



1. Introduction

1.1 Financial technology, or Fintech, refers to the application of new technologies such as data analytics, blockchain and artificial intelligence to financial services. It changes the traditional ways of collecting financial information, the risk-pricing model, the investment decision making process, and the traditional role of credit intermediaries. Its ultimate purpose is to make the delivery of financial services cheaper and more targeted and convenient to customers.

1.2 Financial services such as fundraising, payment, investment management, banking and insurance have benefited particularly from the Fintech development. The underlying business opportunities are reflected in the fast growing investment value of the Fintech sector, with global investment in Fintech businesses increasing rapidly by an annual average of 43% during 2014-2018 to US\$55.3 billion (HK\$433.5 billion).¹

1.3 Along with enhanced operational efficiency and business opportunities, the Fintech development poses challenges to regulators in maintaining a balance between fostering innovation, protecting consumers, and addressing the potential unintended consequences of the new Fintech products and services. Fintech also gives rise to concerns over cybersecurity and data privacy as more financial data are now available in digital format. For example, the onset of big data era inevitably increases the exposure of personal and proprietary data to security breaches and malicious accesses.

¹ See Accenture (2019).

1.4 At the request of Hon WONG Ting-kwong, the Research Office has prepared this information note which studies the regulation of Fintech in Hong Kong, Singapore and China. Hong Kong is currently home to 550 Fintech companies, and its accumulated investment in Fintech companies totalled US\$1.1 billion (HK\$8.6 billion) between 2014 and 2018.² Singapore was Asia's top Fintech hub in 2017,³ as well as the fifth largest Fintech market in Asia Pacific by the amount of fund raised in 2018.⁴ For China, it is widely regarded as a global leader in the Fintech industry. It commanded the largest share of global investment in Fintech, at 46% in 2018,⁵ as well as having the highest Fintech adoption rate of 69% in the world in 2017.⁶

1.5 This information note will first provide an overview of the application of Fintech to five key areas, namely the fundraising, payment, investment management, banking and insurance services. It is then followed by a discussion of the overall regulatory framework adopted by Hong Kong, Singapore and China for Fintech development, as well as their regulation of individual Fintech products and services.

2. Application of Fintech

2.1 The recent years have seen a rapid Fintech development in fundraising, payment, investment management, banking and insurance, which in turn helps enhance the efficiency, convenience and reach of financial services.

² See Accenture (2019).

³ See Deloitte (2017).

⁴ See Accenture (2019).

⁵ Ibid.

⁶ See EY (2017).

Fundraising

2.2 Fintech provides small businesses and start-ups with increased access to more diverse funding options, such as initial coin offerings ("ICOs") and crowdfunding. ICO is a fundraising mechanism offered to investors whereby a project operator issues digital tokens to fund a blockchain-related project in exchange for a widely-used cryptocurrency⁷ or cash.⁸ Digital token can be (a) an utility token which is a digital representation of the token holder's right to receipt of a benefit, or access a product; or (b) an asset token representing assets such as right to a debt or equity claim on the issuer.

2.3 Crowdfunding is an umbrella term describing the use of monetary contributions, obtained from a large number of individuals or organizations, to fund a project, a business, a company, a loan or a donation, and other needs through an online platform. This distinguishes crowdfunding from ICOs as the latter revolve around the blockchain technology. The two most common crowdfunding models are equity crowdfunding and peer-to-peer ("P2P") lending. Investors in equity crowdfunding usually invest in a project or a business (often a start-up) through an online platform, typically in return for an interest in shares issued by the company concerned. P2P lending is a type of online financing activity where debts are issued to borrowers for interest in return.

Payment

2.4 E-wallets or digital/mobile payments are payment instruments that allow people to use a smartphone to shop online and transact at physical stores. Mobile payment/paying with an e-wallet is a convenient alternative to cash and other traditional ways of payment. Users can easily get through an in-store purchase with a simple scanning or tapping their smartphones, without sharing sensitive debit/credit card number with the merchant during the payment process.

⁷ Cryptocurrency is a type of digital currency which typically functions as a medium of exchange, unit of account, or store of value. One of the most popular forms of cryptocurrency is Bitcoin.

⁸ Investors may invest for the benefits and rights associated with the digital tokens (e.g. right to access the new platform or software under the ICO project) or may be attracted by the profit potential on speculation that the token value will become higher than the initial price.

Investment management

2.5 The application of machine learning and artificial intelligence has rung the changes in the investment management industry with the arrival of robo-advisory services. Robo-advisor generally refers to automated digital investment advisory platform which makes use of algorithms, data-driven strategy and technology to provide automated investment/portfolio management advices, strategies and services for users in place of a human financial advisor.

Banking

2.6 Fintech is also transforming the traditional banking industry. Open banking and virtual banking are two of the initiatives that are now gathering momentum in the Fintech industry. Open banking requires financial institutions to permit their customers to share their own transaction data with third-party developers through open application programming interfaces ("Open APIs").⁹ APIs enable developers to build applications using financial information and data shared across different financial institutions and third parties under a customer's consent, thereby helping the customer to find the most appropriate products/services for their individual needs.

2.7 Virtual banking is the delivery of banking services primarily through the Internet or other digital channels without the need to set up physical branches. In the absence of the overheads of physical branches, such as rental and staffing costs, virtual banks are expected to be able to offer a higher interest rate to customers and charge lower fees for services provided.

