnered with London-based, ClauseMatch, to provide "Compliance-as-a-Service" for small and medium-sized FIs in Singapore bringing together Ingenia's consultancy services enhanced by the ClauseMatch RegTech solution.[98]

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92 https://ctinnovations.com/news/connecticut-innovations-invests-750000-in-aureus-analytics/
93 https://e27.co/tuple-tech-raises-us1m-seed-funding-round-20180306/
94 https://active.ai/2017/11/13/active-ai-raises-8-25-m-series-a-funding-led-by-vertex-ventures/
95 https://www.finextra.com/pressarticle/82526/fintech-arm-of-weg-bank-forms-blockchain-in-banking-partnership-with-singapores-anquan-capital
96 https://singaporefintech.org/sfa-press-release-23apr/
97 https://www.cynopsis-solutions.com/post/introducing-cynopsis-solutions-latest-partner-ethikom-consultancy
98 https://www.finextra.com/pressarticle/78895/londons-clausematch-and-singapore-based-ingenia-partner-to-provide-compliance-as-a-service

Potential Future Scenario for Singapore's RegTech Ecosystem

Singapore has consistently positioned itself as a hub, whether that be for finance or trade. As a financial centre, Singapore's success has depended on the MAS, which is at once forward looking and stringent, having established a robust regulatory framework.

This top-down approach has enabled Singapore to be a safe harbor, which is secure, and which has a developed infrastructure. A mature regulatory system, where rules are clear and stringently enforced, in turn, fosters a developed regtech ecosystem.

Singapore has seen the potential for fintech, as well as regtech and now wants to position itself as a leading tech hub. To that end the government has invested a lot to develop these ecosystems, which are reliant on the underlying technical infrastructure to thrive. These foundational elements are key. They are required for the private sector to build solutions on top of them. In this regard Singapore has been commendable. The MyInfo initiative, built around the National Digital Identity initiative, allows for the identification of all individuals residing in Singapore, which then enables remote client onboarding. There is also the broader KYC utility initiative, which is currently being revisited after the first attempt to implement it failed in 2017.

As with the MAS' push to be a leading financial centre, the development of the regtech landscape has also been top-down. The MAS has been very forward thinking in their use of regtech solutions and in developing the overall market. They host the annual Fintech Festival, awards are given to regtech companies, and they have opened regulatory sandboxes to experiment with new kinds of technology. They also reach out to startups and pitch them to their licensees, banks, and FIs, providing these firms with much needed credibility. In addition, the MAS also works very closely with the SFA, which acts as the MAS' quasi interface with the fintech and regtech sectors. The regulator has also teamed up with the ABS to identify very clear market problems to help the regtechs prioritize their positioning.

With Covid-19, the ecosystem is also benefiting from a lot of government and MAS sponsored grants. For example, the Digital Acceleration Grant enables recipients to receive 80% funding towards their digital upgrades.

Singapore's fintech and regtech sectors are, however, currently undergoing consolidation across the board, which Covid-19 is accelerating. The shakeup will likely result in established players partnering with startups to offer more end-to-end solutions. Covid-19 will also end up limiting buyer options, given that some of these smaller companies are unlikely to survive.

Talent and its shortage are another area which has seen support from the government. The government is aware of the problem and is doing a lot in terms of retraining the population. For example, there are now grants for Singaporeans to go back to university to retrain in subjects such as AI and python etc. There is also a fintech curriculum in universities.

This tremendous support from the government and the regulator and their proactive efforts in shaping the market has enabled the regtech landscape to mature. As an advanced regional player with regards to regulation, it's probably easier to start regtech development in Singapore then to try to implement it almost anywhere else.

While Singapore's regtech ecosystem still has quite some room to grow, it's very clear that it will. That is because Singapore also wants to maintain its status as a leading financial centre. Its stringent reporting requirements have meant that the banks have had to employ large teams, which are continuously reporting upward to the regulator. These institutions are looking for ways to streamline and address their risks so that they can focus on competing. Looking at the three local banks, DBS, which is mostly government owned, is the most advanced in its technology uptake. OCBC, then comes a close second, while UOB is regarded as being a bit of a laggard.

This openness to regtech will only grow over time as the MAS adopts suptech for its own regulatory supervision. The regulator is already looking at machine readable format report submissions and wants to codify regulations further in this regard. It is also looking at moving from a push model, where firms fill in reports, to a pull model, where the MAS is able to extract in real-time the information they need to supervise the firm and the market.

Currently, while the big banks in Singapore have been testing the waters, it is important to point out that regtech is still not that widely used within the big banks, but rather in institutions like asset management companies, fund management companies, and investment advisors etc. These institutions do not have the same onerous procurement processes as the bigger FIs and are more willing to onboard these kinds of systems. One caveat to that are the digitally savvy FIs coming out of China or Hong Kong. These are more open to using new regtech solutions.

Then there are the fintech companies, which are more advanced in their adoption of various regtech solutions than the incumbent players. There is a lot of interest among these. They are looking to solve problems by implementing technology, which means that they are also looking at regtech solutions as well, like fully automated onboarding for example.

Digital banks are also seeing a lot of action at the moment, as firms vie for the limited digital banking licenses currently on offer. A successful application will depend on how compliant applicants are, which will be dependent on their integrated regtech components.

The Payment Services Act is also a gamechanger as payment providers, exchanges and other platforms dealing with cryptocurrencies look to apply for licenses, which will be handed out in Q3 and Q4 this year. These firms will be looking for AML solutions, that must now be implemented across the whole blockchain industry as well as by anyone in blockchain financial services. These players are all in the market for screening and transactions monitoring tools, be it for client onboarding, or transaction monitoring on the blockchain.

In the post-Covid era, another driver for greater regtech uptake will be around senior management liability guidance. The MAS was about to introduce such guidance, but this has now been postponed until the end of the year. Such legislation will drive greater uptake of reporting risk management type tools. Management with personal liability has a greater interest in having an overview and keeping track of such risks.

Regtechs entering the market should also be looking at applying regional solutions. As a regional hub, FIs come to Singapore not to serve Singapore per se, but to serve the region. All FIs need to then manage reporting on a regional basis. These FIs then need a regtech solution to enable this regional reporting management. Regtech's value proposition should therefore be much broader. It should be regional.

In summary, then, as a leading financial sector with a rigorous regulatory framework and with strong, top-down government and regulator support to become a tech hub, Singapore's future as a leading regtech ecosystem is bright. This is especially the case given the jurisdiction's position as a key regional hub for FIs to use as a springboard to the wider region. With Covid-19, the acceleration towards digitalizing its economy will only pick up pace, as incumbents and FIs look to adopt regtech solutions to enable more remote onboarding and digital transactions. Singapore is often compared to Hong Kong, but with the current situation in the latter jeopardizing the independence of the regulator and its freedom to shape the regtech market there, Singapore will continue to be the leader in regtech in the region.

Appendix

Appendix 1: Extraterritorial Obligations

Table 1A

Item	Description
Advanced Internal Ratings-based Approach (IRB)	Basel II: Advanced IRB: A set of credit risk measurement techniques proposed under Basel II capital adequacy rules for banking institutions. Under this approach the banks are allowed to develop their own empirical model to quantify required capital for credit risk.
Capital Adequacy Requirements (CAR)	Basel III: Under Basel III, the minimum capital adequacy ratio that banks must maintain is 8%.
Common Reporting Standard (CRS)	The Common Reporting Standard (CRS) is an information standard for the Automatic Exchange Of Information (AEOI) regarding bank accounts on a global level, between tax authorities, which the Organisation for Economic Co-operation and Development (OECD) developed in 2014. Its purpose is to combat tax evasion.
EU anti-money laundering law: EU 4AMLD, EU 5AMLD, EU 6AMLD	After 3AMLD, the EU launched three directives within the space of two and a half years, which may raise the question about whether the directives build upon one another or if each directive is entirely different? A close look at the directives, however, reveals that they are complementary, for example, the fifth directive, amends the fourth, and the latest – the sixth directive – complements the fifth directive.
Financial Action Task Force (FATF) Standards	The Financial Action Task Force (FATF) is the global money laundering and terrorist financing watchdog. The inter-governmental body sets international standards that aim to prevent these illegal activities and the harm they cause to society. Ensure a co-ordinated global response to prevent organised crime, corruption and terrorism. In late June 2019, the Financial Action Task Force (FATF), issued new guidelines on how digital assets should be regulated. While FATF recommendations are not legally binding, the G-20 stated that it uses them to regulate cryptocurrencies for Anti-Money Laundering (AML). In what has now become known as the travel rule, the FATF guidelines require regulators and Virtual Asset Service Providers (VASPs) — namely, exchanges from various countries worldwide — to collect and share personal data during transactions. The recommendation imposes the same standards on the cryptocurrency sector that are normally shouldered by the banking industry.
Fundamental Review of the Trading Book (FRTB)	The Fundamental Review of the Trading Book (FRTB), is a set of proposals by the Basel Committee on Banking Supervision for a new market risk-related capital requirement for banks. This reform, often referred to as "Basel IV", is one of the initiatives taken to strengthen the financial system, noting that the previous proposals (Basel II) did not prevent the financial crisis of 2007–2008. It was initially published in January 2016 and revised in January 2019.

ICAAP	Basel II: Internal Capital Adequacy and Assessment Process: Under ICAAP, the bank will make use of internal models to assess, quantify and stress test risk drivers and factors and the amount of capital required to support them.
IFRS 9	The International Financial Reporting Standard 9 (IFRS 9) Financial Instruments was published in July 2014 and came into force on 1 January 2018, replacing the earlier IFRS for financial instruments, IAS 39. It was designed to address criticism of financial institutions having recognised impairment losses “too little, too late” during the global financial crisis.
Interest Rate Risk in the Banking Book (IRRBB)	Another area of specific interest in Asia-Pacific is the implementation of reforms to the capital treatment of Interest Rate Risk in the Banking Book (IRRBB). From the appropriate application of the standard, to the implementation challenges involved in modelling the interest rate shock scenarios given lack of suitable data and systems, there is again uncertainty as to the regionwide implementation. Referring again to the recent BCBS implementation report, for a reform due to be implemented in 2018, only 4 countries out of 27 have the new IRRBB framework in force (Indonesia and Japan in Asia-Pacific), while at the other end of the spectrum 6 of 27 countries have not even issued draft guidelines for consultation. Others are somewhere in the consultation process but it would appear in most cases not to be a high priority.
ISO 20022	ISO 20022 is an ISO standard for electronic data interchange between financial institutions. It describes a metadata repository containing descriptions of messages and business processes, and a maintenance process for the repository content. In recent years, Swift has been using all its powers of diplomacy and gentle persuasion to coax banks and payment market infrastructures to agree upon an ambitious five-year program (2021-2025) to migrate the world’s major payments systems to ISO 20022.
MiFID II	MiFID II, a European Union packet of financial industry reform legislation, rolled out on January 3, 2018. MiFID II covers virtually every asset and profession within the EU financial services industry. MiFID II regulates off-exchange and OTC trading, essentially pushing it onto official exchanges. Increasing transparency of costs and improving record-keeping of transactions are among MiFID II's key regulations. MiFID II harmonizes the application of oversight among member nations and broadens the scope of the regulations. In particular, it imposes more reporting requirements and tests in order to increase transparency and reduce the use of dark pools (private financial exchanges that allow investors to trade without revealing their identities) and over-the-counter (OTC) trading. Under the new rules, the trading volume of a stock in a dark pool is limited to 8% over 12 months. The new regulations also target high-frequency trading. Algorithms used for automated trading have to be registered, tested and have circuit breakers included.

Net stable funding ratio (NSFR)	Basel III: The net stable funding ratio is a liquidity standard requiring banks to hold enough stable funding to cover the duration of their long-term assets. Introduced as part of the post-crisis banking reforms known as Basel III.
PSD2 (Payment Services Directive)	The Revised Payment Services Directive (PSD2, Directive (EU) 2015/2366, which replaced the Payment Services Directive (PSD), Directive 2007/64/EC) is an EU Directive, administered by the European Commission (Directorate General Internal Market) to regulate payment services and payment service providers throughout the European Union (EU) and European Economic Area (EEA). The PSD directive's purpose was to increase pan-European competition and participation in the payments industry also from non-banks, and to provide for a level playing field by harmonizing consumer protection and the rights and obligations for payment providers and users. The key objectives of the PSD2 directive are creating a more integrated European payments market, making payments safer and more secure and protecting consumers.
SFTR (Securities Financing Transaction Regulation)	The Securities Financing Transactions Regulation (SFTR) is a body of European legislation for the regulation of securities lending and repo. It was published in the EU Official Journal on 23 December 2018. The regulation includes requirements to obtain consent from a counterparty before re-using its collateral, disclosure and reporting to trade repositories. The objective of the legislation is to reduce systemic risk in securities lending and get more visibility over collateral re-use.
Standardized Approach – Counterparty Credit Risk (SA-CCR)	The standardised approach to counterparty credit risk is a measurement of counterparty credit risk that calculates the exposure at default of derivatives and long-settlement transactions. The SA-CCR is also used indirectly in the Basel III leverage ratio framework as a replacement for the current exposure method to calculate banks' derivatives exposure.
The Foreign Account Tax Compliance Act (FATCA)	The Foreign Account Tax Compliance Act (FATCA) is a 2010 United States federal law requiring all non-U.S. foreign financial institutions (FFIs) to search their records for customers with indicia of a connection to the U.S., including indications in records of birth or prior residency in the U.S., or the like, and to report the assets and identities of such persons to the U.S. Department of the Treasury.

Appendix 2: Active Global/Regional RegTech Companies

Table 2A

	Office Y/N								
Regtech	**Australia**	**China**	**HK**	**Indonesia**	**Malaysia**	**Philippines**	**Singapore**	**Thailand**	**Vietnam**
Apiax	✖	✖	✖	✖	✖	✖	✖	✖	✖
Ascent Regtech	✖	✖	✖	✖	✖	✖	✖	✖	✖
Broadridge	✔	✖	✔	✖	✖	✖	✔	✖	✖
Comply Advantage	✖	✖	✖	✖	✖	✖	✔	✖	✖
Dathena	✖	✖	✖	✖	✖	✖	✔	✖	✖
Deloitte	✔	✔	✔	✔	✔	✔	✔	✔	✔
Dow Jones RiskCenter	✔	✔	✔	✔	✔	✔	✔	✔	✖
Elliptic	✖	✖	✖	✖	✖	✖	✖	✖	✖
Exiger	✖	✖	✔	✖	✖	✖	✔	✖	✖
EY	✔	✔	✔	✔	✔	✔	✔	✔	✔
Fenergo	✔	✖	✔	✖	✖	✖	✔	✖	✖
Forter	✖	✖	✖	✖	✖	✖	✔	✖	✖
IBM	✔	✔	✔	✔	✔	✔	✔	✔	✔
Jumio	✖	✖	✖	✖	✖	✖	✔	✖	✖
KPMG	✔	✔	✔	✔	✔	✔	✔	✔	✔
NetGuardians	✖	✖	✖	✖	✖	✖	✔	✖	✖
Onfido	✖	✖	✖	✖	✖	✖	✔	✖	✖
Oracle	✔	✔	✔	✔	✔	✔	✔	✔	✔
Pega	✔	✔	✔	✖	✖	✖	✔	✔	✖
PwC	✔	✔	✔	✔	✔	✔	✔	✔	✔
Refinitiv	✔	✔	✔	✔	✔	✔	✔	✔	✖
Sia Partners	✖	✖	✔	✖	✖	✖	✔	✖	✖
Thomson Reuters	✔	✔	✔	✖	✖	✔	✔	✔	✖
Trulioo	✖	✖	✖	✖	✖	✖	✖	✖	✖
Trunomi	✖	✖	✖	✖	✖	✖	✖	✖	✖
Wolters Kluwer	✔	✔	✔	✖	✔	✖	✔	✔	✖

China Overview

2021

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Main Regulators and Key Initiatives

People's Bank of China (PBOC):

The PBOC is the central bank of the PRC responsible for carrying out monetary policy and regulation of financial institutions in mainland China, as determined by People's Bank Law and Commercial Bank Law.

Recent / Active PBOC Key Initiatives:

- AML/CTF Regulations for Online Financial Institutions
- Digital Currency Electronic Payment (DCEP)
- Fintech Development Plan (2019–2021)
- Macroprudential Policy Bureau
- Notice Regarding Prevention of Risks of Token Offering and Financing
- Personal Financial Information Protection Technical Specification
- Revised PBOC Law
- Tightening E-payment Regulation

China Banking and Insurance Regulatory Commission (CBIRC):

The CBIRC is an agency of the PRC authorized by the State Council whose mandate is to regulate and supervise banking and insurance institutions in China and their market conduct; to maintain fair competition in the banking and insurance sectors; and to protect the legitimate rights and interests of stakeholders including depositors and insurance policyholders.

Recent / Active CBIRC Key Initiatives:

- Draft Rules for the Online Loans of Commercial Banks
- Guideline for the Data Governance of Banking Financial Institutions
- Industrial Blockchain Application Technology Standards
- Nationwide Rating System on Online Microlenders
- Tightened Supervision Over Financial Data Reporting

The China Securities Regulatory Commission (CSRC):

The CSRC is an institution of the State Council of the PRC, with a ministry-level rank. It is the primary regulator of the securities industry in China.

Recent / Active CSRC Key Initiatives:

- 2020 Annual Legislative Work Plan
- Amendment of the Securities Law
- Inspection and Enforcement Science and Technology Establishment Work Plan
- New Regtech Department

Trends, Initiatives, and Implications for Regtechs in China

A Growing Digital Economy

Applying a broad definition of the digital economy that includes both the ICT sector and parts of traditional industries that have been integrated with digital technology, the China Academy of Information and Communication Technology (CAICT) measures the size of China's digital economy to be about 30% of GDP, doubling since 2008.[1]

As any regular visitor to China will know, mobile payments in the country have become ubiquitous, where the number of people making mobile merchant payments is expected to rise to almost 700 million in 2022. Digital payments are becoming so dominant that the PBOC, China's central bank, has had to forbid what it sees as discrimination against cash by merchants who accept only digital payments.[2]

A Dominating Duopoly

This shift away from cash towards digital payments is mostly down to two juggernauts. Alibaba and Tencent. While Western tech players tend to focus on a market, i.e., payments, Chinese firms prefer a broad, horizontal play. The two tech giants see digital payments not as a goal in itself but as an entry point to a vast ecosystem of both offline and online goods and services. China's two tech giants have created "super apps," providing a whole in-app ecosystem of one-stop shops for all services, ranging from entertainment, dining, education, and health.

They have been enabled by the country's widespread bank account and smartphone ownership, allowing them to link users' bank accounts to their propriety e-wallets, which are, in turn, connected to in-app retail platforms. Both companies have since leveraged the massive uptake of their app-based online payment products to move into merchant payments successfully.

Around one-third of consumer payments in China are now cashless, with proximity mobile payment users in China growing by ten percent in 2019 to reach 577.4 million (by far the largest in the world). The two tech giants dominate, accounting for over 90 percent of the US$ 17 trillion mobile payments market. In Q4 2019, Alipay and WeChat Pay handled a colossal US$ 5.9 trillion in Mainland spending.[3,4,5]

1 IMF Working Paper; China's Digital Economy: Opportunities and Risks; 2019
2 https://www.cgap.org/research/publication/china-digital-payments-revolution
3 https://www.emarketer.com/content/china-mobile-payment-users-2019
4 Ibid.
5 Bloomberg data

The Rise of Fintech

Not only have the two giants built comprehensive ecosystems around services such as ride-sharing, food ordering, travel bookings, and so on, but they have also exploited another feature of the country's landscape, the fact that financial services are not well developed in China. Using the data generated from their ecosystem of services, the two giants have built ecosystems catering to a variety of consumers' needs across different financial services like payments, wealth management, lending, and insurance products.

Indeed, supportive government policies coupled with a large, connected, tech-savvy, underserved consumer base has enabled fintech to find a natural home in China. The country now accounts for three of the world's top ten fintech firms, according to the latest Fintech100 report. These are primarily focused on the domestic payments space, mostly in retail.[6]

Regtech itself has a lot of potential in China, given authorities push to digitalize the Chinese economy further. As the number of players and transactions speed up in China, the regtech ecosystem will be driven from the top-down. Regulators will be pushing FIs to adopt regtech solutions and will themselves be critical consumers of the technology.

6 H2 Ventures & KPMG; 2019 Fintech100: Leading Global Fintech Innovators; 2019

Government Initiatives

Enhanced Infrastructure to Support Fintech

As the central government rolls out its fintech agenda, provincial-level authorities are also launching their own fintech trials. As of the end of 2019, ten local governments had obtained approval from the central government to do so: Beijing; Shanghai; Jiangsu; Zhejiang; Fujian; Shandong; Guangdong; Chongqing; Sichuan; and Shaanxi.

In December 2019, the Beijing Municipal Financial Regulation and Administration Bureau launched a Chinese version of the "regulation sandbox." Under Beijing's "Fintech Innovation Regulatory Trial," the municipality will be focusing on areas including secure applications, daily life, data resource integration, and regtech. With regard to regtech, the Beijing trial is making use of technologies, including Big Data and AI, to raise its ability to detect and handle money laundering, fraudulent fundraising, late payment of loans, and misappropriation of funds.[7,8]

Shanghai's fintech trials will focus on four critical areas, including bill risk detection, banking risk control systems, and lending and wealth management risk controls. Zhejiang province, for its part, has proposed the creation of a "digitized central bank financial risk prevention and control platform" as well as a "financial risk joint prevention and joint control mechanism."[9]

Guangdong province is pursuing technology, including Big Data, to analyze illicit financial activity better, while Shenzhen municipality has proposed the establishment of a "smart risk control platform" that will increase the accuracy of identification of suspicious activity. Sichuan plans to gather financial data on private and micro and small enterprises for collation and comparison, as well as establish an anti-money laundering monitoring platform and a unified password services platform.[10]

In addition to these trials, the Shanghai Municipal Financial Regulatory Bureau announced an action plan in 2020 to become an international financial tech hub in five years. The five-year plan lays out 25 significant tasks covering five key areas, including ramping up research, pushing for regulatory schemes and subsidies, and introducing preferential financial and tax policies to attract financial services and tech companies.[11]

Regtechs looking to enter the market should look at the key focus areas highlighted under China's local government fintech trials. For example, if regtech providers' solutions are in line with technologies that Beijing is focusing on, then they should approach the Beijing Municipal Bureau of Finance. However, if their technologies are more in line with Shanghai's focus, then they should contact the Shanghai Municipal Financial

7 https://www.scirp.org/journal/paperinformation.aspx?paperid=97887
8 http://www.chinabankingnews.com/2020/01/13/10-chinese-provinces-launch-fintech-regulatory-trials/
9 Ibid.
10 Ibid.
11 https://technode.com/2020/01/16/shanghai-unveils-five-year-fintech-hub-plan/

Regulatory Bureau. With regards to Shanghai, regtech firms should also look to see if they can leverage Shanghai's ambitions to become an international financial tech hub. They may be able to gain access to subsidies and preferential financial and tax policies.[12,13]

Balancing Innovation with Safety

Corners of China's overleveraged, unwieldy financial sector pose a significant systemic risk and potential harm to consumers. Authorities are now all too acutely aware that the industry presents an existential threat to the party itself. Facing a possible banking and/or credit crisis that could cause severe economic woes, vigilance against managing these risks has stepped up. In April 2018, Chinese President Xi Jinping urged substantial efforts to win the "three tough battles" of preventing financial risks, reducing poverty, and tackling pollution.

The authorities are cracking down. In late 2017, the CBRC, China's banking regulator, issued a 722 million yuan (US$ 109 million) fine to Guangfa Bank for issuing fraudulent guarantees for loans and attempting to cover up the scale of its bad debts. This was equivalent to almost 8% of the bank's net profit in the previous year.[14]

Authorities are not just focusing on the traditional players within the financial sector, either. In the past, Chinese regulators took a relatively laissez-faire approach to regulating new emerging financial platforms and players, letting Tencent and Ant Financial, for example, disrupt the country's entire payment industry. That was so their better services and higher interest rates could serve hundreds of millions of underbanked people and help push for reforms in China's static traditional banking system.

There has since, however, been a sharp reversal in attitudes, following high-profile fraud cases, such as Ezubao, the P2P online lender that scammed 900,000 investors of US$ 9 billion and the implosion of the P2P lending sector in China more generally, which saw a wave of defaults. The P2P fiasco was a wakeup call to Chinese regulators, highlighting the dangers of not legislating on time.

Aware of the potential benefits and risks of fintech, regulators are moving to tighten their surveillance and legislation over the sector. Zhang Chenghui, chief of the finance research bureau at the Development Research Institute of the State Council, said at a forum in Qingdao in December 2019 that regulation on intelligent finance should be written into the 14th five-year plan.[15]

Recognizing regtech's potential to aid them in their efforts to manage financial risks in the economy, Chinese officials have urged greater adoption of regtech measures. For example, the director of the PBOC's Financial Research Institute, Sun Guofeng, has said that China needs to develop regtech, primarily through the use of cutting-edge technologies such as AI, to make regulations work more efficiently and effectively.[16]

Also, Zhou Xiaochuan, ex-governor of the PBOC, has said that authorities will need to adopt regtech measures to match the rapid evolution of the fintech sector. His primary concern is the emergence of distorted behavior during the process of fintech development leading to "phenomena which are inimical to society, and potentially an excessive preference for short term speculation."[17]

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12 http://jrj.beijing.gov.cn/tztg/202003/t20200327_1740527.html (Chinese)
13 http://en.jrj.sh.gov.cn/
14 https://www.scmp.com/business/companies/article/2123565/chinas-regulator-slaps-nations-biggest-fine-guangfa-bank-covering
15 https://www.reuters.com/article/us-china-economy-artificial-intelligence/china-should-step-up-regulation-of-artificial-intelligence-in-finance-think-tank-says-idUSKBN1YQ045
16 https://www.chinadaily.com.cn/opinion/2017-07/13/content_30101695.htm
17 http://www.chinabankingnews.com/2018/11/19/zhou-xiaochuan-frets-fintech-speculation-says-regtech-necessity/

However, according to three blue books that cover the current state of fintech, regtech, and blockchain in China published by the Social Science Literature Publishing House, Chinese regtech is, "in an unacceptable state."[18]

This is an opportunity for foreign regtechs. In a country where the government is all-powerful like China's, officials' proclamations of their desire to harness financial technologies while fostering the adoption of regulatory technology is good news for regtech companies that are interested in entering the Chinese market. Authorities see fintech developments as a double-edged sword and will be keen to keep emerging fintech players and sectors on a tight leash.

As regulators ramp up legislation, fintechs will be subject to ever more stringent compliance requirements. There will be an opportunity here for regtechs to both provide these firms with solutions and the regulator with tools to monitor them. More generally, authorities' concern about the systemic risks to the financial sector arising from overleveraged corporates and new fintech players creates opportunities for regtechs to help authorities collect and analyze economic data promptly to enact any necessary macroprudential policies.

As China opens up its financial market to the outside world and aligns its regulatory measures closer to global standards to attract more foreign institutional investors, there will be further demand from authorities for regtech companies to help them improve regulatory efficiency and standards in the country. Demand will also come from FIs more generally as they face increased regulatory obligations.

Supply Chain and Food Safety

Finally, given China's critical role in global trade and its recent focus on food safety following numerous food scandals, regulators and companies will be stepping up their scrutiny of suppliers all along the supply chain. This will be facilitated by technologies such as internet of things (IoT) devices and blockchain, making on-demand, precise, and almost live reporting potentially a reality in a broad range of industries, from shipping to agriculture. Regtechs that can provide solutions here will also be in demand.

Next-Generation Artificial Intelligence Development Plan

The State Council's "Next Generation Artificial Intelligence Development Plan," issued in 2017, sets the goal of China becoming the world leader in AI by 2030. The plan aims to bring China's AI up to global standards by 2020, with important achievements in AI applications and theory. By 2025, it seeks to establish AI laws and regulations, as well as a core AI industry of at least 400 billion RMB. Finally, by 2030, China aims to become the world's leading AI developer.[19]

Regtech firms that utilize AI in their solutions might be able to gain access to subsidies, tax concessions, and grants under the plan, but should be wary about any dual-use technology, given the explicit aim under the program to enhance AI civil-military integration.

18 https://www.crowdfundinsider.com/2019/11/154532-china-fintech-bluebooks-cyberfraud-in-china-now-a-16-billion-usd-industry/

19 https://www.fmprc.gov.cn/ce/cefi/eng/kxjs/P020171025789108009001.pdf

Regulator Initiatives

The People's Bank of China (PBOC)

Fintech Development Plan (2019–2021)

The PBOC has said that "fintech, or technology-driven financial innovation, has both injected vitality into financial development and brought new challenges to financial security." It is in this context that the PBOC set up a Fintech Committee in May 2017 charged with monitoring the impact of regtech and fintech and ensuring coordinated growth.[20,21]

The PBOC said at the time that it will further study fintech's influence on monetary policy, financial markets, financial stability, payments, and clearing. The central bank has also said that it will increase the use of regtech to boost its capabilities in identifying, preventing, and dissolving financial risks, including both cross-sector and cross-market risks, with technology such as Big Data, AI, and cloud computing.[22]

In 2019, the PBOC issued a three-year development plan for the country's fintech sector under its "Fintech Development Plan (2019–2021)." The policy outlines guidelines, basic principles, development targets, essential tasks, and supportive measures for fintech development over the period. By 2021, the PBOC has said that it will have instituted a sound fundamental framework to support fintech development by bringing increased regulation and guidance for the industry and enhanced infrastructure.[23,24]

The PBOC's plans to implement a regulatory framework for fintech development could have implications for regtechs wishing to enter the market. The plan calls for "achieving in-depth integration and coordinated development of finance and technology." To achieve this, appropriate safeguards will need to be put in place. The plan also calls for "markedly increasing financial risk control levels" and "continuing to raise financial regulatory efficiency." In addition, the plan calls for "optimizing systemic mechanisms" and "standardizing the selection of key shared technology, capability establishment, application scenarios, and security management." The implication here would be that regtech solutions could help achieve these objectives.[25]

In further moves that will have regtech implications, the PBOC's Fintech Committee stressed after meeting at the end of last year that in 2020 Chinese regulators will uphold the "two-hand seizure" of development and regulation. The meeting highlighted six critical areas of focus for PBOC's fintech regulatory efforts.[26]

20 http://www.xinhuanet.com//english/2017-05/15/c_136285404.htm
21 http://www.chinabankingnews.com/2019/11/06/china-exploring-development-of-fintech-regulatory-system-pboc-vice-governor-chen-yulu/
22 Ibid.
23 https://www.moodysanalytics.com/regulatory-news/Aug-27-19-PBC-Releases-Fintech-Development-Plan-for-2019-2021
24 https://www.reuters.com/article/us-china-economy-fintech/chinas-central-bank-to-issue-fintech-development-plan-curb-risks-idUSKCN1VC0T3
25 http://www.chinabankingnews.com/2019/08/23/chinese-central-bank-releases-fintech-development-plan-for-2019-2021/
26 http://www.chinabankingnews.com/2020/01/02/chinese-central-bank-outlines-key-fintech-work-for-2020/

Regtechs wishing to enter the market should look at these six key areas to see where their solutions are aligned. A critical lesson foreign companies must quickly learn when entering the Chinese market is to align their strategies with the government's policies. Those that do will not only find favor but demand for their products and services. As an example, item two on the PBOC's list calls for:

> *"Strengthening financial data management, accelerating the secure sharing of enterprise-related data, and expediting the effective integration and standardized usage of data resources."*[27]

Whereas item four on the list calls for:

> *"Strengthening the establishment of digitized regulatory capability, establishing multi-tier, systematic fintech risk management systems, and strengthening trend detection, analytical assessment and pre-warning disposal levels for risk."*[28]

In a country like China, that is driven so much from the top-down, it is always prudent to listen very carefully to what the authorities are saying. If proclamations such as the above are issued today, tomorrow they will become reality. Regtech providers that can help the PBOC's fintech regulatory efforts should explore potential suptech opportunities with the PBOC to aid the Bank with its policy objectives this year.

Open API

While open banking is not yet regulated in China, it is already underway. For example, WeBank, a private Chinese neobank backed by Tencent, teamed up with Tencent's cloud platform last year to launch a new fintech research lab. The lab is based upon the "development concept" of open banking and will conduct R&D of fintech applications directed at open banking scenarios.[29]

According to state media, China's financial authorities are planning to shortly launch new regulations and policies for the open banking sector and open APIs, saying in January this year that they will:

> *"Unveil policies in relation to the regulation of open API's and accelerate the formula-tion of regulatory standards in relation to open banking in China."*[30]

The "Open Banking Development Research Report (2019)" released by the National Internet Finance Association said that while the sharing of data by banks via technological means such as open API has become a trend in China, there are still a number of risks concerning third party fraud, data intrusion, and client privacy.[31]

Regtechs that are able to address these concerns will undoubtedly find opportunities as China's open banking regime takes off once a suitable framework has been put in place. Data privacy, for one, has been a major area of debate over the last few years. Implications on data security in the financial services market are especially sensitive, particularly as the government looks to reign in shadow banking.

27 Ibid.
28 Ibid.
29 http://www.chinabankingnews.com/2019/04/01/tencent-cloud-and-webank-launch-fintech-lab-to-explore-open-banking/
30 https://finance.sina.com.cn/money/bank/bank_hydt/2020-01-09/doc-iihnzahk2918096.shtml
31 http://www.chinabankingnews.com/2020/01/09/china-to-launch-new-regulations-for-open-apis-open-banking/

Tightening E-payment Regulation

China's e-payment platforms are now firmly in the crosshairs of the authorities as they try to tame the Wild West of China's US$ 9.7 trillion third-party payment market. Regulators had become increasingly concerned about the way these platforms were managing their users' deposits. The money had become a lucrative revenue source for payment companies, which could earn interest on cash deposited in banks or even invested in government bonds.

Worried about the risk of misappropriation and fraud, the government moved to require providers to transfer funds to accounts under the central bank's oversight. Since January 2019, all client funds are now under centrally managed accounts at the central bank, and providers are no longer allowed to collect interest on these.[32]

At the same time as requiring e-payment platforms to deposit their clients' funds at the central bank, China also launched its first clearinghouse dedicated to online transactions in 2018. The new clearinghouse cut the direct link between third-party payment providers and banks and became the nexus connecting more than 200 payment companies with the central bank.[33]

Regulators have not stopped their battle against China's e-payment providers either. Caps on payment by QR code were introduced following a spate of scams involving fake QR codes. Online loans are also being targeted, with interest rates capped and there has been talk that regulators might start to look at the way user data is collected and managed by the platforms.[34]

Authorities will continue to tighten their oversight over the e-payments and online loans sector. There is genuine worry within China about the systemic risks to the financial system and nefarious activities that could harm consumers. Regtechs that can provide solutions, for example that help protect user data, should find opportunities.

Virtual Assets

The Chinese state has a complicated relationship with the world of digital assets. Although the possession of cryptocurrencies is not illegal in China, the Chinese authorities have throttled the sector.

In September 2017, seven government agencies of China, including the PBOC, jointly issued the "Notice regarding Prevention of Risks of Token Offering and Financing." The notice banned all initial coin offerings (ICOs) in China and ordered any organizations or individuals who had previously completed ICOs to make arrangements such as the return of token assets to investors.[35]

In the continued crackdown against crypto assets, in 2018 access to websites on foreign cryptocurrency trading and ICOs including international platforms were blocked in China. Fast forward to today and authorities continue to monitor and shut down domestic websites related to cryptocurrency trades and ICOs and have banned the acceptance of cryptocurrencies including bitcoin.[36]

In December 2019, the PBOC called for greater regulation of the application of blockchain technology in the financial sector with Chen Liwu, vice-head of the PBOC's technology department saying that China must establish new regulatory mechanisms that specifically target blockchain technology. According to Chen the regulation of new blockchain innovations will include the establishment of risk prevention, control mechanisms, and compensation mechanisms.

32 https://www.caixinglobal.com/2019-02-24/in-depth-payment-companies-free-lunch-comes-to-an-end-101383137.html

33 Ibid.

34 https://www.forbes.com/sites/ywang/2018/01/03/china-tightens-regulation-over-mobile-payment-apps-whats-next-for-tencent-and-ant-financial/#3b5367c37f1d

35 https://www.mondaq.com/china/fin-tech/944330/regulation-of-cryptocurrency-in-china

36 https://www.scmp.com/tech/enterprises/article/2161014/china-block-more-120-offshore-cryptocurrency-exchanges-crackdown

To be clear, Chinese leaders have encouraged the development and application of blockchain technology, but they have been explicit that it must service the real economy.[37]

Despite the harsh treatment of cryptocurrencies, China's central bank looks to introduce an official digital currency later this year. The so-called Digital Currency Electronic Payment (DCEP) will be used to simulate everyday banking activities including payments, deposits, and withdrawals from a digital wallet.

Following the launch of the digital yuan, there theoretically should be no transaction that regulatory authorities will not be able to see. Cash flows will be completely traceable. Cash flow information and credit data will be stored on a database, which can then be checked in real-time. Not only will that be helpful in determining the credit structure of the economy, which can then be used to influence the supervisory structure. It will also play a role in keeping digital records and checks against citizens who have committed money laundering, tax evasion or other related offences.[38]

Given that there is no indication that China intends to lift or loosen its ban on cryptocurrencies anytime soon, there is obviously not much for regtechs to go on. However, regtechs that can provide blockchain-enabled solutions that service the real economy, or are able to offer solutions around the implications of the introduction of China's digital yuan, such as those around cybersecurity and preventing fraud, will be valued.

Virtual Banking

In January 2020, it was announced that China was working to finalize its first rules to cover online-only banking operations in a push to minimize risk in the financial sector and attract players including foreign lenders. The new rules would allow foreigners to partner with tech firms for independent digital banking platforms.

The framework will form China's first comprehensive move to standardize oversight of the fast-growing digital banking sector. China has licensed four online-only banks since 2014 including Tencent-backed WeBank, Alibaba offshoot MYbank, AiBank, backed by search engine operator Baidu Inc, and China Citic Bank.[39]

With China moving to introduce a virtual banking framework, interest from outsiders will pick up as these vie for a slice of the market. That is especially true as China looks to liberate its financial sector more generally. As that happens the demand for regtech solutions will increase as digital only platforms search around for digital solutions.

37 http://www.chinabankingnews.com/2019/12/19/pboc-wants-regulatory-mechanism-for-innovative-blockchain-financial-applications/

38 https://www.scmp.com/economy/china-economy/article/3083952/what-chinas-cryptocurrency-sovereign-digital-currency-and-why

39 https://www.reuters.com/article/us-china-banks-digital/china-to-frame-rules-for-online-only-banks-this-year-in-boost-to-foreigners-sources-idUSKBN1ZD0D8

China Banking and Insurance Regulatory Commission (CBIRC)

Industrial Blockchain Application Technology Standards

At the end of last year, the Shanghai Insurance Exchange (SHI), China's answer to the Lloyd's market, launched the start of work on "Industrial Blockchain Application Technology Standards." An initiative under the guidance of the CBIRC.

The aim is to reduce technical friction and make the sector's operations more efficient. The intention is also to reduce application duplication and non-uniform standards. A final motivation is to combine industry efforts to promote breakthroughs in blockchain application technology standards. Ultimately the hope is this will enable open, fair, secure, and efficient innovation.[40]

The SHI has already built a foundational insurance blockchain, the "Insurance Exchange Chain," so that insurers can share information. But this is the underlying blockchain network infrastructure, what is important are the applications that will sit on top of it. To that end, a whitepaper produced in conjunction with research institute CAICT and ten domestic and international insurers has identified eleven insurance applications, including reinsurance, health care, risk control, asset management, and cross-border trade insurance.[41]

Regtechs that have solutions around any of the eleven identified insurance applications should reach out to SHI or the CBIRC to determine how they might be able to get involved.

Tightening Control Over Online Lending

In September 2019, the CBIRC announced that it would establish a ratings-based supervision system for licensed online microlenders as part of draft national rules to oversee them. Such online microlending often involves small, unsecured, short-term loans. It usually targets people with limited access to traditional credit, such as students and rural migrants. Leading industry players include Huabei and Jiebei, two online lending units of Ant Financial Services Group.[42]

While there is as yet no indication on the shape of the ratings-based regulation, the CBIRC has said that the new management system will improve the incentive and restraint mechanism and oversight efficiency. It is likely that online microlenders who have greater ability to manage risk will enjoy greater freedom under a ratings-based system.[43]

Chinese financial regulators have, in recent years, tightened their grip on online microlending and the internet finance sector generally, such as P2P lending, amid concerns about booming household debt and illegal practices in the industry. Many unlicensed online microlenders have been closed and issuance of online microlending licenses has been suspended since the end of 2017.

In further moves to tighten up online lending, in May this year, the CBIRC issued draft rules for the online loans of commercial banks. The CBIRC wants commercial banks' online loans to be "small in amount and short in term." The CBIRC has also stressed risk management, requiring commercial banks to build a comprehensive risk management system for their online lending business. The CBIRC wants to improve commercial banks' supervision of online lending and prevent financial risks.[44]

40 https://www.ledgerinsights.com/china-targets-blockchain-insurance-standards-consortium/
41 Ibid.
42 https://www.caixinglobal.com/2019-09-16/china-to-impose-nationwide-ratings-system-on-online-microlenders-101462606.html
43 Ibid.
44 http://www.xinhuanet.com/english/2020-05/09/c_139043824.htm

As China's authorities continue to target the online loan sector, they are going to want to ensure that commercial banks and other players are using robust risk management systems for their online lending platforms. Regtechs that can provide such systems should be in demand.

Tightening Oversight on Financial Data Reporting

As China steps up its efforts to ensure economic and financial stability, it has intensified financial regulation. It is in this context that the CBIRC fined eight Chinese banks up to CNY 17.7 million (US$ 2.5 million) in May 2020 as the authorities move to tighten supervision over financial data reporting.[45]

The eight banks, including the country's leading commercial lenders like the Industrial and Commercial Bank of China (ICBC), Bank of China, and Bank of Communications, were found to have submitted incomplete information including that on transaction and credit asset transfer and underreported the number of wealth management products.[46]

The CBIRC is increasingly focusing on financial data governance as it moves to tighten its financial supervision and governance capacity. It is widely felt that there is room for improvement on institutional data reporting in the banking sector in terms of accuracy and timeliness. Regtechs that are able to provide technical tools to help banks deal with data on their systems will be in demand as these look to enhance their data governance.

Tightening Supervision of Nonperforming Loans

At the start of 2020, the CBIRC laid out its 2020 agenda, vowing to tighten the supervision of nonperforming loans, curb financial risks, and boost lending to small businesses. In terms of lending, the CBIRC has said that it will roll out a more sophisticated loan classification system based on the current five categories as a measure to step up oversight of lenders' asset quality. The regulator currently requires banks to classify loans as "pass, special mention, substandard, doubtful and loss" based on their judgement of borrowers' ability to repay and other factors that affect the collectability of loans. The latter three categories are defined as "nonperforming."[47]

The CBIRC has said that it will develop new regulations on liability quality as soon as possible, to have banks and insurers better match their liabilities to assets, especially for small and midsize ones. It will also make a list of banks and insurers it considers "systematically important" and deserving of special oversight.[48]

Regtechs that can help banks monitor their outstanding loans and classify these in real-time as well as flag potential delinquencies will be sought after. Especially as banks are further encouraged to lend to SMEs, which have traditionally struggled to obtain financing through formal channels. Banks remain nervous about lending to them and would benefit from solutions that will help them ascertain SMEs' creditworthiness.

45 http://www.xinhuanet.com/english/2020-05/13/c_139053916.htm

46 Ibid.

47 https://www.caixinglobal.com/2020-01-13/banking-regulator-lays-out-top-tasks-for-2020-101503627.html

48 https://www.caixinglobal.com/2020-01-13/banking-regulator-lays-out-top-tasks-for-2020-101503627.html

China Securities Regulatory Commission (CSRC)

Crowdfunding and P2P Lending

Crowdfunding

Crowdfunding as a source of finance in China has emerged quickly and evolved with incredible speed, dominated by the eCommerce giants such as Alibaba, JD.com, Xiaomi and Suning, who can take advantage of their huge consumer bases. Currently, it is the debt-based model that is dominating with a market share of 99.7%, with the equity-based model accounting for almost all the remaining 0.3%.[49]

Chinese laws and regulations around crowdfunding are still developing. The Securities Association of China issued its first draft of equity crowdfunding regulations in 2014, requiring investors to fulfill particular prerequisites to make investments. Still, these rules vary across industries and are continuing to develop.[50]

P2P Lending

P2P lending has become an essential source of borrowing for individuals and SMEs in China, unable to access financing through the formal banking channels. However, following the blowup of the sector in 2017, tighter regulations have been introduced, leading to a dramatic reduction in the number of P2P platforms. In November 2019, for example, Beijing ordered all Chinese P2P firms to clear outstanding loans in less than one year before switching to small loans. Current P2P platforms must comply with the new regulations within a timeframe of just two years.[51]

As the government further tightens its regulatory reigns, the increased regulatory and capital requirements for China's P2P lenders will continue to put pressure on the sustainability of business models across the sector, leading to further industry contraction.[52]

Regulators will watch both the crowdfunding and P2P lending industries closely to rein in risks and strengthen consumer protection. As consolidation continues across the P2P lending sector, those platforms that survive will be the ones that adopt cost-effective regtech solutions to enable them to remain compliant with increasingly onerous regulatory requirements.

Inspection and Enforcement Science and Technology Establishment Work Plan

Amidst the broader efforts by Beijing to rein in the financial sector the CSRC is pushing for the adoption of regtech measures.

