

The Future of FinTech in Hong Kong



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Executive Summary

Financial Technology, more commonly referred to as FinTech, looks set to reshape the financial sector in the coming years and present Hong Kong with both challenges and opportunities. By taking proactive steps, Hong Kong could become the leading FinTech centre within the region and one of the leading centres in the world. A less proactive approach could cede business and employment to rival centres elsewhere.

FinTech, the application of information technology to the provision of financial services, has surged in recent years, spurred by dramatic advances in technology along with post-crisis regulatory changes. The financial services sector has seen a new wave of participants, including FinTech start-ups as well as major e-commerce and technology firms, alongside incumbent financial institutions. Many FinTechs are providing financial services directly to customers in areas such as payments and P2P (peer-to-peer) lending. Others are seeking to challenge incumbents in a range of areas, while yet others are working with incumbents to improve their services. In Mainland China and the developing world, FinTechs are providing millions of people with access to financial services for the first time largely thanks to technology, increasing use of mobile and particularly smart phones, and decreasing cost of servicing.

FinTechs and FinTech-powered incumbents elsewhere are coming out with superior propositions. Jurisdictions such as the UK, Singapore, Switzerland and Australia are introducing FinTech-friendly policies and regulations. Mainland China is already the global FinTech leader in terms of scale. Hong Kong, despite its large financial sector, as yet has only a modest showing in the FinTech space.

Does this matter? Yes, FinTech matters to Hong Kong because over the coming decade or so it may dramatically alter today's financial services delivery model. Since financial services contribute 18% of Hong Kong's GDP and 6% of its employment, the impact will be considerable. FinTech may overhaul many current jobs and business processes derived from complication of process and administration. This will mean better and cheaper services for financial services customers, but it will also threaten today's jobs and revenue streams. It will be important for Hong Kong to seek new job and business opportunities from new sources, including new FinTech services.

This is a demanding goal. With its large financial industry, its East/West linkages, its trusted institutions and respected regulatory standards, Hong Kong comes to FinTech with much strength. However, there are significant weaknesses. From the standpoint of consumer opportunities, Hong Kong is a small market, already heavily served by principal incumbents. From a wider standpoint, Hong Kong's financial regulations and policies have been caught up with the development of FinTech. Other issues include a lack of overall coordination in the public sector, little tradition of technological innovation, and high cost. From a long-term developmental standpoint, Hong Kong is very strong in 'Fin', but not strong in 'Tech'. And there is competition as other centres move rapidly ahead with their own FinTech initiatives.

In recognition of the need to progress, a Government-appointed FinTech Steering Committee delivered its report in early 2016, and the Financial Secretary's 2016/17 Budget restated a commitment to further develop FinTech in Hong Kong. However, it must be recognised that Hong Kong is a latecomer and, to have any chance of competing with and if possible overtaking other centres, it must focus. Hong Kong should not try to be a FinTech generalist but should focus on key areas within FinTech and build its reputation and expertise based on its strongest advantages and most promising opportunities.

With its large financial sector incorporating many regional headquarters operations, Hong Kong can act as a landing pad for FinTechs eyeing regional opportunities, as a market for FinTechs providing business-to-business (B2B) services, and as a launch pad for Mainland FinTechs seeking international expansion. Based on analysis of opportunity and Hong Kong's present capabilities, five areas of FinTech merit greater focus and attention. The aim would be to invest in these areas to attract talent and transaction so as to form a cluster, eventually generating world-class firms and technologies in the context of an overall FinTech Strategy. Such FinTech Strategy should cohere with government initiatives in the areas of Smart City, digital certification, and cyber strategy generally.

- **Cybersecurity.** This is crucially important not only to Hong Kong's large financial sector but to the wider economy and indeed to the society. Cybersecurity is already a focus. The Hong Kong Association of Banks (HKAB) had developed a cybersecurity threat sharing platform, while the Hong Kong Monetary Authority (HKMA) has indicated that the platform can be extended to non-bank financial institutions. Building on this and related initiatives, a publicly-funded Cybersecurity Centre should be established. The Cybersecurity Centre would be a channel for sharing information on cyberattacks and

developing responses. It would conduct research, development, education and training, with a regional as well as local emphasis.