Internet insurance

2.8 The insurance industry has engaged the Internet as an alternative medium for conducting business particularly in marketing of insurance products and servicing of clients. Internet insurance can greatly reduce the operating cost of insurers by directly selling products and services online without the involvement of intermediary agents.

⁹ API is a computer programming approach for facilitating exchange of information and executing instructions between different computer systems. Open APIs refer to APIs that allow third-party access to systems belonging to an organization.

3. Overall regulatory framework in Hong Kong, Singapore and China

3.1 While enhancing the efficiency, convenience and reach of financial services, Fintech brings along many financial risks. For example, ICOs and the use of cryptocurrencies are susceptible to money laundering risks given the anonymous nature of the transactions involved. Equity crowdfunding offers an early opportunity to invest an early-stage venture, but it poses high risks of capital loss to investors in view of the high failure rate for start-ups globally.

3.2 Addressing the financial risks brought by the Fintech development poses challenges to financial regulators. To the extent that Fintech businesses are regulated, they can be drawn into either existing or new regulatory frameworks. The key value of Fintech lies more in upgrading of delivery channels rather than in altering the nature and content of the underlying financial products provided. The current financial regulatory framework thus remains generally applicable to Fintech, and the common international practice is to incorporate Fintech into the existing financial regulatory framework.

3.3 Hong Kong and Singapore have followed the international practice, with no specific regulatory framework for Fintech businesses. Fintech businesses carrying out particular financial services may fall within the ambit of one or more of the existing regulatory regimes governing those financial services. In addition, financial regulators in Hong Kong and Singapore alike seek to strike a balance between innovation and regulation, actively striving to frame an appropriate regulatory approach to **support** as well as **supervise** the Fintech development. In view of the similarity of regulatory regimes between Hong Kong and Singapore, these two places are discussed together in the paragraphs below for simplicity sake.

3.4 In contrast, China initially adopted a "light touch" regulatory approach during the initial booming years of Fintech development. Regulators had largely been playing catch-up to let the innovation cart drive the regulatory horse. It was not until mid-2010s that a more pronounced regulatory approach has become apparent in China for healthy market development and better risk management.

Regulation of Fintech in Hong Kong and Singapore

3.5 Hong Kong and Singapore are similar in their regulatory approach towards the supervision of Fintech businesses. In addition to the lack of specific regulation, they have also shared the principles of "risk-focused", "disclosure-based" and "receptive of Fintech enterprises" to support and supervise the Fintech development.

Risk-focused

3.6 The risk-focused supervisory approach allows greater business latitude to Fintech business that does not pose significant risks to the financial system, in an effort to avoid premature regulation that may stifle innovation. In other words, this regulatory approach is to balance the risks posed by the technologies in a proportionate manner, and new regulations will come in only when the risks posed by the new technology become material or crosses a threshold. For example, there is no additional specific protection for crowdfunding investors in Hong Kong and Singapore unless such lending involves "securities" or "collective investment scheme" ("CIS") by retail investors, to which principles of securities regulation apply.

Disclosure-based

3.7 "Disclosure-based" regime means that Fintech businesses are required to disclose accurate, meaningful and material information that consumers could rely on in making decisions on the selection and use of financial products and services offered by Fintech businesses. For example, ICOs involving the offer of shares or debentures to the public are subject to the prospectus disclosure requirements in Hong Kong and Singapore.

Supportive of Fintech enterprises

3.8 Financial regulators in Hong Kong have been receptive to Fintech, with the implementation of various regulatory initiatives to facilitate the development of Fintech in the territory. These include:

- (a) upgrading the regulatory sandbox by the Hong Kong Monetary Authority ("HKMA") in September 2017 with new features such as a single point of entry linking up the sandboxes of HKMA, the Securities and Futures Commission ("SFC") and the Insurance Authority ("IA"), thereby facilitating pilot trials of cross-sector Fintech products;
- (b) HKMA releasing the *Open API Framework for the Hong Kong Banking Sector* in July 2018 which adopts a four-phased approach towards setting out the timelines for banks to open access to their data to third parties based on a risk-based approach;
- (c) SFC setting out a conceptual framework for potential regulation of virtual asset trading platform in November 2018;¹⁰
- (d) IA granting the first virtual insurance company license under its "Fast Track" in December 2018;¹¹ and
- (e) HKMA issuing eight virtual bank licenses as at mid-May 2019.

3.9 Likewise, the financial regulator in Singapore – the Monetary Authority of Singapore ("MAS") – has been receptive to the Fintech innovation. It has provided support for the development of the Fintech ecosystem in Singapore through the implementation of a number of regulatory initiatives, which include (a) issuing specific guidelines to help clarify how existing rules apply to ICOs and robo-advisory services; and (b) introducing the Fintech Fast Track initiative to expedite the application-to-grant process for Fintech patent applications to as fast as six months, compared to at least two years for normal applications.¹²

¹⁰ Under existing regulatory remits, markets for virtual assets may not be subject to the oversight of SFC if the virtual assets involved fall outside the legal definition of "securities" or "futures contracts". SFC has proposed to close this regulatory loophole in order to bring a significant portion of virtual asset portfolio management activities into its regulatory net.

¹¹ IA's "Fast Track" offers a dedicated channel for speeding up applications for insurers operating solely online.

¹² This is in line with MAS's vision to create a "Smart Financial Centre" as part of Singapore's broader Smart Nation agenda.