In October 2016, the Shanghai Futures Exchange, which is regulated by the CSRC, introduced a new market surveillance platform powered by SMARTS, Nasdaq's flagship surveillance solution. The solution is designed to provide real-time data and process large amounts of market information that can be used in investigations by the exchange.[53]

In May 2018, the CSRC released its "Inspection and Enforcement Science and Technology Establishment Work Plan." The plan outlines six key regtech projects for improving CSRC's enforcement capabilities, including a data concentration project, data modeling project, evidence collection software project, quality

49 https://p2pmarketdata.com/crowdfunding-china/
50 https://www.floship.com/crowdfunding-in-china-practices-and-trends/
51 https://www.reuters.com/article/us-china-p2p/china-gives-p2p-lenders-two-years-to-exit-industry-document-idUSKBN1Y2039
52 https://www.pymnts.com/news/international/2020/china-likely-to-see-more-p2p-shutdowns-this-year/
53 https://www.globenewswire.com/news-release/2016/10/19/880589/0/en/Shanghai-Futures-Exchange-Launches-New-Market-Surveillance-Platform-Powered-by-Nasdaq-s-SMARTS.html

control project, case management project, and an investigation assistance project.[54]

Under the plan, the CSRC wants to:

- Establish a Big Data enforcement platform.
- Use smart technology to help resolve cases.
- Develop a standardized electronic evidence collection tool for collecting information on the links between entities, funds, and transactions, and
- Establish a smart control system for inspection of evidence, assessment of conduct, and determination of punishments.

In December 2019, the CSRC established a new regtech department with Tao Qian, a former vice governor of the Chinese central bank, expected to be appointed head.[55]

Regtechs should familiarize themselves with the CSRC's plan to see if their solutions align with any of the six key regtech projects for improving CSRC's enforcement capabilities. If there is an alignment, they should reach out to the CSRC's new regtech department.

Cross-Regulator Focus Areas

AML/CFT

Chinese regulators have made it clear that AML is a major priority, with the State Council, the government's main executive body, elevating AML to a crucial part of the national strategy on financial regulation. The tightening of AML rules comes as China's regulatory regime moves to bring its AML legislation more in line with global norms, a shift evident on multiple fronts.

In 2016, China moved to integrate its supervisory mechanisms for AML, CTF, and anti-tax evasion (what it has dubbed the "three-antis" approach). Chinese regulators are also demonstrating a commitment to international standards and adopting best practices from their global counterparts by participating in the Asia Pacific Group on Money Laundering, the Eurasian Group on Combating Money Laundering and Financing of Terrorism, and the mutual assessment initiative of the FATF. China is also moving to join the Egmont Group of International Financial Units.[56]

At the start of 2019, new AML/CTF rules for online financial institutions issued by the PBOC came into effect. These online institutions now must set up internal control mechanisms for combating ML/TF, follow KYC rules, and report large and suspicious transactions in a timely fashion.[57]

This tightening of AML/CTF regulations will increasingly require banks to monitor and flag suspicious transactions, incorporate more due diligence into the customer onboarding process (such as cross-checking of personal details against international watchlists), and report more activity to regulators. However, domestic banks are struggling to keep up as compliance remains a major challenge for Chinese financial institutions.

Chinese institutions not only face heavy scrutiny in Europe and the United States, given a history of apparent AML violations, but the pressure will also be increasing on Chinese banks at home, as AML/CTF rules tighten. For example, the new rules introduced by the PBOC require banks to report withdrawals and overseas spending over certain thresholds, which will require additional time and resources to address.

54 http://www.chinabankingnews.com/2018/05/28/chinas-securities-regulator-pushes-greater-adoption-regtech/

55 http://www.chinabankingnews.com/2019/12/12/csrc-establishing-new-regtech-department-ex-central-banker-tao-qian-appointed-as-head/

56 https://www.regulationasia.com/aml-now-top-concern-chinese-regulators-worry-banks/

57 https://www.reuters.com/article/us-china-cenbank/china-issues-rules-for-online-financial-bodies-to-battle-money-laundering-idUSKCN1MK17L

China and the Asia Pacific region, in general, have become a hotbed for financial crimes. A survey conducted by Refinitiv showed 75% of companies in the region suffered losses from financial crime in 2018, and more than 50% of Chinese companies indicated that they had encountered difficulties in using technologies fighting against financial crimes. With international and domestic regulatory policies tightening to combat ML/TF, it will create more favorable conditions and opportunities for the application of regtech within the country.[58]

Cybersecurity

Cybersecurity is another area where authorities have turned their focus as the Chinese government looks to construct a system of institutions, laws, regulations, and policies aimed at strengthening cyber governance. Ultimately, the party wants total control over the Chinese internet, data, and ICT industry.

It is in this context that China's Cybersecurity Law (CSL) was implemented on June 1, 2017, to increase data protection, data localization, and cybersecurity in the interest of "national security" in line with Xi Jinping's dictum "without cybersecurity there is no national security."[59]

In June 2019, the Cyberspace Administration of China (CAC) issued a draft guideline on cross-border data transfers under the country's CSL. The proposed guidelines prevent the flow of personal information overseas if it "risks undermining national security and public interests," or if the security of personal information cannot be effectively guaranteed. The draft covers not only operators of critical information infrastructure referred to in the CSL, but also "network operators," a much wider scope of businesses operating in China, essentially encompassing every business that operates network infrastructure in the country.[60]

The draft guidelines say that network operators and foreign entities that collect online personal information in China for business purposes will need to report to the provincial-level cyberspace administrative department and apply for a security assessment before such information can be sent overseas. Separate applications are needed in the case of multiple receivers. In addition, internet operators need to set up a file on the cross-border data transfer and keep it for at least five years, including information on the identities of overseas receivers and on the sensitivity of the personal information. They additionally need to report to provincial-level cyberspace departments annually.

In December 2019, a new cybersecurity law known as the Cybersecurity Multi-Level Protection Scheme (MLPS 2.0) came into effect. The law effectively means the government has unrestricted access to all data within the country, whether it is being stored on Chinese servers or transmitted through Chinese networks.[61]

Under the new rules, all companies that operate a network must tell the government how sensitive the data they handle is, and what strategies and government-approved infrastructure they use to protect it from cyberattack. Under the new regulations police teams and their affiliated agencies will have the authority to ask companies to provide documentary evidence to support their claims or even plug directly into their networks to verify them. The requirement to only use Beijing-approved infrastructure and networks may also force companies to switch to Chinese servers and service providers.[62]

In January 2020, a new cryptography law came into effect, which states that the development, sale, and use of cryptographic systems "must not harm the state security and public interests." Further, cryptographic systems that are not

58 https://www.refinitiv.com/perspectives/market-insights/key-takeaways-from-the-2019-lujiazui-forum/
59 https://www.lawfareblog.com/chinas-cybersecurity-law-takes-effect-what-expect
60 https://www.regulationasia.com/china-issues-draft-rules-on-cross-border-data-flows/
61 https://www.datacenterdynamics.com/en/opinions/chinas-new-cybersecurity-law-bad-news-data-center-security/
62 https://www.scmp.com/news/china/diplomacy/article/3032649/will-chinas-revised-cybersecurity-law-put-foreign-firms-risk

"examined and authenticated" are also illegal. Also, if a company's data centre uses a Chinese-owned software service, all data stored and managed by that service can be seized. Similarly, any assets maintained by companies within the country can be seized by the government at any time and with minimal justification.[63]

Moreover, under the Cybersecurity Review Regime (CRR), network products and services used in "critical infrastructure" are required to undergo a cybersecurity review administered by the CAC. From June 2020, operators of "critical information infrastructure" such as telecommunications, transport, and finance, that are planning to procure IT equipment are obliged to submit contracts and results of analyzed risks, including those related to national security, to the government for prior examination. Devices and services subject to the review will include personal computers, servers, network equipment and cloud services, among others.[64]

China's burgeoning cybersecurity framework potentially subjects all businesses and foreign entities to onerous rules. Regtech solutions could help alleviate the burden. However, regtechs may find delivering such solutions complicated given the requirement to use government-approved infrastructure, alongside IT equipment and services that have been vetted and approved by the government. These requirements could easily be used by authorities to block foreign regtech providers in favor of domestic providers.

The new rules are a minefield for foreign companies operating in China and there may well be creative regtech solutions that will enable such companies to bypass some of the implications of the new rules, while staying within the law. For example, companies are going to want to take a very close look at their services and applications hosted outside of China. The Chinese government could easily claim that a certain cloud service is not considered licensed by Beijing and therefore is prohibited and/or blocked. That is going to be especially concerning for regtechs that rely on delivering cloud-based regtech solutions.

Privacy concerns are going to mean that firms are also going to be incredibly sensitive now with regards to what data is going through their Chinese servers. Invasive audits and inspections could expose source codes or other proprietary information. Solutions that will help firms to manage what outside data comes into China will be required. Firms will also want solutions to help them manage local data they want to keep private, with a mechanism to prevent them from sending it overseas accidently. Again, for regtechs that want to operate in China with proprietary technology, such invasive inspections will also pose a risk to them.

Data Privacy

Personal Information Security Specification

In May 2018, China's national standard on personal information protection "Information Technology-Personal Information Security Specification" took effect. While the specification is not a law or regulation that requires mandatory compliance, it will likely be relied on by Chinese government agencies as a standard to determine whether companies are following China's data protection rules.

The specification expands on what is considered to be personal or sensitive personal information. It also introduces the concept of a data controller who is responsible for compliance with applicable laws and regulations in the collection, retention, use, sharing and transfer of personal information, as well as in handling data breaches. Standards around each of these items are also specified in turn.[65]

63 https://www.datacenterdynamics.com/en/opinions/chinas-new-cybersecurity-law-bad-news-data-center-security/
64 https://asia.nikkei.com/Economy/Trade-war/China-to-impose-security-check-on-infrastructure-IT-procurement2
65 https://www.chinalawblog.com/2018/02/chinas-personal-information-security-specification-get-ready-for-may-1.html

In the same month, the CBIRC published the "Guideline for the Data Governance of Banking Financial Institutions." The guideline provides that banking financial institutions should allocate adequate resources for data governance.

The guideline requires that banks should establish a data quality control mechanism to ensure the truthfulness, accuracy, continuity, and completeness of data and ensure it is kept up to date. In addition, the guideline requires that banks should embed data throughout their business operations, risk management, and internal controls.[66]

As China tightens up its framework for protecting personal information and data governance, the more stringent demands on internal protocols and processes will require regtech solutions. FIs are, for example, going to require "a comprehensive and effective data management system" and "quality control mechanisms to ensure the authenticity, accuracy, continuity, integrity and timeliness of data." In addition, companies that obtain and use personal information will also require regtech solutions to help them stay within the provisioned guidelines.

As discussed above under cybersecurity, a major concern for companies will be on privacy, especially for those firms deemed to be handling highly sensitive data. These may be subject to higher levels of monitoring, including inspections from cyber police, or even remote or back-door access to their networks further down the line. Any assistance that can be provided to these companies to help them protect the privacy of their data would be well received.

66 https://www.lexology.com/library/detail.aspx?g=cca109a8-1856-4672-9613-a9cab92bfffa

Private Sector

Investors in China are beginning to turn their attention to up-and-coming areas of fintech including regtech, which has appeal among venture capital investors because of its ability to leverage AI and machine learning to assess risk and identify fraud.

China-based investors are also interested in regtech companies that use these technologies more broadly to improve the operations of banks and financial institutions, such as by improving operational efficiencies, helping them to generate and analyze data, and supporting wealth management.

Private Sector Associations and Regional Initiatives

In addition to the government and regulator initiatives there are also a number of private initiatives supporting fintech/regtech in the country. These include:

Logo	Name	Description
中国证券投资基金业协会 Asset Management Association of China	Asset Management Association of China (AMAC)	AMAC is a self-regulatory organization that represents the mutual fund industry of China.
阿里云 创新中心 Innovation Center	Alibaba Cloud Innovation Centre	Alibaba Group has opened more than 50 innovation centres in over 20 Chinese cities. The centres have provided matchmaking services for more than 40,000 startups.
CAICT 中国信通院	China Academy of Information and Communication Technology (CAICT)	CAICT is a scientific research institute directly under the Ministry of Industry and Information Technology (MIIT) of China. It proactively responds to challenges presented by new technologies and new business.
中国加速 CHINACCELERATOR	Chinaccelerator	Billed as the first startup accelerator to launch in China. Chinaccelerator provides a mentorship-driven program assisting internet startups from around the world. It is operated by the venture fund SOSV, which has $700M+ AUM and operates 5 global accelerators.
中国银行业协会	China Banking Association	A nationwide non-profit self-regulation organization of China's banking sector, set up with the approval of the PBOC and the Ministry of Civil Affairs.
CHINA FINTECH	China Fintech	Facilitates cross-border sharing of data and insight on the world's biggest fintech market enabled by a digital platform for collaboration and communication.
CVCA 中华股权投资协会 China Venture Capital and Private Equity Association	China Venture Capital and Private Equity Association (CVCA)	CVCA is an independent and professional entity dedicated to promoting the interests and development of the venture capital and private equity industry in the Greater China Region.

Logo	Name	Description
	Day Day Up	A platform that facilitates connection and communication between Chinese and global innovators. Focusing on AI, IoT, Blockchain, Cloud Computing, 5G, and Mobile Internet, DayDayUp creates an ecosystem for corporates, startups, and investors to connect with each other.
	Insurance Association of China (IAC)	The IAC is a non-profit organization and a national self-regulatory organization that was approved by the China Insurance Regulatory Commission and registered in the Ministry of Civil Affairs of China.
	The Investment Association of China (IAC)	The IAC is the authoritative organization for promoting investment in China. It is governed by the National Development and Reform Commission.
	JadeValue	JadeValue is a fintech investor and incubator located in Shanghai. It provides fintech and insurtech startups with investment and networking. It focuses on cutting-edge technology like blockchain, AI, and intelligent investment advisory.
	National Association of Financial Market Institutional Investors (NAFMII)	NAFMII aims to propel the development of China's OTC financial market, composed of the interbank bond market, interbank lending market, foreign exchange market, commercial paper market, and gold market.
	Ping An Cloud Accelerator	An accelerator program where selected applicants receive expert advice and coaching by global thought leaders and gain exposure to Ping An Cloud services and ecosystem.
	Securities Association of China (SAC)	Founded to increase the strength of capital markets in China.
	Tencent Cloud – WeBank Fintech Innovation Lab	Tencent Cloud and WeBank launched fintech lab to explore open banking in China. The lab is based upon the "development concept" of open banking and helps financial institutions to create ubiquitous fintech services.
	Tsinghua PBCSF	Founded by Tsinghua University's PBC School of Finance in 2012, the Fintech Lab is the first research entity dedicated to leading best practices, promoting interdisciplinary innovation, and encouraging entrepreneurship in the field of fintech through scientific research and innovative project incubation.
	TusStar	An incubator and investment firm that integrates innovation services and building business platforms.
	XNode	XNode is an international platform that helps startups and corporate innovators accelerate their business in China.

Mapping of Potential Ecosystem Cooperation and Partnerships

* Association (A); Government (G); Incubator/Accelerator (I/A); Private (P); Regulator (R)

Institution	Type*
Association of Shanghai Internet Financial Industry	A
Beijing Blockchain Application Association	A
China Banking Association	A
Insurance Association of China	A
National Internet Finance Association of China	A
Securities Association of China	A
Torch High Technology Industry Development Center (The Ministry of Science and Technology)	G
Blockchain+ Fintech Incubator	I/A
Chinaccelerator	I/A
Ping An Cloud Accelerator	I/A
Agricultural Bank of China	P
Bank of China	P
Bank of Communications	P
China CITIC Bank	P
China Construction Bank	P

Institution	Type*
China Everbright Bank	P
China Guangfa Bank	P
China Merchant Bank	P
China Minsheng Bank	P
Huaxia Bank	P
Industrial and Commercial Bank of China	P
Ping An Bank	P
Postal Savings Bank of China	P
Shanghai Pudong Development Bank	P
TechTemple	P
XNode	P
China Banking and Insurance Regulatory Commission	R
China Securities Regulatory Commission	R
People's Bank of China	R

Market Activity

Key China Financial Institutions and their Recent Regtech Initiatives

Institution	Ant Financial	
Partnerships		
Company	**Date**	**Description**
Hebei Provincial Finance Office	Oct. 2018	Ant Financial Services and the Hebei Provincial Finance Office signed a strategic cooperation MoU in October 2018. The two parties agreed to jointly build the "Hebei Financial Supervision Technology Innovation Lab" to explore technology support for financial risk prevention and control and innovation in financial regulatory supervision.[67]

Institution	Industrial and Commercial Bank of China	
Partnerships		
Company	**Date**	**Description**
Huawei	May 2018	The Bank tapped on Huawei for its growing IT infrastructure needs. Huawei has provided the Bank with digital cross-border finance solutions including the Digital Multimedia Banking Solution, Safe Financial Cloud Solution, and the CloudFabric Cloud Data Center Network Solution.[68,69]

Institution	Shanghai Stock Exchange	
Partnerships		
Company	**Date**	**Description**
Ant Financial & Ali Cloud	Aug. 2019	Shanghai Stock Exchange is collaborating with Ant Financial and Ali Cloud. The three parties will together build a suptech platform, enabling real-time risk monitoring and analytics powered by intelligent Big Data algorithms.[70]

Institution	Shenzhen Stock Exchange - Shenzhen Securities Communication	
Partnerships		
Company	**Date**	**Description**
AValueOnline	Oct. 2016	Shenzhen Securities Communication Ltd, part of the Shenzhen Stock Exchange, deployed ValueOnline's compliance product "Yi Dong" to help listed companies with their compliance issues.[71]

67 https://baijiahao.baidu.com/s?id=1615743251912139404&wfr=spider&for=pc
68 https://asianbankingandfinance.net/financial-technology/more-news/icbc-asia-ramps-digital-investments-cross-border-finance
69 https://fintechnews.hk/5274/remittance/icbc-leverages-technology-to-drive-cross-border-development/
70 https://www.lieyunwang.com/archives/457481
71 https://www.valueonline.cn/

Active Regtechs in China

4paradigm

(https://www.4paradigm.com/solution/ai-risk-irm) – The company provides end-to-end fraud and credit risk management solutions. It also provides whole-process risk management solutions including intelligent credit approval, credit application scores, overdue warnings, and intelligent collections.

Alibaba Cloud

(https://us.alibabacloud.com/) – Alibaba Cloud develops highly scalable cloud computing and data management services. Its services are available on a pay-as-you-go basis and include data storage, relational databases, big-data processing, Anti-DDoS protection, and content delivery networks (CDN).

JD Digits

(https://www.jddglobal.com/solutions/credit) – JD Digits provides solutions for risk management control and data security management. It also provides monitoring of real-time credit risk after investment.

SureXing Tech

(http://www.surexing.com/) – SureXing utilizes AI and Big Data technologies to provide quantitative analysis on financial risk, enabling clients to proactively react to potential risks and regulatory violations.

Tencent

(https://s.tencent.com/product/lingkun/index.html) – Tencent's "Lingkun," jointly developed with Shenzhen's municipal government, uses technology such as Big Data, AI, and knowledge graphs to access government databases and detect financial risks in more than 10 areas, including Internet finance, investment, and foreign exchange trading.

Union Mobile Financial Technology (UMF)

(https://www.umfintech.com/) – A UMF product, "U-SAFE," is as an intelligent integrated solution for risk control. It extracts useful information contained in data and provides institutions with solutions for information verification, credit risk control, fraud identification, and collection management.

ValueOnline

(https://www.valueonline.cn/) – Offers an "AI+SaaS" solution. The company provides data processing, information integration, information technology consulting, and other services.

Overview of Private Investors Activity in Regtech in China

Investment Deals

- **April 2020 -** Chinese AI company 4Paradigm raised US$ 230 million in a Series C funding round. The round attracted new strategic investors including Cisco and Lenovo.[72]
- **March 2020 -** Beijing-based Big Data company MiningLamp raised US$ 300 million in a funding round co-led by Singapore's state investor Temasek Holdings and Tencent. Its intelligent finance solution provides FIs with real-time anti-fraud monitoring.[73]
- **December 2019 -** Saxo Bank announced an agreement with China automotive firm Geely, to establish a JV to provide financial and regulatory tech solutions to institutions in China. Specific emerging technologies that will be leveraged include cloud-based services, Big Data, and AI. The focus will also be on delivering solutions related to trading and investment, robo-advisory, asset management, risk solutions and regtech.[74]

72 https://pulse2.com/4paradigm-230-million-funding/
73 https://www.mininglamp.com/column/1#
74 https://www.home.saxo/campaigns/pr/2019-h2/saxo-bank-and-geely-holding-group-to-establish-fintech-joint-venture

- **May 2019 -** Chinese AI provider Megvii Technology, commonly known as Face++, raised US$ 750 million in its latest funding round. Bank of China Group Investment Ltd, the state bank's private equity arm, led the fundraising with US$ 200 million. Face++ facial recognition technology can be used for payments and to prevent fraud.[75]
- **May 2019 -** Heliocor, a London- and Barcelona-based regtech firm focused on fraud detection and prevention, was selected for the third cohort of the Ping An Cloud Accelerator. The Accelerator was initiated by Ping An Group, supported by the Futian Government in Shenzhen, and sponsored by SparkLabs, an accelerator and venture fund.[76]
- **May 2018 -** Chinese facial recognition technology developer SenseTime Group Ltd raised US$ 620 million in a second round of funding. The financing was led by Fidelity International, Hopu Capital, Silver Lake, and Tiger Global. SenseTime develops technology that employs AI to quickly identify and analyze identities using cameras and has been used by Chinese authorities to track and capture suspects in public spaces such as airports and festivals. SenseTime also helps banks ensure that the user's identity is authentic by combining facial recognition with other identity authentication tools.[77]

Vendor Deals

- **June 2019 –** MYBank, a leading internet commercial bank in China, tapped Ant Financial to use its intelligent AML platform for centralized risk control and AML compliance. Ant Financial also holds 30% shares of MYBank.[78]
- **May 2019 –** SureXing Tech and China Zheshang Bank established a financial analytics project based on Big Data and AI. ShuXing Tech will enhance Zheshang Bank's ability to assess financial risk.[79]
- **May 2019 –** Tencent partnered with Beijing-based Huaxia Bank to provide its "Bank T-Sec" system to enhance fraud detection at the Bank. Tencent has also provided its lending system, based on its financial cloud and Big Data centre, to assess borrowers' credit risk.[80]
- **July 2018 –** Tencent connected its "LingKun" Big Data system to both the Bank of China's and China Merchant Bank's payment systems to reduce their financial risk.[81]

75 https://www.reuters.com/article/us-megvii-fundraising/chinese-ai-start-up-megvii-raises-750-million-ahead-of-planned-hk-ipo-idUSKCN1SE138
76 https://www.pr.com/press-release/785957
77 https://fintech.global/more-than-9-5bn-has-been-invested-in-regtech-companies-globally-over-the-last-five-years/
78 https://tech.antfin.com/solutions/zfx
79 https://www.sohu.com/a/317456624_100155957
80 https://tech.huanqiu.com/article/9CaKrnK3GTs
81 https://tech.huanqiu.com/article/9CaKrnKakJZ

Potential Future Scenario for China's RegTech Ecosystem

The regtech ecosystem in China is going to be pushed first and foremost by the government and the regulators. That is the nature of the Chinese market. It is top-down, driven by the authorities.

The good news for the development of China's regtech ecosystem is that the PBOC and the other regulators are now seriously invested in deploying regtech to manage, monitor, and control China's unwieldly financial system. They also want to attract foreign funds. To do so they must align their regulatory measures closer to global standards. As that happens, FIs will face increased regulatory obligations, which will drive the development of the ecosystem further.

It is not just incumbents that face increased regulatory obligations. Fintech players do too. While Beijing understands the valuable role that these can play in China's economy, they are also nervous about bad actors and systemic risks that could occur if these players are not tightly regulated. As Chinese authorities tighten their oversight over the fintechs, these are also going to be looking for cost-effective solutions to manage their increasingly demanding compliance requirements.

China, however, is likely to remain an exceptionally challenging market for foreign regtech companies to penetrate. Authorities are already draconian in their policies towards cyberspace as can be seen from the Cybersecurity Law. They are going to be deeply suspicious of any solution that uses technology to analyze Chinese data. It will also be challenging for overseas regtechs to deliver any cloud-based solution, with domestic companies hindered in their usage of these. Invasive inspections within China will also threaten proprietary technology belonging to regtechs on the ground there, which could be at risk of being appropriated.

Language is also going to be a significant obstacle, with Chinese-versions of regulations taking precedence over English-versions. Regulations are also often purposefully vague, giving authorities wide scope for their interpretation. That makes it difficult to build regtech solutions around. Finally, it will also be very challenging to compete against the big tech players in China, such as Tencent, which will dominate. Not only will there not be a fair playing field, but Chinese FIs, under pressure from authorities, will probably show a preference to use a Chinese firm.

All that being said, China still relies on foreign technology, and if foreign regtechs have technology or solutions that are not yet available in China, they have a good chance of finding traction. The blue book on regtech already acknowledges that Chinese regtech is in an “unacceptable state.” Given that Chinese regulators are going to be big consumers of suptech, foreign players should look at participating in provincial-level authorities’ “regulation sandboxes.” Authorities are genuinely concerned about systemic risks within the financial sector and the implications a crisis could have on their legitimacy. They will be looking very carefully at measures that will help them manage these risks effectively.

Looking to the future of China’s regtech ecosystem, in some ways China is at the cutting edge of the technologies incorporated in many regtech solutions. That includes AI and ML. That is because of the enormous amounts of data available in China. The fuel that enables these technologies to work. The likes of Alibaba and Tencent exist in an environment where every piece of personal data is shared between these companies and the government.

If a company wants to use AI to prevent money-laundering they need vast amounts of data to enable the technology. In Western jurisdictions society’s views around the usage of personal data and the subsequent regulations that follow compromises the availability of such data. But in China, given the rich datasets available, companies are able to build much better models of people’s behavior and subsequently are much better at determining whether an individual’s transaction is genuine or fraudulent. Having access to such data is then what drives the technology and explains what we see coming out of China.

Companies in China are also able to implement systems that simply would not be tolerated in Western jurisdictions. An interviewee for this report spoke of a bank in Northwest China that uses staff’s facial measurements and other biometrics when they enter the building in the morning to see how likely it will be that they will do something illicit during the day. The ability to be able to do this and to access rich datasets suggests that the true regtech breakthroughs could come from China. That has implications, not only for regtechs wishing to enter the Chinese market, but also for future competition across regional and global markets.

The State of Regtech in APAC
Evaluation of the Landscape & Market Opportunity for Regtech Companies

Indonesia Overview

2021

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ENTERPRISE IRELAND

Kapronasia

Main Regulators and Key Initiatives

Bank Indonesia (BI):

The central bank of the Republic of Indonesia. The bank is led by the board of governors, comprising the governor, a senior deputy governor and between four to seven deputy governors.

Recent / Active BI Key Initiatives:

- 2018 E-Money Regulation
- 2025 Payment System Visions
- Application of AML/CTF for Non-Bank Payment System Service Providers and Money Changers
- BI-ANTASENA
- Consultative Paper on Open API Standards
- Payment ID
- PSAK 71: Instrumen Keuangan (IFRS 9)
- Regulatory Sandbox

Financial Services Authority (OJK):

The Financial Services Authority of Indonesia; an Indonesian government agency that regulates and supervises the financial services sector. It stands for Otoritas Jasa Keuangan.

Recent / Active OJK Key Initiatives:

- Implementation of the AML Program and TF Prevention in the Financial Service Sector
- OJK Innovation Centre for Digital Financial Technology (OJK Infinity)
- OJK Rule No. 37/POJK.04/2018 (Equity Crowdfunding)
- P2P Lending Checklist
- Regulatory Sandbox
- Single Presence Policy (SPP)
- Technology Based Fund-Lending Services (P2P)

Commodity Futures Trading Regulatory Agency (Bappebti):

An agency that was launched in 2005 to regulate certain sections of the financial services industry in Indonesia. It stands for Badan Pengawas Perdagangan Berjangka Komoditi.

Recent / Active Bappebti Key Initiatives:

- PerBappebti 5/2019 (Crypto Assets)
- PerBappebti 9/2019 (Crypto Assets)

Trends, Initiatives, and Implications for Regtechs in Indonesia

Indonesia's attractive fundamentals, such as a large, underbanked population of over 260 million people with a relatively high smartphone and internet penetration rates, have provided fertile ground for the fintech sector and its associated technologies and platforms.

Given the lack of financial services in the country, where around 50% of the adult population does not have a bank account, it is perhaps not surprising that e-money and P2P lending companies dominate. While digital platform and e-commerce businesses are growing rapidly, their growth is still constrained by the low credit card ownership rate, making online payments more difficult for some Indonesians.

The rapid adoption of fintech within the country suggests a potential for regtech to develop in Indonesia.

Government Initiatives

Digital Transformation: 2020 Go Digital Vision

While no one Indonesian government agency is directly responsible for digital transformation, the effort to boost the digital economy is shared and synchronized between a few ministries and departments in Indonesia and spearheaded by the Ministry of Communication and Information Technology.

Startups and SMEs have been identified as critical drivers to digital adoption in Indonesia. Technologies such as cloud services, blockchain, and AI are expected to be crucial in meeting the business goals of companies in the country.

In May 2019, Indonesia's Ministry of Communication and Information announced that it was renewing its 1,000 Digital Startup Movement, a campaign launched in 2015 to boost the country's digital economy, which had among its key targets creating 1,000 local tech startups. The new campaign will now be called the "1,001 Digital Startup Movement" and will encourage the development of digital pilot companies.

As compared to the initial program, this version will focus on expanding the scale of coverage (expanded from ten cities under the initial program to 15) and improving the quality of Indonesia's startup development activities. It will also revise the program curriculum to centre more on incubation activity.[1]

Regtechs wishing to participate in the market should look into opportunities to leverage funding and other government incentives available for startups. They may not be able to benefit directly from these but could benefit indirectly by partnering with promising startups that have done so.

Digital Transformation: Making Indonesia 4.0

The Making Indonesia 4.0 program, launched in April 2018, plans to harness the power of disruptive technologies to radically improve performance and productivity in manufacturing. The plan should enable Indonesia's transition from a resource-based to a knowledge-based economy through the development of "Fourth Industrial Revolution" (4IR) technologies, such as 3D printing, AI, human-machine interface, robotics and sensor technology.[2]

Banks will play an important role in this economic uplift by providing an environment that supports this initiative. No doubt these will also be wanting to harness the same 4IR technologies. Regtechs will be in a position to facilitate their adoption across the financial industry and beyond.

1 https://www.opengovasia.com/indonesias-1001-digital-startup-movement-to-boost-digital-economy/

2 https://oxfordbusinessgroup.com/analysis/technology-comes-four-making-indonesia-40-seeks-strengthen-digital-economy-and-attract-foreign

Digital Transformation: Palapa Ring

In late 2019, the government announced the completion of the Palapa Ring project – a priority infrastructure project that aimed to provide access to 4G internet services to more than 500 regencies across Indonesia. The government hopes that the improved internet connectivity can significantly impact industries across the country and encourage economic development.

Greater connectivity will, for example, provide opportunities in the fintech market and increase banking penetration, where less than half the adult population owns a bank account. Increasing internet access can also help government institutions stay transparent, particularly those in remote areas, by digitalizing public services.

As Indonesia's digital economy rapidly expands with the increased high-speed internet access, new digital businesses will enter the market, attracted by the revenue streams on offer. As they do so, the government will be looking to build their regulatory frameworks to govern these entities, increasing the opportunity for regtechs wishing to participate in the market.

Digital Transformation: Pemerintahan Digital Melayani (Digitized Service Government)

In 2018, the government issued Regulation No. 95/2018 on e-Government, with the aim:

> *"To increase integration and efficiency of an electronic-based system of governance in order to achieve clean, effective, transparent and accountable governance as well as to improve quality and reliability of public services."*[3]

The regulation details governance of e-Gov in the country such as the national master plan, e-Gov architectures, roadmaps, and infrastructures that will ensure effective and efficient sharing and use of government data and information for various public services. One strategy highlighted to implement e-government is to develop a national portal on e-service. This portal will include all services provided by central government and local government and is targeted to be operational by 2025.[4]

As the government initiates its e-government strategy to introduce more public services online, it will require a host of solutions to help it to do so. There will be a need to standardize the business process of services to ensure smooth consolidation among various services in one portal. Data and information will need to be integrated to establish interoperability among e-services. These requirements suggest an opportunity for regtechs to get involved.

3 https://labs.webfoundation.org/why-is-the-new-e-gov-policy-in-indonesia-critical-for-open-data/
4 https://govinsider.asia/inclusive-gov/indonesia-digital-government-bappenas-joko-widodo/

Digital Transformation: Decree No.39/2019 on Satu Data (One Data) Indonesia

Satu Data (One Data) Indonesia will be a government agency providing an integrated data-management service to produce accurate, updated, integrated and accountable data, which is accessible and usable by central and regional governments. Decree No.39/2019, signed by President Joko Widodo in June 2019, establishes the framework for One Data Indonesia.

The policy will help agencies to provide accurate, high-quality data for decision-making. It mandates that datasets produced by the government will comply with a common set of standards so that they are interoperable, helping to overcome issues such as "overlapping datasets, lack of data quality, and difficulty in data sharing."[5,6]

Regtechs will be in a position to help the government achieve its objectives. Establishing such a data-management service will require various solutions to work seamlessly and effectively. Data will need to be standardized to meet the principle of interoperability. It should have consistent syntax, structure, scheme and composition and should also be stored in an open format that can be read by an electronic system. Regtechs will be able to help here.

5 https://www.thejakartapost.com/news/2019/06/28/jokowi-signs-regulation-on-satu-data-indonesia.html

6 https://govinsider.asia/security/minister-reveals-priorities-indonesias-one-data-policy/

Regulator Initiatives

Traditionally, Bank Indonesia (BI), the country's central bank, regulates and supervises the payment system, while the Financial Services Authority of Indonesia (OJK) regulates and supervises the capital market, banks, and non-bank institutions.

As far as the fintech sector is concerned this means that BI regulates and supervises fintech players involved in the payment system, such as e-wallet and e-money issuers, payment gateway-providers and principals, switching providers, acquirers, clearing houses and settlement agents. OJK, meanwhile, regulates and supervises fintech providers in the financial services sector, such as P2P lending, equity crowdfunding, insurtech, investment management and others.

Like most jurisdictions, however, Indonesian regulators are finding it hard to keep up with evolving innovations in technology and the entry of new players in the market. The BI and OJK want to at once remove obstacles hindering the uptake of new technologies within the financial sector. Still, at the same time, they are also cognizant about the risks of unbridled growth and allowing a free-for-all.

Bank Indonesia (BI)

Digital Transformation: 2025 Payment System Visions

Given the great potential for Indonesia to reap the benefits of digitalization, BI has taken a step towards digital transformation for sustainable economic development. In May 2019, BI released "Indonesia's 2025 Payment System Visions," where it outlined five initiatives "to ensure the current trend of digitalization develops within a conducive digital economic and financial ecosystem."[7]

The five initiatives, to be implemented directly by BI, encompass: open banking, retail payment systems, market infrastructure, data, and regulatory, licensing and supervision. Soon after releasing its 2025 Visions, BI issued a blueprint titled "Bank Indonesia: Navigating the National Payment System in the Digital Era."

7 https://www.bi.go.id/en/publikasi/kajian/Documents/Indonesia-Payment-Systems-Blueprint-2025.pdf

Through the 2025 Visions, BI intends to:

- Support the integration of the national digital economy and finance.
- Support banking digitalization.
- Guarantee the interlink between fintech and banking.
- Ensure there is a balance between innovation, consumer protection, and healthy business competition.
- Safeguard national interests in cross-border digital economy and finance.[8]

The country's digitalization push is allowing more technology-driven solutions within the financial sector to be implemented (e.g., e-KYC, data analytics, and credit scoring).

Regulators will continue to remove regulatory obstacles hindering established players within the financial sector. The increase in digital offerings by these institutions should also lead to a rise in demand for regtech solutions, as the BI builds a regulatory framework to ensure a balance between innovation, consumer protection, and healthy business competition.

e-KYC

The lack of regtech business-providers in Indonesia may soon change given the country's digitalization push, which is allowing more technology-driven solutions within the financial sector to be implemented. At the same time, regulators are moving to regulate new fintech companies, where, for example, these now have to conduct KYC checks.

As an illustration of the digitalization efforts that could expedite the use of regtech, the Indonesian government has opened the country's ID card database to financial institutions for KYC purposes. ID cards in Indonesia are already used as the basis for issuing passports, driving licenses, tax documentation, insurance policies, land rights certificates and for biometric data. Thus far, more than 190 financial institutions and service providers have signed up to access the ID database for KYC purposes.[9]

In Indonesia, the KYC framework is regulated by BI Regulation No. 3/10/PBI/2001, which was enhanced in 2009. The regulation rules that even when the banking industry uses electronic media to provide its services, it still must meet all prospective customers in person, at least when they open an account.[10]

However, in 2019, the BI issued Regulation Number 19/10/PBI/2017 on "Application of AML/CTF for Non-Bank Payment System Service Providers and Money Changers." Under the regulation's provisions, the use of technology in customer due diligence (CDD) is allowed "provided that it has been equipped with effective policy on and procedure for risk control."[11]

While the e-KYC framework is still under review, there have been some interesting developments in this domain. For example, DBS Indonesia has partnered with 21 coffee shops across the country to enable e-KYC. Customers wishing to open accounts can do so from the approved outlets, which manage the verification process using biometric technology.[12]

OVO, one of Indonesia's leading digital payments platform, has selected Refinitiv's World-Check to support its KYC and AML procedures to minimize its exposure to financial crime risks. While Bank Danamon became the first commercial bank to be granted e-KYC capabilities via mobile banking by OJK in the third quarter of 2018. A prime condition by OJK was that the video banking

8 Bank Indonesia; Indonesia Payment Systems Blueprint 2025: Navigating the National Payment Systems in Digital Era; 2019
9 https://www.brinknews.com/the-evolving-regtech-landscape-in-asia/
10 https://blog.qiscus.com/2018/04/27/changing-trend-in-financial-industry-with-ekyc/
11 https://www.bi.go.id/en/fungsi-utama/sistem-pembayaran/anti-pencucian-uang-dan-pencegahan-pendanaan-terrorisme/default.aspx
12 https://blog.qiscus.com/2018/04/27/changing-trend-in-financial-industry-with-ekyc/

platform must sit within the bank's enterprise architecture.[13,14]

As Indonesian authorities work to firm up their e-KYC framework, it is clear that institutions are taking steps to implement their e-KYC processes. Regtechs that can help them to do this will find a market for such services as incumbent banks and their digital equivalents look to improve the customer experience.

E-money Regulation

The use of e-money in Indonesia has increased along with a growing number of e-money providers in the country. To keep up with the latest trends in the sector, in mid-2018, the BI revoked its 2009 regulation on e-money and introduced an updated set of rules "PBI No. 20/2018 (2018 E-Money Regulation)," which became effective in May 2018.

There are several key changes and new rules under the updated regulation, which include:

- The classification of closed loop and open loop e-money.
- The requirement for anyone conducting e-money activities to obtain a license from the BI.
- Rules pertaining to storage, user identity recording, and maximum limit.
- The classification of payment system service providers into two groups, namely front-end and back-end.
- Increased capital (equity) requirements.
- Foreign shareholding restrictions and controlling shareholder restrictions.

As the BI steps up its efforts to regulate e-money, providers will benefit from regtech solutions. For example, there are implications around user identity, which is classified into two types, namely unregistered and registered. For unregistered e-money, the maximum deposit limit is capped at Rp2 million (US$ 136) and for registered e-money the maximum deposit limit is capped at Rp10 million (US$ 679). Additionally, the transaction value of e-money within one month is not allowed to exceed Rp20 million (US$ 1,358). Providers will want solutions to maintain these requirements.[15]

Interestingly, e-money has garnered some controversy within Indonesia, with several respected Muslim scholars issuing fatwas against e-money. These scholars deem it as "riba," a concept in Islamic Banking than can be roughly translated as "usury," or unjust, exploitative gains made in trade or business under Islamic law. Regtech solutions that can deal with this issue unambiguously would also be favored.[16]

IFRS 9

In January 2020, Indonesia's adaptation of IFRS 9, known as PSAK 71: Instrumen Keuangan in Indonesia, officially came into effect. IFRS 9 is an International Financial Reporting Standard (IFRS) published by the International Accounting Standards Board (IASB). It addresses the accounting for financial instruments.

As a result, banks in the country have had to make significant changes in how they estimate, reserves, and report on losses. Such changes are expected to affect financial institutions' operations, financial planning, and portfolio strategy.

To meet compliance requirements, banks are going to need regtech solutions to analyze large volumes of data efficiently and tailor approaches to deploy risk management solutions across their organizations. They will also need regtech solutions to help their various business segments

13 https://www.refinitiv.com/en/media-center/press-releases/2019/july/digital-payments-platform-ovo-adopts-refinitiv-world-check-to-boost-kyc-capabilities-and-prevent-financial-crime

14 http://www.theasianbanker.com/updates-and-articles/ekyc-in-emerging-markets-opens-new-avenues-for-growth

15 Ibid.

16 https://www.finastra.com/news-events/press-releases/finastra-brings-ifrs-9-regtech-solution-indonesia

adapt to these new regulatory changes, for example, by assisting these with ongoing testing and maintenance efforts.

Finastra is already deploying its SaaS regtech solution to help Indonesian banks prepare the necessary reports for compliance. Banks can send relevant information to the data centre, hosted by Praweda Ciptakarsa Informatika (Praweda), who then classifies the data, performs the necessary calculations, and generates the relevant accounting metrics, balance sheets and reports, using Finastra's Fusion Risk.[17]

Open API

The BI wants to ensure that its open banking initiative's implementation, under 2025 Visions, is standardized and not fragmented. BI is also looking to standardize open partner APIs to address concerns around customer protection, which includes customer data protection, and risk management.

Standards will focus on data, technical aspects, and governance issues. The standards on data are envisaged to encompass the scope and extent of data sets that may be disclosed by banks and fintech players. While for the governance aspect, BI is looking at consumer consent, dispute resolution, and API life cycle aspects.[18]

In April 2020, BI issued a consultative paper urging the banking industry to develop open banking in the payment system through formulation of Open API Standards with interlinkages between the banking industry and fintech. The Bank has said that Open API standards will be applied gradually, initially targeting payment system service providers of appropriate size, scope, and business complexity.[19,20]

Regtechs have an opportunity to be part of the process. The consultative paper seeks feedback in several areas, including data, technical, security, and governance standards. As the Bank rolls out its implementation plan for Open API, there will be a whole host of areas for regtechs to get involved. These will include helping to increase interoperability and efficiency, as well as safeguarding security, data confidentiality, and system integrity. Entities will also need help with protecting consumers, and assistance with authentication, authorization, and encryption, etc.

Payment ID

The BI is looking to set up a secure public infrastructure that will connect all payment transactions and manage the flow of payment data. This will involve the establishment of a payment ID (i.e., a digital identification tool to facilitate access to digital financial services and which can also be used to channel government subsidies to promote the Indonesian government's agenda of financial inclusion) and a data hub (i.e., an infrastructure that acts as a hub for payment data movements and collects granular data arising from different payment transactions). BI is also developing an integrated reporting system called BI-ANTASENA, which will cover a wide scope of payment data using the latest technology (including APIs).[21]

As the country further digitalizes, digital identification and data management will become an increasingly important domain likely to benefit from regtech.

17 https://www.finastra.com/news-events/press-releases/finastra-brings-ifrs-9-regtech-solution-indonesia
18 https://www.bakermckenzie.com/en/insight/publications/2019/11/bank-indonesia-2025-payment-system
19 BI; Open API Standards and Banks Interlinkage with Fintechs: For Payment Service Providers; 2020
20 https://www.bi.go.id/en/publikasi/kajian/Documents/CP-Open-API-Standards_English-extended-deadline.pdf
21 Ibid.

The Financial Services Authority of Indonesia (OJK)

Centre for Digital Financial Technology

The Financial Services Authority of Indonesia (OJK) is also gearing up for the potential growth in fintech, recognizing the innovations that the sector can bring to bear on improving financial inclusion for the unbanked and for MSMEs.

However, the regulator is also aware of the potential risks and challenges that such innovations can bring, which is why it wants to provide the right guidelines to manage these and is pushing for a licensing mechanism to be implemented.

To better shape and guide the sector, OJK also launched the OJK Innovation Centre for Digital Financial Technology (OJK Infinity) in August 2018. The centre aims to integrate the fintech ecosystem into the national financial system in a way that "benefits the community and encourages economic growth." The centre will act as a forum for discussion and collaboration between industry, regulators, government, academics, and other innovation hubs.[22]

The OJK, like many of its peers in the region, sees fintech as a double-edged sword. It is at once a source of innovation, financial inclusion, and growth, but, if not properly harnessed, it could also be a source of instability within the financial system. Regtechs should contact the OJK Infinity Center, to explore which initiatives it is focusing on and where they might be able to add value.

Equity Crowdfunding and P2P Lending

Crowdfunding

In 2018, OJK issued regulations for the Equity Crowdfunding (ECF) model, defining the operational boundaries for platforms and investors, and stating limits on the amount of money that can be raised from crowdfunding. OJK Rule No. 37/POJK.04/2018 defines ECF as a share offering service that is utilized by companies/ issuers to sell their shares directly to investors through an open electronic system network.[23]

There may be opportunities for regtechs to get involved in Indonesia's ECF space. Platforms could require help in implementing their crowdfunding agreements with the issuers, which can be a notarial deed or an electronic document.[24]

The regulations also make it mandatory for ECF providers and users to carry out risk mitigation. Risk mitigation under the regulation includes mitigation from risks including business risk, investment loss risk, liquidity deficiency risk, lacking dividend distribution risk, and shares ownership dilution risk.[25]

The regulation also requires ECF providers to provide audit records of activities within the crowdfunding services electronic system for the purpose of "the supervision, law enforcement, dispute settlement, verification, testing and other inspections that may occur."[26]

P2P

With Indonesia's vast unbanked population, P2P lending has enjoyed triple-digit growth over the last few years. However, perhaps with one eye on the blowup of P2P lending in China, the OJK is cracking down on the booming sector in Indonesia.