Regulatory sandbox

3.10 In addition to risk-focused regulation, Hong Kong and Singapore have also made use of regulatory sandbox to provide a greater flexibility in the application of supervisory regime to emerging technologies. Regulatory sandboxes allow authorized financial institutions and technology firms to test their new technology initiatives in a controlled environment without full compliance with the usual supervisory requirements.¹³

3.11 The first regulatory sandbox for Fintech start-ups was launched by the Financial Conduct Authority of the United Kingdom in 2015. Singapore's MAS launched its own regulatory sandbox in June 2016. In Hong Kong, HKMA caught up by having its sandbox regime in September 2016, and so did SFC and IA in September 2017 respectively.

3.12 In Hong Kong, applications for access to sandboxes of HKMA and IA are restricted to their licensed financial institutions. Technology firms or start-ups must partner with these licensed entities if they want to participate in these sandboxes. Singapore allows technology firms or start-ups to enter regulatory sandbox on their own on the basis of two criteria. First, the proposed financial service should include new or emerging technology, or incorporate the use of existing technology in an innovative way. Second, the proposed financial service addresses a problem or brings benefits to consumers or the industry.

3.13 Recently, Singapore's MAS has proposed to create an "express" regulatory sandbox to complement the current sandbox approach. The aim is to enable firms which intend to conduct certain "regulated activities" – where the risks are generally low or well understood and could be reasonably contained – to embark on their experiments more quickly. Applications for access to an express sandbox will be fast-tracked with approval decisions granted within 21 days.

¹³ For example, they are allowed to conduct live tests of new financial products, financial model and business procedures for a given period of time within a confined scope.

3.14 By introducing regulatory sandboxes, financial regulators aim to allow a Fintech business to be innovative while protecting consumers and the stability of the financial system. Nevertheless, potential competition issues might arise as sandbox entities may enjoy advantages over existing players by having regular advice from financial regulators and being first to the market. This is particularly the case when entry criteria/conditions are set for participation in the sandbox.

Regulation of Fintech in China

3.15 China stands out internationally as one of the most dynamic and advanced Fintech markets in the world, accounting for 46% of global Fintech investment in 2018. It is also at the forefront of various types of Internet finance, particularly e-payments and online lending. The emergence of the Fintech sector in China is a result of the interaction of several factors over time, including (a) an underdeveloped financial infrastructure and growth opportunities for Fintech to fulfil consumer demand unmet by traditional banking sector;¹⁴ (b) a high level of digital connectivity in society; and (c) the high relative significance of e-commerce.¹⁵

3.16 An initially relaxed regulatory environment also contributed to the rapid take off of Fintech development in China. Innovation in Fintech industry was seen as desirable at the beginning since it helped consumers and SMEs get around existing inefficiencies in the traditional financial industry. During China's Fintech boom, financial regulators had largely been playing catch-up to provide nascent Fintech industries with ample space to flourish. While a lack of detailed rules and regulations had facilitated the industry growth, it gave rise to frauds and problematic standards. The most prominent case was Ezubao, a P2P financing platform that lured investors with promises of double-digit annual returns. It was established in 2014 and attracted US\$7.6 billion (HK\$59.2 billion) from about 900 000 investors in just 18 months. It was later found to be a Ponzi scheme with more than 95% of the investment products marketed on the platform were faked.

¹⁴ Underserved by the traditional banking system, many consumers and small and medium-sized enterprises ("SMEs") in China have turned to alternative providers for access to payments, credit, investments, insurance, and even other non-financial service offerings.

¹⁵ China is the world's largest and most developed retail e-commerce market, which is forecasted to account for 56% of the global retail sales in 2019.

3.17 The Ezubao case, coupled with the financial vulnerability of many other online financing platforms,¹⁶ has prompted the Chinese government to embark on a number of regulatory initiatives to strengthen the regulation of the Fintech sector. This began with the People's Bank of China ("PBOC") and nine other authorities jointly publishing the *Guiding Opinions on Promoting the Sound Development of Internet Finance* ("the Guiding Opinions") in 2015. This document is the first and comprehensive guideline explaining how the existing financial and Internet regulations would apply to the Internet finance industry. Before the publication of the Guiding Opinions, there were no high-level rules specifically addressing the framework and regulatory principles in this field.

3.18 After the release of the Guiding Opinions, the Chinese government has subsequently published a series of guidelines (**Table 1**), notices and standards to lay out a comprehensive overarching framework for (a) defining which regulators and how they will regulate individual Fintech products/services;¹⁷ and (b) putting more checks and balances on Fintech companies' business practices, especially on compliance, funding models, as well as consumer protection. The move aims to standardize the regulation and supervision of Internet finance by balancing the often competing goals of protecting consumers and encouraging financial innovation.

3.19 Amid the tightening of regulatory oversight of the Fintech sector, China has yet to establish national regulatory sandboxes. There have been calls from some quarters for the introduction of regulatory sandboxes to reduce the cost and time required for bringing new innovations to the market, while ensuring appropriate protections are in place for customers.

¹⁶ Nearly one-third of online financing platforms in China had ran into financial difficulties by the end of 2015, and about 1 600 P2P lenders (around 40% of the total) had exited the market by April 2016.

¹⁷ PBOC regulates online payment, and China Securities Regulatory Commission ("CSRC") oversees equity crowdfunding and online funds. Online lending, online trust and online consumer finance go under China Banking Regulatory Commission (now China Banking and Insurance Regulatory Commission or CBIRC for short). Meanwhile, Internet insurance is regulated by the China Insurance Regulatory Commission (now CBIRC).

Table 1 – Overview of the regulation on Fintech in China

Fintech	Regulation	Key approaches
ICOs	<ul style="list-style-type: none"> The Announcement on Preventing Financial Risks from Initial Coin Offerings (September 2017) 	<ul style="list-style-type: none"> Banned the practice of fundraising through offering of token (such as ICOs).
Equity crowdfunding	<ul style="list-style-type: none"> The Implementation Plan for the Special Rectification of Risks in Equity Crowdfunding (April 2016) 	<ul style="list-style-type: none"> Setting out non-compliant activities, e.g. making a public offering of "securities" to unspecified investors or more than 200 specified investors without the approval from CSRC.
P2P lending	<ul style="list-style-type: none"> The Interim Measures for the Administration of the Business Activities of Online Lending Information Intermediary Institutions (August 2016) 	<ul style="list-style-type: none"> Restricting the role of P2P lending platform to information intermediaries only. The operators are prohibited from engaging in 13 non-compliant activities.
Payment	<ul style="list-style-type: none"> Notice of on Matters concerning Complete Centralized Deposit of the Funds of Pending Payments of Clients of Payment Institutions (January 2017) 	<ul style="list-style-type: none"> Establishing consumer protection by centralized custody of clients' reserve.
	<ul style="list-style-type: none"> The Notice on Migrating the Online Payment Business of Non-bank Payment Institutions from Direct Connection Mode to Network Platform Processing (August 2017) 	<ul style="list-style-type: none"> Establishing a centralized clearing house for third-party payment.
Robo-advisors	<ul style="list-style-type: none"> The Guiding Opinions on Regulating the Asset Management Business of Financial Institutions (April 2018) 	<ul style="list-style-type: none"> Requiring filing of key parameters of robo-advisory models with financial regulators; and increasing scrutiny on risk and return disclosure.
Internet insurance	<ul style="list-style-type: none"> The Interim Measures for Regulating the Internet Insurance Business (July 2015) 	<ul style="list-style-type: none"> Relaxing geographic restrictions for the sales of certain products and defining applicable products.

Sources: PBOC, CSRC and CBIRC.

Regulation of data protection and cybersecurity

3.20 The foregoing paragraphs have described the different regulatory approaches adopted by Hong Kong, Singapore and China in addressing the financial risks brought by the Fintech development. Fintech also causes concerns over the threats coming from cybersecurity and data privacy breaches.

3.21 Singapore and China have both put in place a cybersecurity law for better protection of data privacy and cyber environment. The law requires infrastructure operators, among other things, to report cybersecurity incidents and data breaches to regulators. Singapore is also reviewing whether to introduce a similar mandatory breach notification regime into its data protection law. In contrast, Hong Kong has not implemented a cybersecurity law, nor has it set out a mandatory data breach notification requirement in its data protection law. The details of the above regulatory regimes adopted by Hong Kong, Singapore and China are set out in the paragraphs below.

Hong Kong

3.22 Data protection in Hong Kong is governed by the Personal Data (Privacy) Ordinance ("PDPO"). It regulates the collection, use and handling of personal data under six data protection principles. Unlike the more stringent regulations adopted around the world, PDPO lacks a mandatory data breach notification system. Against this, the responsible authority, the Office of the Privacy Commissioner for Personal Data, is in the process of reviewing PDPO.

3.23 There is no cybersecurity law in Hong Kong. At present, information security issues, such as computer and Internet-related crimes, are dealt with under the criminal laws.¹⁸ The financial regulators in Hong Kong, however, have issued various specific guidelines on cybersecurity for the licensed and registered financial institutions. For instance, SFC has issued a non-binding guideline setting out the cybersecurity requirements to be adopted by its licensed or registered entities. Meanwhile, IA will introduce a mandatory guideline in July 2019 which requires the authorized insurers to put in place cyber policies to routinely identify, prevent, detect and mitigate cybersecurity threats.

¹⁸ For instance, the Theft Ordinance deals with offences of destroying, defacing, concealing or falsifying records kept by computer, whereas the Crime Ordinance tackles access to computer with criminal or dishonest intent. There is also the Telecommunications Ordinance prohibiting unauthorized access to computer by telecommunications.

Singapore

3.24 Personal data in Singapore is protected by the Personal Data Protection Act 2012 ("PDPA"), setting out rules and regulations governing the collection, use, disclosure, transfer, access to, correction and care of personal data by organizations. One of the key provisions under PDPA is to prohibit the transfer of personal data to a territory outside of Singapore unless the recipient country has data protection standards commensurate to that of PDPA. PDPA is now under review with a proposal for introducing a mandatory breach notification regime in order to keep pace with the evolving needs of society in Singapore.

3.25 Apart from data protection, another key regulatory challenge for Singapore is cybersecurity. In February 2018, the Singaporean government enacted the Cybersecurity Act with an objective of setting out a framework for the regulation of the "critical information infrastructure" (e.g. computer systems)¹⁹ used in financial services and other prescribed essential services.²⁰ The Act also imposes obligations on infrastructure owners requiring them to (a) report cybersecurity incidents and data breaches to authorities; (b) comply with industry codes of practice and performance standards; and (c) conduct cybersecurity audits and risk assessment. Penalties for violating the Act include a fine of up to S\$100,000 (HK\$581,000) and/or two-year imprisonment.

China

3.26 In China, data protection and cybersecurity is regulated under the Cybersecurity Law that came into force on 1 June 2017. The Cybersecurity Law marks the first comprehensive law in China specifically regulating personal information protection and cybersecurity. It contains detailed requirements that covered entities must meet, and imposes significant legal liabilities on companies that breach its provisions. Companies that violate the law may face fines up to RMB1 million (HK\$1.2 million), the closure of websites or revocation of business licenses or permits. Additionally, personnel directly in charge can be individually fined and may be subject to five to 15 days of detention for violating certain provisions.