22 https://theinsiderstories.com/indonesias-fsa-launch-ojk-infinity-to-creates-fintech-ecosystem/
23 https://www.lexology.com/library/detail.aspx?g=e2b9db0f-b252-4c7e-98c2-a281bd83c06a
24 https://www.ibanet.org/Article/NewDetail.aspx?ArticleUid=A926BDC9-FA43-4E73-8D8C-444CC65BF14C
25 Ibid.
26 Ibid.

In 2016 OJK issued Regulation No.77/ POJK.01/2016 on Technology-Based Fund-Lending Services, as the legal framework to govern all P2P business units operating in or intending to set-up in Indonesia, with the aim of protecting the consumer. The law stipulated that such business units must be registered and have the right license to continue to do business. It also set a minimum of IDR 1 billion (US$ 75,000) in paid-up capital to register and an additional IDR 2.5 billion (US$ 188,000) in paid-up capital to have a business license issued.

In July 2018, OJK discovered that out of a total of 227 unlicensed P2P lenders in the country, at least half originated from China. This followed the Chinese government's crackdown of the sector in that country and Indonesia's attractive consumer base. Then, in August 2018, OJK revoked the registration status of five P2P lending companies whose shareholder compositions had been changed without OJK's approval. Also, OJK blocked 635 P2P lending platforms in the period from January 2018 to January 2019.[27,28]

OJK uses software such as Google-Play Store and social media platforms such as Instagram to screen for unlicensed fintech activities. Blocked platforms are included on OJK's blacklist, which subsequently prevents them from applying for a P2P lending registration certificate or license.[29]

Continuing with its crackdown, OJK published a checklist for P2P lending providers to follow in February 2019, updating an earlier checklist issued in October 2018. Changes include the requirement for providers to have an agreement to mitigate the credit risk of lenders and borrowers.

In addition to the changing checklist, even greater changes could be in store with the OJK planning to issue a new OJK regulation to replace the current legislation issued in 2016 on P2P lending services. It is still unclear when the new regulation will be issued, but it is expected to introduce stricter requirements for companies involved in the P2P lending sector.[30]

With the recent scandals around the P2P sector, there is no doubt that the OJK is determined to tighten its supervision and regulations over P2P. This provides an opportunity for regtechs. For example, the requirement for digital signatures is a potential area regtechs might want to explore. OJK requires the underlying P2P agreement to use these. While the Ministry of Communication and Information Technology (MOCIT) has issued a regulation that sets out guidelines for a company to become a digital signature-provider, there appears to be currently only one digital signature-provider in Indonesia, namely PrivyId.

The OJK itself would likely also benefit from regtech solutions to screen for unlicensed fintech activities and to maintain its blacklist.

P2P players themselves will also benefit from regtech solutions, not just by ensuring that they are in compliance with current regulations, but also to ensure that they are in compliance with new regulations that will likely be shortly issued introducing even stricter requirements for companies involved in the P2P lending sector.

Virtual Banking

Despite Indonesia being APAC's most underbanked country, the OJK still has not formulated a licensing policy to form a virtual bank.

However, the authority issued amended regulations in 2019 further allowing incumbent banks to conduct business digitally. These changes were foreshadowed by OJK's guidelines on digital branches and digital banking regulation issued in

27 https://www.thejakartapost.com/news/2018/07/27/majority-of-unlicensed-p2p-lenders-are-from-china-ojk.html
28 https://kr-asia.com/indonesia-tightens-rules-for-online-lending-platforms
29 https://practiceguides.chambers.com/practice-guides/fintech-2021/indonesia
30 http://www.conventuslaw.com/report/peer-to-peer-lending-in-indonesia-a-regulatory/

2016 and 2018, respectively, both of which permit Indonesian banks to digitalise their offices and procedures.[31]

As things currently stand, however, while the current regulations allow traditional bricks-and-mortar banks to offer digital products and channels, they do not contemplate a completely "virtual bank."

In this grey space, both DBS Bank and Bank Tabungan Pensiunan Nasional (BTPN) have established their "digital-only" banks; Digibank and Jenius respectfully. In addition, TMRW, by United Overseas Bank (UOB), is set to launch its services in Indonesia shortly.[32]

For "virtual banks" in Indonesia to succeed, a critical aspect for them to get right will be the use of data. Regtechs are in a unique position to help here. To grow market share and reduce churn, banks are going to have to offer customer personalization. Regtechs can help banks to leverage data insights to enable them to do this by implementing the required analytical architecture and automation through AI and ML.

In addition, regtechs can help "virtual banks" to ensure long-term profitability by providing them with data-driven tools to optimize capital allocation, customer data management, and risk mitigation. Finally, AML technologies, such as graph analytics and ML, applied to histories of transactional data, can help virtual banks curtail criminal flows of capital that put their customers at risk.

The Single Presence Policy (SPP)

Introduced in 2006, the Single Presence Policy (SPP) was seen as a way to push consolidation among the 2,000 or so local banks by requiring acquiring banks to merge all their local operations into one entity. The rule effectively prevents any one party from controlling more than one banking institution. The OJK, however, has said that it expects to amend the SPP as it tries to strengthen the banking sector against growing competition from financial technology firms.

OJK's reconsideration of the policy is partly intended to facilitate established banks in acquiring smaller banks to focus on digital initiatives. According to Heru Kristiyana, commissioner for banking supervision at the regulator, "the entry of technology firms into the financial industry requires a nimbler banking sector in Indonesia." He noted that "with the development of fintech and banking digitalization, banks are required to be efficient so they can compete." Adding, "you must consolidate if you can't compete."[33]

Insurtech

It is not just the banking sector which is digitalizing. Regulators are also trying to reshape the regulations to deal with emerging business models brought on by digitalization in the insurance market. While OJK is still preparing its regulation on insurtech, insurance companies have been entering into partnerships with third parties to distribute their products through online channels, including Indonesian tech unicorns.

This is not surprising, given that the cost of distributing insurance products online is much lower than doing this through physical branches and offices. The wealth of data generated through online transactions also helps insurance companies to assess which products are best suited to their customers and decide how to price them.[34]

There are currently strong opportunities for insurtech solution providers in Indonesia, given the emerging business models in the insurance market brought on by digitalization. Firms in the sector

31 https://www.lexology.com/library/detail.aspx?g=4bd64f7e-5270-4f54-992e-9f7b6bced509
32 https://www.straitstimes.com/business/banking/uob-launches-digital-bank-tmrw-in-indonesia
33 https://www.bloomberg.com/news/articles/2019-07-31/indonesia-to-relax-bank-merger-rule-to-boost-foreign-investment
34 Ibid.

will value solutions to help them leverage the digital realm. New rules and regulations around insurtech, once finalized, might also incentivize these firms to adopt regtech solutions to remain compliant and/or the regulator might also be interested in adopting regtech solutions to help supervise the sector.

Commodity Futures Trading Regulatory Agency (Bappebti)

Virtual Assets

Indonesia witnessed a crypto assets boom in 2017, which led to their prohibition in early 2018. This initial knee-jerk reaction was then reversed at the end of the same year, with the Ministry of Trade officially classifying cryptocurrencies as commodities (crypto assets) under the auspices of the Commodity Futures Trading Regulatory Agency (Bappebti). Since then, several government agencies have been actively involved in developing regulations relating to crypto assets. Using cryptocurrencies as a means of payment is, however, still barred in the country.[35]

Starting with Bappebti, in February 2019 the regulator issued regulations on trading crypto assets (PerBappebti 5/2019), which officially legalized the sale and purchase of these in Indonesia. Crypto exchanges that want to operate legally in the country must be registered and approved by Bappebti for them to do so. Paid-up capital requirements were, however, initially onerously high. So, in July 2019, the regulator issued amendments to PerBappebti 5/2019, by issuing PerBappebti 9/2019, relaxing most of the capital requirements in the initial regulation, but also tightening other requirements.[36,37]

In addition to Bappebti, the Indonesian Financial Transaction Reports and Analysis Centre (PPATK), an independent institution established in the context of preventing and eradicating money laundering in Indonesia, will oversee transactions and ensure no money laundering or terrorism financing is conducted using crypto assets.

It is clear that the regulator in Indonesia is trying calibrate its virtual asset legislative framework to at once remove obstacles hindering the growth of the sector, while ensuring that the right regulation is in place to prevent its potentially negative consequences. There are potentially a number of opportunities open to regtechs to serve this market.

Under the amended Bappebti regulations, the system used by parties for exchange, clearing, trading, or wallet services must be audited by the Certified Information System Auditor (CISA). In addition, stored crypto assets must be insured. That means that a wallet service provider must have a Bappebti-approved cooperation agreement with an insurance company that covers crypto assets.[38]

With the release of these regulations, compliance with their provisions has become a mandatory requirement for crypto exchanges to operate legally in Indonesia. Regtechs should explore where they can help providers with their obligations.

35 https://www.asiablockchainreview.com/blockchain-regulation-and-landscape-in-indonesia/

36 Regulation No. 5 and No. 9 of 2019 that cover the Technical Provisions for the Implementation of the Crypto Asset Physical Market in the Futures Exchange

37 https://gaffarcolaw.com/news-insights/new-regulation-on-cryptocurrency-business-in-indonesia/

38 Ibid.

Cross-Regulator Focus Areas

AML/CFT

Money laundering is a significant problem in Indonesia due to its poorly regulated financial system, a lack of effective law enforcement, and widespread corruption. In addition, Indonesia has a high TF risk. That is despite Indonesia's National Coordination Committee (NCC) issuing a national strategy, "National Strategy on the Prevention and Eradication of Money Laundering and Terrorist Financing (STRANAS) 2017–2019" to mitigate the highest risks identified in the country's national risk assessment (NRA).[39]

Indonesia's ML risk primarily stems from domestic proceeds with higher risks being associated with predicate offences of narcotics (including connections with organized crime), corruption and taxation, and to a lesser extent forestry/environmental crime and fraud. In terms of TF, there are moderate technical shortcomings in Indonesia's targeted financial sanctions (TFS) regime for terrorism and TF, and major improvements are needed in its effective use.[40]

BI and the OJK are responsible for issuing AML regulations in Indonesia and have regulatory and supervisory authority over all banks and financial institutions. The principle AML legislation in Indonesia is OJK Regulation No.12/POJK.01/2017 concerning the Implementation of the Anti-Money Laundering Program and Terrorism Funding Prevention in the Financial Service Sector.

In September 2019, OJK issued Regulation No. 23, which amends several provisions of OJK Regulation No. 12. One change introduced is to allow banks to engage third party service providers to conduct their face-to-face on-boarding verification, whereas previously, banks could only use their own electronic facilities for face-to-face verification.[41]

Regtech solutions that help Indonesia to address its vulnerabilities to ML and TF will be in demand. In addition, with FIs taking steps to introduce e-KYC, there will be an opportunity for regtech providers here too. An obvious solution would be to automate access to the country's ID card database for KYC purposes.

Another area with possible regtech implications concerns Indonesia's membership of FATF's recently launched AML/CFT platform. The platform enables FATF's members to present their initiatives and developments on how new financial and regulatory technologies might improve the effective implementation of AML/CFT measures.[42]

Indonesia has already outlined its progress with such technologies and its position towards them. The OJK has emphasized the benefits and risks it sees with AI in financial services, listing seven benefits, including accurate decision making and fraud detection, and six vulnerabilities, including potential cyber-attacks and inaccuracies in the algorithm used.[43]

Indonesia's participation in such an initiative is indicative of its willingness and need to share and learn from best practices around fintech and regtech, suggesting that the regulators and indeed the government are open to solutions that would help them to mitigate concerns with adopting the new technologies.

39 APG; Anti-money laundering and counter-terrorist financing measures-Indonesia: Mutual Evaluation Report; 2018

40 Ibid.

41 https://aksetlaw.com/news-event/newsflash/new-ojk-regulation-on-anti-money-laundering-and-prevention-of-terrorism-funding-in-financial-services-sector/

42 http://www.fatf-gafi.org/fintech-regtech/?hf=10&b=0&s=desc(fatf_releasedate)

43 https://www.ojk.go.id/apu-ppt/id/berita-dan-kegiatan/info-terkini/Pages/Indonesia-dalam-FATF-FinTech-and-RegTech-Initiative.aspx

Cybersecurity

Despite being home to 150 million internet users, the fifth-highest number in the world, Indonesia's law enforcement institutions are not equipped with adequate laws and tools to combat cyber threats.

At least 232.45 million cyber-attacks against Indonesia were recorded in 2018, compared to 205 million attacks in 2017. In May 2019 alone, 1.9 million cyber-attacks were recorded. It is estimated that these attacks cause IDR 478.8 trillion (US$ 33.7 billion) in losses, equal to almost a fifth of Indonesia's state budget in 2020.[44]

Indonesia, however, still does not have a cybersecurity law. The country only has two cyber-related regulations: The Law on Electronic Information and Transactions and a Government Regulation on the Implementation of Electronic Systems and Transactions. Neither deals with cyber threats.[45]

In 2017, Indonesia did launch a National Cyber and Encryption Agency, which reports directly to the President, to track and identify perpetrators of cyber-crimes. Then, in October 2018, Indonesia's House of Representatives drafted a cybersecurity bill with a target date of 2019 to pass it into law, but to date, the law has still not been passed.

That is unfortunate, as according to Deloitte's Cyber Smart Index, Indonesia ranks bottom out of twelve APAC countries regarding its preparedness, from both an organizational and legislative perspective, in dealing with the risk of cyber-attacks. This is despite its large economy and increasing digitization. Furthermore, according to the report, its exposure is likely to grow in coming years with high rates of economic growth.[46]

Cybersecurity is clearly an area where Indonesia could benefit from regtech solutions and the need for these will only increase over time. Such solutions might even become a necessity should the delayed cybersecurity bill get passed.

Data Privacy

Under Indonesia's current legislative framework there are no comprehensive set of provisions for the protection of personal data, but rather, simply the general idea of personal data protection without specific guidelines.[47]

The Government is, however, considering a definitive law on data protection, submitting a Draft Data Protection Law to the country's House of Representatives in January 2020. The proposed law adopts many concepts from the EU's General Data Protection Regulation (GDPR). The draft law deals with personal data categorization, differentiation between the concepts of data controller and data processor (absent to date), processing personal data, and the forming of a dedicated dispute settlement commission. Should Indonesia's proposed Data Protection Law pass, companies will be obligated to comply with a raft of requirements, including processing personal data.[48]

In addition, in October 2019, the government issued Government Regulation No. 71 on the Management of Electronic Systems and Transactions (GR 71), which revoked Government Regulation No. 82 (GR 82) of 2012 on the same subject. GR 71 provides for, among other things, the classification of electronic system operators (ESOs), data localization, personal data protection, the right to be forgotten and the right to delist, as well as measures to prevent the circulation and

44 https://theconversation.com/indonesia-needs-to-fix-authoritarian-clauses-in-bill-on-cyber-security-before-passing-it-into-law-122342

45 Ibid.

46 Deloitte; Cyber Smart: Enabling APAC businesses; 2020

47 https://www.ssek.com/blog/privacy-and-data-protection-legal-regime-in-indonesia

48 https://iapp.org/news/a/indonesian-president-submits-draft-data-protection-law/

use of prohibited content. GR 71 is extensive and would also suggest regtech solutions to manage effectively.[49,50]

Regulatory Sandboxes

Other initiatives by the BI and the OJK to develop and shape the fintech sector include the introduction of both their respective sandboxes. BI was first off-the-mark, introducing its regulatory sandbox in November 2017. The sandbox is intended to capture all activities utilizing technology in the financial services sector that leads to the use of new products, services, technology or business models that might affect monetary stability, financial system stability or payment system efficiency, security or dependability.

OJK then followed suit by introducing a separate regulatory sandbox for digital finance innovations in August 2018. Digital finance innovations are defined as any "digital" activity aimed at innovation in business processes, business models, or financial instruments that brings added value to the financial services sector.

As the first regulatory sandbox introduced in Indonesia, the BI sandbox captures a wide range of activities and innovations, including those relating to sectors that are regulated by OJK. However, since OJK has now introduced its own sandbox, digital finance innovations, particularly those in respect of non-payment activities (i.e., transaction settlement, fund-raising, investment management, crowdfunding and distribution, insurance, market support and other digital finance support), are all now subject to its sandbox. There is, however, no hard-and-fast rule to determine which unregulated activity falls under which regulator (and therefore which sandbox it will be subject to).[51]

Regtechs interested in entering the Indonesian market should investigate whether to do so via either of the two regulatory sandboxes (BI's and OJK's). Given that there are no hard-and-fast rules determining which of the sandboxes an activity should belong to, it is worth contacting both of them to explore where the best opportunities lie.

49 https://www.bakermckenzie.com/en/insight/publications/2019/10/new-regulation-electronic-system-and-transactions
50 Ibid.
51 https://practiceguides.chambers.com/practice-guides/fintech-2021/indonesia

Private Sector

There is potential for a regtech industry in Indonesia. However, to date, there has been very little by way of a private sector regtech industry in the country other than providers of online tax filing services.[52]

In 2017 the Indonesia Regtech and Legaltech Association (IRLA) was established to enable collaboration between institutions that pursue technological innovation in regulation and legal business although in all that time they only seem to have acquired 13 members.

Private Sector Associations and Regional Initiatives

For regtechs wishing to enter the market there are several private associations and initiatives, which may be able to provide valuable advice, contacts, and exposure in the market. These include:

Logo	Name	Description
	Bandung Digital Valley	A startup incubator. The firm offers co-working space and services on the basis of monthly rental membership.
	Batavia Incubator	A startup incubator. Accepts startups working on a wide range of technologies and sectors.
	Blockchain Association Indonesia	The association aims to create a quality business environment that stimulates the understanding, utilization, progress and competitiveness of Blockchain technology.
	East Ventures	An early stage venture fund focusing on SEA and Japan with 4 unicorns in its portfolio.
	GDP Venture	A venture builder for digital communities, media, commerce, and solution companies in the consumer internet industry.
	General Insurance Association of Indonesia (AAUI)	AAUI vision is to create a healthy and dynamic general insurance industry, with a strong national capacity, to support economic growth.
	GnB	A seed & early stage accelerator & micro venture capital firm. Generally, invests in tech startups operating in sectors such as Mobile Technology.
	Indonesian Banks Association (Perbanas)	The primary organization of the national banking industry, acts as a facilitator for members to convey their aspirations concerning the banking industry.
	Indonesia Fintech Association (AFTECH)	Formally launched in 2015 under OJK's auspices, AFTECH's mission is to develop a fintech ecosystem that can serve all segments of society in Indonesia to improve financial inclusion.

52 https://practiceguides.chambers.com/practice-guides/fintech-2021/indonesia

Logo	Name	Description
	Indonesian Investment Management Association (AMII)	AMII was formed to accommodate the mutual interests of Investment Managers who aim to encourage and develop the investment management industry in Indonesia.
	Indonesia Joint Funding Fintech Association (AFPI)	OJK inaugurated AFPI in 2018, specifically for P2P lending, to help establish a code of conduct for players.
	Indonesia Life Insurance Association (AAJI)	AAJI aims to encourage the creation of conditions for the regulation of life insurance in Indonesia which supports the balanced interests of its mem-bers and the interests of the community.
	Indonesian Mutual Funds Association (APRDI)	APRDI's mission is to achieve international competitiveness for Indonesian capital market and money market management industry.
	Indonesia Regtech and Le-galtech Association (IRLA)	Founded in 2017, the IRLA was established to enable collaboration between any institution that pursues technological innovation in regulation and legal business.
	Indonesia Securities Com-panies Association (APEI)	APEI's is an association created to improve and develop Indonesian Capital Markets.
	Indonesia Sharia Fintech Association (AFSI)	Initiated in October 2017, AFSI is a collaboration of startups, institutions, academics, communities, and expert practitioners encouraging Islamic Financial Technology.
	Indonesian Venture Capital and Startups Association (Amvesindo)	An association consisting of venture capital companies for startups in the technology and other creative fields.
	Kejora	Founded in 2014, Kejora is the leading venture capital firm that operates in the largest tech ecosystem in Southeast Asia.
	Kinara	An early-stage impact investing VC and business accelerator firm. They offer mentorships, team management, corporate governance, access to markets, and investment funding to firms.
	Mandiri Capital Indonesia	The incubator and corporate venture capital arm of Bank Mandiri. Typically invests in tech companies in sectors like FinTech and Consumer Digital. Notable portfolio companies include Moka, Cashlez, Amartha, Privy.
	Merah Putih	A seed and early stage VC and incubator compa-ny. Typically invests in tech companies in sectors like SaaS and Fintech. Notable portfolio companies include Ansvia, Kincir, Kurio, Infokost.
	SKALA	Bills itself as Indonesia's first metrics-driven and growth-focused pre-seed program for technology startups, offering US$ 50,000 for 8%.
	Skystar Ventures	A tech incubator and coworking space founded by Universitas Multimedia Nusantara (UMN) and Kompas Gramedia Group (KGG). They target early stage startups in the Internet, mobile, social, education, and eCommerce sectors.

Active Regtechs in Indonesia

ASLI RI
(https://www.asliri.id/) – Indonesian biometric service provider solving identification and verification challenges through biometrics.

eCLIS.id
(https://www.eclis.id/) – Indonesia-based company providing a search engine for legal information.

Finfleet
(https://www.finfleet.id/) – Finfleet is a logistics financial services company located in Jakarta. Their services include Customer Validation using biometric KYC, online KYC software, API validation, and offline validation.

Indexa
(https://www.indexalaw.id/) – Indonesian-based company enabling legal professionals to find, integrate, and visualize data.

Kontrak Hukum
(https://kontrakhukum.com/) – Indonesian-based digital platform providing one stop legal services through their online system.

Nodeflux
(https://www.nodeflux.io/) – Nodeflux is an Indonesian made Vision AI company based in Jakarta. They develop a distributed computation platform to deliver a scalable brain for various computation models including both traditional and cognitive computing.

Pajak
(https://www.online-pajak.com/) – Indonesian-based online tax application that provides taxation solutions from automatic counting, deposit, and reporting in one integrated tax application.

Poplegal
(http://www.poplegal.id/) – Indonesian-based platform that simplifies the process of making business and legal documents through the Document Generator and Document Management System.

PrivyId
(https://privy.id/) – PrivyID is a universal identity enabler and digital signature provider headquartered in Jakarta, Indonesia. They bill themselves as building an unprecedented business model by combining trusted digital ID, digital signature, and document management.

Selindo Alpha
(https://www.selindoalpha.com/) – a telecoms company based in Indonesia providing a range of solutions from biometrics to speech analytics and process automation.

VIDA
(https://www.vida.id/) – Indonesian-based VIDA provides a trusted digital identity platform. It empowers individuals and businesses with the ability to effortlessly control their most valuable information – their data and identity – while protecting this private information with the highest standards of security.

Potential Future Scenario for Indonesia's RegTech Ecosystem

Indonesia, like other developing markets in SE Asia, still has nascent regulatory frameworks which are not yet well defined. This hinders the uptake of regtech solutions.

There are also often conflicting regulatory requirements issued by multiple ministries. Language can also be vague, and discrepancies often occur across the native language versions and English language versions of the regulations. Implementing any sort of regtech solution under these conditions therefore becomes extraordinary challenging. The urgency is also not there, given that there is a wide divergence between what the regulations say on paper and on how they are enforced.

Another issue hindering the uptake of regtech in Indonesia revolves around the country having some of the strictest localization laws in SEA. This makes Indonesia a difficult market for foreign regtechs that may not be able to comply with these. Regulations issued by BI and OJK require regtech companies to have local infrastructure to ensure that they are in compliance with these regulations. A lot of the large foreign regtech companies end up having local partnerships that act as front companies to assist them in navigating Indonesia's bureaucratic processes and complying with local laws.

Related to the above, another restriction on regtechs are FIs requirements to deploy the software within their own premises. These FIs will want the regtech company to come in and install their software directly on to the FI's own servers. This is to provide them with full control over the data to remain in compliance with these strict localization requirements. This is challenging for regtechs, which are usually lean, do not have large teams, and rely on having software as a service (SaaS) solutions. Indonesia also has strict rules around cloud. People instead like to talk about a "network-based solution," to avoid the mention of cloud. Indonesia's data onshoring rules further hold back the adoption of regtech cloud-based solutions. AWS and Alibaba Cloud are trying to build local infrastructure to bridge that gap, but it will take some time before it can be fully implemented.

Banks are generally also quite set in their ways. They expect a regtech solution to either fit with and be configured to their liking and/or their existing processes. In addition, mid- and lower management are incentivized to keep their heads down. They are often not open to a new regtech company that has come out of nowhere.

The regtech ecosystem will also not see the same level of government and regulator support, given, like other developing markets, these usually tend to have other priorities. This is especially the case in a country like Indonesia with such a large population. The government is going to be more concerned about driving economic development and providing people with jobs. As with other emerging markets, a lack of available support during Covid-19 will likely lead to a market shakeup and consolidation. That could be a good opportunity for foreign players to acquire local domestic companies to gain a foothold in the country.

Indonesia clearly does need regtech solutions, however. In May this year a hacker leaked details of 15 million users registered on Tokopedia, Indonesia's largest online store. The hacker claims the data was obtained in an intrusion that took place in March 2020 and is just a small part of the site's entire user database that was obtained in the hack. This suggests, at the minimum a requirement for better cybersecurity solutions. Given Indonesia's potential to become a major consumer hub on account of its large population, cybersecurity solutions could act as a key differentiator with consumers that will likely be wary of shopping online in light of the recent Tokopedia scandal.[53]

Indonesia does, however, have potential as a market, especially with the government pushing forwards on its digitalization drive. As the government builds out its public utility infrastructure in line with its digitalization initiatives, there will be greater scope for regtechs to build solutions around these. In addition, with the introduction of the aforementioned regulations discussed above, the business case for regtech solutions will start to make more sense, leading to the growth of the ecosystem. Restrictions, however, make Indonesia a difficult market for regtech startups to enter and operate in, suggesting that it would be better suited for well-funded, more established regtechs with a good local partner.

53 https://www.zdnet.com/article/hacker-leaks-15-million-records-from-tokopedia-indonesias-largest-online-store/

The State of Regtech in APAC

Evaluation of the Landscape & Market Opportunity for Regtech Companies

Malaysia Overview

2021

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Main Regulators and Key Initiatives

The Bank Negara Malaysia (BNM):

The Malaysian central bank. The BNM administers the Financial Services Act 2013 (FSA) and the Islamic Financial Services Act 2013 (IFSA). Malaysia operates a dual banking system, namely a conventional banking system operating in tandem with an Islamic banking system. Islamic banks and international Islamic banks subsist alongside conventional banking institutions and offer a wide range of Islamic financial products in any currency to non-residents and residents.[1]

Recent / Active BNM Key Initiatives:

- Digital Banking Regulatory Framework
- Draft e-KYC Framework
- DuitNow
- Financial Sector Blueprint 2011-2020
- Financial Technology Enabler Group (FTEG)
- Fintech Regulatory Sandbox Framework
- Interoperable Credit Transfer Framework (ICTF)
- Publishing Open Data using Open API
- Real-time Retail Payments Platform (RPP)
- Responsibility Mapping
- Revised AML/CFT Guidelines
- Risk Management in Technology (RMiT) Framework

The Securities Commission (SC) Malaysia:

The statutory body entrusted with the responsibility of regulating and systematically developing the capital markets in Malaysia. The SC administers the Capital Markets and Services Act 2007 (CMSA).

Recent / Active SC Malaysia Key Initiatives:

- Capital Markets Advanced Analytics Platform
- Co-Investment Fund (MyCIF)
- Digital Currency and Digital Token Order
- Guidelines on Regulation of Markets
- Malaysian Code on Corporate Governance (MCCG)
- Proposed Regulatory Framework for the Issuance of Digital Assets Through Initial Coin Offerings
- Revised Guidelines on Recognized Markets

Bursa Malaysia:

The market regulator for public-listed companies.

Recent / Active Bursa Key Initiatives:

- Blockchain-enabled Security Borrowing and Lending PoC
- Bursa RegSub

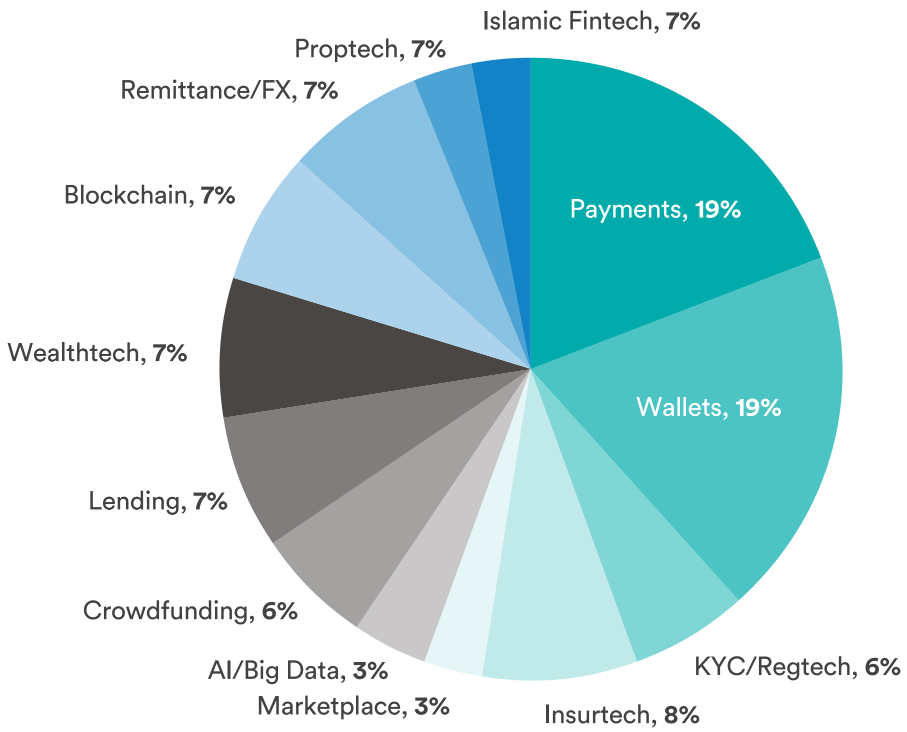
1 https://uk.practicallaw.thomsonreuters.com/w-008-0538?transitionType=Default&contextData=(sc.Default)

Trends, Initiatives, and Implications for Regtechs in Malaysia

With its growing middle class, a relatively large unbanked and underbanked population, and high internet and mobile phone penetration rates, Malaysia is well placed to ride the fintech boom. Internet banking in Malaysia has quadrupled in the last decade, topping a 90 percent usage rate in 2018. Mobile banking is also booming, supported by near universal 4G network coverage, and affordable data.

There is also strong government support for the digital economy, demonstrated by the increase in spending in Malaysia's 2020 Budget directed at the local technology industry. The government is intent on further boosting the capabilities of local SMEs and startups, strengthening digital content, embracing digitization, enhancing e-commerce, and adopting 5G technology.[2]

Figure 1



Source: Fintech Malaysia

2 https://www.nst.com.my/lifestyle/bots/2019/10/529831/2020-budget-boost-malaysias-tech-industry

With such strong fundamentals, it is perhaps not surprising that the World Economic Forum's 2019 Network Readiness Index, which ranks countries in terms of how ready they are to transition to a digitized economy and society, ranked Malaysia 32nd among the 139 countries surveyed—ahead of Italy, China, and Chile—and first among countries in emerging and developing Asia.[3]

Malaysia's increasingly digitized economy will naturally necessitate a more mature fintech and regtech ecosystem to fuel its growth. According to the IMF, fintech is rapidly becoming a central part of Malaysia's financial sector, with considerable promise for expansion. Currently, digital payments and mobile wallets dominate the fintech ecosystem, followed by insurtech, lending, digital remittances, blockchain, wealthtech, crowdfunding, and other forms of financial technology. KYC/regtech is still, however, a relatively small part of Malaysia's ecosystem (Figure 1).[4]

While services like deposits, loans and raising capital still remain within the monopoly of the local banks, digital payments, insurance, and crowdfunding are now all dominated by fintech. However, the number of fintech products and services offered by traditional financial services providers have been expanding, as these adopt new technologies and either compete or collaborate with new tech startups.[5]

3 https://www.imf.org/en/News/Articles/2020/02/27/na022820-malaysia-a-flourishing-fintech-ecosystem

4 Fintech Malaysia; Malaysia Fintech Report; 2019

5 Ibid.

Government Initiatives

The Multimedia Development Corporation (MDeC)

Established in 1996, MDeC is the government agency under the Ministry of Communications and Multimedia Malaysia entrusted to lead the nation's digital economy forward. Its mandate includes driving digital adoption, development of industry-ready tech talents, digital economy policies, and global champions.[6]

The agency has established several initiatives under its auspices, which include:

- **ADAX:** A data technology hub to enable businesses, governments, academia and professionals to adopt AI and Big Data Analytics (BDA) as tools to empower data driven decision making and spur innovation.
- **Digital Finance Innovation Hub:** Established in partnership with the United Nations Capital Development Fund (UNCDF) and BNM, the Digital Finance Innovation Hub aims to accelerate innovation in digital financial services with new or improved solutions that empower the daily lives of low and moderate-income people.
- **Fintech Academy:** A partnership between MDeC and regulators BNM and SC Malaysia, the capital markets regulator, to conduct regulatory bootcamps on a quarterly basis.
- **Global Acceleration and Innovation Network (GAIN):** A program designed to catalyze the expansion of Malaysian and Malaysia-based technology companies.
- **Islamic Digital Economy (IDE):** Helps fintech startups make their financial products more Shariah-compliant by tapping into the global Islamic economy.
- **Malaysian Tech Entrepreneur Program (MTEP):** An initiative to woo fintech founders to set up shop in Malaysia. The program offers 1-5 years employment passes to selected entrepreneurs who qualify.
- **My Fintech Week:** Conducted under the aegis of BNM, the annual event brings together industry movers and shakers in the fields of finance and technology for meaningful exchanges to shape the future of financial services.
- **Orbit:** A co-working space that serves as a nexus point for local and foreign fintech players, allowing startups to interact with industry leaders to ease solution development and early market entry. One of the key purposes of Orbit is to help fintech startups to gain access to regulators. This is done through the quarterly Regulatory Bootcamp, which normally sees participation from both BNM and SC Malaysia.

6 https://mdec.my/

Malaysian Global Innovation & Creativity Centre (MaGIC)

Since its inception in 2014, MaGIC has provided its community of startups, investors and, ecosystem players with capacity building programs, market and funding opportunities and regulatory assistance that has impacted more than 100,000 aspiring and seasoned entrepreneurs with an overall value creation of RM 1.9 billion (US$ 444.3 million).

As an agency under the Ministry of Science, Technology and Innovation (MOSTI), MaGIC facilitates, navigates, and enables the ecosystem with the mission of strengthening Malaysia's position as an emerging innovation nation.[7]

Working Capital Guarantee Scheme

The government is offering a 70% guarantee on financing obtained from participating FIs (including principal and interest/profit) to assist SME companies in all sectors to gain access to financing. The facility is to be used for working capital as well as for capital expenditure (CAPEX).

Given MDeC's leading role in developing Malaysia's digital economy, regtechs looking to enter the market should look into the agency's various initiatives to see which of these they would be most suited to. Both MDeC and MaGIC provide a useful role in acting as an interface between the regulators and the vendors, enabling more productive communication between the entities. In addition, regtechs wishing to build a presence in the market should look at tapping into the government's working capital guarantee scheme.

7 https://mymagic.my/about

Regulator Initiatives

Bank Negara Malaysia (BNM) Initiatives

e-KYC

BNM issued an exposure draft in December 2019 setting out proposed requirements and standards for financial institutions looking to implement e-KYC, including the use of biometric technology, fraud detection, and liveness detection.

The proposed rules apply to banks, investment banks, Islamic banks, life insurance and takaful (Islamic insurance) operators, prescribed development financial institutions, money changers, remittance providers, and approved non-bank issuers of designated payment instruments.[8]

The new draft imposes obligations to ensure appropriate policies and procedures are in place to address operational, IT-related and ML/TF risks. The document says:

> *"A financial institution shall adopt an appropriate combination of authentication factors when establishing measures to verify the identity of a customer being onboarded through e-KYC."*[9]

Specifically, BNM suggests financial institutions use:

- Biometric technology to verify the customer against a government issued ID.
- Fraud detection technology to ensure that the government issued ID used to support e-KYC customer verification is authentic.
- Liveness detection technology to ensure the customer is a live subject and to detect impersonation attempts.[10]

BNM also suggests the use of AI, ML or other forms of predictive algorithms to ensure accurate identification and verification, and to automate decision-making.[11]

The draft framework for e-KYC is largely anticipated to be released this year ahead of BNM's planned introduction of a new virtual bank framework for consultation by year-end.

The latest rules effectively open the field to all FI's, suggesting that many of these entities will be looking around for technologies to help them conduct e-KYC.

8 BNM; Electronic Know-Your-Customer (e-KYC) Exposure Draft; 2019
9 Ibid.
10 Ibid.
11 Ibid.

Fintech Regulatory Sandbox Framework

In October 2016, BNM launched a Fintech Regulatory Sandbox Framework, making it one of the first central banks in Asia to do so.

The sandbox is managed by the cross-functional Financial Technology Enabler Group (FTEG), established by BNM in June 2016, to:

> *"Develop regulatory policy to support innovations that improve the quality, efficiency, security and accessibility of financial services in Malaysia and to facilitate the creation, operation and management of its regulatory sandbox."*[12]

Graduating from BNM's sandbox can be a critical prerequisite for regtechs wanting to implement their technology in Malaysia. As a case in point, WorldRemit, a UK-based digital money transfer company, had technology allowing customers to submit identification via mobile phone through photos posing along with their official IDs. However, this method for customer identification was not permitted under existing regulations at the time.

As one of only four initial entrants into BNM's sandbox in June 2017, WorldRemit was able to test their product, which was ultimately approved, allowing them to implement it in the market. Subsequently, BNM drafted e-KYC guidelines that allowed other providers to implement similar technology.[13] FTEG now organizes quarterly regulatory bootcamps to educate industry players on evolving customer identification and verification procedures.

BNM's Regulatory Sandbox can be an essential first point of call for regtechs which have innovative solutions that are not yet covered by regulatory guidelines.

Interoperable Credit Transfer Framework

The BNM has adopted a 'co-opetition' strategy, which has made banks and non-banking financial institutions compete at service levels while sharing the underlying infrastructure.

This was the idea behind the Interoperable Credit Transfer Framework (ICTF), introduced by the BNM in 2018. The initiative connects banks and non-banks on a single payment network known as the Real-time Retail Payments Platform (RPP), which is operated by PayNet through a partnership with ACI Worldwide.

One of the first services launched on the platform was DuitNow, an instant credit transfer with a national addressing database that links mobile numbers and national identity numbers to account numbers.

The ICTF and RPP are part of BNM's agenda to increase the efficiency of the nation's payment systems as highlighted in the Bank's Financial Sector Blueprint 2011-2020. The government is hoping to increase the number of digital payment users to 15 million people, so that "nearly every Malaysian above 18 years will be on digital payment," according to finance minister Lim Guan Eng.[14]

The drive towards greater e-payments represents an opportunity for regtechs in Malaysia, especially in terms of improved security for service providers. DuitNow, for example, links a customer's account number with another identification number. Keeping information safe during transmission and preventing cybercriminals from stealing login credentials will be paramount.

12 https://www.myfteg.com/

13 https://economictimes.indiatimes.com/markets/stocks/news/regulatory-sandbox-and-fintech-innovation/articleshow/69107031.cms

14 https://www.pymnts.com/news/international/2020/malaysia-promotes-cashless-society-with-ewallet-incentive-award/

Open API

Following a paper published in September 2018 for public comment on the adoption of standardized open API, BNM published a policy document, in January 2019, titled "Publishing Open Data using Open API." This policy document recommends the standards of open APIs that banks should adopt. It also elaborates on the security standards of these APIs and the governance processes of third-party service providers to ensure that banking data is shared safely and responsibly. BNM has stated that banks are encouraged to share certain banking information with third-party service providers through open APIs but are not obliged to do so.[15]

BNM's key goals in this initiative are to improve SME's access to financing, push for liberalization of motor insurance and takaful products, facilitate the development of fintech to enhance customer choice, and lastly, to use technology as a leverage for the distribution and consumption of financial products.[16]

As the open banking revolution gets underway in Malaysia, it is sure to be accompanied by a wave of new regulations designed to help protect consumers. Both new players and incumbents are going to need regtech solutions to manage their compliance requirements.

Indeed, new fintech players are an attractive target market segment for regtechs, not only because they often lack experience in compliance requirements such as AML/CTF, sanctions filtering, capital, consumer protection, governance and oversight, but they also do not have to deal with costly legacy systems, freeing them up to implement regtech solutions for their purpose.

The big banks, however, should also not be dismissed. These are much more experienced in implementing compliance requirements and have the resources to spend on technology that fits their needs. Regtech solutions will be crucial to both new players looking to quickly get off the ground and to traditional, large banks implementing new solutions to stay competitive in this changing environment.

Virtual Banking

Malaysia is set to introduce digital banking following the passage of a new regulatory framework by BNM in December 2019. The central bank will be issuing up to five licenses to qualified applicants to establish digital banks to conduct either conventional or Islamic banking business in Malaysia (Table 1).

Licensees will have to undergo a three- to five-year foundational phase to demonstrate their viability. In March 2020, BNM published an updated draft, incorporating a proposed "simplified regulatory framework for digital banks applicable during the foundational phase" to "reduce the regulatory burden for new entrants that have strong value propositions, whilst safeguarding the integrity and stability of the financial system."[17]

On 31 December 2020, Bank Negara Malaysia issued the much- anticipated digital banking framework, which followed a six-month public consultation period. Plans for a digital banking framework were first announced in March 2019 and were initially scheduled to open for applications in mid-2020 but the development of the framework was delayed due to disruptions caused by COVID-19. The framework remains largely the same but with some changes to the capital adequacy, liquidity, stress testing and public disclosure requirements.[18]

The arrival of virtual banks promises to be "the biggest single disruption that the banking industry has seen in decades." The sector is going to see a ramp-up in competition as both incumbents and challengers seek to offer a superior experience to customers. Regtech solutions that are able to help incumbents and/or challengers increase their efficiency that contributes to such an improved customer experience will be at a premium.[19]

15 Ibid.

16 Ibid.

17 https://www.bnm.gov.my/-/regulatory-framework-for-digital-banks-update-

18 https://www.bnm.gov.my/-/policy-document-on-licensing-framework-for-digital-banks

19 https://www.pwc.com/my/en/publications/2019/virtual-banking-malaysian-customers-take-charge.html

New players may also lack experience in building robust protocols and processes to enable them to adhere to their compliance requirements, especially around ensuring that customer data remains secure. Such entities will also welcome solutions that will help them in this regard. Digital banks are going to need help with their remote onboarding solutions as well as their overall AML/CFT processes, not to mention their cybersecurity. Another area where these banks would benefit would be in solutions providing for alternative credit scoring for loans and mortgages.

With all the activity around the upcoming virtual banks in Malaysia, there is a real opportunity for outside vendors to come in and provide solutions as many of the contenders vying for digital banking licenses are currently shopping around for regtech solutions.

According to Jenna Huey, Regtech Chair at the Fintech Association of Malaysia, it's "almost now or never with the emergence of these virtual banks." She went on to say:

> *"We see a lot of conglomerates coming in to fish for clients. They are also driving M&A or teaming up with partners to acquire e-KYC capabilities to enable them to compete in the race to serve virtual banks. And it's not just virtual banks, incumbents also want to consume these technologies to enable them to remain competitive against these virtual banks."*

Table 1

Brand	Parent	Notes
Potential Candidates[20,21,22,23,24,25]		
AMTD International	AMTD Group	Having successfully secured a virtual banking license in Hong Kong, the group is also eyeing to secure digital banking licenses in Singapore and Malaysia.
BigPay	AirAsia Group Bhd	AirAsia Group Bhd's financial service, BigPay, has been named as one of the prominent technology players that is aiming for the license. With a customer base of more than 700,000 users and the potential to leverage on AirAsia's 63 million passenger database, BigPay is suited for the development of virtual banking in the country.
Boost	Axiata Group Bhd	Axiata Group's digital arm, Axiata Digital Services Sdn Bhd, operates Boost, one of Malaysia's e-wallets. The group is talking to eleven potential partners, including banks, to jointly bid for a digital banking license.
Grab	Grab Malaysia	Grab Malaysia's involvement in virtual banking is reasonable as it is already on the move to apply for a digital banking license from the Singaporean government.

20 https://themalaysianreserve.com/2020/01/06/contenders-for-malaysias-maiden-digital-banking-licences/
21 https://news.nestia.com/detail/Digibank-contender-lists-its-subsdiary-amtd-international-on-sgx/3895933
22 https://www.dealstreetasia.com/stories/v-capital-cross-river-bank-digital-banking-licence-malaysia-186188/
23 https://money.yahoo.com/malaysias-axiata-talks-11-partner-093035509.html
24 https://asianbankingandfinance.net/financial-technology/news/inside-hong-leong-banks-digitalisation-journey
25 https://www.straitstimes.com/asia/se-asia/grab-razer-among-firms-eyeing-digital-bank-licence-in-malaysia

Hong Leong Bank (HLB)	Hong Leong Bank	HLB has said that being driven by their "Digital-at-the-Core" ethos they would naturally be keen to explore the regulatory changes and opportunities that might come about because of the virtual bank licensing.
Razer	Razer Inc.	Razer is in talks with a local conglomerate for a Malaysian license.
TNG eWallet	TNG Digital Sdn Bhd	TNG Digital Sdn Bhd, the JV between TNG and Ant Financial, is considered as one of the strongest contenders to get a license. TNG is also supported by an established bank, namely CIMB Group Holdings Bhd that holds a 52% stake in Touch 'n Go Sdn Bhd — the operator of the smart card that is used as an electronic payment system.
V Capital	V Capital Cross River Bank	Malaysia based advisory firm V Capital Investments Ltd has teamed up with US-based fintech solution provider Cross River Bank to work towards applying for a digital bank license in Malaysia.