¹⁹ Excluding data centre owners and cloud services operators.

²⁰ The Act also provides for the appointment of a Commissioner of Cybersecurity with significant powers to respond to, and prevent, cybersecurity incidents affecting Singapore. The Commissioner is empowered, among other things, to investigate cybersecurity threats and incidents, and license cybersecurity service providers.

3.27 The Cybersecurity Law applies to network operators²¹ and operators of critical information infrastructure ("CII").²² Network operators are required to comply with various measures related to cybersecurity and personal data protection. These include (a) strengthening network security such as adopting appropriate technologies to investigate, prevent and combat cyber-attacks; (b) protecting personal data through measures such as notifying the government of actual or suspected personal information breaches; and (c) allowing customers the right to rectification and erasure of personal data.

3.28 CII operators are required to engage in similar cybersecurity practices as network operators, along with some additional requirements such as ensuring network products and services that might affect national security shall go through a security review. In addition, CII operators are also subject to data localization rule, meaning that personal information and important data gathered and produced by them during their operation is stored within the territory of China. Where it is necessary to provide such information and data to overseas entities owing to business purposes, a security assessment must be conducted.

4. Regulation of individual Fintech services

4.1 Hong Kong, Singapore and China vary among themselves in the regulation of ICOs, crowdfunding, payment, investment management, banking and insurance services, reflecting the difference in their stances towards the promotion and risk assessment of each of these services. Salient features of their regulatory regimes are highlighted in **Appendices I to VI**.

ICOs

4.2 In Hong Kong, if digital tokens offered in an ICO are "shares", "debentures" or interests in a CIS, they would fall under the definition of "securities". In that case, dealing in or advising on the digital tokens, or

²¹ The term "network operators" defined to include "owners, operators, and service providers of networks", which might capture financial institutions using computers or other information terminals to collect customer information and provide online services.

²² The scope of CII is equally broad, including CII in companies in critical sectors such as finance, energy, transport, radio and television, as well as other critical information infrastructure that could threaten national security, people's livelihood and the public interest in case of damage, loss of functionality or data leakage.

managing or marketing a fund investing in such digital tokens, may constitute a "regulated activity" and therefore subject to the securities regulations. Singapore's regulation of ICOs is similar to that of Hong Kong. If digital tokens are classified as "capital market products", it would be subject to Singapore's securities regulations.²³

4.3 In China, token offerings are a form of unapproved illegal fundraising activity which might involve criminal activities such as illegal securities issuance, financial fraud and pyramid selling. As such, China has banned the practice of fundraising through offering of token (such as ICOs) and the operation of cryptocurrency exchanges for purposes of investor protection and financial risk prevention.

Crowdfunding

4.4 Crowdfunding activities in Hong Kong and Singapore can be governed by money lenders regulations. They will be subject to additional specific protection for crowdfunding investors if the lending activities involve "securities" or CISs by retail investors, to which principles of securities regulations apply.

4.5 Singapore has recently adopted a more facilitative policy stance towards crowdfunding for the promotion of financial innovation in the city. In 2016, MAS relaxed the rules for start-ups and SMEs to gain access to securities-based crowdfunding.²⁴ The relevant measures include simplifying the pre-qualification checks²⁵ so as to make it easier for crowdfunding platform operators to be exempted from prospectus disclosure requirement for small offers.²⁶ Other measures are easing the financial requirements²⁷ for

²³ Securities regulations in Singapore mainly include the Securities and Futures Act and the Financial Advisers Act.

²⁴ Securities-based crowdfunding refers to lending-based and equity crowdfunding which both involve offers of "securities" by companies. Lending-based crowdfunding include P2P lending but not covering those directly between individuals.

²⁵ For example, operators now only need to determine investors are **either** (a) financial competent **or** (b) suitable to invest in securities-based crowdfunding given their investment objective and risk tolerance. Before that, they had to meet both requirements (a) and (b).

²⁶ Prospectus requirement is exempted if it is a small offer that does not exceed S\$5 million (HK\$29 million) within any 12-month period.

²⁷ The capital requirement and minimum operational risk requirement have both lowered from S\$250,000 (HK\$1.5 million) to S\$50,000 (HK\$290,500), while the security deposit requirement of S\$100,000 (HK\$581,000) has been removed.

platform operators raising funds from accredited and institutional investors; as well as allowing platform operators to publicize their services subject to advertisement guidelines.

4.6 In contrast, China has taken a more cautious stance towards crowdfunding activities after the outbreak of several high-profile scandal cases in the mid-2010s. Regulation is now more stringent with the financial and securities regulators stipulating a number of non-compliant activities for conducting equity crowdfunding. For example, it is prohibited to make a public offer of "securities" to unspecified investors or more than 200 specified investors without approval. As to P2P lending platforms, they are defined as an information intermediary only that matches borrowers and investors. The platform operators are (a) prohibited from engaging in 13 categories of activities;²⁸ (b) restricted by the borrowing caps;²⁹ (c) required to assess creditworthiness of borrowers; and (d) mandated to separate their own funds and funds of lenders and borrowers.