Securities Commission (SC) Malaysia Initiatives

Equity Crowdfunding and P2P Lending

SMEs are the backbone of Malaysia. They account for 98.5% of all registered businesses in the country and generated 38.3% of its GDP in 2018, up from 37.8% in 2017.[26,27]

However, SMEs are hindered from raising capital through traditional financial sources as they are generally seen as being overly risky. The inability to secure financing constrains these companies' growth, which in turn affects the development of the nation's economy.

Given the importance of SMEs to the Malaysian economy, the government has introduced a slew of initiatives to increase SMEs' access to capital. Malaysia was the first ASEAN country to regulate both equity crowdfunding (ECF) and P2P financing.[28] The introduction of ECF and P2P financing provides an alternative source of capital for SMEs to fund business expansion, finance working capital, and meet other financial requirements.

The government has also set aside MYR 50 million (US$ 11.4 million) for a Co-Investment Fund (MyCIF), administered by SC Malaysia, to invest in ECF and P2P financing campaigns. From April 2020 until the end of September 2020, MyCIF has increased its funding matching ratio from 1:4 to 1:2 for eligible ECF and P2P campaigns, to provide additional liquidity to the alternative finance space.[29]

26 http://www.smecorp.gov.my/index.php/en/policies/2020-02-11-08-01-24/sme-statistics

27 https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=159&bul_id=R0Vka2RpeVJ0cUlpR3BqdjhudDZh-dz09&menu_id=TE5CRUZCblh4ZTZMODZIbmk2aWRRQT09

28 ECF platforms are regulated under "Guidelines on Regulation of Markets under Section 34 of the Capital Markets and Services Act 2007," issued in February 2015; while the revised "Guidelines on Recognized Markets," issued in May 2016, provides the regulatory framework for P2P.

29 https://fintechnews.my/23418/crowdfunding-malaysia/securities-commission-raises-equity-crowdfunding-fundraising-limits-to-rm-10-million/

In 2019, alternative fundraising methods like ECF and P2P financing saw 127% YOY growth to MYR 400 million (US$ 91.1 million) while fundraising through venture capital and private equity saw an 8% contraction to MYR 600 million (US$ 136.7 million).[30] As of May 2019, there were 21 licensed financing platform operators in Malaysia.[31]

In April 2020, the SC Malaysia lifted fundraising limits on ECF platforms to MYR 10 million (US$ 2.3 million) from the previous limit of MYR 5 million (US$ 1.15 million) and allowed ECF and P2P platforms to operationalize secondary trading, both with immediate effect.[32]

Property Crowdfunding

The SC Malaysia has also revised its guidelines to facilitate property crowdfunding schemes, an alternative funding source for first-time homebuyers.

In May 2019, the SC Malaysia released a new property crowdfunding framework following amendments made to its "Guidelines on Recognized Markets." This is under an initiative announced in the Government's Budget 2019 to provide an alternative financing avenue for first-time homebuyers.

The revised guidelines include new obligations for a property crowdfunding platform operator. These include minimum shareholders' funds of MYR 10 million (US$ 2.3 million), a commitment to provide fair, transparent, and timely information to both homebuyers and investors before participating in a property crowdfunding campaign; and exit certainty at the end of the agreed time frame.[33]

ECF and P2P platforms face several challenges that could be solved by regtech solutions. Firstly, any solution that is able minimize redundancy or process bottlenecks for borrowers that expect an instantaneous loan process will be in demand.

Next, P2P platforms also need to mitigate credit risks. Providers need to be able to quickly and accurately assess a borrower's risk profile. That means that they need a robust credit analysis solution that can price risk effectively. Platforms and lenders also want up-to-date information about the financial health of their customers. This suggests a regtech solution that provides monitoring services to detect changes in credit risk on a timely basis. Platforms also need solutions that allow them to track and monitor repayments, with red flags raised automatically in the event of an increased chance of potential defaults.

In addition, alternative finance platforms are also at higher risk from money laundering as they often operate with pooled client accounts where the added anonymity creates greater risk for those involved. This suggests another area where regtech would be of benefit. It is essential for these platforms to undertake appropriate risk-based customer due-diligence so as to ensure that the services offered by these financial institutions are not being used for money laundering.

30 https://www.thestar.com.my/business/business-news/2020/04/20/alternative-fundraising-gains-traction
31 https://www.theedgemarkets.com/article/cover-story-ecf-p2p-just-scratching-surface-sme-funding-gap
32 https://www.thestar.com.my/business/business-news/2020/04/20/alternative-fundraising-gains-traction
33 https://www.crowdfundinsider.com/2019/05/147542-malaysia-updates-crowdfunding-framework-securities-commission-malaysia-affirms-its-support-for-fintech/

Memorandum of Understanding (MoU) with MIMOS

In 2016, the SC Malaysia signed an MoU with MIMOS, the country's R&D centre in ICT, to jointly develop a capital market advanced analytics platform. The collaboration is designed to help the SC Malaysia leverage new technology to process a higher volume of data from a variety of sources beyond the traditional data sets. It is also intended to facilitate the usage of regtech to enhance regulatory effectiveness and build Malaysia's Big Data capability in the capital market. The SC Malaysia was one of the first among its peers in the ASEAN region to implement and develop advance analytics to aid and complement its regulatory work.[34]

There could be regtech opportunities here too. The SC Malaysia has highlighted its desire to develop the technology capabilities to harvest and process a high volume of both structured and unstructured data, and to enable more accurate scenario analysis and horizon scanning to generate better insights. The SC Malaysia wants to develop further and adopt regtech solutions to support a more fact-based, insight-driven approach to surveillance, supervision, and research. Regtech providers with solutions in this area should contact the SC Malaysia to see where they might be able to add value.

Virtual Assets

The SC Malaysia introduced the "Capital Markets and Services (Prescription of Securities) (Digital Currency and Digital Token) Order 2019" in January 2019. The regulation classifies digital currencies, tokens, and crypto-assets as securities, placing them under the SC Malaysia's authority. While the BNM does not recognize digital currencies as legal tender in Malaysia, the trading of digital currencies is legal, providing that digital assets exchange platform operators have obtained approval from the SC Malaysia. Once registered, local cryptocurrency exchanges have up to nine months to achieve compliance with the SC Malaysia's regulation standards.

Three Recognized Market Operators (RMOs) were conditionally approved by the SC Malaysia in June 2019 to operate digital asset exchanges. These were: Luno Malaysia, Sinegy Technologies, and Tokenize Technology. Luno and Tokenize have now received full approval to operate a digital asset exchange.

The SC Malaysia issued a public consultation paper for Initial Coin Offerings (ICOs) in March 2019 titled "Public Consultation Paper No. 1/2019 Proposed Regulatory Framework for the Issuance of Digital Assets Through Initial Coin Offerings (ICOs)." The guidelines were effective from the second half of 2020, after which fundraising via digital token offering must only be carried out through an Initial Exchange Offering (IEO) platform. The platform will have to be registered with the SC Malaysia for this purpose.

Money laundering and terrorist financing are the two key risks facing digital asset platforms. Such is the risk that BNM amended the AML/CFT regulations in February 2018 to include requirements for digital asset service providers. Solutions that enable these platforms to implement the same preventive measures as financial institutions, including customer due diligence, record keeping, and reporting of suspicious transactions, will be required. As will solutions that enable platforms to obtain, hold, and securely transmit originator and beneficiary information (FATF's Travel Rule). Such solutions are, however, challenging to implement, given the anonymity of the sources and uses of virtual funds.

34 https://www.sc.com.my/resources/media-releases-and-announcements/collaboration-between-sc-and-mimos-on-big-data-capability-in-capital-market

Bursa Malaysia Initiatives

Blockchain

Malaysia's stock exchange, Bursa Malaysia, is working on a blockchain-enabled security borrowing and lending Proof-of-Concept (PoC). The initiative aims to develop greater transparency and address other challenges of borrowing and lending securities in Malaysia. The PoC should increase the efficiency, speed, and capacity of the aforementioned services, which should consequently bring higher demand. This is the first time such an initiative has taken place in an ASEAN member state.[35]

According to Bursa Malaysia, the PoC represents the beginning of "a longer-term holistic roadmap that leverages emerging technology to address challenges in the securities lending market." Bursa Malaysia has said that it is targeting inefficiencies in execution, collateral management, and corporate action management, where the ultimate aim is to build "a future-ready end-to-end, technology-driven solution" for the country's securities lending market.[36]

There exists an opportunity here for regtech providers that can help Bursa Malaysia tackle its operational challenges with a technologically driven solution that is flexible and scalable into the future. Providers should note however, that Bursa Malaysia will establish a wholly owned subsidiary (Bursa RegSub) to assume the regulatory functions currently undertaken by Bursa Malaysia. This is was expected to be operational by the end of 2020 but was further delayed into 2021.[37]

Cross-Regulator Focus Areas

AML/CFT

According to a 2013 survey by EY, Malaysia was ranked as one of the world's most corrupt nations and identified as a country most likely to take shortcuts to meet targets when economic times are tough.[38] Then, in July 2015, the 1MDB scandal erupted, when the Malaysian state fund came under investigation for alleged impropriety after reports emerged that investigators traced some US$ 700 million wired into Prime Minister Najib's bank accounts. A population, fed up with corruption, gave Mahathir Mohamad a decisive victory in the 2018 election. Since then, the government has been making efforts to introduce good governance, integrity, and to clean up the culture of corrupt practices and power abuse that were prevalent in the past.

In 2018 Malaysia adopted the Malaysian Anti-Corruption Commission (Amendment) Act 2018, which introduced corporate liability in corruption as a legal concept, as well as the concept of "adequate procedures" defense. Malaysia has also adopted ISO 37001 (Anti Bribery Management Systems). ISO 37001 specifies requirements and provides guidance for establishing, implementing, maintaining, reviewing, and improving an anti-bribery management system.[39]

In November 2019, Malaysia launched the Malaysian Financial Intelligence Network (MyFINet), a public-private partnership (PPP) initiative. BNM, the SC Malaysia, and several law enforcement agencies and financial institutions

35 https://cointelegraph.com/news/malaysias-stock-exchange-to-develop-blockchain-poc-for-security-borrowing-and-lending

36 http://www.securitieslendingtimes.com/securitieslendingnews/article.php?article_id=223477

37 https://fintechnews.my/22999/regtech-fintech-regulation-malaysia/securities-commission-and-bursa-malaysia-sets-up-a-regulatory-subsidiary/

38 https://news.yahoo.com/malaysia-one-most-corrupt-nations-survey-shows-032001030.html

39 https://www.iso.org/standard/65034.html

have combined forces to be more effective in detecting suspicious transactions by financial, and other reporting institutions.[40]

In January 2020, BNM's revised AML/CFT guidelines came into effect. The new guidelines, which are in line with international standards set by FATF, aim to push institutions into taking greater ownership of their AML/CFT controls by moving towards a principle-based application in assessing and setting their own criteria to combat any risks. Two regulatory documents, placing institutions into two different categories: financial institutions and designated non-financial businesses and professions (DNFBPs) and non-bank financial institutions, were released in December 2019 respectively.[41,42]

The stricter AML/CFT restrictions have myriad implications for regtech providers. Firstly, all those institutions that are designated as DNFBPs and non-bank financial institutions are going to find it challenging to build robust AML/CFT frameworks that can maintain efficient operations while mitigating risks and exposure. The new rules push institutions into taking greater ownership of their AML/CFT controls. These players will have little to no experience in putting such controls in place and are going to need solutions that will enable them to do so.

Secondly, the new rules also allow for simplified customer due diligence (CDD). However, several thresholds have been introduced to segment conditions where simplified CDD is permitted. Institutions are going to need solutions that enable them to manage the increased complexities around determining an appropriate method to apply for varying circumstances.

Corporate Governance

Malaysia has no single corporate governance framework, which is contained in several pieces of legislation and guidelines. In the interests of parsimony, we will look at two elements within Malaysia's corporate governance framework, namely the SC Malaysia's Malaysian Code on Corporate Governance (MCCG) and BNM's Responsibility Mapping.

MCCG

The SC Malaysia is implementing the internalization of a culture of good governance amongst capital market participants as outlined under the five strategic priorities listed under its "Corporate Governance Strategic Priorities 2017-2020 (CG Priorities)." These are:

- Enhancing the corporate governance regulatory framework.
- Strengthening the corporate governance ecosystem.
- Promoting greater gender diversity on boards.
- Embedding corporate governance culture early in the life cycle of companies and among youth.
- Leveraging technology to enhance monitoring of corporate governance practices and shareholder activism.[43]

In the CG Priorities, SC Malaysia committed to publishing analysis and observations through the release of a Corporate Governance Monitor (CG Monitor) publication. The CG Monitor is produced annually to present the overall state of play concerning the adoption of the MCCG and observations from the selected thematic reviews for the year.[44]

40 https://www.thesundaily.my/business/financial-intelligence-network-launched-to-combat-financial-crimes-ED1577336

41 https://home.kpmg/my/en/home/media/press-releases/2019/12/kpmg-urges-institutions-to-assess-risks-in-anticipation-of-revis.html

42 Anti-Money Laundering, Countering Financing of Terrorism and Targeted Financial Sanctions for Financial Institutions; and Anti-Money Laundering, Countering Financing of Terrorism and Targeted Financial Sanctions for Designated Non-Financial Businesses and Professions (DNFBPs) & Non-Bank Financial Institutions (NBFIs)

43 https://www.sc.com.my/regulation/corporate-governance

44 Ibid.

It is with these priorities in mind that the Malaysian Code on Corporate Governance (MCCG), first introduced in 2000 and which has been reviewed periodically, was revised in 2017 (MCCG 2017). The latest revision introduces a new set of best practices built on accountability and transparency. The MCCG 2017 is applicable to all public listed companies, while non-listed entities, including state-owned enterprises, SMEs, and licensed intermediaries, are also encouraged to embrace the code. The code contains 36 practices to support three core principles about a company's board, audit and risk management, and stakeholders.

Key features of the approach include:

- The Comprehend, Apply and Report approach – CARE.
- The shift from comply or explain to apply or explain an alternative.
- Greater focus and clarity on Intended Outcomes for each practice.
- Guidance to assist companies in applying the practices.
- Identify exemplary practices which support companies in moving towards greater excellence – Step Ups.[45]

Under the MCCG 2017, listed companies must provide disclosures which contain information required to explain the adoption or departure from the MCCG practices. It is also no longer sufficient for companies to merely explain the reasons for non-compliance; they will also have to provide alternative steps or actions that have been taken if the requirements have not been adhered to.[46]

SC Malaysia is using technology that leverages advanced analytics capabilities to monitor and analyze both quantitative and qualitative data from companies on their corporate governance policies and practices. Such scrutiny has clear regtech implications. Regtech solutions that enable listed companies to remain compliant and/or help them to incorporate "step-up'" practices to achieve excellence in corporate governance will be welcomed. As, indeed, will solutions that can help listed companies fulfill their disclosure requirements to SC Malaysia.[47]

Responsibility Mapping

In line with the push towards greater corporate good governance, BNM issued an exposure draft on "Responsibility Mapping" in December 2019, following the issuance of a discussion paper in February 2018. Responsibility mapping is a fundamental pillar within the governance framework that accords focus on the role of individuals holding leadership positions in financial institutions to promote actions and decisions in areas under their purview that are consistent with good governance and sound risk management.

The exposure draft sets out BNM's proposals to clarify the roles, responsibilities, and accountability of individuals holding leadership positions in financial institutions. The proposals complement the existing governance arrangements to promote a corporate culture which reinforces ethical, prudent, and professional behavior. [48]

BNM's Responsibility Mapping framework also has regtech implications that will require solutions. Financial Institutions' board of directors will need tools to enable them to oversee and ensure an effective process for responsibility mapping, including:

- Having a robust mechanism to identify the responsible areas.
- Ensuring all responsibility areas are clearly mapped into the organizational structure.

45 https://www.sc.com.my/api/documentms/download.ashx?id=70a5568b-1937-4d2b-8cbf-3aefed112c0a
46 https://www.accaglobal.com/crsh/en/member/discover/cpd-articles/governance-risk-control/mycorpgov-cpd.html
47 SC Malaysia; Corporate Governance Monitor 2019; 2019
48 https://www.bnm.gov.my/documents/20124/52006/ed_responsibility+mapping_dec2019.pdf/73187c28-8465-fdd2-7fcf-0ddefa2e8bb2?t=1578645662143

- Enabling the CEO to identify responsibility areas that covers all functions integral to the conduct of the operations and affairs of the financial institution. The CEO must also maintain a complete and up-to-date register of individual responsibilities.[49]

Individuals that have been allocated responsibility areas will also need solutions to ensure that they manage responsibility areas in line with legal and regulatory requirements. Overall, solutions that enable the better collection and aggregation of data, which provides greater transparency to accountable persons will be in demand.

Cybersecurity

Risk Management in Technology (RMiT)

Aware that cyberattacks can undercut customer confidence and inflict widespread damage, Malaysian banks and regulators list cybersecurity among their issues of top concern. Yet Malaysia still has no standalone Cyber Security Law. Therefore, enforcement agencies like the National Cyber Security Agency (NCSA), must rely on existing legislation to combat cyber threats. Such legislation is archaic and may not have kept pace with the advancement of modern technology.

The BNM, cognizant of the fact that the existing regulatory environment was inadequate to protect Malaysians against cyber threats, published the Risk Management in Technology (RMiT) framework in July 2019, which came into effect at the start of 2020. The framework, intended to help combat the ever-growing threat posed to information and financial systems by nation-states, terrorist organizations, and independent criminal actors, aims to formalize the development of consistent risk management programs in all Malaysian FIs.

The impact is broad and affects licensed local and international banks, insurers, takaful operations, financial institutions, issuers of e-money, and operators of designated payment systems.

The purpose of the policy is to help Malaysian FIs establish the necessary frameworks, management structures, policies, and procedures to ensure that said institutions maintain their cyber-exposure to a level commensurate to their risk.

The regulation is designed to:

- Promote the protection of customer information.
- Promote the protection of information technology systems of regulated entities.
- Require each affected company to assess its specific risk profile.
- Design a program that robustly addresses cyber risks.
- Certify compliance with these regulations by senior management.[50]

The RMiT framework mandates compliance around several areas that would benefit from reghtech solutions. These include:

- Access Control
- Patch and End-of-Life (EOL) System Management
- Cybersecurity Operations (and Minimum Control Measures on Cybersecurity)
- Security Operations Centre

FI's are going to struggle to build suitable processes and procedures to remain compliant. Each one of these areas has a number of requirements that would benefit significantly from a regtech solution.

49 https://www.lexology.com/library/detail.aspx?g=71903352-d7f9-4ddd-8029-bc5fd75251cf

50 https://www.beyondtrust.com/blog/entry/achieving-compliance-with-malaysia-risk-management-in-technology-rmit

Digital Transformation in Securities and Capital Markets

In March 2018, the SC Malaysia and BNM established the Brokerage Industry Digitization Group (BRIDGe), a joint working group between regulators and industry to accelerate the digitization of the stockbroking industry. BRIDGe aims to accelerate the digitization of the brokerage industry to enhance operational efficiencies and service standards while reducing cost in both brokerage and banking sectors.[51]

As incumbents and new market entrants seek opportunities across the intermediation value chain there will likely be demand for technological solutions to support these stakeholders in areas such as their regulatory reporting, risk management, identity management and control, compliance, and transaction monitoring.

Islamic Finance

Malaysia is already a leader in Islamic finance. With the growing Islamic population domestically, in addition to that of its neighboring country Indonesia, Malaysia has a particular geopolitical advantage to be the fintech hub for Sharia-compliant finance infrastructure and products.

Malaysia remains the world's largest market for "Sukuk," or Islamic bonds. And the market is significant; outstanding Sukuk deals added up to US$ 426 billion in 2017 alone. And the demand for Sukuk, as well as other Islamic Financial products, is continuously growing: Sharia-compliant assets worldwide were recently pegged at over US$ 2.4 trillion, compared to just $200 billion in 2003.[52] It is predicted that by 2022 that figure is projected to grow to US$ 3.8 trillion, with fintech ventures expected to drive much of the growth.[53]

Indeed, Islamic bank loan growth in Malaysia expanded by 8.9% in 2018, compared to 2.5% for conventional banks.[54]

While Islamic fintech is still in its infancy in Malaysia, the central bank is supporting efforts to promote the sector. Once such initiative is the Investment Account Platform (IAP): An avenue for Shariah-compliant investment and financing. The IAP is a multi-bank platform that facilitates channeling of funds from investors to finance viable ventures. Funds mobilized via IAP are intermediated by participating Islamic banks through investment account (IA) products.[55]

As Malaysia moves towards becoming a fintech hub for Sharia-compliant finance infrastructure and products, the market for tailored regtech solutions in this niche segment will only grow. For example, regtech could help the industry achieve more compliance with general banking regulations and sharia-specific rules, while minimizing the reputation risk related to potential breaches of such sharia requirements.

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51 https://fintechnews.my/16796/regtech-fintech-regulation-malaysia/sc-and-bnm-to-joins-forces-to-accelerate-digitisation-of-stockbroking-through-bridge/

52 https://www.forbes.com/sites/vinnielauria/2020/03/13/islamic-fintech-startups-on-the-rise-in-southeast-asia/#7775f2d4296d

53 https://www.reuters.com/article/idUSWAOAPHREBLWW18A3

54 https://www.imf.org/en/News/Articles/2020/02/27/na022820-malaysia-a-flourishing-fintech-ecosystem

55 Investment Account Platform; Avenue of Choice for your Investment and Fund Raising; 2017

Private Sector

In jurisdictions such as Singapore, the regtech ecosystem is driven from the top-down. In Malaysia, it is very much driven from the bottom-up, by industry. The regulators prefer industry sectors to update them on what they are doing, which then leads, through a discussion process, to the appropriate regulations being put in place. This is why the FinTech Association of Malaysia (FAOM) plays an important role. The Regtech Sub-Committee of FAOM has been active in acting as a liaison between the sector, industry, the government, and the regulators.

Given that regulators in Malaysia have a preference for being reactive to industry developments, regtechs and Malaysia's regulated entities have a crucial role to play in helping to shape the regtech landscape. They are in a position to help the regulator develop the regulations for the future.

Private Sector Associations and Regional Initiatives

It is not merely the regulators that have taken an active role in developing the regtech ecosystem in Malaysia. There also exist several associations and regional initiatives. These include:

Logo	Name	Description
500	500	500 Startups is the most active global venture capital firm. We're on a mission to back the world's most talented entrepreneurs and build thriving ecosystems worldwide.
1337 VENTURES	1337 Ventures	An accelerator and early stage venture capital fo-cused on doing pre-seed and seed stage invest-ments (in partnership with MDEC).
	Association of Banks in Malaysia (ABM)	A dynamic organization involved in driving a wide spectrum of initiatives on behalf of our members (comprising all commercial banks operating in Malaysia) as well as responding to the needs of the banking public.
AIBIM	Association of Islamic Banking and Financial Institutions (AIBIM)	A dynamic, visible, responsive and effective organization representing the voice of Islamic Finance industry underpinning the value-based intermediation thrust in serving the community.
ALPHA STARTUPS	Alpha Startups	BNI's Fintech Accelerator-run by 1337 Ventures. A pre-accelerator program for idea stage startups.
Cradle Creating. Leading. Startups.	Cradle	Cradle has supported over 1000 Malaysian Technology-Based companies across multiple sectors and holds the highest commercialization rate amongst funding agencies in the country (Government-owned seed fund & angel tax incentive processing office).
ctos Knowledge Creates Confidence	Ctos	A Credit Reporting Agency (CRA), Ctos facilitates credit extensions by empowering individuals and businesses with access to crucial information at greater ease and speed. They deliver a complete portfolio of credit risk management solutions and services.

Logo	Name	Description
	Fintech Association of Malaysia (FAOM)	Advocates for the local Malaysia fintech community and engages with industry players and regulators in pro-innovation policymaking.
	FinTech SuperCharger	A fintech accelerator dedicated to both early-stage and scale-up startups (in partnership with MDEC).
	Gobi Partners	One of the first VC firms with a regional presence across China, Hong Kong, and ASEAN with over US$1.1 billion in assets under management (AUM). The firm, headquartered in Shanghai and Kuala Lumpur, supports entrepreneurs from the early to growth stages and focuses on emerging and underserved markets.
	Investment Account Platform (IAP)	IAP is a platform to facilitate channeling funds from investors to finance viable ventures and projects. IAP is backed by Islamic banking institutions via the offering of Investment Account (IA) to the investors.
	MaGIC	Supports the creativity and innovation development in Malaysia through dynamic programs and capacity-building initiatives.
	MAVCAP	MAVCAP is a Government-owned VC company (largest in Malaysia) in the technology space, developing the Malaysian venture capital ecosystem via smart partnerships while enabling access to VC funding for technology companies.
	Malaysian Association of Asset Managers (MAAM)	MAAM is the representative body for the asset management industry in Malaysia whose mission is to promote the asset management industry in Malaysia and to ensure the provision of a high standard of service to investors.
	Malaysia Blockchain Association	An international Non-Profit social enterprise estab-lished with a global vision to build a sustainable blockchain community through Malaysia coopera-tion.
	Malaysia International Islamic Financial Centre (MIFC)	The MIFC Community is a network overseeing Malaysia's Islamic finance marketplace.
	NEXEA	A VC and Accelerator for early stage Startups looking for startup funding. They focus on deliver-ing not only capital but also the best-in.
	Proficeo	Proficeo designs programs for High Growth Ventures who are Ready to Scale.
	Selangor Accelerator Programme (SAP)	SAP is a top-tier accelerator that targets 30 local high-potential startups by providing an intensive 4-month program.
	TH Capital	A Malaysian based private investment firm with strong Southeast Asian connections. TH Capital is a platform that empowers and accelerates ventures with capital infusion, business consultancy, strategic mentorship and strong networking opportunities.
	Tuas Capital Partners	A venture capital and private equity investment company, Tuas invests in, accelerates and sup-ports businesses' growth by supplementing entre-preneurs' strategic and operating capabilities; and by tapping into growth opportunities and linkages within SE Asia through its Principals.
	WatchTower and Friends	A company that is pursuing its vision of building a startup ecosystem that will raise an ever-growing number of successful startups.

Regtech firms wishing to enter the market should reach out to these entities as a first port of call. These may be able to provide valuable advice, contacts, and exposure in the market.

Active Regtechs in Malaysia

Ai-XPRT

(https://www.ai-xprt.com/) – UK-based with a presence in Malaysia, Ai-XPRT uses AI, NLP and ML to automate compliance and auditing assurance.

Capnovum

(http://www.capnovum.com/) – UK-based with a presence in Malaysia, Capnovum is a cognitive compliance management platform that provides an up-to- date repository of regulations, obligations and regulatory news that lets financial institutions manage compliance across jurisdictions.

Chekk

(https://www.chekk.me/) – HK-based with a presence in Malaysia, Chekk helps businesses by providing seamless on-boarding solutions.

Experian

(https://www.experian.com.my/) – An Irish-domiciled consumer credit reporting company with a presence in Malaysia.

EZMCOM (FICO)

(https://www.fico.com/) – US-based with a presence in Malaysia, EZMCOM builds highly secure, easy to use strong authentication & authorization software products. It has now been acquired by FICO, a firm enabling businesses to automate, improve, and connect decisions to enhance business performance.

Innov8tif Solutions

(https://innov8tif.com/) – Malaysian-based startup heling clients in SE Asia to digitize business processes - both in customer onboarding (eKYC) and process automation.

Pulse iD

(https://www.pulseid.com/) – A HK-based startup with a presence in Malaysia, Pulse iD is an identity platform that uses geolocation data to unlock security, loyalty & identity services to banks, telcos & media clients.

TM One

(https://www.tmone.com.my/) – The enterprise and public sector business solutions arm of Telekom Malaysia Berhad (TM) Group. TM ONE caters to the connectivity and digital needs of corporations and the government sector by providing services such as Connectivity, Collaboration, Cloud, Security, Data Centre, BPO and Smart Services.

Virtusa

(https://www.virtusa.com/) – A US-based company with a presence in Malaysia providing next-gen information technology (IT) consulting and outsourcing services.

Xendity

(https://www.xendity.com/) – Malaysian-based, Xendity is a software technology startup aiming to accelerate and strengthen identity verification processes by using e-KYC technology.

Potential Future Scenario for Malaysia's RegTech Ecosystem

Currently, regtech is still very nascent in Malaysia, with both the regulators and regulated entities struggling with legacy systems.

Until these issues are resolved it will be very difficult to build regtech solutions on top of such systems. The lack of infrastructure is critical. If entities are not plugged into the relevant databases because they lack APIs to do so, they will not be able to do e-KYC, for example.

The authorities' role is also an essential factor. While the Government and the regulators are supportive, they also have other priorities, such as developing the economy and nurturing the business sector. A successful government initiative that Malaysia does have, however, are its two government entities, MDEC and MaGIC. These act as an interface with the regtech vendors. MDEC has been especially proactive in acting as the regtechs' representative in their dealings with BNM or the SC Malaysia.

Perhaps unsurprisingly, it is the regulated industries, specifically banking and finance, that have been the most prolific in their uptake of regtech solutions. Namely, because of their obligations around AML/CFT (FATF) and data protection (GDPR). However, the bigger banks tend to be bureaucratic and conservative so there has been resistance from these. In general, smaller FIs are more flexible. They have the ability and willingness to onboard new regtech solutions. For these companies, their margins are often thin, and their compliance costs have rocketed. Regtech solutions are seen as being cost-effective by these smaller FIs.

It's not just the banks either. Malaysia's fund managers have been busy building APIs so that they can consume the technology that they need. There are fewer restrictions on fund managers given that they are not regulated in the same way as banks. That is good for regtechs as they do not have to go through the same burdensome procurement cycle. In addition, now that DNFBP entities, including law firms and bullion companies, are under BNM's regulatory compliance umbrella, several local institutions, e.g., large credit companies, are starting to invest in regtech, especially around ID verification given that DNFBPs are seen as high-risk businesses for ML. These institutions are also looking at compliance, i.e. transaction monitoring and transaction screening.

There are also companies outside of banking and finance such as Axiata, a Malaysian telecoms conglomerate, that have been adopting regtech initiatives. In terms of the opportunities then, while there has been a lot of activity around e-KYC and digital identification solutions, which are being adopted outside of banking and finance, the market has already become somewhat saturated with a number of foreign players coming in to serve this demand. White spaces are more around cybersecurity, AML, and reporting.

While still nascent Malaysia's regtech sector is expected to grow over the coming years and will remain an attractive destination given that it is less expensive to run or hire a team there as compared to the likes of Singapore and language is not a barrier, with a lot of the regulations drafted in English. For regtechs coming to Malaysia, getting to know the regulations and localizing their solutions to fit these accordingly will be critical. Malaysia then offers a good springboard to expand to other parts of Southeast Asia given its close ties to both Thailand and Indonesia.

The State of Regtech in APAC

Evaluation of the Landscape & Market Opportunity for Regtech Companies

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Main Regulators and Key Initiatives

The Bangko Sentral ng Pilipinas (BSP):

The BSP is the central monetary authority of the Philippines. It supervises the operations of banks in the Philippines and provides policy directions in banking, credit, and money matters.

Recent / Active BSP Key Initiatives:

- API and Chatbot Suptech Initiatives
- Circular 1022 (e-KYC/AML/CFT)
- Circular 1033 (Digital Financial Inclusion)
- Circular 944 (Virtual Assets)
- National Payment System Act (NPSA)
- National Retail Payment System (NRPS)
- Philippine Payment and Settlement System (PhilPaSS)

The Securities and Exchange Commission (SEC):

The agency of the Government of the Philippines responsible for regulating the securities industry in the Philippines. In addition to its regulatory functions, the SEC also maintains the country's company register.

Recent / Active SEC Key Initiatives:

- Code of Corporate Governance
- Crowdfunding Framework
- Memorandum Circular No. 16 (AML/CFT)
- Memorandum Circular No. 17 (AML/CFT)
- Memorandum Circular No. 22 (Virtual Assets)
- Memorandum Circular No. 24 (Corp. Gov)
- Rules for Digital Asset Exchange
- Securities Regulation Code (SRC)

Insurance Commission (IC) of the Philippines:

The IC's mandate is to regulate and supervise the insurance, pre-need, and health maintenance organization (HMO) industries in accordance with the provisions of the Insurance Code, as amended, Pre-Need Code of the Philippines, and Executive Order No. 192 (s. 2015)

Recent / Active IC Key Initiatives:

- Amended Insurance Code R.A. 10607
- Capital Requirements
- Insurance Guidelines on Rule XVI – RA8042
- IRR of R.A. 9829
- Pre-Need Code R.A. 9829
- Regulatory Sandbox
- The Insurance Code P.D. 612
- Transfer of HMO EO 192, s. 2015

Trends, Initiatives, and Implications for Regtechs in the Philippines

Fintech in the Philippines is expanding from the usual financial services, i.e., money business operations such as remittance, payments, and digital wallets, to other fintech verticals such as distributed ledger technology (DLT), cryptocurrency, insurtech, and regtech.

However, as far as regtech is concerned, uncertainties in the scope, extent or intent of local regulations pose an obstacle to the development of new products or services. While regulators in the Philippines have consistently expressed an openness and positive regulatory view towards the developments offered by the regtech market, for example in notable public policies on data privacy, anti-money laundering and cybersecurity, rationalizing existing regulations and refining new and upcoming ones remains a key challenge.

Increasing digitalization, however, will require more legislation, and given the partnership between the BSP and Regulators Accelerator (R2A) (see below), it is likely that the BSP will be more mindful about issuing regulations facilitating regtech solutions.

Government Initiatives

The E-Government Master Plan (EGMP) 2022

As part of the Government's efforts to establish one digitized government, the Department of Information and Communications Technology (DICT) launched phase two of its E-Government Masterplan (EGMP), "EGMP 2022" in June 2019. EGMP 2022 is a blueprint of the DICT's plans for integrating an interoperable government ICT network and systems. The EGMP aims to simplify processes, help make access to accurate information faster and less costly, and to deliver services with more transparency and greater accountability.[1,2]

Since the establishment of the first EGMP, three components needed for e-government environment implementation have been implemented. These are: The Medium-Term ICT Harmonization Initiative (MITHI), the Integrated Government Philippines (iGovPhil) project, and agency-specific applications. The iGovPhil Program, launched in June 2012, seeks to achieve a higher level of e-governance and the use of ICT to rationalize government operations and improve the delivery of goods and services to the people.[3,4]

EGMP 2022 is an ambitious endeavor that inevitably will have regtech implications. There will be opportunities for providers to offer solutions around robust cybersecurity systems; monitoring and analytics systems; identity management systems; data exchange systems; and Big Data management systems.

1 EGMP 2022 is the successor to EGMP (2013-2016) and can be alternatively named EGMP 2.0 (2016-2022)
2 https://dict.gov.ph/ictstatistics/launching-of-the-e-government-masterplan-2022/
3 https://dict.gov.ph/ictstatistics/wp-content/uploads/2019/07/EGMP_Book_Abridged.pdf
4 http://i.gov.ph/about-us/

Regulator Initiatives

Bangko Sentral ng Pilipinas (BSP)

Application Program Interface (API) and Chatbot

As the BSP pushes for increased use of electronic payment platforms, it is also itself implementing regtech-based tools for the conduct of bank supervision. The BSP was the first financial authority to partner with "RegTech for Regulators Accelerator (R2A)," a program assisting financial sector authorities to "pioneer SupTech applications for financial sector regulation, supervision, and policy analysis."[5]

The BSP is currently testing two platforms with the help of R2A. The first is an API-based prudential reporting system to connect financial service-providers to the BSP for data sharing. Such a system, which will include tools for data visualization and analysis, aims to improve data quality and access helping the BSP to:

> *"implement a risk-based supervisory approach that reduces compliance costs and promotes financial inclusion while ensuring financial stability and integrity."*[6]

The system will allow for the streamlined transmission, processing, warehousing, and analysis of the supervised banks' prudential reports. This will significantly improve the timeliness, ease, and integrity of data submission.

For the less sophisticated supervised entities that cannot immediately migrate to the API-based reporting, the BSP has developed a central automated reporting environment referred to as the Financial Institution (FI) portal. The FI portal provides a single electronic platform upon which FIs can submit reports, receive feedback on their acceptability, and exchange correspondences with the BSP on matters related to report submissions. It offers a more secure encrypted process of submission through a web facility where supervised entities can upload their reports instead of sending them via regular email.[7]

The BSP has also rationalized the prudential reporting requirements for banks as part of efforts to promote ease of doing business in the industry. In November 2019, the BSP's Monetary Board, through Resolution No. 1479, approved the amendments to the Reports Required of Banks under Section 173 of the Manual of Regulations for Banks (MORB).

This is all part of the BSP's efforts to streamline manual-intensive processes. Previously, banks were burdened by an extensive and time-consuming validation process, involving more than 240 Excel-based data entry templates with 100,000 plus data points. The resulting delays and the scope for human error posed complications on

5 https://www.r2accelerator.org/about
6 https://bfaglobal.com/r2a/
7 https://www.philstar.com/business/banking/2019/10/15/1960130/bsp-banks-now-allowed-to-submit-reports-ai

BSP's data and statistical compilation operations. With the API system, manual intervention is eliminated since data sorting, sanitation, and validation processes are fully automated and secured. Processing time of filed returns has been cut to just 10 seconds each from more than 30 minutes, thereby streamlining the entire end-to-end process of regulatory reporting and validation.[8]

The second platform is a chatbot that will leverage AI and NLP to automate the handling of complaints from the public, which are sent via text message and online platforms. Currently, BSP's customer assistance mechanism (CAM) receives around 10,000 complaints and enquiries per year through email, phone, and visits to the central bank itself. Processing these complaints has been labor-intensive, and there was also the potential for human error in data management as staff focused on processing rather than analytics. The chatbot, meanwhile, has a more streamlined architecture for registering, classifying, sorting, and analyzing consumer complaints.[9]

To keep pace with digital transformation, BSP Governor, Benjamin E. Diokno, speaking before the Bankers Institute of the Philippines (BAIPHIL) in 2019, said that the BSP had embarked on a "Strategy for Technology Adoption in Regulatory Supervision" or STARS. Under STARS, Diokno said that the BSP is now employing regtech and suptech solutions to provide the BSP with "real-time market surveillance, supervision, and examination, digitalization, data analytics, data collection, and distribution."[10]

The BSP's commendable approach towards applying regtech solutions to improve its regulation, supervision, and policy analysis has positive implications for regtech providers wishing to enter the market.

Firstly, it suggests that the BSP itself is open to implementing suptech solutions to strengthen its risk-based regulatory and supervisory activities. Secondly, now that the BSP has started on its regtech journey, it also suggests that it is likely that regulations purposefully suited to regtech will be issued in the foreseeable future. The BSP has spoken about the adoption of a Surveillance Loop and Early Intervention Framework, which according to a central bank report, involves the development of a banking sector resilience index and a vulnerability index. These are meant to help banks brace for potential vulnerabilities. The composition of such indices might require regtech solutions to enable the submission and collection of relevant data that will feed into them.[11]

e-KYC

The BSP has been making moves to ease restrictions on e-KYC. Circular No. 950, issued in 2017, amended AML regulations both for banks and non-bank FIs. Under the revised regulations, the use of technology in face-to-face contacts and interviews may be allowed provided that:

> *"The covered person is in possession of and has verified the identification documents submitted by the prospective client prior to the interview and that the entire procedure is documented."*[12]

In the same year, the BSP's 2017 Financial Inclusion Survey found that out of 52.8 million adults who did not have bank accounts, 18% did not have the required documents, such as an acceptable ID, to open an account. This finding led in 2018 to the signing of the Philippine Identification System Act, mandating a single ID system in which all residents

8 https://www.philstar.com/business/2019/11/04/1965689/reporting-rules-banks-rationalized
9 https://www.centralbanking.com/fintech/4397461/artificial-intelligence-initiative-central-bank-of-the-philippines
10 https://journal.com.ph/editorial/opinion/adapt-or-be-left-behind
11 https://www.panaynews.net/adapt-or-be-left-behind/
12 BSP; Circular No. 950; Series of 2017

are issued with a single national identification card known as the “Philippine Identification Card (PhilID).” The motivation behind this move was to make it easier for unbanked individuals to sign up for bank accounts and financial services.

Then, in November 2018, the BSP issued Circular 1022, allowing BSP-supervised financial institutions (BSFIs) to accept PhilID as an official document for financial transactions, while also allowing the use of technology-aided KYC processes to capture and record personal customer data as well as conduct virtualized face-to-face contact or interview. The new rules appear to no longer require banks to be “in possession of” identification papers from a prospective client.

With the recent easing of restrictions around e-KYC, regtechs that have solutions to remotely onboard customers should find steady demand for their products, especially if these can be aligned with financial inclusion efforts to bring banking and financial services to the unbanked sector of the population.

Financial Inclusion Agenda

Launched in 2015, the National Strategy for Financial Inclusion (NSFI) was initiated to:

> *“Provide a comprehensive framework that underpins efforts by the government and private sector toward the shared vision for financial inclusion in the country.”*[13]

Whereby financial inclusion is defined as “a state wherein there is effective access to a wide range of financial services for all.”[14]

Lack of access to financial services is an issue in the Philippines where, according to the BPS’ Financial Inclusion Survey 2017, only an estimated 15.8 million adult Filipinos, or 22.6%, have bank accounts.[15]

In 2019, the BSP’s charter was amended under the Republic Act No.11211, making financial inclusion and its complementary objectives of financial literacy and consumer protection no longer just a strategic advocacy but a mandate of the BSP.[16]

Digital Financial Inclusion

With mobile user penetration in the Philippines at 58% and with more than 50% of Filipinos using the internet, the BSP has its sights on digital innovations as a catalyst and strategic enabler of financial inclusion. “Digital financial inclusion” is defined as “the digital access to and use of formal financial services by the unserved and underserved population.” The BSP has said that it “aims to develop a digital finance ecosystem that supports the diverse needs of all users in a manner that is secure, sustainable, convenient, and affordable."[17,18]

An example of where technology is being used to overcome structural impediments preventing financial inclusion involves UnionBank’s spearheading of a challenging "island-to-island" (i2i) project. The archipelagic nature of the Philippines imposes serious physical barriers to financial access. As of 2018, 536 out of 1,530 cities and municipalities did not have a banking office. The i2i project focuses on financial inclusion using blockchain as the interconnecting ecosystem by linking rural banks with major financial networks through a collaborative approach so that they can become more relevant to their customers.[19,20]

13 https://www.bsp.gov.ph/Inclusive%20Finance/PhilippinesNSFIBooklet.pdf
14 Ibid.
15 BSP; Financial Inclusion Survey: Moving Towards Digital Financial Inclusion; 2017
16 BSP; Financial Inclusion Initiatives 2019; 2019
17 BSP; Financial Inclusion in the Philippines: Digital Financial Inclusion; 2018
18 http://www.bsp.gov.ph/publications/media.asp?id=4738
19 Ibid.
20 https://www.finextra.com/blogposting/18180/how-asian-banks-are-revolutionizing-the-customer-onboarding

In February 2019 the BSP issued Circular No. 1033, expressly recognizing the impact of electronic payment and financial services (EPFS) in economic growth by facilitating the movement of funds that fuel productive activities. EPFS pertains to products or services offered by BSFIs to enable customers to receive payments or initiate financial transactions and other related services through an electronic device. Banks are now also allowed to use third party cash agents such as shops, retailers, and stores in remote areas, as a cost-efficient service channel to deliver digital banking solutions in the low-income areas long considered as niche and unviable by bigger banks.[21]

Given the centrality of financial inclusion under the BSP's mandate and efforts to enact regulation to improve digital financial inclusion, there are likely to be a number of regtech opportunities available. For example, Circular 1033 outlines the minimum pre-conditions BSFIs should meet to engage in EPFS. There are a number of prerequisites such as the requirement to have adequate risk management process in place to identify, assess, monitor, and control the risks arising from the proposed EPFS. BSFIs must also have the appropriate policies and procedures in place to address all security risks and concerns affecting the EPFS platform and application systems.

National Payment System Act (NPSA)

In November 2018, the Philippines legislature passed Republic Act No. 11127, otherwise known as the "National Payment Systems Act" (the NPSA), which became effective in December 2018. The Act provides the comprehensive legal and regulatory framework for the payment systems in the country. Under the Act the BSP has had its scope of supervision expanded to include money service businesses, credit granting businesses, and payment system, operators.[22,23]

In March 2020, the BSP issued a draft circular on the payment system oversight framework, which covers key areas of the BSP's oversight function under the NPSA. The draft framework provides that the BSP may issue policies to boost "innovative" payment solutions while mitigating risks associated with the use of these systems. The draft circular says:

> *"These policies shall include principles and requirements on various areas, such as but not limited to governance, risk management, consumer protection, data confidentiality, information security, AML/CFT, and pricing mechanism."*[24]

> The draft rules also seek to establish a Payment System Management Body (PSMB) to organize, manage, and govern the participants in the payment system "to ensure that transactions are "safely and efficiently cleared and settled with finality." Operators of payment systems, which are required to register with the BSP, will have to submit key reports, in accordance with the reporting governance framework of the central bank.[25]

The BSP's drive to encourage innovation, while mitigating risks for payment systems would again suggest plenty of opportunity for regtech solutions. Both on behalf of the payment system operators that will have to build processes and systems to remain compliant, which will include collecting and aggregating the required data to submit to the BSP, but also for the BSP too, which would likely want to monitor these operators in real-time if it had the tools available to do so.

21 https://www.philstar.com/business/2019/07/28/1938556/digital-banking-policies-toward-greater-financial-inclusion
22 https://www.pwc.com/ph/en/taxwise-or-otherwise/2019/embracing-the-digital-financial-world.html
23 In September 2019, the BSP issued Circular 1049 on the rules and regulations on the registration of payment system operators
24 https://www.bworldonline.com/bsp-to-boost-oversight-of-payment-systems/
25 Ibid.

National Retail Payment System (NRPS)

The Philippines, like most countries in Asia, has plans to move towards a cashless society. BSP Governor Benjamin Diokno has said that the Philippines would be "cash-lite" by 2023, with the BSP also updating an earlier target to capture 20% of total payments in the country through digital and electronic means in 2020 to 30%, up from a paltry 1% in 2013.[26]

The NRPS was thus established to "create a safe, efficient, and reliable electronic retail payment system that is interconnected and interoperable." Due to its immense potential to foster financial inclusion, the NRPS is also seen to provide robust support to the shared goal of promoting inclusive economic growth.[27,28]

There are the two priority automated clearing houses (ACHs) under the NRPS. These are PESONet, a batch electronic fund-transfer payment system, and InstaPay, which allows customers to transfer peso funds almost instantly between accounts in participating BSP-supervised banks and non-bank electronic money issuers. Two recent initiatives utilizing the ACHs are EGov Pay, an online facility through which customers can pay their taxes via PESONet, and QR Ph, a national QR code standard enabling person-to-person money transfers through InstaPay.[29,30]

Additionally, the BSP is looking at directing payments made by the government to suppliers, as well as social security premiums, dividends, and other fees through the NRPS. BSP is also pushing for PhPay to be included on the platform. PhPay is a government online payment system which is currently being re-developed. It is intended to provide a bookkeeping service to the whole of government by integrating all government services under a single platform and similarly integrating all qualified electronic payment facilities that will enable citizens and businesses to pay for any government transactions online.[31]

New BSFIs wishing to participate will have to implement the necessary internal controls to remain compliant with the NPRS framework. Such entities would benefit from regtech solutions to help them do so. Management of the NPRS infrastructure itself will also benefit from regtech solutions. Risk management solutions to monitor and manage the BSFIs on the platform would be an obvious area to explore, as would general internal control measures. Another area for regtechs to explore would be cybersecurity, given the increased exposure to cyber threats that a digital economy brings.

Open API

Unlike in more mature economies, open banking is happening from the ground up in the Philippines, rather than as a top-down initiative by the regulator. The motivation behind such private initiatives is competition, and being able to offer better customer service. With such a large number of Filipinos remaining underbanked, there is an opportunity for incumbents to power the transactions of rural banks, cooperatives, micro-financial institutions, and other small players, giving these institutions' customers access to a wide array of financial services and thus tapping into this underserved yet large market.

SMEs are another underserved segment of the market that would have a lot to gain from open banking. SMEs make up 99.6% of all registered businesses in the Philippines and employ over 70% of the working population. However, traditional

26 https://business.inquirer.net/283756/bsp-chief-diokno-ph-to-be-cash-lite-by-2023
27 https://www.pwc.com/ph/en/taxwise-or-otherwise/2019/embracing-the-digital-financial-world.html
28 https://www.bsp.gov.ph/Pages/PAYMENTS%20AND%20SETTLEMENTS/National%20Retail%20Payment%20System/The-Regulatory-Framework.aspx
29 https://www.manilatimes.net/2019/08/19/business/business-top/e-payment-dealings-via-nrps-on-the-rise/602425/
30 https://www.opengovasia.com/bangko-sentral-ng-pilipinas-and-industry-launch-egov-pay-and-qr-ph/
31 https://opengovasia.com/bangko-sentral-ng-pilipinas-to-test-electronic-payment-of-tax/

banks struggle to offer affordable and efficient financial solutions to them, mainly due to lack of verifiable data and slow, paper-based processing that often takes between nine to 12 months to finish. As a result, SMEs rely on middlemen and manual effort for payments and data reconciliation, adding significant costs, time, and risk to their operations, while applying for loans remains a slow and cumbersome process.[32]

Regtechs that can provide solutions that enable incumbents to tap into the hard to reach, geographically dispersed, bottom of the pyramid should find opportunities. For example, incumbents might benefit from an API that enables statement retrieval, allowing the incumbent to aggregate data on consumers' transaction history to be applied for credit scoring, loan application, and reconciliation purposes. Alternatively, banks might value direct debit solutions, that enable payments on e-commerce purchases, topping up eWallets, and paying back loans. Regardless, open banking is happening in the Philippines, and regtechs should adjust their communication to drive home the value that their solutions can provide in fostering a competitive advantage for banks considering their services to enable further open banking facilities.

Philippine Payment and Settlement System (PhilPaSS)

PhilPaSS is the central bank's real-time gross settlement (RTGS) system owned and operated by the BSP. It allows high-value payments between banks through the demand deposit accounts they maintain with the central bank. The system has 168 participants, including big, mid-sized and small banks as well as non-banks with quasi-banking functions and external institutions.[33,34]

Given that RTGS systems are some of the most critical infrastructure central banks maintain, the BPS will be open to regtech providers that are able to provide upgrades to current processes. DLT would be one such area, to enable participants' systems to connect and achieve settlement with the BSP's systems, to deliver a resilient, flexible payment system.

Virtual Banking

The Chairman of the House Committee on Ways and Means, Jose Salceda, filed House Bill 5913 in January 2020, a measure that provides a regulatory framework for virtual banking. The bill also outlines a framework for consumer protection in virtual banks, including deposit insurance and protection against unauthorized transactions. The bill provides that the BSP can grant up to five virtual bank licenses every year for five years. Should the bill pass as expected, the country will become one of the first in Asia to provide a basic framework for virtual banking.

Current players in the local "virtual banking" field include CIMB Group, which signed up almost 2 million Filipinos via the CIMB Bank PH digital platform in its first full year of formal operations, and ING Bank NV-Manila. Both players started their digital bank operations in 2019.[35,36]

In January 2020, Tonik Financial announced that its subsidiary in the Philippines had received a Notice of Approval for a new banking license from the BSP. The license will enable Tonik to provide a full range of retail banking services, focused primarily on retail deposits and consumer loans, through what they claim to be the first digital-only branchless bank licensed platform in the Philippines, starting this year.[37]

32 https://www.manilatimes.net/2020/03/07/business/columnists-business/open-banking-and-its-impact-on-smes/700902/
33 https://www.bsp.gov.ph/PaymentAndSettlement/PhilPaSS.pdf
34 https://www.philstar.com/business/2020/04/28/2010191/bsp-tells-banks-waive-fees-interbank-atm-transaction
35 https://techwireasia.com/2020/04/complex-regulations-and-evolving-digital-payment-landscape-require-financial-services-to-rethink-ekyc/
36 https://www.bworldonline.com/ing-bank-n-v-manila-to-venture-into-payments-lending-services/
37 https://fintechnews.sg/35936/fintechphilippines/a-new-digital-bank-will-launch-in-the-philippines-in-2020/

In May 2020, in recognition that an increasing number of transactions are being conducted online by the residents of the Philippines due to Covid-19, the government confirmed that it will launch a branchless bank that will offer services to Filipinos working and living abroad. The digital bank will also pilot or test the issuance of electronic receipts. The Overseas Filipino Bank (OFBank) will relaunch as the digital bank in question.[38]

Once the House Bill 5913 passes, the market should expect a quick succession of players and their consortia announcing that they will enter the virtual banking space. Rizal Commercial Banking Corp., for one, is looking at opening an online-only bank, while Bank of the Philippine Islands (BPI) is intensifying its digitalization efforts. Regtech providers enabling better onboarding experiences, AML compliance, and/or reporting tools will find opportunities arising from these digital/virtual bank offerings.

Insurance Commission (IC)

Philippine law generally classifies insurance into two types: life insurance and non-life insurance. Life insurance is defined as "insurance on human lives and insurance appertaining thereto or connected therewith." Any other type of insurance, such as property, marine or fire insurance, is considered non-life insurance. There are separate rules and regulations for each type of insurance under Philippine law.[39]

The insurtech industry in the Philippines is in its initial stages of development, and the extent of such development has been focused on increasing and improving distribution channels of insurance products through digital means and platforms.

Other than regulations issued by the IC regulating the use of e-commerce and digital platforms for product distribution and customer on-boarding, there are no regulations that specifically govern the underwriting process for insurtech industry participants in the Philippines.[40]

New Capital Requirements

As of the end of 2019, all insurance and reinsurance companies authorised to transact business in the Philippines must hold capital of PHP 900 million (US$ 18.2 million), up from PHP 550 million (US$ 11.1 million) – while professional reinsurance companies must hold PHP 2.5 billion (US$ 50.6 million). New insurance companies will be required to have PHP 1 billion (US$ 20.3 million) in paid-up capital.[41]

According to the IC, most life insurance companies were able to comply with only "a couple" unable to do so. For the non-life sector, however, most players failed to meet the deadline while the IC confirmed that it expected several insurers to merge soon in an attempt to meet the new capital requirements. After intense lobbying by the insurance industry, the IC changed its original plan to increase the capital requirement for insurers further in 2022 – and will keep the minimum capital requirement at PHP 900 million – rather than raising it to PHP 1.3 billion (US$ 26.3 million) as it had previously intended.[42]

The Move to Fintech

These moves will have implications for insurtech in the Philippines as the higher capital requirement forces consolidation within the industry, at least in the non-life sector. Insurance Commissioner Dennis B. Funa has said he sees the Philippine insurance industry embracing fintech in the future, as a majority of its markets are adapting swiftly

38 https://www.crowdfundinsider.com/2020/05/161869-another-digital-bank-to-launch-in-the-philippines-as-government-aims-to-offer-virtual-banking-services-to-filipinos-working-abroad/

39 https://practiceguides.chambers.com/practice-guides/fintech-2021/philippines

40 Ibid.

41 https://www.asiainsurancereview.com/Magazine/ReadMagazineArticle?aid=43138

42 Ibid.

to the changing times. The resulting larger firms will have the resources to spend on insurtech solutions, as the focus moves to increasing and improving distribution channels of insurance products through digital means and platforms.[43]

The IC is also playing its part, issuing at least five documents in the last few years to encourage insurance companies to shift to using fintech. In 2018, the IC issued CL 2018-7, amending item 7.18 of CL 2014-47, regarding the use of mobile applications for the distribution of insurance products. The new CL sets the guidelines for the use of mobile applications in the distribution of insurance products by the insurance industry.[44]

The IC commissioner has also said that the commission is veering toward digitizing the process, starting with computerizing insurance agents' licensure examinations. The insurance regulator has also minimized the use of hard copy reports required by its various departments.

As the move towards greater digitalization picks up pace, data security is going to be one of the major challenges in enabling the insurance industry to shift to using fintech entirely. Insurtech/regtech companies that can help both the insurance companies and the regulator in this domain will be in demand. There should also be less resilience given that digital platforms should naturally lead to digital solutions. Cost, however, for the nonlife insurance sector, could be a challenge as firms struggle with the high capitalization required by the government.[45]

Securities and Exchange Commission (SEC)

Corporate Governance

In November 2016, the SEC approved the "Code of Corporate Governance for Publicly Listed Companies," which followed from its predecessor, the "Philippine Corporate Governance Blueprint of 2015." The code adopted a "Comply or Explain" approach, which combined voluntary compliance with mandatory disclosure. Companies do not have to comply with the law, but they must state in their annual corporate governance reports whether they adhere to the code provisions, identify any areas of noncompliance, and explain the reasons for such.

In January 2020, the SEC issued a new code of corporate governance for public companies and registered issuers (i.e., issuers of shares or debt securities to the public, regardless of whether the securities are listed on the stock exchange). It is rooted in the same corporate governance principles provided in the Code of Corporate Governance for publicly listed companies with the same intention of raising the standards of Philippine corporations consistent with other internationally recognized principles.

Memorandum Circular No. 24 (2019), as the code is known, promotes 16 principles across corporate governance subjects, including governance responsibilities of corporate boards, disclosure and transparency, and risk management frameworks. The code also encourages companies to establish an investor relations office, and to disclose basic shareholder rights in their corporate governance manuals. Like its predecessor, the code is recommendatory in nature and follows a "comply or explain" approach.

43 https://businessmirror.com.ph/2018/10/11/insurance-industry-slowly-but-surely-adopts-to-fintech-in-doing-business/
44 Ibid.
45 Ibid.

Public companies and registered users, under pressure to incorporate the provisions under the SEC's revised code of corporate governance, would benefit from regtech solutions to help them comply. Boards are going to, for example, need greater transparency within their organizations. They will need robust systems for gathering data from its various sources and reporting it upwards for board members to get a 360-degree view of their operations. Regtech providers that are able to provide solutions in this regard will find opportunities here.

The SEC's revised code is only the start and is part of a series of Corporate Governance Codes that the SEC will issue for different types of corporations. As and when these codes are released, targeted corporations would no doubt also benefit from regtech solutions.[46]

Equity Crowdfunding and P2P Lending

While there appear to be no clear rules and regulations around the P2P lending sector, only that the BSP is monitoring its development and acknowledges the need to regulate the industry amidst its rise, the SEC has been moving to regulate crowdfunding. In July 2019 the the SEC released a finalized version of the rules and regulations governing the latter.[47,48,49]

The regulator sees four types of crowdfunding, but under the new regulations, only lending- and equity-based crowdfunding are subject to securities regulation as these involve securities or the prospect of financial returns in contrast to the other two types of crowdfunding, namely donation- and reward-based crowdfunding. The new regulations stipulate that crowdfunding portals must register with the SEC, and crowdfunding transactions must be conducted exclusively through registered intermediaries. There are also some limits and caps on crowdfunding platforms, but these do not apply to qualified investors, who are governed by other rules in the Securities Regulation Code (SRC).[50,51]

Regtech providers wishing to serve crowdfunding intermediaries, defined as a registered broker, investment house, or funding portal that mediates offer and sale of crowdfunding securities through an online electronic platform, will find that the new rules and regulations around crowdfunding should offer them plenty of opportunity to do so.

There are several requirements that suggest the application of regtech solutions. For example, the financial intermediary is responsible for the disclosure of business activities. The intermediary is required to monitor and ensure compliance with the SRC, as well as to immediately notify the SEC of any breach or irregularity concerning the SRC and the rules governing crowdfunding.[52]

The intermediary must also implement measures to ensure that the issuer seeking to offer and sell securities is not committing fraud. As such, there are several requirements for the issuer, which include the need to register with the intermediary and to provide detailed information on themselves and the investment.[53]

The rules also require both the financial intermediary and the issuer to keep a record, furnish copies, and make reports to the SEC. Parties must also submit yearly reports to the Commission. Furthermore, there must be a post

46 https://www.sec.gov.ph/pr-2020/sec-raises-corporate-governance-standards-for-public-companies-registered-issuers/
47 https://www.techinasia.com/talk/philippines-regulating-crowdfunding-issues
48 http://www.sec.gov.ph/wp-content/uploads/2019/07/2019PressRelease_SEC-approves-rules-on-crowdfunding.pdf
49 Ibid.
50 https://fintechnews.sg/32158/fintechphilippines/philippines-regulator-sec-crowdfunding-startup-investment/
51 Ibid.
52 https://businessmirror.com.ph/2019/07/23/online-crowdfunding-via-securities-in-the-philippines-an-overview-of-the-rules-and-regulations/
53 Ibid.

on the intermediary's web site of an annual report, along with disclosures and other submissions certified by the principal to be true and complete in all material respects and a description of the financial condition of the issuer.[54]

Regtech providers looking to serve financial intermediaries in the crowdfunding space would be well advised to familiarize themselves with the new rules and regulations, focusing particularly on the requirements of financial intermediaries to see where they might be able to offer a solution. Digital identification tools around KYC/AML would be an obvious example.

Regtech providers might also note that it is only a matter of time before one of the regulators, be it the BSP or the SEC, issues a governing framework to regulate the P2P sector. P2P lending will require rules and regulations governed by the regulator that are tailored to the nature of the lending business and the risk investors face. The late BSP governor, Nestor A. Espenilla, Jr., said in a speech at the 39th National Conference of Employers in April 2018 that the:

> *"Rapid development of P2P lending could complement the role performed by traditional finance. Provided such lending platforms are properly managed and regulated, this could lead to a more resilient network and positively contribute to the diversification of risk across the financial system."*[55]

Astute P2P platforms will already be looking around for regtech solutions to build these into their offerings, to get ahead of regulations and to gain credibility with the regulator and their stakeholders.

Cross-Regulator Focus Areas

AML/CFT: AMLC

The Anti-Money Laundering Council (AMLC), composed of the Governor of the BSP as Chairman, and the Commissioner of the IC and the Chairperson of the SEC as members, is the agency of the Government of the Philippines that is tasked with implementing the provisions of Republic Act No. 9160, also known as the "Anti-Money Laundering Act of 2001" (AMLA), as amended, and Republic Act No. 10168, also known as the "Terrorism Financing Prevention and Suppression Act of 2012" (TFPSA).[56]

The AMLC serves as the Philippines' central AML/CTF authority. As such, it functions as the AML/CTF regulator and supervisor, financial intelligence unit, and primary law enforcement agency of the Philippines against money laundering and terrorist financing.[57]

Bangladesh Bank Cyber Heist

In February 2016 unknown criminals stole US$ 81 million from the Bangladesh central bank account at the Federal Reserve Bank of New York and funnelled the money to accounts at Manila-based Rizal Commercial Banking Corp (RCBC), which then vanished into the casino industry in the Philippines.

In 2018, following the Bangladesh Bank cyber heist, as it has become known, the AMLC approved amendments to the Implementing Rules & Regulations (IRR 2018) for AMLA in an effort to enhance the country's AML/CFT regime. Notably, the new rules include casinos as covered persons. Casinos are now required to report daily

54 Ibid.
55 https://www.bsp.gov.ph/SitePages/MediaAndResearch/SpeechesDisp.aspx?ItemId=587
56 https://en.wikipedia.org/wiki/Anti-Money_Laundering_Council_(Philippines)
57 Ibid.

transactions worth at least 5 million pesos (US$ 99 thousand) to authorities.[58]

In May 2018, AMLC also adopted AML/CFT Guidelines for Designated Non-Financial Businesses and Professions (DNFBPs), which includes as covered persons jewelry dealers in precious stones and metals; company service providers who deliver fund/securities management services for other persons, and persons and entities who, as a business, provide services to organize, create and manage companies and arrangements. Under the guidelines lawyers and accountants who provide certain services are also considered covered persons and must therefore report suspicious transactions to the AMLC. However, the law does take into account legal professional privilege.

As the fallout from the Bangladesh robbery continued, the BSP issued Circular 1022 in November 2018, requiring BSFI lenders to have a "group-level" Money Laundering and Terrorist Financing Prevention Program, which should be under the watch of senior management. On a broader scale, tighter AML/CFT rules under the Circular also require players to comply with relevant resolutions made by the UN Security Council in conducting due diligence among customers, especially on the "prevention, suppression and disruption" of the use of WMD and its financing.

In the same year, the SEC issued Memorandum Circular No. 16 on its "2018 Guidelines on Anti-Money Laundering and Combating the Financing of Terrorism for SEC Covered Institutions and Other SEC Regulated Persons/Entities" (2018 AML/CFT Guidelines).[59]

The SEC also issued Memorandum Circular No. 17, whereby the regulator, as of the start of 2019, now requires all SEC-registered domestic corporations, both stock and non-stock, to disclose their "beneficial owners" in their respective General Information Sheets (GIS). The additional disclosures are intended to assist in the implementation of AMLA, as amended, and to ensure timely access to "adequate, accurate and current" information on the beneficial ownership and control of covered corporations which would then prevent their "misuse for money laundering and terrorist financing purposes."[60,61]

In November 2018, President Duterte issued Executive Order 68, forming a multi-agency coordinating body that will enforce the National AML/CFT Strategy (NACS) 2018-2022. The National AML/CFT Coordinating Committee (NACC) will provide overall policy and strategic direction and oversee NACS implementation.

The strategy consists of action plans addressing the risks and problem areas identified in the Philippine National Risk Assessment, covering 2015-2016, which found that the national money laundering threat remained "high."[62]

Then, in February 2020, with the country still reeling from the scandal, the AMLC further amended certain provisions of the IRR 2018 for AMLA, particularly Section 2 Rule 22 pertaining to the filing of covered transaction reports (CTRs) and suspicious transaction reports (STRs). The period for submission of STRs was shortened to a day from five to 15 days. CTRs are required to be filed within five working days and not exceeding 15 working days from the occurrence.

In addition, the definition of customers or clients was broadened to include juridical persons, i.e., non-human legal entities, such as corporate

58 http://www.amlc.gov.ph/16-news-and-announcements/161-amlc-approves-2018-implementing-rules-and-regulations-of-the-amla

59 https://www.sec.gov.ph/mc-2018/mc-no-16-s-2018-2018-guidelines-on-anti-money-laundering-and-combating-the-financing-of-terrorism-for-sec-covered-institutions-2018-aml-cft-guidelines-3/

60 https://www.lexology.com/library/detail.aspx?g=b1639fc8-02fc-4dc2-bdc8-835564959275

61 https://platonmartinez.com/articles/an-overview-of-sec-memorandum-circular-no-17-series-of-2018

62 https://www.bworldonline.com/govt-stepping-up-fight-against-dirty-money/

clients who keep or maintain an account with a covered person. Close associates of politically exposed persons (PEPs) are now also considered covered persons. The new rules also require covered persons to apply enhanced due diligence proportionate to risks, as well as to customers from foreign jurisdictions and geographical locations that present a greater risk for ML or TF as determined by the FATF and FATF-style regional bodies.[63]

Finally, in March 2020, the AMLC announced that Philippine Offshore Gaming Operators (POGOs) lack compliance with measures against ML. The announcement was based on results from its study "Understanding the Internet-Based Casino Sector in the Philippines: A Risk Assessment." The study also found that the threat level of money laundering and other fraudulent activities was increasing. Internet-based casinos are those that offer non-Filipino gaming patrons located outside the Philippines the means to play and place bets through gaming websites or standalone mobile applications.[64]

The Bangladesh bank cyber heist shone an unfavorable light on the Philippines' AML framework and the weaknesses around AML processes at banks and casinos operating there. With international pressure from the likes of the Asia Pacific Group on Money Laundering (APG) and the threat that failure to implement key recommended actions will result in the Philippines automatic referral to the International Cooperation Review Group (ICRG) or to grey-listing, the authorities are taking the risks from money laundering seriously. As legislation tightens further, organizations under AMLC's umbrella are going to require AML solutions to remain compliant.

Regtech solutions that would enable BSFI lenders to implement their "group-level" Money Laundering and Terrorist Financing Prevention Programs and help them apply more stringent KYC procedures in conducting due diligence among customers will be in demand, as will solutions helping SEC-regulated entities to institute the appropriate procedures and to ensure the timely gathering of the required information as required by the circulars as mentioned above.

With AMLC now adopting AML/CFT Guidelines to cover DNFBPs, these organizations will also be looking around for AML solutions, especially as the widening of AMLC's oversight to include these entities will push up demand and therefore cost of compliance professionals. As that happens, the business case for digital AML solutions will start to make more sense.

Cybersecurity

The Philippines, for the second time in a row, was crowned number one in South-East Asia and ranked seventh globally in terms of the most attacked country by cyberthreats according to independent research by cybersecurity firm Kaspersky in 2019.[65]

While the Philippines has no single cybersecurity law, there are legislations in place to protect both users and providers and to arm regulators with effective enforcement mechanisms. Such legislation includes the Electronic Commerce Act of 2000, the Data Protection Act of 2012, and the Cybercrime Prevention Act of 2012, which criminalizes offences that violate the integrity of computer data and systems, or that use computers to commit crime such as fraud and content-related acts. The Philippines also acceded to the Budapest Convention on Cybercrime in 2018.[66]

63 https://www.philstar.com/business/2020/02/10/1991755/amlc-strengthens-campaign-vs-dirty-money-terror-funding
64 https://www.gmanetwork.com/news/money/economy/729090/pogos-lack-compliance-with-anti-money-laundering-measures-says-amlc/story/
65 https://www.cisomag.com/philippines-most-vulnerable-to-cyberthreats-two-years-in-a-row/
66 https://www.philstar.com/business/2020/01/31/1989079/what-state-cybersecurity-country

In addition, DICT is also vested with wide-ranging powers to develop a cybersecurity ecosystem for the country. It has done so by establishing the National Cybersecurity Plan 2022 to serve as a roadmap of actions to safeguard cyberspace against threats and attacks.[67]

There are also the newly launched Computer Emergency Response Teams (CERTs), which coordinate and report incidences to the National CERT (NCERT). These also conduct real-time coordination with the Cybercrime Investigation and Coordinating Centre (CICC), an inter-agency body attached to DICT for policy coordination and enforcement of the national cybersecurity plan. NCERT is a division under the Cybersecurity Bureau of the DICT and is responsible for receiving, reviewing, and responding to computer security incident reports and activities.[68]

Finally, there is also a new cyber platform to enhance the country's monitoring of cyberthreats. Dubbed the Cybersecurity Management System Project (CMSP), it was launched under the DICT in January 2019. Following a bidding process, the platform is set to proceed via a joint venture between local firm Integrated Computer Systems (ICS) and Israeli company Verint over an initial licensing period set out for three years.[69]

Given the Philippines vulnerability and exposure to cyberthreats, regtechs that are able to provide solutions to help companies mitigate against these will be in demand. Kaspersky's study found that companies in the Southeast Asian countries, including the Philippines, are starting to prioritize investing in their cybersecurity capabilities, with many planning to increase their IT security budgets over the next three years. Regtech solution providers would also be advised to engage directly with DICT given that there will likely be many areas where regtech solutions might be able to make a real difference to the overall cyber resilience of the country.[70]

Data Privacy

In 2012, the Philippines issued Republic Act No. 10173 or the Data Privacy Act (DPA). The DPA is an Act protecting individual personal information in information and communications systems in the government and the private sector. The scope of the DPA covers the processing of all types of personal information and to any natural and judicial person, in the country and even abroad, subject to certain qualifications.[71]

The National Privacy Commission, or NPC, is an independent body created under the DPA, mandated to administer and implement the provisions of the Act, and to monitor and ensure compliance of the country with international standards set for data protection.[72,73]

The NPC launched the 5 Pillars of Data Privacy Accountability and Compliance that each organization in the country is expected to follow. These pillars are:

- Commit to Comply: Appoint a Data Protection Officer
- Know Your Risks: Conduct a Privacy Risk or Impact Assessments
- Be Accountable: Develop a Privacy Management Program and Privacy Manual
- Demonstrate Compliance: Implement Privacy and Data Protection Measures
- Be Prepared for Breach: Regularly Exercise Breach Reporting Procedure

The Data Protection Officer (DPO) is responsible for the overall management of compliance to the DPA.

67 Ibid.
68 https://www.ncert.gov.ph/about-us/ncert/
69 https://thediplomat.com/2019/01/whats-in-the-philippines-new-cyber-platform/
70 https://www.bworldonline.com/companies-increasing-budget-for-cybersecurity/
71 https://www.opengovasia.com/exclusive-transforming-the-philippines-into-a-privacy-resilient-country/
72 https://www.privacy.gov.ph/data-privacy-act/
73 https://en.wikipedia.org/wiki/National_Privacy_Commission_(Philippines)

Other initiatives under the NPC include the "Privacy Wall" initiative, a community of practitioners that are grouped according to industry sectors for the DPOs to engage in dialogue, seek advice and ask for support. Another initiative is the Privacy Safety Security and Trust (PSST) project, which is an online campaign that raises awareness on how Filipinos might be placing their information at risk through online services.

In addition, Privacy Sweeps are done regularly to check on websites and mobile apps. The Commission also does site visits and requests for document submissions. This is a random but guided check for compliance, conducted after the NPC receives a number of complaints on a particular sector. There is also a chatbot tool, AskPriva, which is a public engagement initiative whereby Filipinos can have commonly asked queries answered.[74]

In addition, the NPC launched an automated registration system for personal information controllers (PICs) and processors (PIPs), which should be operational by July 2020.[75]

Finally, in April 2020, the NPC issued a statement that it is investigating several breach notifications it has received relating to the unauthorized disclosure of sensitive personal information of confirmed and suspected Covid-19 patients. The statement calls upon health institutions and their data protection officers to strengthen the protection of patient data and outlines eight measures that can be implemented to further this objective.[76]

Given that various companies in the Philippines are still in the infancy stage of implementing their data protection and data privacy obligations, they are at high risk of data breaches. This is especially true under the current work-from-home setup, whereby communication technologies and the information transacted through them create a very high risk for personal data breaches, which could lead to unauthorized access and disclosure.

Regtech companies that are able to provide companies with solutions that enable them to implement their privacy and data protection measures will be in demand. In addition, regtech companies should liaise directly with the NPC, and enquire on the scope to engage directly with companies via the Privacy Wall initiative or via the PSST project.

The Financial Sector Forum-FinTech Committee

In August 2018, a Fintech Committee was created under the Financial Sector Forum (FSF) which is composed of four financial regulators in the country, namely the SEC, the IC, the Philippine Deposit Insurance Corporation (PDIC) and the BSP. Under this committee, the FSF shall harmonize its regulatory responses to fintech innovations in the financial sector. The FSF-Fintech Committee is in the initial stages of crafting a Cooperative Oversight Framework which will institutionalize collaboration and clarify regulations to all supervised and would be supervised entities.[77]

Regulatory Sandboxes

There are currently no Philippine laws, rules, or regulations governing the establishment or the conduct of regulatory sandboxes for the fintech industry in the Philippines. However, both the Philippine SEC and the BSP maintain a relatively open approach to new players in the industry seeking to conduct pilot testing of fintech products and services not currently regulated under prevailing legislation under a quasi-regulatory sandbox regime.[78]

74 https://www.opengovasia.com/exclusive-transforming-the-philippines-into-a-privacy-resilient-country/
75 https://globalcompliancenews.com/philippines-erehistro-updates-from-the-national-privacy-commission-12032021/
76 https://www.lexology.com/library/detail.aspx?g=4808e25c-039d-44d6-9130-e08918619d85
77 https://www.bis.org/review/r191023g.htm
78 https://practiceguides.chambers.com/practice-guides/fintech-2021/philippines

However, in June 2020, the Insurance Commission (IC) issued guidelines for the adoption of a regulatory sandbox framework for insurtech innovations. Circular Letter No. 2020-73, outlines the guidelines on the use of regulatory sandboxes, requiring firms to secure prior approval from the IC before these are implemented. The IC has said that non-regulated entities wanting to join a regulatory sandbox will have to comply with IC's existing regulations first and submit an application.[79]

Regtechs wishing to bring unregulated technology to market should engage directly with the appropriate regulator on the legal permissibility and potential regulation of their proposed product or service. Where necessary, they should propose an ad hoc "sandbox" through which operations could be undertaken under the regulator's supervision. The BSP, for example, says that it takes a "'test-and-learn' approach applied on a case-by-case basis, adopting a balanced regulatory approach focused on risk-based and proportionate regulation, active multi-stakeholder collaboration, and consumer protection."[80]

Virtual Assets

The BSP issued rules and regulations governing operations of Virtual Currency (VC) exchanges in the Philippines under Circular No. 944 released in February 2017. While virtual currencies are not recognized as legal tender; because they are used as a conduit to provide certain financial services, such as remittances and payment transactions. Such VC exchanges are thus considered similar to transfer and remittance exchanges and are therefore covered by relevant AML legal and regulatory rules. Accordingly, Philippine AML regulation provides that, in order to mitigate and manage risks, entities that provide services with virtual assets must register with Philippine authorities, obtain from them appropriate licenses, and have systems aimed at "monitoring and ensuring compliance with the relevant preventive measures." As of December 2020, there were 16 VC exchanges registered with the BSP.[81,82]

Depending on the complexity of VC operations and business models adopted, a VC exchange is required to put in place adequate risk management and security control mechanisms to address, manage, and mitigate technology risks associated with VCs. For VC exchanges providing wallet services for holding, storing, and transferring VCs, an effective cybersecurity program encompassing storage and transaction security requirements as well as sound key management practices must be established to ensure the integrity and security of VC transactions and wallets. For those with simple VC operations, installation of up-to-date anti-malware solutions, periodic back-ups, and constant awareness of the emerging risks and other cyber-attacks involving VCs may suffice.[83]

All VC exchanges must also maintain an internal control system commensurate to the nature, size, and complexity of their respective businesses. All VC exchanges must also maintain minimum control standards as outlined in the guidelines. VC exchanges are also required to maintain records and comply with several notification and reporting requirements which include the annual submission of audited financial statements and the quarterly submission of the Quarterly Report on Total Volume and Value of VCs transacted, and a quarterly list of operating offices and websites.[84]

2019 was a busy year for developments in virtual assets in the Philippines. In February 2019, the Philippines' "fintech city" Cagayan Economic Zone Authority (CEZA) issued a new set of rules, "the

79 https://www.bworldonline.com/ic-issues-rules-on-use-of-insurtechs-regulatory-sandbox/
80 https://www.bsp.gov.ph/Pages/MediaAndResearch/Speeches/2019/October/684.aspx
81 https://www.loc.gov/law/help/cryptoassets/philippines.php#_ftn6
82 https://news.bitcoin.com/philippines-16-cryptocurrency-exchanges-approved-central-bank/
83 Ibid.
84 Ibid.

Digital Asset Token Offering (DATO) regulations," in the acquisition and trading of cryptocurrency assets in the Philippines, including utility and security tokens, which are meant to effectively regulate and protect investors. CEZA, in its bid to develop the economic zone as the centre of fintech firms in Southeast Asia, has so far approved and issued provisional principal offshore VC exchange licenses to 19 companies engaged in the blockchain ecosystem industries.

In March 2019, the BSP clarified that operators of ATMs for VCs that allow purchase or exchange of VCs or other devices with similar functionality and capability, are considered VC exchanges and subject to the rules and regulations under Circular 944.

In July 2019, the SEC published the draft "Rules for Digital Asset Exchange," recasting traditional securities law and principles to enable a regulatory framework for Digital Asset Exchanges. Also, the regulator also issued Memorandum Circular No. 22 (2019) in November 2019, which adopts the Philippine Interpretations Committee (PIC) accounting principles of crypto assets.

VCs constitute securities under Section 3.1 of the Securities Regulation Code (SRC), and as such, offerors of VCs have to register with the SEC and obtain the appropriate licenses and/or permits to sell securities to the public under the SRC. Also, in August and December 2018, the SEC released proposed rules to govern the registration of Initial Coin Offerings (ICOs). The SEC had been intending to issue guidelines for ICOs by the end of 2019. The SEC has since said that guidelines may be released by the middle of 2020.

In September 2019, a comprehensive bill for cryptocurrencies was proposed in Congress. The proposed bill, entitled "Digital Assets Act of 2019" aims to "clarify and institutionalize the rules regarding digital assets, recognize but not regulate digital assets by defining what they are, and standardize the process for the licensing and operation of e-money, virtual asset exchanges, and virtual asset businesses." The proposed bill delineates the regulatory authority of the BSP and SEC concerning digital asset business activities. For example, the Act calls for the BSP to be the lead agency for E-Money, while the SEC should be the lead agency for virtual assets.[85,86]

Given the almost monthly developments in the virtual asset space in the Philippines, the scope and breadth of opportunities afforded to regtech providers must surely be wide. Rules and regulations are being tailored, while different economic zones are falling over themselves to develop their respective investment promotion agenda for digital assets. CEZA has already been discussed, but both the Authority of Freeport Area of Bataan (AFAB), and Aurora Pacific Economic Zone (APECO) are also in the race. With so much movement, existing and new operators in this space will be looking at regtech solutions, both to remain compliant and gain a competitive edge.

As an example of where regtech solutions may be required, the amendments to the 2018 IRR for AMLA also incorporate FATF's definitions for "Virtual Assets," which are considered "property" within the context of AML laws and regulations, and "Virtual Asset Service Providers." Under the amended rules, as recommended by FATF, virtual asset service providers must be regulated for AML/CTF purposes; licensed or registered; and subject to effective systems for monitoring and ensuring compliance with the relevant preventive measures. Covered persons are to undertake risk assessments prior to the launch or use of such products, practices, and technologies; and take appropriate measures to manage and mitigate the risks. Regtech providers that are able to help these entities to do the above will be in demand.[87]

85 https://bitpinas.com/news/philippines-imee-marcos-clarify-digital-assets/

86 https://bitpinas.com/news/key-takeaways-senate-bill-1041-digital-asset-act-2019/

87 http://www.amlc.gov.ph/images/PDFs/FINAL%202018%20IRRv1.pdf

Private Sector

The development of the regtech ecosystem in any market is determined in large part by the type of regulations and infrastructure in place which then determines the shape and takeup of regtech in a market.

For example, the Philippines allows cloud, enabling regtech cloud-based SaaS solutions, Indonesia, by contrast has strict regulations around such services. In terms of infrastructure, as the government invests further in developing this and introduces more initiatives like the PhilID it will become easier for regtechs to build their solutions around, helping to build up the regtech market.

The development of the ecosystem will also be driven from the bottom-up due to commercial imperatives. This can already be seen around open banking where the motivation behind such private initiatives is competition and being able to offer better customer service. This will especially be the case with the rise of "virtual banking" in the Philippines where competition will spur both incumbents and challengers to adopt regtech solutions.

Private Sector Associations and Regional Initiatives

For regtechs wishing to enter the market there are several private associations and initiatives, which may be able to provide valuable advice, contacts, and exposure to the market. These include:

Logo	Name	Description
	ACI Financial Markets Association Philippines	ACI Financial Markets Association (ACI FMA) is a leading global trade association representing the interests of the professional wholesale financial markets community.
	The AIM-Dado Banatao Incubator	The incubator targets innovation-driven entrepreneurs whose businesses have the potential to impact all sectors of society. The ideal target startup will provide solutions to emerging world problems, generate jobs, and distribute created wealth in a dispersed manner.
	Analytics Association of the Philippines	An organization with a mission to develop and promote the practice of Analytics—across the data value chain—in the Philippines.
	Bankers Association of the Philippines (BAP)	The BAP is the lead organization of universal and commercial banks in the Philippines consisting of forty-five (45) member banks; twenty-one (21) of which are local banks and twenty-four (24) are foreign bank branches.
	Bankers Institute of the Philippines Inc. (BAIPHIL)	The leading institute that supports the banking industry in advocating good governance and enhancing capability through continuing education, research and information exchange.
	Cerebro Labs	A rigorous incubator and accelerator program headed by a multi-industry team trained in Silicon Valley. Like many incubators and accelerator programs, it also offers a coworking space for starting entrepreneurs.
	Fintech Alliance Philippines	A collaboration amongst strategic players in the digital finance space operating in the Philippines. Membership is open to registered companies operating in the Philippines engaged in digital finance.
	Fintech Philippines Association	Established in 2017, it consists of over 100 institutional and individual members and is partnered with technology associations in Denmark, Israel, Japan, Malaysia, Singapore, and Thailand. It is also a founding member of the Asia Pacific Fintech Network.
	Fund Managers Associa-tion of the Philippines (FMAP)	FMAP is an organization composed of local equity and fixed income fund managers.
	IdeaSpace	An incubator and accelerator backed by Smart Communications, dedicated to supporting innova-tion, technology development, and entrepreneur-ship as a path to nation building.
	Impact Hub Manila	Impact Hub Manila is part of the greater Impact Hub community of incubators and accelerators around the world that have supported hundreds of startups. Impact Hub Manila offers incubation and startup support, community workspaces, programs and events, and training and development.
	Kickstart	A Corporate Venture Capital firm betting on visionary founders in the early- to growth-stages of company formation and expansion.
	Launchgarage	Launchgarage is backed by fellow incubator, Kickstart Ventures. So far, eight startups have graduated from its program.
	Narra Venture Capital	A venture management and advisory group that has invested in private high-technology companies with potential for accelerated growth.

Logo	Name	Description
PASBDI	The Philippine Association of Securities Brokers and Dealers, Inc. (PASBDI)	An association for the purpose of institutionalizing a medium through which its membership can collectively assist and coordinate with the national government, its appropriate agencies and instrumentalities in the development of the securities market in the Philippines.
Philippine Blockchain Association	Philippine Blockchain Association	The purpose of the association is to introduce, educate, connect businesses, government and academics to the potential of DLT in order to build a thriving digital future for the Philippines.
PFA Philippine Finance Association	Philippine Finance Association	The PFA's mission is to promote, enhance, and uphold sound, ethical and fair business conduct and practices among banks, finance companies and other financial institutions engaged in consumer finance, leasing, and other forms of business finance.
Philippine Fintech Festival 2020	Philippine Fintech Festival (PFF)	An annual event that aims to act as the platform for leaders and innovators to engage, inspire, and collaborate on business, industry, and nation transformation.
PIRA, Inc.	The Philippine Insurers and Reinsurers Association (Pira)	PIRA represents the collective interests of the Philippine non-life insurance industry. It speaks out on issues of common interest; helps to inform and participate in debates on public policy issues; and acts as an advocate for the insurance industry.
Philippine Life Insurance Association, Inc.	Philippine Life Insurance Association (PLIA)	The PLIA is the non-stock, non-profit umbrella organization of all life insurance companies operating in the country. It was founded in 1950.
	Philippine Venture Capital Investment Group	The forum's main focus is to put the entrepreneurs in contact with elusive and quiet Business Angels who provide capital for equity and other non-financial resources.
QBO	QBO	A holistic incubator in the Philippines that guides startups from entry to exit. Its signature JP Morgan Incubation Program looks after startups from crash courses to networking to assistance in fundraising.
start village	Startup Village	An incubator and accelerator whose intensive 14-week training program called "The Gift" covers everything from business planning to accounting.
VCAP Venture Capital & Private Equity Association of the Philippines	Venture Capital and Private Equity Association of the Philippines (VCAP)	The association's main goal is to strengthen the market for VCs and PEs and act as the voice of investors.

Active Regtechs/ Insurtechs in the Philipines

Amihan Global Strategies

(https://amihan.net/) – Philippine-based company utilizing Cloud, Blockchain, Big Data Analytics, Process Automation, and Artificial Intelligence to fuel their customers' digital transformation journeys.

BIMA

(https://www.bima.ph/) – Philippine-based insutech using mobile technology to deliver affordable and easy-to-use insurance products that underserved families cannot access through traditional channels.

KayaCredit

(https://www.kayacredit.com/) – Bills itself as the Philippines' first profile scoring service giving the vast majority of unbanked but economically active Filipinos quick and convenient access to personal and small business loans.

Kwik.insure

(http://kwik.insure/) – A Philippines-based insurtech providing an online insurance marketplace that promises easy and reliable insurance.

Lenddo

(https://include1billion.com/) – Lenddo is a Singapore-based SaaS company, with a presence in the Philippines, which uses non-traditional data comprising social media and smartphone records in order to ascertain customers' financial stability.

Saphron

(https://saphron.asia/) – Philippine-based insutech that aims to make viable financial protection and assistance accessible by helping clients to develop technologies that transform consumer experiences.

TrustingSocial

(https://trustingsocial.com/) – Singapore-based, with a presence in the Philippines, Trusting Social provides consumer credit scores based on social, web and mobile data.

Unawa

(https://unawa.asia/) – Philippine-based company billing itself as the most comprehensive regtech startup in Southeast Asia, accelerating ease of doing business so firms can start, grow, and scale their business in the digital economy.

Potential Future Scenario for Philippine's RegTech Ecosystem

Similar to most emerging markets, demand for regtech solutions has not been high in the Philippines.

As well as the usual reasons around the weak enforcement of rules, another factor hindering regtech's uptake in the country has to do with the size of the population. This is for two reasons. Firstly, the government obviously has pressing priorities in the form of ensuring that people have jobs, which means that they are focused on facilitating business. Secondly, where you have a large, cheap labor pool that is willing and able to manually deliver on compliance requirements it somewhat negates the need for a regtech solution. The push to use technology only becomes evident for very lean companies or for very tech-savvy companies.

Having said that, as the number of Filipinos using digital financial services in the Philippines grows, this will put pressure on the regulators to regulate. With the number of transactions and players increasing, it makes it harder for the regulator to monitor these, especially as their budgets are not growing commensurately. The only way to manage this environment is by implementing technology.

Indeed, regulatory compliance was not big in the Philippines until the recent Bangladesh Bank heist, which brought to light inadequacies at Filipino banks. It also identified other areas of concern, such as casinos and junket operators. In response to growing international pressure, the Congress of the Philippines, the country's legislature, passed laws to strengthen AML and regulatory compliance requirements.

KYC then is currently a key focus area in the country, with digital identification and screening solutions in demand. The same applies for AML, such as transaction monitoring and for cybersecurity. However, for regtech companies, Filipino banks present challenges. These are usually large in size and have a broad customer base, so solutions have to handle extensive amounts of data and provide a response in a reasonable amount of time. Banks in the Philippines are also similar to those in Indonesia and Malaysia in that they are set in their ways. They expect a regtech solution to either fit with and be configured to their liking and/or their existing processes. In addition, mid- and lower management are incentivized to keep their heads down. They are not open to a new regtech company that has come out of nowhere.

However, players in the "virtual banking" space in the Philippines are more receptive and are going to need regtech solutions. That is especially true of the foreign players. Indeed, CIMB is already working with Jumio, a Palo Alto-based AI platform that delivers identity verification, to act as its onboarding partner for their e-KYC service for their digital bank in the country. As more players enter the space, so the demand for regtech solutions will grow.