Investment management

4.7 Robo-advisors in Hong Kong, Singapore and China are required to (a) maintain a robust framework to effectively manage and supervise their algorithms; and/or (b) provide customers with sufficient information (e.g. scopes and limitations of robo-advisory services) to make informed investment decisions. In October 2018, Singapore moved ahead of Hong Kong and China with the implementation of a new guideline on robo-advisors to facilitate the provision of robo-services in the city. Under the guideline, robo-advisors can still be licensed by MAS even if they do not meet the corporate track record requirements,³⁰ providing that they have specific safeguards³¹ in place.

²⁸ The prohibited activities include: (a) taking deposits from members of the public or creating asset pools; (b) conducting offline promotion of financing projects; (c) providing guarantees for borrowers; (d) selling wealth management products; and (e) transferring debts by issuing asset-backed securities.

²⁹ The total amount that an individual can borrow on a single platform must not exceed RMB200,000 (HK\$237,100), and RMB1 million (HK\$1.2 million) on multiple platforms. The respective caps for a corporate entity are RMB1 million (HK\$1.2 million) and RMB5 million (HK\$5.9 million).

³⁰ Fund management firms must have a five-year corporate track record or a minimum assets under management ("AUM") of S\$1 billion (HK\$5.8 billion) to be licensed.

³¹ These safeguards include (a) having board and senior management members with relevant experience in fund management and technology; and (b) undertaking an independent audit of the digital advisory business at the end of the first year of operations.

Banking

4.8 Open banking and virtual banking in Hong Kong, Singapore and China are largely governed by the same set of regulatory requirements applicable to traditional banks such as risk management. Among them, Hong Kong is more pro-active in promoting open banking with timelines set out for banks to adopt Open APIs (**Table 2**). This contrasts with Singapore which allows bank to decide whether to open access to their data to third parties, and China which has yet to come up with a guideline or API standards for accessing customer and account information.

Table 2 – Open API phases for the Hong Kong banking sector

Phase	Open API functions	Examples	Delivery time
I	Product information	Deposit rates, credit card offerings, service charges and other public information	by the end of January 2019
II	Customer acquisition	New applications for credit cards, loans and other products	by the end of October 2019
III	Account information	Account balance, credit card outstanding balance, transaction records, credit limit change and others	to be set out before July 2019
IV	Transactions	Payment and transfers	

Source: HKMA (2019).

4.9 Hong Kong also differs from Singapore in virtual banking in which it does not require non-financial companies to partner with a bank or other financial institution to set up a virtual bank. However, Hong Kong has introduced some new requirements for the licensees to suit the business model of virtual bank. For instance, virtual banks are not allowed to impose minimum balance requirements or low-balance fees on customers.³²

³² According to HKMA, the key objective of introducing virtual banks is to help promote financial inclusion by leveraging on these banks' information technology platforms that would lower the incremental cost of taking in additional customers. As such, virtual banks should not impose any minimum balance requirements or low-balance fees on customers.

Internet insurance

4.10 Hong Kong, Singapore and China are similar in their regulatory approach towards Internet insurance, requiring virtual insurers to be licensed and follow the same capital and conduct requirements applicable to traditional insurance companies. Nevertheless, Hong Kong and Singapore have implemented facilitating measures to support the development of Internet insurance in the cities. Hong Kong is piloting a fast track system to expedite the authorization applications for insurers using solely digital insurance products (i.e. without the involvement of intermediaries) to provide insurance products with a simple structure. For Singapore, MAS has relaxed the rules allowing the distribution of all life insurance products online without provision of advice.

5. Concluding remarks

5.1 China is playing in a different league to Hong Kong and Singapore not just because of the size of its Fintech sector, but also due to its approach to regulation which went from "light touch" regulation to one with more emphasis on market order, healthy development and risk development.

5.2 Hong Kong and Singapore have been all along receptive to Fintech development, seeking to strike a balance between regulation and innovation. Hong Kong had arguably been lagging behind Singapore when Fintech first appeared, but it has also been dissuaded from going too fast as China did during its initial years of development. Indeed, the slow start has been made up by various policy initiatives introduced by the Government in recent years. These include (a) issuing eight virtual banking licenses; (b) formulating a policy framework on Open APIs; (c) upgrading the regulatory sandbox; (d) implementing the Faster Payment System to address the increasing market needs for more efficient e-payment services; and (e) piloting a fast track system to facilitate the provision of Internet insurance in Hong Kong.

Regulation of ICOs in Hong Kong, Singapore and China

	Hong Kong	Singapore	China
Market development	<ul style="list-style-type: none"> Currently the second largest ICO hub in Asia after Singapore. Closed 20 ICOs in the first five months of 2018, raising a total of US\$0.2 billion (HK\$1.7 billion). 	<ul style="list-style-type: none"> One of the largest ICO hubs in the world and Asia's leading hub for ICO activity. Closed 53 ICOs in the first five months of 2018, raising a total of US\$1.2 billion (HK\$9.3 billion). 	<ul style="list-style-type: none"> Formerly one of the world's largest ICO hubs before all ICOs were banned in September 2017.
Regulation	<ul style="list-style-type: none"> Regulated by SFC if digital tokens offered are "securities" in form of "shares", "debentures" or interests in a CIS and constituting a "regulated activity". 	<ul style="list-style-type: none"> Regulated by MAS if digital tokens⁽¹⁾ involved are "capital market products" that include any "securities", units in CIS, "derivatives contracts", and "spot foreign exchange contracts". 	<ul style="list-style-type: none"> Banned as token offerings are considered as a form of unapproved illegal fundraising activity that might involve criminal activities.
Specific regulatory requirements	<ul style="list-style-type: none"> A "regulated activity" is subject to prospectus disclosure requirement and requires authorization from or licensing by SFC unless an exemption applies (e.g. offering to professional investors). SFC has recently proposed to tighten the regulation of virtual asset portfolio managers, e.g. allowing only professional investors to invest in virtual asset portfolios. 	<ul style="list-style-type: none"> The offer must be made with a prospectus registered with MAS to enable investors to make informed investment decision, unless an exemption applies. Intermediates (e.g. anyone who operates an exchange platform) must seek approval or recognition from MAS and obtain licenses for trading in "capital market products". 	<ul style="list-style-type: none"> Not applicable.