As the country further digitalizes and under some international pressure, authorities are going to continue to tighten regulation around ML/TF and compliance. Organizations are going to subsequently need KYC, AML, risk management, cybersecurity, and reporting solutions etc. With forward looking regulators, regulations will also likely be increasingly rationalized to facilitate a shift towards more regtech solutions. The regulators themselves will also be looking for suptech solutions to enable them to monitor the increasingly complicated digital ecosystem. In short, despite the constraints, the Philippines, with the added benefit of being an English-speaking country, is ripe for the nascent development of a regtech sector and offers a promising market for regtechs to enter.

The State of Regtech in APAC

Evaluation of the Landscape & Market Opportunity for Regtech Companies

Thailand Overview

2021

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Main Regulators and Key Initiatives

The Bank of Thailand (BOT):

The central monetary authority. The Bank formulates monetary policy, supervises the financial system, provides banking facilities to the government and financial institutions, prints and issues banknotes, and manages the foreign exchange rate.

Recent / Active BOT Key Initiatives:

- Digital Transformation/Data-driven Innovation (DT&DI)
- E-KYC Under the National Digital ID Platform
- Payment Systems Act (PSA)
- Project Inthanon
- PromptPay
- Regulatory Sandbox
- The National e-Payment Master Plan (NEMP)

The Office of the Securities and Exchange Commission (SEC):

The capital market regulator. The SEC is a public agency under the Securities and Exchange Act (1992) with the duty to supervise and develop the Thai capital market to ensure efficiency, fairness, transparency, and integrity.

Recent / Active SEC Key Initiatives:

- Blockchain Initiative
- Emergency Royal Decree on Digital Asset Businesses
- Regulatory Sandbox
- The Determination of Rules, Procedures, and Conditions for Peer-to-Peer Lending Businesses and Platforms
- The Offering of Securities for Sale through Crowdfunding Portals

The Office of Insurance Commission (OIC):

Thailand's insurance industry regulator. The OIC is empowered to regulate insurance companies, brokers and agents and was established under the Thailand Government Insurance Commission Act.

Recent / Active OIC Key Initiatives:

- Amendments to the Life Insurance Act and Non-Life Insurance Act
- Center of InsurTech, Thailand (CIT)
- Digital Insurance Framework
- Insurance Development Plan
- Regulatory Sandbox
- Rules and Procedures for Issuing and Offering for Sale Insurance Products of Life and Non-Life Insurance Companies
- The Operations of Insurance Agents and Licensed Brokers

Trends, Initiatives, and Implications for Regtechs in Thailand

Regtech is not very well-known in Thailand, with no specific law which addresses regtech services. However, there are ample opportunities for regtech companies that can reduce the burden of entities facing increasingly complex regulation and compliance.

For regtechs wishing to enter the market, Thailand scores highly in terms of regulatory openness and advancements, with "accommodating policies" and initiatives put in place to foster fintech innovation, including those that help startups get funding and financial support.[1]

1 EY; Thailand FinTech Landscape Report; 2019

Government Initiatives

Thailand 4.0

An economic initiative launched by the government in 2015, Thailand 4.0 is a national strategy focusing on high-tech industries and innovation to pull the country out of the "middle-income trap" and transform Thailand into a "value-based" economy. It aims to reach four objectives: economic prosperity, social well-being, raising the human value, and environmental protection.[2]

To achieve economic prosperity, the key drivers will be innovation, technology, and creativity. The plan aims to increase R&D expenditure to 4% of GDP, increase the economic growth rate to 5–6% within five years, and increase national income per capita from US$ 5,470 in 2014 to US$ 15,000 by 2032.[3]

To attract the most innovative companies, Thailand, through its Board of Investment, is offering an array of incentives, including tax breaks of up to 13 years and renewable SMART Visas of up to four years for international talent, investors, and their families.

National Digital Economy Master Plan

As part of the Thailand 4.0 strategy of a technology-driven economy, the Thai Government aims to build a digital economy and society to enable Thailand to become a digital leader and compete within the ASEAN economic community. The "Digital Development Plan for Economy and Digital Society" or "National Digital Economy Master Plan" sets out several key targets and indicators. These include placing Thailand in the top 40 countries in the global ICT Development Index (IDI) and the top 15 in the World Competitiveness Index. The Digital Economy Plan is divided into four phases to be incorporated over a 20-year period.[4,5]

The Digital Economy Promotion Agency (DEPA)

The Digital Economy Promotion Agency (DEPA), was established in January 2017, under the Ministry of Digital Economy and Society (DES) of Thailand, to promote and support the development of digital industry and innovation and digital technology adoption in order to achieve economic, social, cultural and security benefits in accordance with the Digital Development for Economy and Society Act. DEPA's duties include an extensive framework for the digital

2 https://www.forbes.com/custom/2018/10/30/thailand-a-vision-for-the-future/
3 https://fintechnews.sg/32830/thailand/fintech-thailand-hub-ey-asean/
4 https://diodeweb.files.wordpress.com/2018/05/thai-digital-economy-policy-diode-paper1.pdf
5 Ibid.

transformation of the Thai economy. DEPA has also introduced a digital-transformation fund to help startups and existing businesses and industries in the development and adoption of new technologies.[6,7]

Eastern Economic Corridor (EEC)

The Eastern Economic Corridor, or EEC, is a swathe of territory stretching for 200 kilometres south and east of Bangkok, covering Rayong, Chonburi, and Chachoengsao provinces. Here, the government and private investors plan to spend more than US$ 45 billion developing environmentally sustainable smart cities, digital technology parks, fast rail links, three seaports and other facilities.[8]

With infrastructure development in the EEC underway, investment incentives will play an integral role in enticing foreign investments in the economic zone. Under the Eastern Economic Corridor Act, enacted in 2018, companies operating in the economic zone will have their taxes halved for an additional period of five years. In addition, the National Competitive Enhancement Act for Targeted Industries provides a corporate income tax exemption for up to 15 years for eligible businesses in industries that are expected to contribute to Thailand's development.[9]

Digital Park Thailand

As part of its efforts to drive forward Thailand's digital innovation, DEPA is spearheading the Thailand Digital Park and Internet-of-Things (IoT) Institute in the EEC. The mega project has earmarked US$ 160 million to be used on the development of facilities and an additional amount for incentives provided for international investors. The Digital Park aims to become a vibrant digital innovation hub, supporting technology transfer and the creation of digital innovations, such as mobile applications, data centres, and IoT products. An IoT institute will also be established in the Digital Park to develop entrepreneurs for new growth industries such as those in 5G, cloud innovation labs, AI design labs, and data analytic centres.[10]

The government's top-down, technologically progressive developments have implications for regtech service providers looking to enter the country. The drive to legitimize technology and its viability will shape wider public consciousness and prime the market for the widespread adoption of innovative technologies, including regtech. The government is clearly open to technological innovation. For example, the kingdom's revenue department is exploring the use of blockchain and machine learning to curb tax avoidance. In addition, Thailand's Democrat Party was the first political party in the world to use blockchain in a live e-voting system.

Regtech firms wishing to enter the market would be advised to engage with DEPA and consider opportunities that arise within the Digital Park in the EEC.

The National Digital Trade Platform (NDTP)

Thailand's Cabinet has approved the setting up of a National Digital Trade Platform (NDTP) that will be connected to the National Single Window System (NSW). The NDTP will be the central platform providing online import-export data related to customs, export agents, freight forwarders, shipping, and airline companies. It will

6 https://e27.co/company/digital-economy-promotion-agency/
7 EY; Thailand Fintech Landscape Report; 2019
8 https://www.bangkokpost.com/business/1881410/fast-forward-to-thailand-4-0
9 http://www.thailandtoday.in.th/economy/overview
10 https://e27.co/depas-digital-park-thailand-set-to-launch-as-aseans-largest-digital-innovation-center-and-hub-20190227/

also be linked with 36 government agencies that issue licenses and certification.[11]

The NDTP is intended to increase the efficiency of trade by reducing processing costs and time. It will also help curb double financing and fraudulent documents as well as improve access to finance for SMEs. The aim is to eventually link the NDTP with the ASEAN Single Window to create an online trading system with ASEAN countries.

The Joint Standing Committee on Commerce, Industry and Banking of Thailand (JSCCIB), composed of the Thai Chamber of Commerce, Board of Trade, Federation of Thai Industries and Thai Bankers Association has been appointed to work with the Office of the Public Sector Development Commission to set up the NDTP.[12]

With the NDTP still on the drawing board, there are several opportunities for regtech providers to get involved. Solutions that incorporate cryptography technologies to enable information exchange, while ensuring commercial data privacy would likely be in demand; as would solutions that integrate data and document threading that allow trade processes to be digitalized and simplified. Another potential solution includes enabling the detection of trade irregularities and reducing risks through data cross verification.

11 https://www.nationthailand.com/news/30376047

12 https://www.opengovasia.com/thai-government-gets-industry-help-with-digital-platform/

Regulator Initiatives

Bank of Thailand

e-KYC

In the latter half of 2019, the Bank of Thailand (BOT), the central bank, allowed banks that had exited its regulatory sandbox to adopt biometric technology. This includes facial recognition and fingerprint scanning, to verify identity when opening deposit accounts. Some Thai banks have been experimenting with e-KYC rules using mobile apps that read contactless data off Thai passports using NCF technology.[13]

Allowing banks to adopt biometric technology to verify identity is linked to a new government initiative to give all Thai citizens electronic identity cards, which come with electronic chips to store basic information, including a photo. At the end of last year, banks were leveraging the government's initiative to onboard customers using facial recognition. New customers can open accounts using their mobiles, whereby banks request a selfie, to compare that to the photo on their national digital identity card.[14,15]

National Digital ID (NDID) platform

In line with the government's Digital Platform concept, a National Digital ID (NDID) platform to promote digital transactions has been initiated by the newly created National Digital ID Company, in collaboration with the Electronic Transactions Development Agency (ETDA), an agency under the Ministry of DES. The NDID platform is regulated under ETDA's recently amended Electronic Transaction Act, which incorporated the Digital Identification Act that became effective in May 2019.[16]

Under the NDID platform, a customer can give their bank permission to serve as its primary identity provider. Effectively their bank is their data trustee. If that customer then seeks a service from a different bank (or broker or other entity), which doesn't know that person, they can authorize the institution to request personal data from their data trustee, via the national digital identity platform.[17]

To test out this new facility, in February 2020, the BOT approved six banks to provide online cross-bank identity verification through the NDID platform for opening bank accounts in the regulatory sandbox. The six banks are:

- Bangkok Bank
- Bank of Ayudhya
- KasikornBank
- CIMB Thai Bank
- TMB Bank
- Siam Commercial Bank

When this first group exit the sandbox, likely towards the end of the year, they will be able to offer digital deposit account opening using e-KYC

13 Ibid.
14 https://www.digfingroup.com/banking-kyc/
15 Ibid.
16 https://siamcitylaw.com/thailands-amendment-to-electronic-transaction-act-on-digital-id/
17 https://www.digfingroup.com/banking-kyc/

technology for identity verification, enabling consumers and the unbanked easier access to financial services.[18,19]

Since the first six banks were granted permission to use the BOT's regulatory sandbox, an additional seven financial institutions have applied to experiment with financial recognition technology through the NDID platform for identity authentication. The BOT plans to allow other financial institutions, including insurance, securities and asset management firms, permission to test out e-KYC services in the regulatory sandbox in the next phase.[20]

Regtechs wishing to get involved in the NDID platform would be advised to reach out to the key stakeholders involved in the project, namely the NDID Company, ETDA, and the BOT. There will inevitably be demand for regtech solutions. Banks on the platform are going to be required to pay close attention to data security, for example in how they store and manage biometric and personal data in case there is a breach. Another critical area with regtech implications will be around privacy and how banks handle consumer consent around biometric KYC. Also, the BOT is going to be closely monitoring how banks communicate with customers, especially when their facial-recognition software detects potential fraud.

There is certainly plenty of interest in the new NDID platform. At a press conference held in November 2019, 10 pilot banking groups, a securities group, and more than 20 life insurance companies, together with the National Credit Information Company Limited, and the Office of the SEC all expressed interest in becoming involved in the development of various services which will be provided by and through the system. The Stock Exchange of Thailand (SET), for example, is poised to introduce a "Digital Gateway," to enable an efficient, secure, and cost-effective means to access the NDID.[21]

National e-Payment Master Plan

In December 2015, the Ministry of Finance (MOF) and the BOT created The National e-Payment Master Plan (NEMP) as a national strategy to push the development of payment infrastructure and to promote the use of electronic payment services in all sectors. The scheme is also in line with the BOT's strategic plan for payment systems, which is currently in its fourth phase under its payment system roadmap for 2019-21.[22,23]

The main objective of NEMP is to develop an integrated e-payment infrastructure for fund transfers and payment systems between the government and the private sector. In particular, the infrastructure is intended to be used as the primary channel through which tax and social security disbursement payments will be made by the government to private sectors. Ultimately, the government aims to transform Thailand into a "cashless society" where purchases of goods and services are made by credit cards and electronic fund transfers, etc., instead of cash or cheques.[24]

The NEMP consists of five essential projects:

- The PromptPay project.[25]
- The card usage expansion project.

18 https://www.bot.or.th/English/PressandSpeeches/Press/2020/Pages/n0663.aspx
19 https://www.bangkokpost.com/business/1853114/bot-carves-out-e-kyc-path-for-banking
20 Ibid.
21 https://www.opengovasia.com/thailand-is-ready-for-digital-id/
22 Bank of Thailand; Payment Systems Roadmap No.4 (2019-2021); 2019
23 Ibid.
24 https://www.lexology.com/library/detail.aspx?g=8da64a30-f308-4012-9773-31774611e718
25 PromptPay, an e-money transfer service, introduced in July 2016, allows customers to transfer money online requiring only a customer's mobile phone number or ID card number. From January 2017, corporate entities have also been able to use the service.

- The e-Tax and e-Document systems project.
- The Government e-Payment project, and
- The literacy and promotion project.[26]

Thailand's push towards a cashless society involving the development of payment infrastructures for fund transfers and payment systems suggests possible opportunities for regtech providers, if these are able to apply solutions that make such infrastructures more efficient, safe, and secure.

Payment Systems Act

In October 2017, the Thai government published the Payment Systems Act (PSA) in the Government Gazette, setting out the framework for a new licensing and registration regime to regulate electronic payment business operators and putting in place several provisions for a stable and reliable e-payment ecosystem. The PSA became effective in April 2018.[27]

The PSA empowers the MOF and the BOT to regulate and supervise what have been categorized as the "Systemically Important Payment Systems," the "Regulated Payment Systems," and the "Regulated Payment Services," for the purposes of risk management and security, financial stability, good governance, customer protection, efficiency, and competitiveness. The PSA requires service providers to notify, register, or obtain permission from the BOT before providing each type of electronic payment services.[28,29]

As with NEMP, the PSA is clearly aimed at encouraging a cashless society, but at the same time, ensuring that the players providing the platforms and services are regulated. The focus is on ensuring a stable and reliable e-payment ecosystem. To achieve these aims, service providers face increased obligations to meet compliance requirements. Such obligations could be facilitated by using an effective regtech solution.

Open API

Thailand currently has no Open Banking regulation or frameworks, a factor hindering its uptake across the country. In addition, until banks and third-party providers (TPPs) build larger interconnected ecosystems, API standardization and its adoption will also remain a challenge. The BOT could, however, be instrumental in this regard, as it was in its efforts to encourage the industry to standardize around a QR code payment scheme. Another development that will facilitate open banking and make its regulation easier is Thailand's Personal Data Protection Act (PDPA), which was published in May 2019. The creation of open banking and API standards go hand-in-hand with data protection legislation.

Market forces are also pushing open banking-type initiatives from the bottom-up, with Thai banks currently focusing on transforming their legacy systems into an API architecture. Banks in Thailand recognize that if they want to compete with non-bank platforms such as ride-hailing app Grab and text-messaging app Line, they must find a way to more easily offer integrated financial services to customers that want more innovative processes and a better customer experience. They also appreciate the opportunities to drive new revenue streams by offering services to third parties, such as consumer credit checks and identity management.

Banks in Thailand are looking at working in innovative ways. For example, in December 2016, Kasikorn Bank released its K-Payment Gateway, allowing SMEs to accept and process payments. In May 2018, Kasikorn also showcased a QR API system, which will enable customers to transfer

26 Bank of Thailand; Payment Systems Roadmap No.4 (2019-2021); 2019
27 https://www.tilleke.com/insights/thailands-payment-systems-act-2017-electronic-payments-and-bankruptcy/
28 https://www.lawplusltd.com/2017/12/thailand-new-payment-system-law/
29 https://www.tilleke.com/insights/thailands-payment-systems-act-2017-electronic-payments-and-bankruptcy/

funds between other banks. In January 2017, Bangkok Bank was the first in the country to launch a developer portal. The portal had just four APIs but paved the way for other banks in the country to develop similar platforms to encourage innovation.[30]

In May 2018, Siam Commercial Bank (SCB) launched a partnership with social media group Line Thailand to allow corporate users to receive notifications of deposits, withdrawals, and card spending. In August 2018, SCB also announced a partnership with The Mall Group to launch co-branded cards, QR payments, banking services, and parking reservation services. The SCB and Mall Group partnership has resulted in a multitude of new products that leverage SCB's APIs.[31]

Another key initiative is Bank of Ayudhya's Krungsri Mortgage Loans app, announced in June 2018, which will be available through social media, Line, and property search portals, giving customers visibility into mortgage affordability.[32]

In further developments towards more open banking, in May 2019, SCB launched an open API, allowing software developers and corporations to develop new services integrated with banking activities. SCB will open its API via a web portal, which will allow developers to read relevant documents and examine methods to link their applications to the SCB platform. The portal also provides SCB with simulator apps to enable application developers to conduct tests covering all scenarios instantly in a sandbox environment. The portal has four services for developers: loans, payments and QR code payments, sharing customer profiles, and authentication.[33]

As open banking becomes more widespread across Thailand, the market for regtech solutions will grow. Open banking will introduce more interfaces leading to potential security and fraud vulnerabilities. Regtech solutions could have a big part to play in mitigating against these. Regtechs also have the opportunity to offer a whole host of services that incumbents might want to offer third parties, such as consumer credit checks and identity management. Also, commercial bank customers in the country are also looking for services that regtechs could offer them via incumbents. For example, SMEs are looking for improvements in payments, invoicing and matching, integration with accounting packages and lending, while large corporations are looking at finance, treasury management, and payments.[34]

Digital Transformation/ Data-driven Innovation (DT&DI)

The BOT has adopted an institution-wide DT&DI program broadly aimed at shifting to automated/ digital processes and systems and utilizing advanced data analytics tools. Under such a bank-wide digitalization strategy, the banking supervision department contributes by promoting the development of suptech.[35]

The BOT has, for example, operationalized a credit risk assessment model that applies logistic regression and random forest algorithms to granular data from commercial credit contracts to generate a credit score for individual lenders.[36]

The BOT has also developed an NLP platform that is used to analyze executive committee meeting minutes to study corporate governance. Meeting minutes are collected in machine-readable form (PDF and Microsoft Word) via a web portal

30 https://bankingblog.accenture.com/brave-new-world-open-banking-apac-thailand
31 Ibid.
32 Ibid.
33 https://www.bangkokpost.com/business/1684372/scb-launches-open-api
34 https://www.nationthailand.com/Corporate/30359840
35 BIS; FSI Insights on policy implementation No 19: The suptech generations; 2019
36 Ibid.

and stored in the BOT's document and record management system before they are run through a Python-based topic modeling algorithm.[37]

The BOT has also been looking to leverage DLT to transform government saving bonds, issuance, distribution, and sales. Not only would the technology allow for stakeholders to access information more easily, blockchain would also allow for increased efficiency, transparency, as well as easy regulatory monitoring and reporting.[38]

APIs

In addition, automation at the Bank is increasingly achieved through APIs and other technology that enables machine-to-machine communication.

The BOT has several API projects under consideration or in the pipeline. For example, to help organizations access BOT published data more efficiently, and securely, in January 2019, the BOT launched a regional economic and financial statistics and payment systems statistics published in the form of an API.[39]

Users have access to:

- High frequency data, including exchange rate, interest rate and debt securities auction results.
- Statistics, including economic and financial.
- Other data, such as financial product comparison, bank holidays, branches, and service points of commercial banks etc.[40]

Virtual Banking

The BOT is looking at issuing digital banking licenses this year in a move that will open up more opportunities for domestic players to gain access to various banking services. The move will also, it is hoped, promote financial inclusion, prevent monopolization, and facilitate the healthy growth of Thailand's financial ecosystem.[41]

According to the BOT, three key pillars are needed to build digital banks: data from non-financial sources, an electronic identification system, and a suitable regulatory framework. Veerathai Santiprabhob, the BOT's governor, has said that Thailand is stepping up its efforts to ensure all three of these pillars reach international standards.

While Thailand currently lacks independent virtual banks, local and foreign lenders do offer various digital services in the country, including payments. Singapore's UOB started its first mobile-only bank, known as TMRW, in Thailand last year. Looking forwards, Siam Commercial Bank is considering offering virtual banking services via its subsidiary SCB 10X Co Ltd, rather than the bank itself. Meanwhile, Kasikorn bank has said the Bank has a clear direction to go digital.

Whether or not digital banking licenses are issued this year, the intent is clear. Once the BOT feels that it has the infrastructure in place, it will issue digital banking licenses. In the meantime, the BOT is keen to offer more digital banking services to the people. Regtech providers that can help banks overcome obstacles hindering the rolling out of more digital services will be in demand. At the moment, digital banking services are limited mostly to fund transfers, while lending remains a significant challenge because there is insufficient data to help banks evaluate clients' creditworthiness. Regtech solutions able to help in this regard would be highly valued.

37 Ibid.
38 https://www.opengovasia.com/bank-of-thailand-announces-blockchain-pilot-project/
39 https://www.bot.or.th/English/Statistics/Pages/API_PR.aspx
40 https://apiportal.bot.or.th/bot/public/
41 https://www.opengovasia.com/bank-of-thailand-could-issue-digital-banking-licenses/

The Securities & Exchange Commission (SEC) Thailand

Blockchain

The Thai Bond Market Association (TBMA) is using blockchain technology to power its registrar service platform, aiming to facilitate and promote the growth of the secondary market's liquidity. Blockchain shortens the time for bond-issuing preparation to just three days from seven to eight days. It also reduces the cost of issuing and provides real-time information on bond holdings.

Toyota Leasing (Thailand) Co Ltd was the first corporate bond issuer on the platform, which is supported by the SEC and the BOT. The TBMA intends to add more features to the platform, such as an e-bond passbook which will inform bondholders about future coupon payments and other information.[42]

Regtechs with solutions that can run on DLT platforms should approach the TBMA to discuss where they might be able to add value.

Equity Crowdfunding and P2P Lending

Crowdfunding

In May 2019, the SEC codified the process of crowdfunding, aiming to facilitate grassroots financing through such initiatives. The new regulations, under SEC Notification "Tor Jor. 21/2562 Re: The Offering of Securities for Sale through Crowdfunding Portals," expand the scope of permitted crowdfunding activities. Issuers are now allowed to offer "pure vanilla" debentures and shares, therefore lifting restrictions on issuing securities to both retail and non-retail investors.[43]

Specific requirements under the new regulations will be of interest to regtech providers looking to provide services to crowdfunding portals in Thailand. For example, crowdfunding portals are obliged to record information relating to the issuing of securities on the platform and keep that information for at least two years after the date of offering. Portals are also required to disclose transaction summary reports to the SEC. In addition, platforms are responsible for complying with KYC procedures relating to their investors. In general, they are also responsible for issuer compliance with SEC crowdfunding regulations.[44]

In the same month as codifying the process of crowdfunding, the SEC also issued regulations on debt crowdfunding through funding portals to increase alternative fundraising methods for SMEs and startups. Of significance to regtechs, to be eligible for a funding portal license, an applicant must have the same qualifications and work systems required for equity crowdfunding and must also have a method for assessing creditworthiness and risks of the debt fundraisers.[45]

P2P

In April 2019, the BOT issued Thailand's first legislation relating to P2P lending under "Notification 4/2562 Re: The Determination of Rules, Procedures, and Conditions for Peer-to-Peer Lending Businesses and Platforms." Before this enumeration by the BOT, the legal status of P2P lending activities was not consistent or clear-cut, with some types of P2P lending being strictly prohibited without a license from the BOT or the SEC.[46]

Of potential interest to regtechs, platform providers, under the new regulations, are prohibited from holding the money, property, and securities of lenders and borrowers, so a

42 https://www.nationthailand.com/business/30380670
43 https://silklegal.com/thai-sec-clarifies-equity-crowdfunding-regulations/
44 https://www.tilleke.com/insights/thailands-sec-provides-legal-clarity-equity-crowdfunding-regulations/
45 https://www.nationthailand.com/Corporate/30369810
46 https://www.tilleke.com/resources/first-peer-peer-lending-regulation-issued-bank-thailand

qualified custodian is required. There might be potential here for a regtech solution that enables the platform provider to monitor, in real-time, the assets of lenders and borrowers held by the custodian. Custodians must be either authorized custodians under SEC regulations or authorized commercial banks (for escrow accounts) under BOT regulations.

The new regulations also set parameters for borrowers and credit limits. This could also call forth the potential for regtech solutions. For example, the notifications require that individuals have the capability to borrow. That would require a credit scoring capability. Such a solution would need to be creative, given that the reason unbanked individuals are unable to access financial services such as loans through traditional channels is precisely that they do not have a credit history. The regulations also require that borrowers have not already obtained personal loans from three lenders. Again, there may be some solution that would enable providers to verify this provision.

Virtual Assets

In early February 2018, the BOT issued a circular asking, "financial institutions not to get involved in cryptocurrency transactions for fear of possible problems from the unregulated trading."[47]

FIs were banned from investing or trading in cryptocurrency, exchanging cryptocurrencies, creating platforms for cryptocurrency trading, allowing clients to use credit cards to buy cryptocurrencies, and from advising customers on cryptocurrency investing or trading. The BOT also stated that "cryptocurrencies were not legal tender in Thailand."[48]

In what then appeared to be a reversal, in May 2018, an Emergency [Royal] Decree on Digital Asset Businesses was issued. The royal decree lists four types of secondary business intermediaries: digital exchanges, brokerage firms, dealers, and token portal service providers (ICO portals). The decree covers cryptocurrencies, digital tokens, and any other electronic data unit, as specified by the SEC. Exchanges, brokers, and dealers are required to apply for licenses from the MOF, while ICO portals must be approved by the SEC.[49]

The key take-away of the royal decree is that there are two activities which are now regulated under this law, namely the offering of Digital Tokens to the public in the primary market, and the operation of Digital Asset Businesses in the secondary market.[50]

The SEC is currently studying whether the royal decree has any areas that are stumbling blocks to digital asset businesses and plans to amend the royal decree this year in its aim to "facilitate the growth of digital assets while protecting investors from unnecessary risk."[51] SEC secretary-general, Ruenvadee Suwanmongkol, said in November 2019 that, "the regulator must be flexible to apply the rules and regulations in line with the market environment." She then went on to say:

> *"For example, laws should not be outdated and should serve market needs, especially for new digital asset products, and be competitive with the global market. We need to explore any possible obstacles."*[52]

Authorities are seriously considering the merits of virtual assets. The BOT is currently looking into developing and testing a POC for domestic wholesale funds transfer using a wholesale Central Bank Digital Currency (CBDC). Project Inthanon,

47 https://news.bitcoin.com/bank-of-thailand-bans-banks-from-cryptocurrency-activities/
48 Ibid.
49 https://www.bangkokpost.com/business/1801374/sec-to-amend-decree-on-digital-asset-businesses
50 https://www.bakermckenzie.com/-/media/files/insight/publications/2018/09/bk_thailand_completeguidecryptoicos_sep18.pdf?la=en
51 https://www.ibtimes.sg/cryptocurrency-thailand-plans-change-its-regulatory-framework-2020-35023
52 https://www.bangkokpost.com/business/1801374/sec-to-amend-decree-on-digital-asset-businesses

as it is known, is a collaborative project of the central bank and financial institutions. The BOT is also collaborating with the Hong Kong Monetary Authority to explore interoperability among ledgers to achieve cross-border funds transfer.[53]

Now that digital assets have been regulated in Thailand, regtechs should find opportunities to provide solutions for digital exchanges, brokerage firms, dealers, and ICO portals. An evident demand would be for KYC solutions. Digital asset business operators are now considered as "financial institutions" pursuant to anti-money laundering laws, which means that cryptocurrency exchanges, brokers, and dealers will be subject to Thailand's Anti-Money Laundering Office's (AMLO) scrutiny and reporting requirements.

The Office of Insurance Commission (OIC)

Center of InsurTech, Thailand (CIT)

The OIC, as the natural host for startups to develop new insurtech, set up the CIT in mid-2018, for data collection, technological exchange, and insurance product development. The CIT is a hub to integrate insurance firms and tech startups to drive the domestic insurance industry forward.[54]

The CIT is tasked with four objectives:

- Encouraging research and exchange of knowledge on insurance technology, while also promoting the development of insurance technology.
- Promoting the development of regulatory technology for the insurance industry.
- Supporting accessibility and reachability of insurance knowledge among the public via insurance technology.
- Brainstorming ideas among the regulators and insurtech startups in order to facilitate innovation and protect insurance interest among consumers.[55]

The OIC has publicly stated that investment in technology is a must for insurance companies to integrate new technologies, AI, and HealthTech to deal with challenges from changes in demography, technology, and external volatility.[56]

Given the endorsement of the use of technology by the regulator in the insurance sector, regtechs and/or insurtechs looking to enter the market should engage with the OIC and explore opportunities by reaching out to the CIT. The home page of CIT's website explicitly says that they are interested in regtech, suptech, insurtech, and healthtech and has links for companies wishing to join as partners and/or technology implementers.[57]

Digital Insurance

In 2016, the OIC, in collaboration with local insurance associations, set about establishing a regulatory framework to conduct e-insurance as part of the Thai Government's promotion of the digital economy and commerce. Previously, issuing insurance policies via electronic transaction was subject to the general requirements under the Electronic Transactions Act. The new regulations were designed to address the specific requirements of the insurance industry.[58]

53 https://www.bangkokpost.com/business/1714652/project-inthanon-heads-to-phase-iii
54 https://cit.oic.or.th/
55 Ibid.
56 https://www.bangkokpost.com/business/1763934/oic-promotes-tech-investment
57 https://cit.oic.or.th/
58 https://www.tilleke.com/resources/thailand-e-insurance-and-e-policy-regulatory-developments

Highlights of the framework include:

- Insurers must implement a secured IT system that complies with the requirements under the Thai Electronic Transactions Act and its subordinated regulations.
- e-Insurance must not preclude customers' right to choose whether to obtain their policy documents in an electronic version, known as an e-Policy, or in a traditional hardcopy version.
- Insurers must implement a search engine system, allowing each customer to access his or her insurance policy and the coverage provided.
- The OIC's delegates could conduct an annual assessment to ensure that insurers effectively comply with e-Insurance regulatory requirements when conducting e-Insurance business and issuing e-Policies.[59]

In August 2017, the OIC, then followed up on the previous year's regulatory framework on e-insurance by issuing new notifications concerning the criteria, procedures, and conditions for:

- Offering insurance policies for sale through electronic channels.
- Using electronic means as part of the sale of policies.
- Issuing policies through electronic channels, and
- Paying compensation for claims through electronic channels.[60]

Several requirements for compliance outlined under the framework would suggest regtech/insurtech opportunities. For example, insurers might need a solution to help them implement a search engine system, allowing each customer to access his or her insurance policy and the coverage provided. Also, a solution enabling insurers to monitor their intermediaries for noncompliance with the notifications would also be beneficial. Furthermore, requirements for an e-signature and identification processes before any electronic claims compensation is made both suggest a regtech/insurtech solution. Finally, requirements around security and a secured IT system, would also suggest regtech/insurtech solutions.

In further developments, the OIC is currently contemplating issuing digital licenses. The OIC has dedicated a task force to study digital insurance licensing in Hong Kong. Recent reports indicate that the OIC may issue both visual licenses (for new entrants wishing to sell insurance digitally without commission), and digital licenses (to existing insurers wishing to switch to purely digital sales).[61]

The OIC is also poised to enable non-life insurers to offer digital auto insurance with coverage for less than a standard 12-month period as the public becomes more familiar with digital tools during the coronavirus crisis. The move is meant to turn around a decline in auto insurance premiums after a sharp slump in new car sales.[62]

Life and Non-Life Insurance

Requirements on Life and Non-life Insurance and Reinsurance

At the start of 2019, the OIC's "Rules and Procedures for Issuing and Offering for Sale Insurance Products of Life and Non-Life Insurance Companies" and the "Operations of Insurance Agents and Licensed Brokers," (Notifications) came into effect. The Notifications impose practical new requirements on life and non-

59 Ibid.
60 https://www.tilleke.com/insights/thailand-e-insurance-regulations-issued-effective-august-2017/
61 https://www.bakermckenzie.com/en/insight/publications/2020/02/oic-considers-granting-insurance-digital-licenses
62 https://www.bangkokpost.com/business/1906435/oic-allows-brief-digital-auto-policies

life insurance and reinsurance companies in Thailand.[63,64]

The Notifications focus on good corporate governance, fair treatment of customers, and places obligations on insurance companies to include specific procedures in their operations, including risk management and internal controls. Regtechs/Insurtechs might be interested to hear that the sale of insurance policies via electronic platforms is now also recognized by the Notifications and is subject to the OIC's notification concerning sales via electronic means.[65]

As the OIC tightens regulatory compliance requirements over the sector to prioritize and protect the benefits of the insured in all aspects of the insurance business, firms will benefit from regtech/insurtech solutions to help them remain compliant. The obligations to include risk management and internal controls would suggest technological solutions that enable entities to implement and manage these processes in a cost-effective way. Specifically, regtechs/insurtechs might be able to provide solutions around collecting, storing, and securing customers' personal data; and/or handling claim compensation and monitory benefits according to policies. Other provisions under the Notifications that regtechs/insurtechs might want to explore are those around conduct in respect to the issuance of insurance products, and requirements around after-sales service.[66]

Amendments to Insurance Acts

In late 2019, Thailand's cabinet approved in principle the draft amendments to the Life Insurance Act (1992) and Non-Life Insurance Act (1992) (Insurance Acts). The key changes introduced by the draft amendments include: added provision on insurance business transfers that result in a change of insurer; added provision on the registration of amalgamation; added provision on the subrogation of rights for the transferee of insurance business; added penalties for a number of offenses; and amended provisions on the offenses that can be settled by a Settlement Committee.[67]

In addition, the fourth amendments (Fourth Amendments) to the Insurance Acts relating to qualifications of insurance agents, brokers, and loss adjusters came into force in November 2019. The Fourth Amendments are intended to afford better protection to the insured and the general public.[68]

The Fourth Amendments cover some areas of note that might be of interest to regtechs/ insurtechs. For example, under the amendments, a juristic insurance broker must now maintain a system for supervising the performance of the individuals it appoints. What is more, a juristic insurance broker is now jointly liable for damages caused by individuals it appoints to act as insurance brokers. Any of its directors, managers, and responsible persons could be held jointly liable with it.[69]

The Fourth Amendments also increase the OIC's supervisory powers, authorizing the regulator to issue subordinated regulations to regulate agents and brokers' insurance offers and sales, including those which specify sanctions for non-compliance. Also, some criminal sanctions have been revised to carry more severe penalties. In a first for Thailand, insurance fraud was also introduced and will be treated separately as a non-compoundable (public) offense.[70]

63 https://www.bakermckenzie.com/en/insight/publications/2019/12/amendments-to-life-and-non-life-insurance-acts
64 https://www.lexology.com/library/detail.aspx?g=38334615-fd2c-4c90-a6fb-238555947a70
65 https://www.bakermckenzie.com/en/insight/publications/2019/12/amendments-to-life-and-non-life-insurance-acts
66 Ibid.
67 https://www.lexology.com/library/detail.aspx?g=de6de94c-07fc-4490-9351-b06384a97c3c
68 https://www.bakermckenzie.com/en/insight/publications/2019/12/amendments-to-life-and-non-life-insurance-acts
69 Ibid.
70 Ibid.

Finally, the Fourth Amendments make it clear that any electronic transactions in relation to the Insurance Acts (partially or wholly), unless specific OIC regulations exist, must be conducted per the electronic transactions laws and other related laws.[71]

Brokers, agents, and loss adjusters as well as insurers are going to have to ensure that they comply with the more stringent requirements under the Fourth Amendments going forward. This is now especially the case, considering the OIC's authority to impose administrative sanctions. Increased regulatory compliance and penalties for non-compliance suggests that such entities would benefit from regtech/insurtech type solutions. In addition, given the OIC's increased supervisory powers, entities in the sector can expect additional sub-regulations to supplement the Fourth Amendments. Another reason to expect that the demand for regtech/insurtech solutions in this area will increase.

Cross-Regulator Focus Areas

AML/CFT

Thailand is at high risk from a number of ML/TF threats. For example, the country is often a destination of choice for proceeds of foreign bribery and bribery by Thai businesses of foreign officials. There is also a risk of domestic TF from home-grown groups chiefly operating in the southern border provinces. Thailand is also at risk from large numbers of large-scale domestic and transnational frauds. The country is also a target for a range of tax offences, including the conduct of foreign tax crimes. There is also indication that Thailand has been a hub for transnational ID fraud syndicates.[72]

The Anti-Money Laundering Office (AMLO) is Thailand's central authority for AML/CFT and plays a pivotal role in coordinating ML/TF risk assessments. The country's AML/CTF law was founded in 1999 upon the adoption of the Anti-Money Laundering Act (AMLA). In December 2016, AMLO also published its "Counter-Terrorism and Proliferation of Weapon[s] of Mass Destruction Financing Act (2016)," in the Government Gazette.[73,74,75]

The AMLA has been amended several times over the years, with the latest amendment (No. 5), taking effect in October 2015. This amendment covered several provisions that would be of note to regtechs. These include onboarding policy and customer due diligence (CDD), which now subjects all types of "Reporting Entities," instead of only FIs and certain types of reporting entities to the obligations under section 20/1 to (a) stipulate a policy on onboarding clients and risk management and (b) conduct CDD, following ministerial regulations. Also, the information and documents regarding CDD must be kept for ten years from the close of the account or termination of the relationship with the customer.[76]

In October 2019, Thailand's Cabinet approved a draft regulation proposed by AMLO which would allow FIs and business operators to scrutinize their customers' sources of money, in a move to combat ML and TF. The regulation would require FIs and business operators as listed under Section 16 of the AMLA to thoroughly assess their customers' activities in order to reduce the risk of ML/TF.[77]

71 Ibid.
72 https://www.fatf-gafi.org/media/fatf/documents/reports/mer-fsrb/APG-MER-Thailand-2017.pdf
73 http://www.amlo.go.th/index.php/en/2016-05-21-21-37-20/background
74 http://www.amlo.go.th/amlo-intranet/media/k2/attachments/AMLAZNoZ1-5Z2016_2.pdf
75 http://www.amlo.go.th/amlo-intranet/media/k2/attachments/CTPF%20Act_1.pdf
76 https://globalcompliancenews.com/thailand-anti-money-laundering-law-strengthened/
77 https://www.bangkokpost.com/business/1763454/cabinet-approves-amlos-funds-scrutiny-draft-regulation

Under the new regulations, not only banks but also investment consultants, gem and gold traders, real estate brokers, electronic payment service providers, antique traders, and non-bank credit companies will be required to "suspend business transactions with customers whose financial activities are deemed suspicious," and report them to AMLO."[78]

For cross-border wire transfers exceeding 50,000 baht (US$ 1,555), both the ordering and the recipient institution will be required to have information about the origin of the funds, as well as both the benefactor and beneficiary.

The draft regulation was proposed after Thailand failed to meet FATF's International Standard for AML/CFT, especially regarding the number of sectors and business activities required to comply with AML regulations.[79]

Given the high risks to ML/TF faced by Thailand and the tighter AML/CTF regulations, which have now been expanded to include all reporting entities, not just FIs, the expectation would be that the demand for regtech solutions will have increased. This will especially be the case if AMLO's draft law passes, obliging FIs and business operators to scrutinize their customers' sources of money. Entities are also going to need to comply with AML/CFT requirements around onboarding clients and risk management. They will also need data management solutions around the storage and handling of information and documents regarding CDD.

Cybersecurity

According to Cisco's 2019 Asia-Pacific Chief Information Security Officer Benchmark study, just over a third of businesses in Thailand said that their most significant cyber breach had cost them US$ 1 million or more in damages.[80]

It is in this context that Thailand's National Legislative Assembly approved and endorsed the country's Cybersecurity Act in February 2019, which became effective in May 2019. The Act endeavors to enforce legal safeguards to ensure the security of cyberspace, and in particular, sets out a cybersecurity risk assessment plan to prevent and mitigate against cybersecurity threats.[81]

The Act classes Cyber Threats into three levels, namely non-critical, critical, and crisis level cyber threats. The power and authority of relevant officials against private organizations will be different depending on the level of cyber threat. The two central authorities charged with enforcing the Act are the National Cybersecurity Committee (NCSC) and the Cybersecurity Regulating Committee (CSRC).[82]

Private organizations deemed to be "critical information infrastructure (CII) organizations," (e.g., those using computers and computer systems in the course of their operations to maintain national security, public security, national economic security, or fundamental infrastructure for public interest) face the most obligations under the Act.[83]

Private organizations, which are not CII organizations are also subject to the Act. In the event of a cyber threat, the relevant authorities may request cooperation from or order private organizations to perform various actions. In addition, all private organizations must monitor their computers and computer systems.

There are a number of implications associated with the Act that will be of relevance to regtech providers. Computer systems deemed "critical"

78 https://knowyourcustomer.com/aml-requirements-thailand-2019/
79 https://www.bangkokpost.com/business/1763454/cabinet-approves-amlos-funds-scrutiny-draft-regulation
80 Cisco; 2019 Asia Pacific CISO Benchmark Study; 2019
81 https://asialawportal.com/2019/12/03/cybersecurity-law-in-thailand/
82 https://silklegal.com/thailands-new-cybersecurity-law-comes-into-full-effect/
83 https://globalcompliancenews.com/thailand-cybersecurity-act-has-been-passed-20190325/

to security must be protected from cyber threats by implementing the relevant cybersecurity standards. Likewise, CII Operators, e.g., those entities in banking, ICT, and transportation, are required to have cybersecurity measures that comply with standards, as do "Operators of Essential Services." While cloud computing services are not specifically defined under the Act, they could be categorized as CII organizations under information technology and telecommunications services. The same rationale applies for digital service providers.[84]

With the introduction of more stringent regulations, CII organizations are going to need regtech solutions. For example, these are required to have in place a code of practice, which must at least cover cybersecurity risk identification and assessment and a cyber threat response plan. They also must have organizational measures and a cybersecurity framework that complies with prescribed cybersecurity minimum standards. CII entities must further provide monitoring mechanisms for cyber threats and cybersecurity incidents that threaten their CII according to standards as prescribed by the NCSC or CSRC.[85]

In the event of a cybersecurity incident involving the CII of either public or private entities, these entities must investigate all of their information, computer data, and computer systems, including any circumstances related to the incident to evaluate the cyber threat. Measures under the code of practice and cybersecurity standards must be followed in responding to and mitigating the cyber threat. They must also notify the NCSC office and competent regulator of each entity involved in the cybersecurity incident.[86]

With such demanding requirements now placed on CII organizations, regtech service providers that are able to help them to comply with these new measures will be in demand. Generally, investment in cybersecurity technology has been increasing in Thailand, reaching US$ 63 million in 2018. It will only increase with the roll-out of the Cybersecurity Act and the Personal Data Protection Act, as well as the national ID scheme.[87]

Data Privacy

The National Legislative Assembly approved the Thailand Personal Data Protection Act (PDPA), modelled on the EU's General Data Protection Regulation (GDPR), in February 2019, which became effective in May 2019. The PDPA is the first consolidated law, generally governing data protection in Thailand. Companies had until May 27, 2020 to bring their practices into compliance.[88]

Notably, the PDPA adopts a broad definition of "personal data" (essentially, any information which directly or indirectly identifies an individual) and an extraterritorial scope that extends its obligations to organizations outside of Thailand who either (i) offer products and services to individuals in Thailand, or (ii) monitor the behavior of individuals in Thailand. The PDPA also adopts the concepts of "controller" and "processor" consistent with various other privacy regimes.[89]

With the PDPA now in place, companies, both onshore and offshore, will require regtech solutions for their personal data-related activities (e.g., customer data, supplier data, employee data, billing and payment documents), conducting data classification, data mapping, preparing personal data related documents, and other necessary steps for full compliance with the PDPA.

84 https://asialawportal.com/2019/12/03/cybersecurity-law-in-thailand/
85 Ibid.
86 Ibid.
87 https://www.bangkokpost.com/business/1777204/thailand-lags-in-cybersecurity-stakes
88 https://globalcompliancenews.com/first-thailand-personal-data-protection-act-has-been-passed-20190401/
89 https://www.lexology.com/library/detail.aspx?g=b0ef7ae3-cad2-44b0-a85f-32ee516f0416

Regulatory sandboxes

Thailand is the first country in the world with three regulatory sandboxes covering different aspects of financial services.

- **The BOT Sandbox:** The BOT launched its regulatory sandbox in December 2016 for banks and non-bank financial institutions incorporated in Thailand who offer products related to lending, payments, and fund transfers. The BOT is open to fresh, never-seen-before innovation in areas including QR payments, and cross-border payments. The companies stay in the sandbox for six to 12 months.
- **The SEC Sandbox:** In March 2017, the SEC launched a series of sandboxes for securities, derivatives, clearinghouses, KYC initiatives, and e-trading. The SEC facilitates and works with fintech and other stakeholders to embrace the regulatory sandbox to allow fintechs to test new services to minimize risks and encourage innovation. Several months before launching its sandboxes, the SEC launched an annual fintech challenge contest with winners offered admittance to the sandbox. Its first cohort competed in categories of financial inclusion, blockchain technology, and regtech.
- **The OIC Sandbox:** The OIC launched its insurtech sandbox in June 2017, allowing agents, insurers, and fintech companies to beta-test innovative insurtech products.

Private Sector

Like most SE Asian countries, Thailand's regtech ecosystem is going to be driven from the bottom-up. That means that private initiatives are going to play a significant role in shaping the market. It will be driven by individual private companies looking for efficiencies and to serve their customers better. The quickest way to judge what will be successful will be through the customer-focused lens. If the solution enables entities to service customers better or reduces the friction with customer onboarding, or selling to customers, then it will gain traction with the buyer.

While on the ground regulatory nuances favor local domestic vendors, these are still often reliant on the technology and resources of a well-funded overseas regtech. This creates partnership opportunities within the country. The impact of Covid-19 also can't be ignored. With markets like Thailand seeing less government and regulator support in the form of grants and subsidies, a lot of the small players might not survive, which then limits options for buyers. It is also going to lead to consolidation and to FIs, like the banks, buying up these companies to incorporate their technology. There could be an opportunity here for well-funded, foreign regtechs to enter the market and acquire local players, to gain a foothold in the country.

Private Sector Associations and Regional Initiatives

In addition to the government and regulator initiatives there are also some private initiatives supporting fintech/regtech in the country. These include:

Logo	Name	Description
AIB ASSOCIATION OF INTERNATIONAL BANKS	Association of International Banks	The AIB was established to represent foreign banks in Thailand with the Bank of Thailand and other regulatory bodies on issues of concern to the foreign banking community.
AIMC	Association of Investment Management Companies (AIMC)	The AIMC has eleven objectives, the first being to serve as a central body for businesses in the investment management industry.
AIS The StartUp	AIS The StartUp	A business development platform, headquartered in Thailand, under Advanced Info Service (AIS), a telecom and digital business provider. Assists tech startups by providing technology and experts.
Allianz Ayudhya Activator	Allianz Ayudhya Activator	An incubation program focusing on co-creating new insurance technology ventures.
depa	depa Accelerator Program	depa Accelerator Program (ASEAN's First Smart City Accelerator) is developed to support and act as a catalyst for digital startups.
Digital Ventures	Digital Venture DVA	The venture capital (VC) arm of Siam Commercial Bank, was launched in 2016 to make strategic investments in high technology startups and venture capital funds around the world.
F13 Fintech Hub of Thailand	F13	Initiated by the Thai Fintech Association, F13 is a sandbox for fintech startups to test and validate their product and service with real customers.

Logo	Name	Description
FETCO	Federation of Thai Capital Market Organization (FETCO)	As the representative for the organizations in the Thai capital market, FETCO has continuously taken part in various activities to promote Thai capital market development.
THE FINLAB UOB	FinLab	The FinLab, a JV of UOB Singapore, operates acceleration programs focused on propelling the growth of innovation FinTech and technology companies and catalyzes the digital transformation of businesses.
IMPACTECH	ImpacTech	ImpacTech Thailand is an acceleration program for startups who use technology to tackle social issues. ImpacTech aims to empower social tech startups in Thailand and create a vibrant social tech community of startups and supporters.
BANGKOK BANK INNOHUB	InnoHub program	Founded in 2017, Bangkok Bank InnoHub is a Global FinTech Accelerator Program of Bangkok Bank. The program objective is to support early-stage, growth-driven companies to define and build their initial products, identify promising cus-tomer segments, and secure resources, including capital and employees through various support such as mentorship, and potential financing.
KV KASIKORN VISION	Kasikorn Vision (KVision)	The investment arm of Kasikorn Bank, has a total budget of US$ 245 million that prioritizes investments in fintech and e-commerce.
KX KNOWLEDGE XCHANGE	Knowledge Xchange	A global community centred in Bangkok ad-dressing social and industry challenges by trans-lating deep research and technology through the appropriate business models; from social enter-prises to investable and scalable startups to high tech SMEs.
RISE	RISE	Thailand's first FinTech Accelerator, initially launched with Krungsri (Bank of Ayudhya) in 2016 as Krungsri RISE. Its vision is to become the #1 Corporate Innovation and Startup Accelerator in SE Asia.
SPARK	SPARK Accelerator	Supports high-potential Thai startups in early-stage through intensive mentoring sessions with regional and international experts to guide and improve startups' capabilities, products, and solutions to reach the global market's needs.
STARTUP THAILAND	Startup Thailand	Founded as a national agency to support the startup businesses and its ecosystem based on the policy of the National Startup Committee (NSC).
สมาคมธนาคารไทย	The Thai Bankers' Association	Representative body of the commercial banks incorporated in Thailand.
ThaiBMA	The Thai Bond Market Association (ThaiBMA)	ThaiBMA's main purpose is to be a self-regulatory organization for a fair and efficient operation of the bond market and to be an information centre for the Thai bond market.
THAI FINTECH ASSOCIATION	Thailand FinTech Associa-tion	Launched in 2016, the association bills itself as a community with a mission to drive financial technology industry in Thailand.
Thai General Insurance Association	Thai General Insurance Association	An organization that promotes and supports the non-life insurance industry as a socio-economic pillar of Thailand.
	Thai Life Assurance Association	The central body of life insurance business operators and related professional groups.
trueINCUBE	trueINCUBE	A tech incubator in Thailand managed under True Group. Focuses include AI, Big Data, ML and Fintech.

Active Regtechs/ Insurtechs in Thailand[90]

Claim DI

(https://www.claimdi.com/en/) – Claim Di is a Thai-based mobile application that enables car owners in Thailand to communicate directly with their insurance company.

Fairdee

(https://www.fairdee.co.th/) – A company launched by Singapore-based car insurance company Vouch. Fairdee aims to promote safer driving by offering a 30% annual premium refund for customers who do not make claims within a given policy period.

iTax

(https://www.itax.in.th/) – Thai-based iTAX helps users to save time on preparing tax documents, optimizes all conditions to get the maximum tax refund, and provides the best advice on tax-saving products.

SmartContract Thailand

(https://www.smartcontractthailand.com/) – A Thai-based company providing enterprise blockchain consulting and solution development, including in e-KYC and Digital Identity.

90 http://thaifintech.org/members/

Potential Future Scenario for Thailand's RegTech Ecosystem

There is currently not a lot of regtech coming out of Thailand. That is largely because Thailand still has nascent frameworks for regulation and compliance and lacks the underlying infrastructure. That means that the legal system and regulatory requirements are not yet well defined, making it challenging to build technological solutions around – which is compounded further by the lack of physical infrastructure. It also disincentivizes FIs from spending on solutions that they do not really need.

Markets where the existing regulatory framework is not robust tend to also have monopolies or duopolies in terms of regulatory compliance service providers. One or two companies will get selected by the government for partnerships and/ or invested in by SOEs. This then enables the government to control any company that helps FIs, to make sure that these comply with regulations. A final reason we also do not see a lot of regtech coming out of Thailand is because regulations in these markets tend to be very local, encompassing local requirements. That makes it hard for foreign regtechs to serve on, and it also makes it hard for domestic companies to export their solutions.

That is not to say that there are not opportunities for regtechs entering the market. While Thailand's FIs are very much reliant on homegrown, local vendors, and players, these will often partner with a multinational Tier-1 regtech company. The result is a hybrid model that can take on local regulations and have that international flavor.

There are clearly regtech activities occurring in Thailand. For example, the BOT has adopted several regtech solutions. Siam Commercial Bank has also recently completed a digitalization project, which included regtech-type solutions. The Bank was the first in the country to link an API to the government's company registration database, which provides them with all the documents they need, e.g., company registration, shareholder structure, authorized directors etc. for a client to open an account with them. They also built a KYC engine on top of the platform that can calculate the individual's and the company's risk profile instantly. Since then, Thai banks are now all able to leverage APIs to access this government data. The government now also provides an API-enabled GoldenSource citizen directory that FIs can use.91

Indeed, KYC has been growing in importance in markets like Thailand, which has recently allowed six commercial banks to use e-KYC, which includes facial recognition. As the take-up of e-KYC grows in Thailand, so will demand for solutions around digital identification.

As the government and the regulators build up the country's infrastructure under their digitalization initiatives and look to hone their regulations, at least around their international obligations such as AML/CTF, there will be opportunities for foreign regtechs to come in and serve the market.

91 GoldenSource Corporation is a global software company in the enterprise data management industry, founded in 1984 and headquartered in New York City, United States, with offices in London, Mumbai, Milan, Melbourne, and Hong Kong.

Vietnam Overview

2021

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Main Regulators and Key Initiatives

The State Bank of Vietnam (SBV):

The SBV is the central bank charged with oversight of the official currency, the Vietnamese dong.

Recent / Active SBV Key Initiatives:

- Cashless Payment Network
- Circular No. 23 (Intermediary Payment Services)
- Draft Circular Revising Circular 35 (AML)
- Draft Decree Revising Several Articles of Decree 116 (AML)
- e-Money Services
- Key Tasks of the Banking Sector in 2020
- Mobile Money Services
- OL 5228 (SBV's View on P2P)
- Pilot Implementation of P2P Lending
- Steering Committee on Financial Technology

The State Securities Commission of Vietnam (SSCV):

The SSCV oversees and regulates securities trading on the country's two official exchanges, the Ho Chi Minh Stock Exchange (HSX) and the Hanoi Securities Trading Center (HaSTC). The SSCV was recently granted operational autonomy although still its officially part of the Vietnamese Ministry of Finance (MoF)

Recent / Active SSCV Key Initiatives:

- Amended Securities Law
- e-One-Stop Information Disclosure System

The Insurance Supervisory Authority (ISA):

The MoF is in charge of the state regulation on insurance business. In February 2009, the MOF established the ISA under the MOF. The ISA's mandate is to assist the Minister of the MOF to regulate insurance business nationwide and directly govern and supervise insurance business activities and services.

Recent / Active ISA Key Initiatives:

- Decree on Electronic Transaction (in progress)
- Plan on Restructuring the Stock Market and the Insurance Market
- Professional Competency Framework
- Revised Law on Insurance Business (in progress)
- Risk-based Capital Management Model (in progress)

Trends, Initiatives, and Implications for Regtechs in Vietnam

Despite there being little evidence of specific regtech activity taking place in Vietnam, like many developing economies in the region, Vietnam provides ample opportunity for regtech firms looking to enter the market.

That is because, unlike their more developed counterparts, rapidly growing countries like Vietnam need a whole shopping list of solutions to address myriad challenges and shortfalls in the regulatory and operating environments.

While Vietnam lags behind some of its peers in the region in terms of fit for purpose legislative frameworks to regulate emerging technologies and new business models, the reality is that these technologies and players are in the country and will at some point need to be monitored. Astute incumbents and new players will be looking to get ahead of the curve now to pre-empt regulations coming down the pipeline and build credibility with customers and authorities. Regtech providers should strike while the iron's hot.

Government Initiatives

National Strategy for Industry 4.0

The introduction of the Politburo's Resolution No. 52-NQ/TW (Resolution 52) in October 2019 signaled the government's plans to implement policies that facilitate the country's active participation in the fourth industrial revolution. Under the resolution, the National Assembly, the Government, ministries and sectors and localities will jointly participate in implementing concrete programs and plans to promote "Industry 4.0" nationwide.[1]

Resolution 52 sets out a number of ambitious targets for the digital economy. For example, by 2025, the aim is for the digital economy to account for 20% of GDP; and by 2030, for over 30% of GDP. A feasible goal, given that according to a recent survey by Google and Singapore's Temasek, Vietnam's digital market is estimated to rise to US$ 30 billion by 2025.[2,3]

The Ministry of Planning and Investment's (MPI) Central Institute for Economic Management (CIEM) was tasked with drafting the national strategy on the fourth industrial revolution. As well as proposing plans to build an e-Government and strive toward a digital Government, the draft plan outlines sectors and fields prioritized for technology upgrading and transformation. These include public administration, electricity-water, healthcare, education, manufacturing, agriculture, transportation and logistics, commerce, information and communication, and finance/ banking.

In addition, the plan outlines technologies to be prioritized for development, which include 5G and after-5G mobile connection, AI, blockchain, 3D printing, cloud computing, Internet of Things (IoT), cybersecurity, and clean energy.[4]

The National Digital Transformation Plan

The underlying focus that permeates the Industry 4.0 plan is the digital movement, including digitizing the whole of society, enterprises, and state management.

Given the centrality of digital to Industry 4.0, Vietnam's Ministry of Information and Communications (MIC) was tasked with drawing up a national digital plan, which has now been submitted to the Prime Minister for review. The plan would see Vietnam move towards a comprehensive digital economy and society by 2030, becoming ASEAN's leading digital country.[5]

1 ttps://www.vir.com.vn/vietnam-ready-to-embrace-industry-40-70940.html
2 https://www.opengovasia.com/vietnam-creates-policies-for-industry-4-0/
3 Google/Temasek; e-Conomy SEA 2019; 2019
4 https://vietnamlawmagazine.vn/national-strategy-on-industry-40-drafted-16794.html
5 https://vietnamnews.vn/economy/652813/mic-to-submit-national-digital-transformation-programme-this-month.html

E-Government

As Vietnam prepares to go digital, the MIC declared that 2020 was the year of "national digital transformation to turn Vietnam into a digital economy and digital society." To help the country on its way, the Prime Minister, Nguyen Xuan Phuc, asked the MIC to make a breakthrough in e-government in 2020, promoting connectivity and data sharing among ministries, sectors, and localities.[6]

Setting the groundwork for more e-government, in March 2019, the national e-document exchange platform was launched, as part of broader efforts to build e-government systems. This followed the issuance of Decision No. 28/2018/QD-TTg in July 2018, prescribing the sending and receipt of e-documents among agencies in the state administrative system.

As part of the new system, ministries, agencies, and localities have been asked to complete national databases on population, insurance, finance, business registration, federal land and electronic household registration, and specialized data, which will be connected to the e-document exchange platform during the 2020-2025 period. There has been an emphasis put on ensuring the absolute safety of information and cybersecurity.[7]

Vietnam's Deputy Prime Minister has also taken several steps to digitalize government processes. In January 2020, he ordered that all documents sent and received on the new e-document exchange platform must be digitally signed and authenticated in line with a circular on the use of digital signatures in government agencies.

Ministries, agencies, and local authorities were also told to complete the connection of their document management systems by June 2020.

In addition, the Deputy PM has called for mechanisms to ensure the consistent performance of the infrastructure to send and receive e-documents, backup measures in case of disruptions, and tools to ensure responsibility for information leakages during the process of transferring documents.[8]

Vietnam's ambitious plans to digitalize the economy will face several challenges which regtech solutions could help to mitigate. Digital security will be paramount, especially as Vietnam suffers from a high number of cyberattacks. The country is also a haven for botnets, which increases the risk of harmful software compromising digital systems and networks. Other regtech solutions that will be in demand are those that can help with database synchronicity, helping to connect disparate government and business platforms around the country.

6 https://www.opengovasia.com/vietnam-to-unveil-national-strategy-on-digital-transformation-2020/
7 https://vietnamlawmagazine.vn/national-e-document-exchange-platform-launched-6604.html
8 Ibid.

Regulator Initiatives

The State Bank of Vietnam (SBV)

Cashless/digital payments

The digital payments segment is growing steadily in Vietnam, reaching US$ 6.4 million in 2018, up more than 22% on an annual basis. By 2022, it is forecast to reach US$ 11.1 million. E-wallets are growing even faster. Transactions reached VND 53.1 trillion (US$ 2.29 billion) in 2017, up 64% from a year earlier, according to the SBV.[9]

To adapt to the increasingly diverse needs of customers, many banks in the country are implementing cashless payment services. Most banks have also established and upgraded their core banking systems, developed an internal payment system, and integrated new mobile and internet payment channels.[10]

In the background is the National Payment Corporation of Vietnam (NAPAS), a state-owned company (with its largest shareholder being the SBV). NAPAS provides switching and electronic clearing and settlement services in Vietnam. It operates and manages an inter-bank connection system with 16,800 ATMs, 220,000 POS devices, and over 90 million domestic cards from 43 local commercial banks and foreign banks operating in the country. It also provides e-commerce services to more than 200 merchants, including airlines, telecommunications, hotels, tourism, and others.[11]

However, the legal framework for payments remains incomplete, with laws relating to electronic payments and e-commerce not providing peace of mind to many. The country has been trying to make some inroads in an attempt to address this legislative shortfall.[12]

In November 2012, the government promulgated the SBV's Decree 101/2012/NĐ-CP (Decree 101) on non-cash payments. Then, in December 2014, the SBV issued Circular No. 39/2014/TT-NHNN (Circular No. 39) which sets a series of rules banks and non-bank organizations in Vietnam must follow to be permitted to offer intermediary payment services such as electronic payment portals, cash collection, and payment services, electronic money transfer services, and e-wallet services. However, the SBV has thus far taken a cautious approach, having only granted 32 payments licenses to non-banks as of February 2020.[13,14,15]

In December 2016, the Prime Minister approved Decision No. 2545/QD-TTg, which looks to promote non-cash payments in Vietnam during the 2016-2020 period. A target of the scheme is to reduce the ratio of cash transactions from 90% in 2016 to below 10% in 2020. However, as of November 2019, 90% of daily transactions were

9 https://www.kapronasia.com/asia-banking-research-category/fintechs-could-give-vietnam-s-banks-a-run-for-their-money.html
10 http://vneconomictimes.com/article/business/cashless-payments-making-steady-inroads
11 https://www.opengovasia.com/vietnam-central-bank-establishes-steering-committee-on-fintech/
12 Ibid.
13 https://vanbanphapluat.co/decree-no-101-2012-nd-cpnon-cash-payments
14 https://fintechnews.sg/17689/vietnam/mobile-payment-service-providers-in-vietnam-the-complete-list/
15 Ibid.

still conducted in cash. The scheme also looked specifically to develop non-cash payments in rural, remote areas.[16]

In January 2020, the government designated increasing the use of cashless payments as a key task, under Resolution 02, to improving the business environment and national competitiveness in 2020. Ministers and heads of ministerial-level agencies have been instructed to direct the provision of at least 30% of online public services under their respective competence, while also “allowing people and enterprises to make non-cash payment by various means.” Banks have also been instructed to encourage the use of cashless payments for government-funded services and assure “the payment system functions properly, securely and stably.”[17,18]

It was in this context that in January 2020, the SBV issued Resolution 01/CT-NHNN, on “organizing the implementation of the key tasks of the Banking sector in 2020.” Among these, as per Resolution 02, includes the boosting of cashless payments, with the SBV and the MIC also working on launching mobile money services this year.[19,20]

The SBV is also currently working on a new decree that would replace Decree 101 on non-cash payments. The new rules would supplement and revise the current regulations on non-cash payments to include e-money services, which would consist of prepaid cards, e-wallet, mobile money, and also cryptocurrencies—with the goal of ensuring consumer protection while fostering innovation and competition.[21,22]

In further developments, a potential game-changer to move the country away from a cash-based economy could be a US$ 700 million payment system, which is scheduled to become operational this year and expanded over five years. SBV has partnered with Alliex, a South Korean payment servicer, to develop a cashless payment network, accessible to banks and retailers. The core system will serve as a platform for electronic payments and bookkeeping. Tablets will be distributed to stores where the devices can be used to process QR payments and other cashless options. Alliex is also working with VietinBank and SacomBank to promote such cashless payments by providing POS devices.[23]

With both the government and the SBV working hard to address obstacles hindering the increased adoption of cashless payments, there is an opportunity for regtechs to engage with both the government and the SBV to help shape new legislation to ensure that “the payment system functions properly, securely and stably.” As new rules are introduced platform operators, both traditional and new, will require regtech solutions to remain compliant and efficient.

e-KYC

A key hindrance to the emergence of digital banking and fintech in general in Vietnam is that the country still does not have regulation that allows customers to identify themselves digitally. Current regulations still require customers to go directly to the bank to open an account.

In January 2018, TPBank was chosen to trial digital identification for KYC purposes, but the

16 http://hanoitimes.vn/vietnams-us700-million-cashless-payment-network-to-be-operational-next-year-300083.html
17 http://news.chinhphu.vn/Home/Resolution-on-continued-improvement-of-business-environment-Resolution-02/20191/35609.vgp
18 https://vietnamnews.vn/economy/570713/sbv-sets-cashless-payments-as-top-priority-for-2020.html
19 https://bit.ly/2WX0GJR
20 https://vietnamnews.vn/economy/570713/sbv-sets-cashless-payments-as-top-priority-for-2020.html
21 https://fintechnews.sg/36141/mobilepayments/vietnams-mobile-payments-landscape-sees-strong-developments/
22 https://bit.ly/2Wxrh1s
23 https://asia.nikkei.com/Business/Business-deals/Cashless-in-Vietnam-South-Korea-s-Alliex-partners-with-central-bank

SBV has yet to allow banks to adopt e-KYC. It has been speculated that this is perhaps down to an insufficient legal framework and high risks. In Vietnam, legal regulations for electronic verification of customers' identities are not adequate since citizens' data has yet to be standardized and made consistent. These limitations make it easy to fake data or carry out cyber-attacks.[24]

As the country and its FIs get behind the drive towards greater digitalization it will be imperative for the authorities to issue an appropriate legal framework to enable e-KYC. Regulations will also be required to mitigate against associated risks such as possible security and personal privacy breaches. Regtechs that can help banks to build robust systems to prevent these will be in demand. Some banks have been suggesting that the government should allow them to access the Ministry of Public Security's (MPS's) national population database to ensure they could safely adopt e-KYC. If that happens, regtechs might have solutions that would enable them to do so.

Open API

Vietnam currently has no developed guidelines or regulations on API banking. However, in March 2017, the SBV established a Steering Committee on Financial Technology, with representatives from the SBV and NAPAS. The Committee is responsible for formulating and submitting an annual action plan to the SBV Governor, advising the Governor on solutions to build an appropriate ecosystem, including a legal framework to facilitate the development of fintech. One area of focus has been Open APIs. In October 2018, SBV Deputy Governor Nguyen Kim Anh said that the SBV has been working to develop a standardized Open API that will enable banks and the fintech community to move towards an open system.[25,26]

In fact, some banks in Vietnam are already using APIs to connect with external partners and services. According to VNUHCM IBT, a research institute founded by the Vietnam National University Ho Chi Minh City, most commercial banks have already developed API connections with fintechs. The leading banks in this trend are Vietcombank (APIs with 30 companies), VietinBank, MB (26 companies), VIB, Sacombank, and VPBank (25 companies).[27]

Other banks, such as Asia Commercial Bank (ACB), are developing their own APIs to work with third-party providers. ACB has been one of the first banks in Vietnam that has developed a functional set of APIs, which can be found on their Developer Portal.[28]

Strong market imperatives are driving Vietnamese banks to adopt open APIs, especially as they face rising competition from fintechs. Open APIs allow incumbents to enrich their product/service offerings for their customers while avoiding the expense and time that it would take to develop such services inhouse. They can also tap into new revenue streams by becoming infrastructure powerhouses for fintechs or financial institutions. The incentive for banks to ramp up their API connections is there. Regtechs that can help them to do this effectively will find ample opportunities.

24 https://vietnamnews.vn/economy/business-beat/536492/electronic-know-your-customer-client-holds-key-to-digital-banking.html

25 https://www.opengovasia.com/vietnam-central-bank-establishes-steering-committee-on-fintech/

26 https://bit.ly/2WWPOvE

27 https://medium.com/@longpham91/vietnam-fintech-in-a-flash-part-iii-innovated-banking-306f65a3f348

28 Ibid.

Regulatory Sandbox

While Vietnam still has no regulatory sandbox, one is on the way as part of the government's plan to provide an experimental legal framework for fintech activities. At the start of 2020, the government issued Resolution 01, an annual plan providing guidelines to bolster the country's socio-economic development for the year ahead. Under the resolution, there is an explicit directive to "issue [a] regulatory sandbox for fintech activities in the fields of banking and non-cash payment."[29]

The opening of the regulatory sandbox in Vietnam has several implications for regtechs wishing to participate in the market. Vietnam currently lags behind other countries in terms of the quantity of regulations governing fintech activities. The good news for regtechs is that a sandbox will help the country feel its way towards crafting an effective fintech management model. As it does so, this will lead to regtech opportunities as the authorities walk the line of both promoting the creative economy, protecting customers, and taking precautions against money laundering and tax evasion. Once regulations are in place, there will undoubtedly be significant developments in fintech companies as well as banking technologies and products.

Virtual Banking

Several factors bode positively for the emergence of digital banking in Vietnam. Banking penetration is still low in the country, at only 59% as compared to say Thailand's 86% and Malaysia's 92%. However, there were 68.17 million internet users in Vietnam as of January 2020, a 10% increase YOY, while internet penetration stood at 70%. There were also 145.8 million mobile connections in Vietnam in January 2020, equivalent to 150% of the total population. This juxtaposition of a large unbanked population that is nevertheless online creates opportunities for digital banking growth in the country.[30,31]

There are, however, also a number of obstacles holding back the emergence of exclusively virtual banks in Vietnam. These include cybersecurity, consumer preference towards cash usage, and a lack of infrastructure and regulatory framework.

Taking the last two obstacles as examples, Vietnam still has no regulatory framework for digital banking. The country, for example, does not have a legal framework for sharing, using, and storing data, so banks have not been able to apply cloud computing or blockchain widely in their operations. Infrastructure is another obstacle. To have a Digital Native bank, there have to be sufficient e-KYC processes and opening of APIs that work seamlessly with the core banking system.[32,33]

Despite these challenges, traditional banks are responding to rising competition from fintechs to digitalize their products and services for their customers. According to Vietcombank, 94% of banks in Vietnam are investing in digitization, and 42% of them consider digital banking a top priority. There has also been exponential growth in online banking. Internet banking reached 226 million transactions in Q3 2019, while mobile banking reached 202 million transactions in the same period.[34,35]

There is as yet, however, no genuinely digital bank in the country, e.g., one that provides banking facilities exclusively through digital platforms. As such, most use cases of digital banking in Vietnam

29 http://news.chinhphu.vn/Home/Resolution-on-major-tasks-and-solutions-guiding-realization-of-2020-Socioeconomic-development-plan/20201/38425.vgp

30 https://medium.com/@longpham91/vietnam-fintech-in-a-flash-part-iii-innovated-banking-306f65a3f348

31 https://datareportal.com/reports/digital-2020-vietnam

32 http://hanoitimes.vn/great-potential-to-promote-development-of-digital-banking-in-vietnam-brokerage-45770.html

33 https://medium.com/@longpham91/vietnam-fintech-in-a-flash-part-iii-innovated-banking-306f65a3f348

34 Ibid.

35 Ibid.

consequently fall under Model A or B under IBM's definition of the four digital banking models.[36]

Under Model A, a traditional bank will launch a new Digital Bank, with its own banking products and dedicated sales and marketing channels. This new Digital Bank will still share some of the old brand's features and leverage the available resources from their legacy infrastructure, back-office, and distribution channels. Examples of such banks in Vietnam include OCB OMNI, TPBank LiveBank, and VIB.[37]

Under Model B, a traditional bank will develop an entirely new Digital Bank, which is altogether different from their current branding, creating a new distribution channel for its banking products. The predominant example of this in Vietnam is VPBank, with its digital banks YOLO and Timo. Viettel, the country's telecom giant, has also ventured into digital banking with its mobile-based service ViettelPay, which links with Military Bank (MB) to offer banking services.[38]

Looking to the future, Vietnamese authorities have indicated that they are likely to explore regulating digital banking shortly. In the meantime, digital banking will move forwards in the country. In March 2020, MSB (formerly Maritime Bank) announced that it was partnering with German-based Mambu to leverage its cloud-based banking platform to sit at the heart of its digital transformation project. MSB aims to be the first "cloud-first" bank in Vietnam.[39]

As in other economies, the imperative to digitalize traditional banking platforms is being driven by market forces in Vietnam, as incumbents face increased competition from fintech startups. There are opportunities for regtechs looking to enter the market, despite the lack of regulation, as traditional incumbents look to build out their digital offerings with one eye on legislation that is sure to follow shortly.

State Securities Commission (SSC) of Vietnam

Equity Crowdfunding and P2P Lending:

Crowdfunding

In August 2015, the MPI met with local startups to request feedback on a new policy to create a legal framework for crowdfunding activities. Fast forward to today, and there is still no regulatory framework governing the crowdfunding space in Vietnam.[40]

That is not to say, however, that crowdfunding is not taking off in Vietnam. It is driven by the significant gap between startups and seed funding in the country. Crowdfunding platforms have been looking to close that gap. Several have already achieved significant traction. Examples include FirstStep, Betado, Comicola, Fundstart, Charity Map, and FundingVN.

In February 2020, in alignment with the government's Resolution 01 plan for the year ahead, the Prime Minister signed Directive No 09/CT-TTg, in efforts to create favorable conditions for startup firms. Under the directive there is a call for an equity crowdfunding platform to be established to boost the development of such firms. The Prime Minister has asked the MoF to develop a plan before 2021.[41]

36 IBM; Designing a sustainable digital bank: Learning from the digital pioneers; 2015
37 https://medium.com/@longpham91/vietnam-fintech-in-a-flash-part-iii-innovated-banking-306f65a3f348
38 Ibid.
39 https://www.fintechfutures.com/2020/03/vietnamese-bank-msb-picks-mambu-for-digital-transformation/
40 https://www.dealstreetasia.com/stories/exclusive-vietnam-government-mulls-crowdfunding-policy-framework-10748/
41 https://vietnamnews.vn/economy/602458/equity-crowdfunding-platform-to-boost-development-of-start-ups.html

Authorities will want to regulate the crowdfunding sector at some point. When they do, platforms are going to be required to adjust their processes and procedures to comply with the new regulations. Astute platform providers will want to get ahead of such regulations now by adopting some common standards embraced elsewhere. Doing so will also help them to build credibility more generally. Regtechs that can provide solutions to help prevent fraud, such as due diligence against scammers, or to help investors gauge an investment's viability, will be in demand, as will be solutions that are able to mitigate against hackers and cyber-criminals.

P2P

Vietnam currently has no legal framework governing the P2P lending space, despite the sector experiencing rapid growth in the country in recent years. The global P2P market was estimated to be worth US$ 490 billion in 2020, and Vietnam's slice is expected to be US$ 7.8 billion, almost double the US$ 4.4 billion in 2017. According to the World Bank, 79% of the population, or 76 million people in Vietnam, cannot access official financial services, a reason why the sector has performed so well. In just the last few years, P2P lending has made its presence felt in the financial market, with more than 40 active businesses, both domestic and foreign-owned, operating in Vietnam.[42]

The lack of any regulatory framework, however, poses significant risks for lenders, borrowers, and other potential stakeholders, as they have no legal protection. Without falling under the purview of a financial authority, P2P services do not have to register as a credit institution. As the P2P market expands, consumers are left vulnerable to predatory lending practices and market collapse caused by a wildly unregulated industry. The lack of a legal framework also creates difficulties for fintech companies in raising capital and running new services.

In July 2019, the SBV issued its Official Letter No. 5228/NHNN-CSTT (OL 5228) expressing its view and recommendation to credit institutions (CIs) in Vietnam on P2P lending activities. The SBV's view is as follows:

- P2P Lending is built on a digital platform which connects borrowers and lenders without having to go through financial intermediaries (such as CIs). All lending activities will be recorded on the platform.
- The SBV acknowledges that P2P Lending is not specifically regulated by current regulations.
- Besides its potential to create an additional way to mobilize capital, P2P Lending can give rise to the following risks: (1) misleading information provided by P2P Lenders about the product's safety, (2) lack of oversight on a P2P Lender's platform in terms of cybersecurity, (3) P2P Lenders using customer information for predatory lending activities, and (4) P2P Lending being considered as activities of CIs.
- If a CI enters into a co-operation agreement with a P2P Lender, the CI should require the P2P Lender to publish the content of the agreement. The CI should review the published information regularly to ensure such information is correct and to take appropriate action against inaccurate or insufficient information which may harm the customer.[43]

In March 2020, the SBV announced that it was developing a project for the pilot implementation of P2P lending in the country before officially developing a regulatory framework for the new fundraising method.[44]

During the pilot, P2P lending companies will only be allowed to act as intermediaries to connect lenders and borrowers. They will not be allowed to mobilize capital. Under Vietnam's current legal regulations prescribed in the Law on Credit Institutions, individuals and organizations, which are not credit institutions, are not allowed to carry

42 https://www.solidiance.com/insights/others/news/vietnamese-government-to-allow-p2p-lending
43 https://vietnam-business-law.info/blog/2019/7/31/view-of-the-state-bank-of-vietnam-on-p2p-lending
44 https://fintechnews.sg/29629/vietnam/vietnam-p2p-lending/

out banking activities, except for margin and stock trading of securities companies.[45,46]

Regtechs wishing to get involved in Vietnam's burgeoning P2P space have an opportunity to provide solutions to platforms that are interested in gaining credibility with the authorities, once an inevitable regulatory framework is introduced. There is plenty of reason to believe that one will be introduced at some point, given the potential for P2P to facilitate inclusive finance, especially in remote areas where the banking sector remains under-developed.

A regulated P2P sector will also help customers, especially household businesses and SMEs, to access banking and finance services at low costs. Regtech solutions that can mitigate against the typical risks afflicting the sector, such as tax evasion, money laundering, terrorist financing, and theft of personal information, will be in demand as will be those that are able to provide alternative credit scoring solutions for lenders to ascertain the creditworthiness of borrowers.

New Securities Law

Vietnam has amended its Law on Securities, which will come into force at the start of 2021. The new law is part of the government's efforts to improve the legal framework to make the market more transparent, open, and equal for investors, giving a boost to the development of the securities market and the capital markets in general. The new law consists of 10 chapters and 135 articles regulating securities and securities market activities, the rights and obligations of institutions and individuals operating in this field, and the organization of the stock market.[47]

Compared with the 2006 version, which was amended and supplemented in 2010, the new law provides more prohibited acts in the securities sector to suit the actual practice, such as using one or more than one trading account or accounts of others to buy and purchase securities to create fake supply and demand, or using customers' accounts and assets without being entrusted, or abusing trust to appropriate properties of customers, among others.[48]

Suptech solutions that enable the SSC to monitor compliance with provisions under the new law, or to help companies comply with the new provisions will be in demand.

One-stop information disclosure system

The SSC has announced that it will shortly be launching an electronic one-stop information disclosure system for the stock market. The system will help entities participating in the stock market save time and money when disclosing information, while minimizing the risk of false disclosures. A business, wishing to publicise information will send it to the stock exchange, via the system, which will simultaneously share it with the public and the SSC for supervision and management.[49]

As the SSC makes efforts to reform administrative procedures, there will be opportunities for regtechs to get involved. For example, for the electronic one-stop information disclosure system to work smoothly, enterprises will have to adjust their current technology systems for compatibility. Regtechs that are able to help these synchronise their technological and information infrastructure will be in demand.

45 Ibid.
46 https://vietnamnews.vn/economy/506959/government-moves-to-legalise-p2p-lending.html
47 https://vietnamlawmagazine.vn/new-revised-securities-law-available-on-official-gazette-issues-nos-136-144-of-2019-27149.html
48 Ibid.
49 https://vietnamnews.vn/economy/715374/state-securities-commission-to-launch-one-stop-information-disclosure-system.html

Virtual Assets

Vietnam currently has no legislation around the regulation of virtual assets. This is despite the fact that as far back as 2016, the government was already looking into completing the legal framework for managing and handling digital assets, virtual currency, and digital money. The following year, in August 2017, the Prime Minister issued Decision No 1255/QD-TTg to approve completing the legal framework for managing virtual assets, crypto currencies and electronic currencies.[50,51]

As the authorities were gearing up to issue a legal framework to govern virtual assets, it appears that they waivered after a series of cryptocurrency-related fraudulent activities. This led the government to reverse course, cracking down on the crypto sector by issuing Directive No 10/CT-TT (Directive 10) in April 2018.[52]

The directive ordered:

- The SBV to direct credit institutions and intermediate payment providers not to carry out transactions associated with "virtual currencies."
- The MoF to direct securities firms not to engage in issuance, brokerage, and trading of "virtual currencies"; and
- The MPS to intensify its investigations into acts of mobilizing funds, multi-level marketing, and fraud in relation to "virtual currencies."[53]

Following this directive, the SBV and the SSC issued warnings to lower-level banks, securities firms, and public companies not to engage in cryptocurrency-related transactions. The government also asked the authorities concerned to restrict the import of coin mining hardware and double down their efforts to prevent fraudulent activities concerning digital currencies. In the same month, Bitcoin was banned as a means of payment in Vietnam, and the SBV stated that it does not recognize cryptocurrencies as legal tender.[54]

In November 2018, the authorities went back to the drawing board to consider their approach towards regulating the cryptocurrency space. The MoJ put forward three possible options. The first approach referred to as "floating," involves the implementation of a relatively lax regulatory regime. The second called "prohibiting" is pretty much self-explanatory. And the third option is to legalize digital asset transactions under certain conditions.[55]

Authorities have still not decided on the approach that they want to take towards regulating virtual assets. In August 2019 the Prime Minister, again, approved a directive to complete the legal framework for managing virtual assets, cryptocurrencies, and electronic currencies. Then, in May 2020 the MoF announced plans to establish a research group with the aim of studying and devising policy proposals regarding cryptocurrencies and virtual assets. The group will be comprised of nine members led by the vice-chairman of the SSC, Pham Hong Son.[56]

It is going to be crucial for the country to implement policies to effectively manage virtual assets, given a burgeoning crypto market that has seen local digital asset exchanges accelerating the proliferation of cryptocurrencies. Unregulated, these pose risks and might cause negative impacts on the market. Regtechs can surely be part of the answer, especially as these might be able to bring solutions that have been successful in

50 http://vneconomictimes.com/article/banking-finance/bitcoin-to-be-legally-regulated-in-2018
51 http://bizhub.vn/news/ministry-tosetup-research-group-on-cryptocurrency_315443.html
52 Ibid.
53 https://www.lexology.com/library/detail.aspx?g=33dabdac-5ee5-4fb3-af6f-9d7ea38b340f
54 http://www.xinhuanet.com/english/2018-04/14/c_137110260.htm
55 https://news.bitcoin.com/vietnam-at-crossroads-on-cryptocurrency-regulations/
56 https://shuftipro.com/news/vietnam-govt-to-introduce-crypto-research-group-to-evaluate-policy

other markets. Regtechs can engage with the appropriate authorities to advise on best-practices incorporated elsewhere. Solutions to mitigate against criminal activities often associated with the sector, such as tax evasion, hacking, money laundering, and terrorist funding will be looked on favorably.

The Insurance Supervisory Authority (ISA)

The two key regulatory bodies that oversee the licensing of insurance businesses and activities in Vietnam are the MoF and the ISA (a subordinate body within the MoF).

The primary legislation regulating insurance activities in Vietnam is the Law on Insurance Business of 2000, as amended in 2010 and 2019, as well as guiding decrees and circulars issued by governmental authorities. Under the 2019 amendment, services auxiliary to insurance are now, for the first time, regulated in Vietnamese insurance laws.[57]

The ISA has said that the insurance market needs to focus on two goals this year, which are to maintain a stable and sustainable growth rate, attracting more investors, and to enhance the role of insurance in the economy. Accordingly, Vietnam's insurance industry aims to maintain a high growth rate of 18% in 2020, gaining revenue of VND 188.7 trillion (US$ 8.1 billion), insurers are also targeting an increase in their total assets of 13% YOY to VND 514.8 trillion (US$ 22.2 billion), while reinvesting into the economy VND 433 trillion (US$ 18.7 billion), a sum 15% higher than 2019.[58,59]

To meet the targets, the deputy director of the ISA has said that the authority would continue to improve mechanisms and policies, focusing on restructuring to make the insurance market develop transparently, safely, and efficiently as well as in line with international standards. The ISA is looking to focus on completing the revised Law on Insurance Business and regulations to guide the implementation of the law this year.[60]

In February 2019, the Prime Minister issued Decision No. 242/QD-TTg, approving the “Plan on Restructuring the Stock Market and the Insurance Market until 2020, oriented toward 2025.” The plan sets out several overarching objectives, one of which includes developing a safe, sustainable, and efficient insurance market that meets the diversified insurance demands. The policy also sets out more specific objectives and action plans. One of these particular objectives includes utilizing modern technologies for all insurance business operations to facilitate clients' participation in insurance policies. Critical solutions for achieving these objectives include improving the legal framework of the insurance business sector of Vietnam, which will result in a draft new Law on Insurance Business for finalization and approval in 2020.[61]

Critical solutions also include enhancing the transparency of information of the insurance business market; developing and professionalizing insurance distribution channels; as well as developing an information system to systemize all data on the insurance sector. In addition, the plan provides for further solutions and action plans to be explicitly implemented within the life insurance space and separate solutions and action plans for the general / non-life insurance space.[62]

57 https://uk.practicallaw.thomsonreuters.com/2-568-9187?transitionType=Default&contextData=(sc.Default)&firstPage=true&bh-cp=1
58 https://www.asiainsurancereview.com/Magazine/ReadMagazineArticle?aid=40461
59 https://www.internationalinvestment.net/news/4008939/vietnam-forecasts-insurance-industry-growth-2020
60 Ibid.
61 https://www.bakermckenzie.com/en/insight/publications/2019/04/vietnam-issues
62 Ibid.

The Ministry is also researching a risk-based capital management model to be applied gradually in the market. There are also plans to build a common database for health and motor insurance. At present, the Ministry is drafting a decree on electronic transactions in the financial sector, including the insurance sector. It will continue to issue guidelines for digital insurance.[63]

In June 2019, the ISA launched the country's first professional competency framework (PCF) for the general insurance industry. The PCF will provide local insurance companies with a measuring tool for their own internal training and standards for the professional development of their employees. Based on this competency framework, the MoF will develop and implement a certification scheme and training programs for the job roles in general insurance and broking companies.[64]

In another development, many general insurers in Vietnam are linking up with insurtech firms in a trend aimed at leveraging the advantages of the different parties. Insurtech firms are seen to have the ability to keep up with new technology trends, provide unique products based on customer needs while minimising the process of policy applications, issuance, as well as compensation. Meanwhile, traditional insurers have an understanding of the market and consumer behaviour, as well as possessing brand power.[65]

With the ISA pushing for reforms within Vietnam's insurance sector, which will include the adoption of a revised Law on Insurance Business, there will be opportunities for insurtechs/regtechs to provide solutions to both incumbents and new players. The law sets out specific requirements which include internal controls and checks in terms of legal compliance. Also, as aforementioned, the restructuring plan for the sector targets the utilization of modern technologies, with the Ministry drafting a decree on electronic transactions. As the sector and its distribution channels further digitalizes, the demand for insurtech will increase. Authorities may also require solutions to enable them to build the information system to systemize all data on the insurance sector. Finally, with the launch of the PCF, there may also be requirements for regtech solutions to be embedded into online training programs.

Cross-Regulator Focus Areas

AML/CFT

Vietnam is a high risk for ML, given its relatively weak oversight, regulations, enforcement mechanisms, preponderance for cash, and growing, diversifying economy. TF is slightly less of a concern.[66]

The country's legislative framework for AML is spread across several directives, namely:

- Law on Prevention of and Anti Money Laundering No. 07/2012/QH13, issued by the National Assembly on 18 June 2012 (AML).
- Decree No. 116/2013/ND-CP on detailing the implementation of certain provisions of the AML (Decree 116).
- Circular No. 35/2013/TT-NHNN on guiding the implementation of certain regulations on anti-money laundering, issued by the SBV on 31 December 2013 and amended by Circular No. 31/2014/TT-NHNN; and
- Penal Code No. 15/1999/QH10 issued by the National Assembly on 21 December 1999, as amended by Law No. 37/2009/QH12.[67]

63 https://www.asiainsurancereview.com/Magazine/ReadMagazineArticle?aid=40461
64 https://www.insurancebusinessmag.com/asia/news/breaking-news/vietnams-insurance-regulator-unveils-competency-framework-171285.aspx
65 https://www.asiaadvisersnetwork.com/Article?aid=60702
66 https://www.moneylaunderingbulletin.com/jurisdictions/asia/law-and-effect--vietnam--1.htm
67 https://www.mondaq.com/money-laundering/563206/vietnam-guide-to-anti-money-laundering

However, it seems that the AML legal framework is still not sufficient. Guiding implementation remains unclear, awareness of credit institutions of ML is low, the ability to detect ML activities is weak, IT in AML activities is not up to par, and the punishment regime for violating acts of the AML is only formalistic.[68]

Changes are afoot, however, as the SBV, responsible to the government for state administering the implementation of AML regulations, makes efforts to address AML/CTF shortfalls.

In November 2019, the SBV issued a draft decree revising several articles of Decree 116 regarding entities involved in AML activities, identification of beneficial owners and clients, and the responsibility to share information.

In addition, the central bank also released a draft circular revising Circular 35 to detail some AML regulations. Under the proposed revisions, payment intermediary service providers would have to apply the same measures to prevent and combat ML as FIs.[69]

The SBV's revisions involving AML activities have several implications for regtech providers. The draft revision for Decree 116 outlines provisions for payment intermediary service providers and FIs to identify the ultimate beneficial owner of each of their clients based on either ownership or control rights. Regtech solutions that can assist in this regard would be helpful.