Note: (1) Separately, businesses of providing services of dealing in digital payment tokens or facilitating the exchange of digital payment tokens (such as cryptocurrency exchanges) is required to obtain a Standard Payment Institution license or a Major Payment Institution license. Such licensee will be regulated for money laundering and terrorism-financing risks. Licensing requirements are the same as those for e-payment services in Singapore. See Appendix III.

Regulation of crowdfunding in Hong Kong, Singapore and China

	Hong Kong	Singapore	China
Market development	<ul style="list-style-type: none"> A relatively small crowdfunding market, raising a total of US\$8.2 million (HK\$63.8 million) in 2017. 	<ul style="list-style-type: none"> Ranked the seventh largest among 29 crowdfunding markets in Asia Pacific, raising a total of US\$190.6 million (HK\$1.5 billion) in 2017. 	<ul style="list-style-type: none"> A front-runner on the global crowdfunding market, raising RMB22 billion (HK\$26 billion) in 2017.
Regulation	<ul style="list-style-type: none"> Regulated by SFC if constituting a "regulated activity" and involving "securities" or "CIS". 	<ul style="list-style-type: none"> Securities-based crowdfunding (i.e. lending-based and equity crowdfunding involving offer of "securities" by companies to retail investors) is regulated by MAS under the securities regulations. 	<ul style="list-style-type: none"> Must be approved by/registered with the securities and financial regulators.
Specific regulatory requirements	<ul style="list-style-type: none"> A "regulated activity" requires authorization from or licensing by SFC unless an exemption applies. Subject to prospectus disclosure requirement if the offer is made to the public. 	<ul style="list-style-type: none"> Subject to the prospectus disclosure and licensing requirements unless an exemption applies. MAS has relaxed the requirements so that SMEs can rely on the exemption of prospectus disclosure requirement for small offers more easily. MAS has lowered the capital requirement and waived security deposit requirement for those platform operators raising funds from accredited and institutional investors. 	<ul style="list-style-type: none"> Equity crowdfunding platforms are prohibited from certain activities such as making a public offer to more than 200 specified investors without approval. P2P lending platforms serve only as information intermediaries between borrowers and investors. They are subject to borrowing caps and prohibited from engaging in 13 non-compliant activities.

Regulation of e-payment in Hong Kong, Singapore and China

	Hong Kong	Singapore	China
Market development	<ul style="list-style-type: none"> At the end of 4Q 2018, stored value facility ("SVF") accounts totalled 56.1 million. During the same quarter, there were on average 17.8 million SVF transactions daily, involving HK\$523 million. 	<ul style="list-style-type: none"> In Singapore, shoppers still favour credit cards (66% in 2017), but alternative payment methods are gaining popularity in the payments market. The market share of e-wallet is expected to increase from 13% in 2017 to 21% in 2021. 	<ul style="list-style-type: none"> Non-cash transactions conducted via e-wallets totalled US\$41.8 billion (HK\$325.4 billion) globally in 2016, of which China accounted for 39% of the total. Within China, e-wallet accounted for 36% of total point of sale transactions in 2016, nine times the global average of 4%.
Regulation	<ul style="list-style-type: none"> Regulated under a mandatory licensing regime administered by HKMA. 	<ul style="list-style-type: none"> Payment services providers must apply for a Standard Payment Institution license or a Major Payment Institution license to operate e-payment services in Singapore. 	<ul style="list-style-type: none"> Regulated as third-party payment to be licensed by PBOC.
Specific regulatory requirements	<ul style="list-style-type: none"> Licensing criteria include: <ul style="list-style-type: none"> (a) maintaining a paid-up share capital of not less than HK\$25 million; and (b) complying with operational requirements such as convincing HKMA of having sufficient funds to cover the float. 	<ul style="list-style-type: none"> Standard Payment Institution licensees are regulated primarily for money laundering and terrorism-financing risks. Major Payment Institution licensees are subject to additional operational requirement such as having a bank which undertakes to be fully liable for the whole e-money float. 	<ul style="list-style-type: none"> Payment firms are required to: <ul style="list-style-type: none"> (a) deposit 100% of their reserves of clients' fund with a centralized custody account; and (b) settle online client payment transactions through a centralized network platform established by PBOC.

Regulation of robo-advisors in Hong Kong, Singapore and China

	Hong Kong	Singapore	China
Market development	<ul style="list-style-type: none"> A key robo-advisor market in Asia Pacific, with AUM amounting to US\$90 million (HK\$700 million) and users totalling 6 000 in 2018. 	<ul style="list-style-type: none"> Market size more than doubled that of Hong Kong, with AUM amounting to US\$2 billion (HK\$15.6 billion) and users totalling 122 000 in 2018. 	<ul style="list-style-type: none"> Gaining popularity in China with 17.5 million investors using robo-advisory services in 2018.
Regulation	<ul style="list-style-type: none"> Licensed by SFC if involving a "regulated activity" such as managing a portfolio of securities or futures contracts for clients on a discretionary basis. 	<ul style="list-style-type: none"> Licensed by MAS and subject to the business conduct requirements under the securities regulations depending on the robo advisor's "scope of activities and business model". 	<ul style="list-style-type: none"> Regulated by financial regulators (i.e. PBOC, CBIRC, CSRC and the State Administration of Foreign Exchange) which jointly issued the Guiding Opinions on Regulating the Asset Management Business of Financial Institutions in 2018.
Specific regulatory requirements	<ul style="list-style-type: none"> From July 2019 onwards, licensees will be required to: <ol style="list-style-type: none"> provide sufficient information to enable investors to make informed decision⁽¹⁾; and effectively manage and adequately supervise the design, development and operations of algorithms used. 	<ul style="list-style-type: none"> Robo-advisors are required to establish a robust framework to govern and supervise their algorithms, and to manage technology and cyber risks. MAS has recently loosened the licensing criteria by allowing robo-advisors to be licensed even if they lack the usual corporate track record requirements providing that certain consumer protections are in place. 	<ul style="list-style-type: none"> The Guiding Opinions, with a transition period until end-2020, require financial institutions, among other things, to: <ol style="list-style-type: none"> make filings of their artificial intelligence technology with the relevant financial regulators; and make sufficient disclosure to customers regarding the potential risks of automated investment technology.

Note: (1) Investors must be informed of the scope and limitations of robo-advisory services, as well as knowing how and when the algorithm will rebalance the portfolio before using the services.

Regulation of open/virtual banking in Hong Kong, Singapore and China

	Hong Kong	Singapore	China
Market development	<ul style="list-style-type: none"> Ranked the third in the 2018 Open Banking Readiness Index. Issuance of eight virtual bank licenses as at mid-May 2019. 	<ul style="list-style-type: none"> Ranked the most advanced in the 2018 Open Banking Readiness Index. No specific licenses are required for the launch of virtual banking. 	<ul style="list-style-type: none"> Ranked the fourth in the 2018 Open Banking Readiness Index. Three commercial banks currently operate as online-only virtual banks⁽¹⁾, plus financial institutions with direct bank licenses to offer their services via an online platform only.
Regulation	<ul style="list-style-type: none"> Subject to the same set of regulatory requirements applicable to traditional banks. 	<ul style="list-style-type: none"> Subject to the same regulations as traditional banks. 	<ul style="list-style-type: none"> Regulatory approach broadly similar to that of Hong Kong and Singapore.
Specific regulatory requirements	<ul style="list-style-type: none"> Open banking: adopting a four-phased approach to Open APIs with timelines for banks to open access to their data to third parties. Virtual banking: allowing non-financial companies to set up a virtual bank using their own technical infrastructure without integration with traditional banks. 	<ul style="list-style-type: none"> Open banking: a comprehensive guideline on open banking has been issued, but banks are allowed to decide whether to open access to their data to third parties. Virtual banking: bank ownership by non-financial companies is capped, as these companies are required to partner with a Singapore-incorporate bank to open a virtual bank. 	<ul style="list-style-type: none"> Open banking: China has yet to come up with a guideline or API standards for accessing customer and account information. Virtual banking: customers can only open Types II and III Accounts via an electronic channel, and these accounts are subject to low monetary caps on transactions, payments and deposit balances⁽²⁾.

Notes: (1) They are WeBank from Tencent, MyBank from Alibaba, and Sichuan XW Bank from Xiaomi.

(2) For example, Type II Account restrict consumption and payments to RMB10,000 (HK\$11,900) per day, while Type III Accounts are subject to corresponding restrictions of RMB2,000 (HK\$2,400).

Regulation of Internet insurance in Hong Kong, Singapore and China

	Hong Kong	Singapore	China
Market development	<ul style="list-style-type: none"> IA launched a pilot scheme "Fast Track" in September 2017 to expedite the authorization applications for selling insurance online without the involvement of intermediaries. The first virtual licence under "Fast Track" was issued to an online-only insurer in December 2018. 	<ul style="list-style-type: none"> Digital life insurers started their operations in Singapore around two years ago. In March 2017, MAS issued a guideline allowing life insurers to offer all types of life policies on the online direct channel with no advice provided. 	<ul style="list-style-type: none"> Recent years have seen explosive growth in the Internet insurance industry, as evidenced by the increase in number of insurance policies sold online from 3.7 billion in 2012 to 12.5 billion in 2017.
Regulation	<ul style="list-style-type: none"> Virtual insurers must be licensed and follow the same capital and conduct requirements as traditional insurance companies. 	<ul style="list-style-type: none"> Licensed life insurers seeking to commence Internet insurance are governed by their existing licensing requirements. 	<ul style="list-style-type: none"> Insurers must be licensed and are governed by the general insurance laws and regulations. Third-party platform is prohibited from selling insurance products online without a license.
Specific regulatory requirements	<ul style="list-style-type: none"> All solvency, capital, and local asset requirements, which are set for ensuring sufficient loss absorption capability of authorized insurers, must be met. Virtual insurers are prohibited from using any agents or banks to sell insurance. 	<ul style="list-style-type: none"> Customers would need to have access to the Product Summary, Benefit Illustration, Product Highlights Sheet and full policy wording of the relevant life insurance policy prior to purchase online. 	<ul style="list-style-type: none"> Prescribed insurance businesses can be provided over the Internet to provinces where the insurance companies concerned do not have branch offices.

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