Furthermore, the draft would allow FIs and intermediary payment service providers to apply simplified KYC measures to clients identified as showing a low degree of ML/TF risk. Also, when conducting transactions with new clients, these entities may choose whether or not to require the clients to show up in person. However, they must take appropriate measures to identify and verify client identification information. Regtech solutions that help entities to conduct KYC and safely identify and verify client identification information will be in demand.[70]

SBV's revisions to Circular 35 also have regtech implications. As per the draft, FIs would have to take post-trade or real-time supervisory measures to detect international electronic funds transfer transactions without information on the funds transfer order creators or beneficiaries. For transactions worth US$ 1,000 or more, in addition to identifying order creators, FIs would have to identify recipients and preserve beneficiary identification information.[71]

Regtech solutions that can help FIs to take such post-trade or real-time supervisory measures, to identify order creators and beneficiaries, and to help FIs preserve beneficiary identification information will be in demand.

Furthermore, the revisions outline provisions for reporting transaction-conducting organizations or individuals that are detected to be on the blacklist of the UN Security Council or the MPS. There are also provisions for reporting transactions if there are grounds to believe that other organizations and individuals are committing acts related to ML/TF. Additionally, FIs would be obliged to require their clients to provide information on the legal agreements they have entered into, e.g., trust or entrustment agreements, including also life insurance and investment-linked insurance policies. For clients that have entered into legal agreements, FIs will have to apply KYC measures to identify the beneficial owners.[72]

68 https://blogs.duanemorris.com/vietnam/2017/01/20/vietnam-guide-to-anti-money-laundering/
69 https://vietnamlawmagazine.vn/anti-money-laundering-regulations-to-be-revised-16913.html
70 Ibid.
71 Ibid.
72 Ibid.

FIs will benefit from regtech solutions that enable them to crosscheck transaction-conducting organizations or individuals against the blacklists mentioned above and to apply KYC measures to identify the beneficial owners of such mentioned legal agreements.

In general terms, regtech solutions addressing AML/CTF challenges for FIs and intermediary payment service providers are sorely needed. Currently, there is limited use of technology, which leads to weak data feeds, a lack of data, and transaction monitoring systems that are not fit-for-purpose or do not cover all operations. Regtechs could help bring best-practices in governance and new technology solutions that are starting to gain a foothold in their developed markets, such as biometric technology for customer onboarding and robotic process automation for transaction monitoring.

Cybersecurity

Vietnam is a cybersecurity risk, especially in the financial sector. In 2018, it was reported that 8,319 cybersecurity attacks targeted banks, and 560,000 computers were affected by malware capable of stealing bank account information in the country. According to Bkav, a Vietnamese cybersecurity firm, in 2018, the damage caused by computer viruses to Vietnamese users reached a record US$ 642 million, 21% higher than the loss in 2017.[73,74]

It is in this context that Vietnam's controversial Cybersecurity Law was introduced, which came into effect at the start of 2019. While the majority of the law's provisions were enforceable from the effective date, there are still specific provisions of the law which need to be further guided by implementing regulations and guidelines.[75]

The most problematic provision of the Cybersecurity Law is article 26.3, which relates to the requirements of data localization. Should the draft provisions be approved, the law will compel:

> *"Domestic and foreign enterprises providing services on telecommunication networks, or the internet, or value-added services in cyberspace in Vietnam with activities of collecting, exploiting, analyzing, and processing personal information data, data on the relationships of service users, or data generated by service users in Vietnam, to store such data in Vietnam for the period prescribed by the government. Foreign enterprises mentioned in this clause must open branches or representative offices in Vietnam."*[76]

Technology companies will also be required to remove content that the government deems offensive.[77]

The Cybersecurity Law seriously risks undermining Vietnam's digital economy and its efforts to position itself as a growing market for tech startups. Should all the law's provisions come to pass, regtechs might find themselves in the unenviable position of aiding and abetting a totalitarian regime. There will be requirements both from foreign and domestic online service providers for solutions to help them store personal data of Vietnamese end-users in Vietnam, surrender such data to Vietnamese government authorities upon request, and supervise user posts to remove "prohibited" content.

73 https://theaseanpost.com/article/digital-fraud-rise-asean
74 https://www.bkav.com/en/top-news/-/view-content/65098/viet-nam-cyber-security-overview-in-2018-and-predictions-for-2019
75 https://www.lexology.com/library/detail.aspx?g=8833627c-e189-4d60-a472-6ee742cc38fd
76 Ibid.
77 https://www.straitstimes.com/asia/vietnams-cyber-security-law-takes-effect-amid-criticism

Data Privacy

As Vietnam further digitalizes its economy and more of its population gets online, it has become increasingly urgent for the country to have proper data protection regulations, especially around personal data as its digital economy grows.

A significant issue for the country is that its legal framework for data protection is not fit-for-purpose, with personal data protection rules scattered across many laws and regulations. The framework is unclear and inadequate for implementation and has become an obstacle to the growth of the digital economy.

The government is working towards developing a comprehensive legal framework regarding data protection that is in line with international standards. In December 2019, the MPS published the first version of the draft "Decree on Personal Data Protection (Draft Decree)."[78]

In February 2020, the MPS announced that it had completed the Draft Decree and was seeking comments. In particular, the Draft Decree provides definitions for, among other things, personal data, sensitive personal data, data processing, and data subject, and would prohibit the disclosure of sensitive personal data.[79]

Also, the Draft Decree sets out the principles of data protection, which include purpose limitation, data security, accuracy and quality of data, and data subjects' right of information about any processing activities, as well as requiring the registration of sensitive data processing and cross-border transfers of personal data of Vietnamese citizens.[80]

Moreover, the Draft Decree contains provisions on obtaining the consent of data subjects, the technical measures needed to protect personal data, as well as the creation of a data protection authority.[81]

Two other decrees currently under discussion that also concern data are on:

- The management, connection, and sharing of digital data, which the MIC is currently drafting. The decree will make it compulsory for all state agencies to share data with other state agencies. Vietnam lacks a well-protected overall data system. Local data infrastructure was built ad-hoc, and there is no centralized data repository, with data distributed all over the place. The task now is to connect data securely.[82]
- Electronic identification and authentication. This decree, also being drafted by the MIC, is aimed at guaranteeing information security in electronic transactions, improving the operation of public service portals and administrative one-stop-shop mechanisms, and promoting the development of e-Government.[83]

As authorities move to establish fit-for-purpose data management frameworks regtechs should find plenty of demand not just from companies looking to comply with data protection rules, but also from local and central government officials that are looking to build centralized platforms to connect and store data.

78 https://www.bakermckenzie.com/en/insight/publications/2020/04/draft-decree-on-personal-data-protection
79 https://www.dataguidance.com/news/vietnam-mps-seeks-comments-draft-data-protection-decree
80 Ibid.
81 Ibid.
82 https://www.opengovasia.com/vietnam-decree-on-digital-data-sharing/
83 https://www.rouse.com/magazine/news/vietnam-three-new-important-regulations-on-data-protection-in-the-making/

Private Sector

In Vietnam, the expansion of both fintech and regtech is being driven from the bottom-up, with the regulators then reacting to developments on the ground. This is a prevalent trend in Vietnam. The market moves forwards with new players operating in loosely or unregulated spaces until finally, the regulator is forced to react by issuing regulations to accommodate these developments.

For example, eight years ago, it would have been impossible to have a payment gateway in Vietnam. Now all the payment companies are payment gateway processors. This was not a regulator initiative. It was the market moving towards more digital transactions. As that happened, because there were no clear guidelines to manage these companies, the regulator was forced to follow developments. They had to issue regulations and license more of these gateway processors so that these could hold money.

In terms of regtech specifically and its uptake in the private sector, there is interest, with a lot of the big FIs saying that they want to be more streamlined. However, there is still minimal adoption. With regulations lacking or weakly enforced, the incentive to adopt a solution is simply not there, even for large clients. That also goes for the foreign FIs in Vietnam. They just do not have the in-country budget, or they have to use solutions produced by HQ. When local incumbents do opt for regtech solutions, they want to have the most prominent name brand solutions.

Private Sector Associations and Regional Initiatives

In addition to the government and regulator initiatives, there are also several private initiatives supporting fintech/regtech in the country. These include:

Logo	Name	Description
500	500 Startups	US-based, 500 Startups is an early-stage venture fund and seed accelerator with a presence in Vietnam.
Captii ventures	Captii Ventures	Malaysian-based, Captii Ventures invests in technology and innovation. They are a multi-stage investor in Southeast Asian businesses with a presence in Vietnam.
DRAGON CAPITAL	Dragon Capital	Founded in 1994, Dragon Capital Group is a Vietnam-focused financial institution with long-standing investment experience in Vietnam and its surrounding Southeast Asian region.
FPT	FPT Corporation	Formerly the Corporation for Financing and Promoting Technology, FPT is the largest IT service company in Vietnam with its core business focusing on the provision of ICT-related services.
HATCH VENTURES	Hatch! Ventures	Hatch offers intensive programs for early-stage innovation-based startups as well as mentorship, consultation; business development; and seed-funding.

Logo	Name	Description
IDG Ventures Vietnam	IDG Ventures Vietnam (IDGVV)	IDGVV is the first technology venture capital fund in Vietnam. Since 2004, they've been working with entrepreneurs to grow innovative and market-leading companies.
	Insurance Association of Vietnam (IAV)	The IAV bills itself as a bridge between insurers and state management agencies, and between insurers and customers.
Life.SREDA	Life.SREDA	Singapore-based, Life.SREDA VC is an international venture capital firm, billing itself as one of the first FinTech-only non-corporate VC fund in the world.
nest	Nest	HK-based with a presence in Vietnam, Nest operates corporate accelerator programs, invests in startups and runs a global entrepreneurial community called Mettā.
NEXTTECH Group of Technopreneurs	NextTech Group of Technopreneurs	A Vietnamese digital service group. In 2019, the Group launched a US$ 10 million early-stage startup fund called Next100, a hybrid model of a venture builder, an ecosystem, and a venture capital firm, which claims to be the first of its kind in Vietnam.
VNBA	The Vietnam Banks Association (VNBA)	The VNBA is a voluntary professional organization of credit institutions in Vietnam.
VIETNAM BLOCKCHAIN CORPORATION	Vietnam Blockchain Association (VBC)	The VBC aims to power Vietnam in becoming a “Blockchain Country & Expert Hub.”
VBMA	Vietnam Bond Market Association	The VBMA is a non-profit organization aimed to promote the professional and effective development of Vietnam Bond market.
V	Vietnam Cloud Computing and Data Center Club (VNCDC)	The VNCDC is aimed at promoting the development of cloud computing and data centres in Vietnam. The club includes 12 founding members, including the Vietnam Internet Association (VIA).
VECOM	Vietnam E-commerce Association	Established in 2007, Vietnam E-commerce Association has contributed to creating a favorable environment for the development of e-commerce and business operations of enterprises.
VIETFINTECH	Vietnam FinTech Association	A non-profit organization to promote, support and proactively build a fintech ecosystem in Vietnam.
VIISA	Vietnam Innovative Startups Accelerator (VIISA)	A business accelerator and seed-stage fund. Founded by Dragon Capital Group and FPT Corporation. VIISA's goal is to invest in over 100 global ready startups from Vietnam over the next 5 years, with its first batch starting in 2017.
VIETNAM SILICON VALLEY	Vietnam Silicon Valley	Vietnam Silicon Valley is a leading accelerator that invests in world-class early stage startups.
VinaCapital	VinaCapital	VinaCapital is a large Vietnamese investment and asset management firm. As of 2019, the firm manages more than US$ 2 billion of investor capital. It is dedicated to investments in capital markets, private equity, undervalued assets, privatized assets, property, and private placements in Vietnam.

Active Regtechs/ Insurtechs in Vietnam

Bkav

(https://www.bkav.com/) – A Vietnamese-based company that specializes in cyber security, software, e-government, smartphone manufacturing and smart electronic devices.

Compliy

(https://compliy.com/) – Singapore-based with a presence in Vietnam, Compliy is a collaborative AI web-platform with centralized data that simplifies and automates regulatory change processes for compliance teams in APAC.

CredoLab

(https://www.credolab.com/) – Singapore-based with a presence in Vietnam, CredoLab develops bank-grade digital credit scorecards built on mobile device metadata.

FiinGroup

(https://fiingroup.vn/) – Vietnam-based company that bills itself as a leading integrated service provider of financial data, business information, industry research, credit rating reports and other data-driven analytics services.

Infinity Blockchain Labs

(https://blockchainlabs.asia/) – Vietnam-based company that bills itself as a visionary R&D company engaged in intermediary and RegTech services employing blockchain technology.

INSO

(https://inso.vn/) – Vietnam-based insutech offering online insurance and online claiming procedures.

OPES Insurance

(https://opes.com.vn/) – Vietnam-based insurtech, OPES Insurance is a digital platform that offers personalized insurance products via online and mobile channels. The platform uses technology to directly connect with customers without any intermediary parties.

Private Credit Bureau

(PCB) (http://pcb.vn/en/) – Vietnam-based, PCB's credit information system assists banks in retrieving credit information reports of individuals, proprietorships, and SMEs.

TrustingSocial

(https://trustingsocial.com/) – Singapore-based, with a presence in Vietnam, Trusting Social provides consumer credit scores based on social, web and mobile data.

Wicare

(https://wicare.vn/) – A Vietnamese insurtech, Wicare is a smart insurance platform that allows the user to buy and claim health insurance policies via a mobile app.

Potential Future Scenario for Vietnam's RegTech Ecosystem

To date, Vietnam has not established much of a regtech sector. Much like the other emerging markets in SE Asia, where the existing regulatory framework is not robust, there tends to be one or two companies that will get selected by the government for partnerships and/or invested in by SOEs. This then enables the authorities to maintain close control over its FIs, to make sure that these comply with regulations.

Vietnam, with its specific local regulations encompassing local requirements, is a difficult market for foreign regtechs to serve. Like Indonesia, there are also multiple ministries issuing regulations, which often conflict. This makes navigating the regulatory environment challenging. Language is also a significant barrier. Where clarification is required between the Vietnamese-language version of a regulation and the English-language version, the default will always be to follow the Vietnamese version. Language around regulations is also vague. The regulator will say, for example "you must practice good controls for identification verification," but they do not define what those controls are, nor is it clear what this means in practice.

Another issue that makes Vietnam a hard market to serve is the issuance of confusing regulations which do not follow any systematic consistency. In a jurisdiction like Singapore, new regulations are relatively easy to follow. In Vietnam, by contrast, when the regulator releases regulations, the original regulation will have been called one thing, while the revised regulation will be called something else. Implementing any sort of regtech solution under these conditions therefore becomes extraordinary challenging. The urgency is also not there, given that there is a wide divergence between what the regulations say on paper and on how they are enforced. Given these issues, it is a definite requirement to have a local partner to succeed in Vietnam.

However, that is not to say that there is not potential for Vietnam's regtech ecosystem. There is, but developments will probably be around relatively straight forward solutions such as KYC. With the Vietnamese market still emerging, the priority is on attracting in funds, that means FIs main focus is on onboarding new clients. While Vietnam's compliance requirements are not that onerous, KYC is a global requirement. Every time FIs touch US dollars (USD), they have to do KYC. They cannot cut corners either, otherwise, they risk being cut off from transacting in USD. This imperative therefore raises the demand for solutions around KYC. Unfortunately, however, at present, a customer in Vietnam is still required to go into a branch and physically show their identification to an individual if they want to open a bank account.

In a similar vein to KYC requirements, there should also be demand for regtech solutions around the tsunami of international regulatory accords and changes to these. Vietnam is still, for example, struggling to meet its MiFID II requirements as well as Basel II.

Another potential area of focus for regtechs entering the market will be around the payments sector. With Vietnam trying to go cashless within the next ten years, authorities are focused on pushing digital wallets and remittances. That is where 80% of all funding for fintech startups is going to payments. As regulations tighten, regtechs will find opportunities to serve this segment of the market.

Given that Vietnam is focused on attracting funds to develop its economy, if it wants to remain connected to the global finance community, the country will need to follow international regulatory requirements. Governance, Risk, and Compliance (GRC) platforms are now standard in the US and the EU, but very few companies in Vietnam have such platforms. Should GRC platforms become a standard global requirement, as expected, this gap will need to be closed. There will be a surge in demand from FIs looking to build these GRC platforms, and regtechs can help them to do so.

Finally, as in the other emerging markets with low levels of government support for their fintech sectors, Covid-19 is also likely to lead to consolidation in the market as companies disappear or get bought up by more prominent players. This is also a reasonable case scenario for Vietnam. The result will be a less fragmented market, less choice for the buyer, more end-to-end solutions, and an opportunity for foreign regtechs to acquire a local company to get a foothold in the market.

In short, the development of Vietnam's regtech ecosystem is likely to be a slow and bumpy one, given the constraints outlined above and the lack of existing regulations. Where there will be demand will be around international compliance requirements, which Vietnam is incentivized to follow if it wants to attract in the funds to develop its economy.

The State of Regtech in APAC

Evaluation of the Landscape & Market Opportunity for Regtech Companies

Japan Overview

2021

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ENTERPRISE IRELAND

FINTECH ASSOCIATION OF JAPAN

Main regulators and key initiatives

Financial Services Agency (FSA)

FSA: The statutory body set up to regulate and supervise the financial industry

Recent/ Active FSA key initiatives:

- FinTech Support Desk
- FinTech PoC (Proof-of-Concept) Hub
- Blockchain Governance Initiative Network (BGIN)
- Anti-money laundering and combating the financing of terrorism guideline (AML/ CFT)
- Open banking application programming interfaces (APIs)
- Cryptoassets

FSA/ Bank of Japan (BoJ)

BoJ: The central bank of Japan

Recent/ Active FSA and BoJ key initiatives:

- Coordination of financial inspections and regulatory reporting

BoJ

Recent/ Active BoJ key initiatives:

- Central Bank Digital Currency (CBDC)

Government Initiatives

Under the administration of Prime Minister Shinzo Abe, the Cabinet decided the Growth Strategy 2017 in June 2017. The Growth Strategy 2017 consists of measures aimed at realizing Society 5.0 that incorporate the innovations of the 4th Industrial Revolution into society and solve various social problems. Society 5.0 is defined as the fifth new society in human history, following (1) hunter-gatherer society, (2) agrarian society, (3) industrial society, and (4) information society.

The Growth Strategy 2017 includes important measures described in this chapter, such as the regulatory sandbox, a FinTech PoC hub, promotion of open APIs, electronic Know Your Customer (eKYC) and others. Each of the measures set forth in the Growth Strategy 2017 has been updated and promoted in the Action Plan of the Growth Strategy in the following years.

Digital Agency

The Growth Strategy 2017 stated that the driving force behind Society 5.0 is the "digitization of social infrastructure and government services". In July 2020, the Cabinet of Japan released the Basic Policy on Economic and Fiscal Management and Reform 2020: Overcoming the Crisis and Moving Toward a New Future.[1] This policy aims to prepare the groundwork for concentrated investment in and implementation of digitization, which is the driving force in constructing the new normal lifestyle (the digital new deal).

The government actively promotes digitization throughout Japanese society. It speeds up initiatives such as moving administrative processes online and making these processes into one-stop, once-only procedures by prioritizing the digital government among our policy challenges. The government also promotes digital transformation (DX) in the private sector and encourages an environment that induces innovation and private-sector investment.[2]

In December 2020, the Basic Policy for Innovations toward the Realization of a Digital Society,[3] which includes the creation of the Digital Agency, was compiled at the Ministerial Conference on Digital Government.

The Digital Agency will serve as a control tower for forming a digital society and will have a strong overall coordination function. The Digital Agency will be responsible for planning, including the formulation of basic policies, and for the control and supervision of the information systems from the national government, local governments, and quasi-public sectors, and for the maintenance of important systems. The Digital Agency aims to improve administrative services.

Responsibilities of the Digital Agency are as follows:

- Standardization and unification of national information systems to ensure mutual coordination
- Common digital infrastructure for local areas
- Individual number (My Number)
- Support for the digitization of the private sector and the quasi-public sector

1 https://www5.cao.go.jp/keizai1/basicpolicies-e.html
2 https://www5.cao.go.jp/keizai-shimon/kaigi/cabinet/2020/decision0717.html
3 https://www.kantei.go.jp/jp/singi/it2/dgov/201225/siryou1.pdf (Japanese)

- Data utilization
- Realization of cybersecurity
- Securing digital human resources

The Digital Agency is scheduled to launch in September 2021.

e-Government

The Basic Act on the Advancement of Public and Private Sector Data Utilization (the Basic Act) was enacted in December 2016.[4] The Basic Act requires the government to promote various measures that contribute to utilizing public-private sector data, such as the development of a data distribution environment and the principle of online administrative procedures.[5]

In May 2017, the Digital Government Promotion Policy was formulated.[6] The policy aims to realize a digital government that focuses on improving convenience for citizens and businesses.

In January 2018, the e-Government Implementation Plan was formulated as a plan to realize a safe, secure, fair, just, and prosperous society by embodying and implementing the directions set forth in the Basic Act and the Digital Government Promotion Policy.[7] The Cabinet decided on the plan in December 2019. It was revised in December 2020 based on the progress of subsequent efforts and issues revealed in response to the COVID-19 infection.

The objective of the plan is to create a society where people can choose services that meet their individual needs. The agenda includes the development of infrastructure for the realization of digital government, the implementation of measures against the digital divide, the promotion of digitalization in local governments and others.

The direction of the measures will not change after establishing the Digital Agency and should be promoted more vigorously under the new leadership.

Regulatory sandbox arrangement in Japan

In June 2018, the Act on Special Measures for Productivity Improvement, which provides for the regulatory sandbox and other measures, came into effect. The regulatory sandbox is now fully operational in Japan.[8 9]

The regulatory sandbox aims to create an environment where new, disruptive technologies can be tested without being bound by existing regulations. The data obtained from these tests is used to quickly implement regulatory reforms.

The committee has been established under the Cabinet Office since the scope is not limited to financial industry. The committee consists of thirteen members, experts in law, technology and business from the academic and the private sectors. The Prime Minister appoints committee members. They have a strong mandate to make recommendations to the ministries which have jurisdiction over the related regulations.

The Regulatory Sandbox in Japan is not a cohort system and is always open to proposals for PoC. Japanese companies, as well as foreign companies, can conduct PoC under this system.

As of February 2021, twenty projects relating to FinTech and RegTech, mobility and healthcare, have been approved and certified by the committee. Most projects were carried out by private companies. The Ministry of Land,

4 https://japan.kantei.go.jp/policy/it/data_basicact/data_basicact.html
5 https://japan.kantei.go.jp/policy/it/outline.pdf
6 https://cio.go.jp/node/2359
7 https://cio.go.jp/digi-gov-actionplan, https://www.kantei.go.jp/jp/singi/it2/dgov/201225/siryou4.pdf, https://cio.go.jp/sites/default/files/uploads/documents/2020_dg_overview.pptx
8 https://www.meti.go.jp/english/press/2018_06/0606_001_00.html
9 https://www.kantei.go.jp/jp/singi/keizaisaisei/regulatorysandbox.html

Infrastructure, Transport and Tourism (MLIT) also carried out some projects to collect data necessary for its regulatory changes.[10]

The Act on Special Measures for Productivity Improvement has been made permanent in February 2021.[11]

Overseas companies or foreign-affiliated companies in Japan can contact Japan External Trade Organization (JETRO) via the Invest Japan hotline before consulting with the government's regulatory sandbox Team.[12]

Governance innovation: redesigning law and architecture for Society 5.0

The Japanese government aims to realize Society 5.0, a human-centered society that balances economic development with the resolution of social challenges, through a system that integrates cyberspace and physical space, including AI, IoT and big data (i.e., the cyber-physical system). To further encourage the incorporation of innovative technologies in social life, it is necessary to reform the governance model and to take the changes in the social structure that new technologies will bring into account.

The G20 Osaka Summit, hosted by Japan in June 2019,[13] agreed on the concept of Data Free Flow with Trust (DFFT). In order to promote international policy discussions to harness the full potential of data and the digital economy, the Osaka Track was launched at the Summit. In the subsequent G20 Ministerial Meeting on Trade and Digital Economy, the ministers released a ministerial statement, which declared the need for governance innovation that meets social changes brought about by digital technologies and social implementation.[14]

The Ministry of Economy, Trade and Industry (METI) launched the Study Group on a New Governance Model for Society 5.0 in August 2019.[15] It has been studying a new governance model that will unleash innovation and realize social value.

The first report, titled GOVERNANCE INNOVATION: Redesigning Law and Architecture for Society 5.0, released in July 2020, describes a cross-sectional, multi-stakeholder governance model that includes goal-based laws and regulations, emphasis on corporate accountability and incentive-based enforcement.[16] The second report, the draft of which was released in February 2021, shared the concept of agile governance and outlined various governance mechanisms based on this concept, including corporate governance, laws and regulations, infrastructure, markets and social norms.[17]

This working group is also actively working with foreign policymakers and international organizations. In January 2020, the group participated in the OECD Global Conference on Governance Innovation.[18] It is a member of the Global Future Council on Agile Governance of the World Economic Forum.[19]

10 http://www.kantei.go.jp/jp/singi/keizaisaisei/regulatorysandbox.html
11 https://www.meti.go.jp/english/press/2021/0205_002.html
12 https://www.jetro.go.jp/ext_images/en/invest/incentive_programs/pdf/Detailed_overview.pdf
13 https://www.mofa.go.jp/policy/economy/g20_summit/osaka19/en/
14 https://g20-digital.go.jp/asset/pdf/g20_2019_japan_digital_statement.pdf
15 https://www.meti.go.jp/shingikai/mono_info_service/governance_model_kento/index.html (Japanese)
16 https://www.meti.go.jp/english/press/2020/0713_001.html
17 Governance Innovation ver.2: A Guide to Designing and Implementing Agile Governance https://www.meti.go.jp/english/press/2021/0219_004.html
18 https://www.oecd.org/innovation/oecd-global-conference-on-governance-innovation.htm
19 https://jp.weforum.org/communities/gfc-on-agile-governance

The digital governance codes

In November 2020, METI compiled digital governance codes, a collection of rules that businesses should refer to when formulating management goals or dialoguing with stakeholders.[20] The codes consider the social reforms brought about by digital technologies and encourage companies to embrace DX efforts voluntarily.

The concept is not for the government to evaluate the excellence of digital technology initiatives, but to promote competition and stakeholder engagement by making proactive in dialogue visible to the market. Companies ready to take action in line with the guidelines and respond to social changes caused by digital technology through dialogue with stakeholders will be certified.

METI and the Tokyo Stock Exchange (TSE) are promoting stocks of companies that are engaged in DX that dramatically changes business models and leads to new growth and enhanced competitiveness as Digital Transformation Stocks (DX Stocks). METI has positioned the DX Stocks as a measure that complements the digital governance codes within the framework of effective DX efforts.[21]

The Act on the Protection of Personal Information (APPI)

In January 2016, the Personal Information Protection Commission (PPC) was established under the Act on the Protection of Personal Information (APPI) and relevant Cabinet Order.[22] PPC's duties are the protection of the rights and interests of individuals while considering proper and effective use of personal information including My Number. The PPC is one of the highly independent organs in the Japanese legal framework.

The APPI was established in 2003, amended in 2015, and fully enforced on May 30, 2017. The 2015 Amendment Act included provisions to review the system every three years.[23]

In 2020 June, the Amendment Bill of the APPI was promulgated.[24] The amendments are made to leverage technological innovation while protecting personal information, and reduce risks due to the increased cross-border data flow. From the perspective of promoting innovation, Pseudonymously Processed Information, which deletes a person's name, etc. from personal information, was introduced. Obligations regarding the claim for disclosure and suspension of use were eased based on the premise that the data usage is limited to business operators' internal analyses. For information that does not fall under the definition of personal data on the provider's side but is supposed to become personal data on the recipient's side, the provider shall confirm a principal's consent about the transfer to the recipient.[25]

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20 https://www.meti.go.jp/policy/it_policy/investment/dgc/dgc.html (Japanese)
21 https://www.meti.go.jp/english/press/2020/1118_002.html
22 https://www.ppc.go.jp/en/
23 https://www.ppc.go.jp/files/pdf/APPI_The_Every_Three_Year_Review_Outline_of_the_System_Reform.pdf
24 https://www.ppc.go.jp/en/news/archives/2020/20200618/
25 https://www.ppc.go.jp/files/pdf/overview_amended_act.pdf

Incidents, including leakage of personal data that may cause violation of individual rights and interests, need to be reported to the PPC and notified to a principal. Penalties for violations of orders issued by the PPC and false submission of reports to the PPC were reinforced. From a global perspective, foreign business operators that supply goods or services in Japan and handle individuals' personal information in Japan are subject to regulatory reporting and orders, which are enforced with a penalty. Also, when transferring personal data to a third party in a foreign country, a business operator is required to enrich the information provided to the principal regarding the handling of personal information at a recipient business operator.[26]

Cybersecurity

The Basic Act on Cybersecurity has been in effect since 2015.[27] The act aims to promote cybersecurity by setting the basic principles of cybersecurity policy and clarifying the responsibilities of the government, private entities and citizens. Based on this Act, the Cybersecurity Strategic Headquarters was established under the Cabinet in November 2014 to effectively and comprehensively promote cybersecurity policies. In 2015, the National center of Incident readiness and Strategy for Cybersecurity (NISC) was established based on the former National Information Security Center (also abbreviated to NISC) acting since 2005, as a secretariat of the Cybersecurity Strategy Headquarters in collaboration with the public and private sectors on a variety of activities to create a free, fair and secure cyberspace. NISC plays its leading role as a focal point in coordinating intra-government collaboration and promoting partnerships between industry, academia, and public and private sectors.[28]

As a basic framework for the protection of critical infrastructure, the Japanese Government has formulated common action plans between the Government, which is responsible for the protection of critical infrastructure, and critical infrastructure providers, etc., which are promoting voluntary efforts. This framework began with the Special Action Plan for Countermeasures against Cyber Terrorism in Critical Infrastructures,[29] which was developed in December 2000. As the fourth action plan, the Cybersecurity Policy for Critical Infrastructure Protection (4th Edition), which was finalized in 2017 and revised in January 2020, lists 14 critical infrastructure sectors, including information and communication services, financial services, and medical services.[30]

Information sharing and analysis functions for critical infrastructure providers and Capability for Engineering of Protection, Technical Operation, Analysis and Response (CEPTOAR), which is responsible for these functions, have been established. To prevent IT failures from occurring, to prevent the spread of damage when they do occur, to recover quickly, and to prevent recurrences, the Government and other organizations provide information to critical infrastructure providers, etc. in an appropriate manner, and information is shared among the parties concerned, with the aim of contributing to improving the service maintenance and recovery capabilities of each critical infrastructure provider, etc.[31]

At the private sector level, each industry has established its own ISAC (Information Sharing and Analysis Center) to share information.[32]

26 https://www.ppc.go.jp/files/pdf/overview_amended_act.pdf
27 http://www.japaneselawtranslation.go.jp/law/detail/?id=2760&vm=04&re=02
28 https://www.nisc.go.jp/eng/index.html
29 http://japan.kantei.go.jp/it/security/2001/cyber_terror.html
30 https://www.nisc.go.jp/eng/pdf/cs_policy_cip_eng_v4.pdf
31 https://www.nisc.go.jp/active/infra/ceptoar.html (Japanese)
32 https://www.jttri.or.jp/pdf/H29cyber_ISAC-houkoku.pdf (Japanese)

Smart Tokyo Implementation Strategy

In February 2020, the Tokyo Metropolitan Government (TMG) released the Smart Tokyo Implementation Strategy: Towards the Realization of Tokyo's Version of Society 5.0.[33] This strategy aims to realize the "Tokyo Strategic Vision for the Future" formulated in December 2019. The strategy includes the collection of information and provision of services using 5G antennas, the establishment of a public-private data platform, and support for startups that solve administrative issues.[34]

The report also mentions the so-called ecosystem, where TMG and the private sector will build a flat partnership, bring each other's knowledge, and create innovations one after another. Specifically, TMG has established the "Tokyo Metropolitan Open Data Catalog Site" as a platform to promote the distribution and utilization of open data in Tokyo, creating an environment where the private sector can utilize government data and contribute to the promotion of the ecosystem.[35]

33 https://fpcj.jp/wp/wp-content/uploads/2020/02/7804158048eebdaac90be2faa07ef31c.pdf

34 https://www.senryaku.metro.tokyo.lg.jp/tokyodatahighway/index.html (Japanese)

35 https://portal.data.metro.tokyo.lg.jp/ (Japanese)

Regulator Initiatives

FSA initiatives

FinTech Support Desk

In December 2015, FSA announced the establishment of the FinTech Support Desk, a centralized consultation and information exchange service for FinTech, as a new initiative in response to the growing trend of FinTech applications, based on FSA's Strategic Directions and Priorities 2015-2016.[36]

The desk provides consultation on a wide range of financial matters, including matters related to specific businesses and business plans, to those who are operating or considering new businesses involving FinTech and various other innovations.

In addition, FSA asks for general opinions, requests and suggestions related to FinTech and other businesses that involve various innovations and actively exchange information and opinions.

FinTech PoC Hub

Based on the Growth Strategy 2017, which mandated FSA to facilitate experiments to accelerate innovation using FinTech, in September 2017, FSA established the FinTech PoC Hub to dispel hesitations and concerns that FinTech companies and financial institutions tend to have when conducting unprecedented demonstration experiments.[37]

The FinTech PoC Hub provides ongoing support for the issues that FinTech companies, financial institutions, etc., want to sort out through PoC by forming a team in charge within the FSA for each PoC.

The FinTech POC Hub has supported experiments, establishing a shared system for identity verification procedures using blockchain technology, identity verification using face recognition technology, and improving compliance operations' efficiency using AI and others.

Blockchain Governance Initiative Network (BGIN)

A decentralized financial system underpinned by blockchain could attain full P2P (Peer to Peer) financial transactions without intermediaries. While such systems can offer a variety of opportunities and benefits, they could also undermine the ability to enforce existing regulations. At the G20 Osaka Summit in June 2019, a consensus has been reached on the issue of governance of decentralized financial systems based on blockchain technology and the importance of strengthening dialogue with a wide range of stakeholders, including regulatory authorities and engineers.

Based on this belief, in March 2020, a special online panel discussion has been held at Blockchain Global Governance Conference [BG2C], which is a new global conference on blockchain and cohosted by FSA and Nikkei, Inc. In the panel discussion, Shin'ichiro Matsuo (Research Professor, Georgetown University) made

36 https://www.fsa.go.jp/en/news/2018/20180717.html
37 https://www.fsa.go.jp/news/29/sonota/20170921/20170921.html (Japanese)

public the launch of a new global network named "Blockchain Governance Initiative Network" (BGIN - pronounced "BEGIN").[38]

BGIN aims to provide an open and neutral space for all stakeholders to develop a common understanding and cooperate in resolving the issues facing the blockchain community for its sustainable development.

- Creating an open, global and neutral platform for multi-stakeholder dialogue
- Developing a common language and understandings among stakeholders with diverse perspectives
- Building academic anchors through continuous provision of trustable documents and codes based on an open source-style approach[39]

Guidelines for Anti-Money Laundering/ Combating the Financing of Terrorism (AML/ CFT)

FSA believes that money laundering and funding of terrorism are a threat to Japan's financial system. The public and private sectors must work together to strengthen the system in the face of the increasing threat of terrorism and other international community crimes.

FSA established the Anti-Money Laundering and Terrorist Financing Planning Office in February 2018. It is responsible for planning and coordinating responses to the Financial Action Task Force (FATF) evaluations and monitoring the AML/CFT operations of financial institutions with international operations.[40]

In February 2018, to encourage financial institutions to develop effective systems, the Guidelines on Anti-Money Laundering and Terrorist Financing were released to clarify the basic approach to risk management related to money laundering and other threats.[41]

With the globalization of finance and the increasing sophistication of information technology, money laundering and terrorist financing continue to change in a complex manner. Criminal methods are becoming more sophisticated.

The guidelines recommend that the use of new technologies such as AI, blockchain, RPA, and others, should be actively considered for their future development and effectiveness. FSA revised the guidelines in April 2019[42] and in February 2021[43]. The fourth FATF mutual evaluation of Japan was conducted from October to November 2019.

Open banking APIs

After being discussed in national councils and other bodies, the rules for APIs in banking were outlined in the Banking Act, which was revised in May 2018.[44]

Within two years of the enforcement of the revised Banking Act, each financial institution, including banks, was obliged to make efforts to provide open APIs. There was a grace period until September 2020 to decide whether to open up the data. About 95% of all banks have announced that they will provide open APIs. Non-financial businesses have started to develop new services using those bank data.[45]

38 https://www.fsa.go.jp/en/policy/bgin/information.html
39 https://bgin.team/press_releases/20200310_press_release_bgin.pdf
40 https://www.fsa.go.jp/news/30/20180202/20180202-1.html (Japanese)
41 https://www.fsa.go.jp/news/30/20180206/fsa_maneron3001.html (Japanese)
42 https://www.fsa.go.jp/news/30/20190410amlcft/fsa_amlcft1904.html (Japanese)
43 https://www.fsa.go.jp/news/r2/202102_amlcft/202102amlcft.html (Japanese)
44 https://www.fsa.go.jp/news/30/ginkou/20180530.html
45 https://www.nikkei.com/article/DGXZQOGC289WO0Y0A221C2000000/

Cryptoassets

In Japan, the government and regulators address the cryptoassets (virtual currency) and security tokens through various legal and regulatory amendments.

The FSA released the amendments to the cabinet orders and cabinet office orders pertaining to the 2019 revision of the Payment Services Act. The main contents of this amendment are the consolidation of terminology related to cryptoassets, the development of systems related to cryptoasset exchange business, and the development of regulations related to derivative transactions and funding transactions using cryptoassets.[46]

FSA/ BoJ initiatives

Coordination of financial inspections and regulatory reporting

FSA and BOJ are promoting efforts to centralize data, coordinate inspections and examinations, share the results, and strengthen cooperation in bank license examinations and check account opening procedures.

These efforts aim to reduce the burden on financial institutions and achieve higher quality monitoring. One of the measures on the agenda is to set up a system to share data between FSA and BOJ securely.[47]

BoJ initiatives

Central Bank Digital Currency (CBDC)

Basic Policy on Economic and Fiscal Management and Reform 2020: Overcoming the Crisis and Moving Toward a New Future, which was released in July 2020, stated that: "the Bank of Japan (BoJ) will explore Central Bank Digital Currency (CBDC) by, for example, conducting experiments on technical aspects while coordinating with other countries."[48]

BoJ set up the Digital Currency Group in its Payment and Settlement Systems Department in July 2020 as a step-up in exploration, including experiments. In October 2020, BoJ released The Bank of Japan's Approach to Central Bank Digital Currency. While BoJ currently has no plan to issue CBDC, this clarifies its approach to "general purpose" CBDC - that is, CBDC intended for a wide range of end-users, including individuals and firms. According to this approach, the planned next steps include;

- Experiments (PoC)
- Exploring Institutional Arrangements
- Coordination with Stakeholders at Home and Abroad[49]

BoJ will collaborate with the private sector infrastructure operators to start a PoC in spring 2021. The basic functions of issuing and circulating digital currency will be confirmed by building a ledger to record transaction history. The first phase will take about a year to complete. Based on the results, it is planned to move on to the second phase to verify the next feasibility.[50]

46 https://www.fsa.go.jp/en/newsletter/weekly2020/387.html
47 https://www.fsa.go.jp/news/r2/sonota/20201120.html (Japanese)
48 https://www5.cao.go.jp/keizai-shimon/kaigi/cabinet/2020/2020_basicpolicies_en.pdf
49 https://www.boj.or.jp/en/announcements/release_2020/rel201009e.htm/
50 https://coinpost.jp/?p=222064 (Japanese)

Cross-regulator focus areas

Electronic Know Your Customer (eKYC)

In November 2018, the Order to Amend Part of the Enforcement Regulations of the Act on Prevention of Transfer of Criminal Proceeds was released. The amendment adds a new method to verify the identity of natural persons online.[51] Previously, online identity verification involved sending a copy of identity documents and receiving non-forwarded mail to verify residency. The amendment relates to the efficient identification method for FinTech, one of the important measures from the Growth Strategy 2017.

The scope of the Act on Prevention of Transfer of Criminal Proceeds includes not only financial institutions but also real estate brokers, precious metal brokers and others. An increasing number of companies consider using eKYC as part of their policies, even though they are not subject to this act.

51 https://www.fsa.go.jp/news/30/sonota/20181130/20181130.html (Japanese)

Private Sector

Private sector concerns

There are various issues related to blockchain technology, AI, big data technologies, and other advanced technologies, which are the foundation of digitization. For example, while AI-based lending decisions and scoring are expected to become more common in the near future, there is a concern that the process and rationale for AI decisions will become a black box, making it challenging to hold lenders accountable. The government and regulators have set certain regulations to maintain a sound market and protect consumers. However, with the spread of advanced technologies, it is becoming increasingly difficult for the government and regulators to consider a balance between the pursuit of convenience and consumer protection. As such, the idea of consensus building by involving primary stakeholders such as the government, regulators, businesses, investors, consumers, industry groups, and others is gaining ground.

Banking as a Service (BaaS)

Banking as a Service (BaaS) is attracting attention in Japan. BaaS is a mechanism that allows various companies to incorporate parts of banking functions or financial services into their services. Banking functions or financial services, which have traditionally been provided by financial institutions, are modularized and made available by utilizing APIs.

In April 2020, the Japan Fair Trade Commission (JFTC) released a report which included items such as those relating to interbank fees and the governance of the Zengin System, a nationwide online network system for domestic funds transfers by banks.[52] JFTC points out that from the viewpoint of equal footing of competitive conditions, it is desirable that consideration be given to opening up access to the Zengin system for funds transfer service providers. New entrants, including those from different industries, who use new technologies, will stimulate competition among businesses, leading to new services and other innovations and greater convenience for users. JFTC has issued this report from the perspective of promoting new entrants and creating an environment in which fair and free competition can be actively conducted.

In May 2020, the Japanese Bankers Association (JBA) established the Task Force on the Next Generation Funds Settlement System (TF), to promote the sophistication and efficiency of Japan's funds transfer system, without being bound by the conventional framework of banks. The TF released a report in January 2021, which recommends that the requirements for participating in the Zengin System, whose membership qualification is currently limited to deposit-taking financial institutions (i.e., banks), be revised.[53] The target of the revision is to enable funds transfer service providers (i.e., non-banks) to apply for its membership by FY2022. There are few examples except in Japan of such discussions among various stakeholders regarding the opening of fund settlement systems to non-banks such as fund transfer companies.

52 https://www.jftc.go.jp/houdou/pressrelease/2020/apr/200421.html (Japanese)
53 https://www.zengin-net.jp/en/announcement/pdf/announcement_20210201Overview.pdf

Some banks have already emerged as platform banks, offering financial services to a wide range of businesses regardless of industry or business category. Such banks include a bank that provides sophisticated corporate settlement services and consumer financial services to FinTechs and other businesses, and a digital bank that provides comprehensive consumer financial services from account opening, deposits and withdrawals, to transfers via smartphones.

Private sector associations

Associations that have taken an active role in developing the RegTech ecosystem in Japan include:

Logo	Name	Description
FINTECH ASSOCIATION	Fintech Association of Japan (FAJ)	The FAJ is a general incorporated association that promotes open innovation in the Japanese FinTech industry by organizing events for its members and the FinTech community, conducting working groups on key FinTech subsectors and areas of interest, researching market trends and other activities in support of the FinTech ecosystem..
FINTECH ASSOCIATION	FAJ RegTech&SupTech Subcommittee	The committee discusses new ways of governance using data and technology, as well as the use of technology for supervisory and regulatory purposes.
	The Center for Financial Industry Information Systems (FISC)	FISC researches diverse topics, such as technology, utilization, control and threat/ defense related to financial information systems. The contributors are of a wide range, including financial institutions, insurance companies, securities firms, computer manufacturers and telecommunications companies. FISC is also a member of an FSA- hosted group, ”the payments Council on Financial Innovation”.
TOKYO INNOVATION ECOSYSTEMS	Startup Ecosystem Tokyo Consortium	The Consortium, established by the Tokyo Metropolitan Government, aims to establish Tokyo as a global hub to drive the startup ecosystem, thereby strengthening international competitiveness, creating and growing more startups, and ultimately achieving sustainable economic development in Tokyo. In addition, it aims to implement innovation through the startup ecosystem into society.
APAC Regtech Network FINTECH ASSOCIATIONS	APAC Regtech Network	The RegTech committees of the FinTech associations of Hong Kong, Singapore and Japan jointly launched the APAC RegTech Network in May 2019 to enhance cross-border collaboration on RegTech initiatives.

Potential future scenario for Japan's RegTech ecosystem

The year 2021 is becoming a major turning point for the Japanese RegTech ecosystem.

Firstly, the newly created framework of financial services intermediary business is expected to come into effect in 2021. The registration of this financial services intermediary business is expected to enable various financial institutions and non-financial services companies to provide one-stop banking, securities and insurance services.

Driven by this transformation in the financial services industry, financial institutions and FinTech companies with financial licenses are actively trying to open up APIs for open banking initiatives. RegTech companies will benefit from the opportunities in the open API ecosystem.

Secondly, FSA launched the Blockchain Governance Initiative Network (BGIN) in 2020 and has begun to tackle the issues related to market governance and sustainable development of the industry through a multi-stakeholder approach. In response to this trend, FIN/SUM, which is a forum sponsored by FSA, holds an ideathon in 2021 where participants propose solutions to the problem statement presented by FSA. There are also efforts to develop this event into a TechSprint in the future.[54]

Since 2020, FSA and TMG have been facilitating the globalization of the financial services industry of Japan. FinTech has been positioned as one of the key pillars together with the asset management industry. RegTech is one of the most globalized categories of FinTechs, and this globalization is expected to provide strong support to overseas RegTech companies looking to enter the Japanese market.

54 UK Financial Conduct Authority (FCA) defines TechSprints as events that bring together participants from across and outside of financial services to develop technology based ideas or proof of concepts to address specific industry challenges. https://www.fca.org.uk/firms/innovation/regtech/techsprints

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