- ***Payments and securities settlement.*** Leveraging Hong Kong's extensive settlement platforms, the aim would be to secure and expand Hong Kong role as a settlement hub for China-international payments and securities transactions. On the payments side, the retail payments environment can be improved via the Stored Value Facility (SVF) and the HKMA's forthcoming Faster Payments System (FPS). On the securities settlement side, the Stock Connects and the forthcoming Bond Connect indicate the potential for the modernisation of the platforms and interconnection with the payments infrastructure can be essential further enablers.
- ***Digital ID and KYC utility.*** Verifying customer identity and ascertaining suitability and preferences is a costly responsibility for the financial sector. A FinTech solution in the form of a sector-wide digital ID utility to address know-your-customer (KYC) requirements would be welcomed by participants and would in turn support the development of a range of new services. Once established, the digital ID utility would have potential to extend to the registration of broader categories of entity with greater geographical scope, and perhaps ultimately can support the emerging Internet of Things.
- ***WealthTech and InsurTech - data analytics, automation and AI.*** As a major investment management and insurance centre, Hong Kong is already heavily involved in the application of technology in related areas, particularly computerised trading and investment management. There is much greater potential in the areas of automated advice ('robo-advisory'), Big Data, and artificial intelligence (AI). The scope does not just to enhance Hong Kong's competitiveness in these areas but to impact more broadly on other aspects, such as insurance and banking, of Hong Kong's financial centre role.
- ***RegTech.*** Hong Kong's regulators, already respected, can further show their leadership by carving out an appropriate regulatory regime for FinTech, and by developing the application of technology to regulatory compliance. Regulatory reporting can be automated through FinTech, partnering with supportive Big Data analysis, would render a new paradigm of financial regulation in which regulators monitor and analyse their charges' transactions in real time. New approaches are also needed to address the risks posed by FinTech.

This strategy needs to be pursued with energy and vision. A FinTech Office referencing an advisory group from major stakeholders from the private sector, public sector and academia, should be created by the Government to monitor, support and coordinate implementation of the FinTech Strategy. The FinTech Office will also act as a channel for FinTech practitioners to provide input to the formulation of policy and regulation.

The five programmes described above should be supported in due course by initiatives to recast financial regulation along digital lines, build out technical capability, and extend regulatory passporting for Hong Kong financial products and services into the Mainland, regionally and internationally. At the same time, the potential risks of FinTech – increased interconnectedness and complexity, greater herding and liquidity risks, more intense operational risk and opportunities for regulatory arbitrage – need to be recognised and monitored and, where appropriate, addressed through focus on the regulatory perimeter, improved resolution regimes, and a more disciplined approach to operational and cyber risks.

This FinTech Strategy would be a major statement of Hong Kong's intent to be a regional, even global, FinTech centre. The programmes would establish a platform for FinTech-empowered finance in Hong Kong over time and help to foster an ecosystem that attracts players from overseas and Mainland China as well as nurturing home-grown enterprises. Hong Kong would strengthen its attractions as a springboard for Mainland FinTech firms to expand internationally. Local consumers and businesses and government would benefit from improved financial services and from the territory's continued competitiveness as a major international financial centre. Hong Kong would secure an important role in the future of FinTech.

1. Introduction

FinTech, the application of information technology in the context of financial services, is emerging at a time when on the one hand technologies such as the Internet, smartphones, and big data analysis enable low-cost mass distribution of services, while on the other hand incumbents are withdrawing from certain customer segments because of regulatory burdens and unfavourable economics. FinTech brings financial services to the excluded as well as providing improved and new services to existing customers. FinTech is already transforming finance and looks set to continue doing so in the years to come.

For Hong Kong, as a major international financial centre comprising mainly large overseas- and Mainland-based incumbents, FinTech presents both challenges and opportunities. If Hong Kong takes a proactive approach, it can carve out a major role in a FinTech-enabled future. A less proactive role would risk ceding business to other jurisdictions.

This paper, which can be read in conjunction with a companion FSDC paper on distributed ledger technology,¹ seeks to explain briefly what FinTech is and to review global FinTech developments. Hong Kong's existing FinTech-related capabilities are described, and barriers to further development identified. A strategy and initiatives to break through the barriers are proposed, with a focus on five key programme areas, to be supported and coordinated by a government FinTech Office. Appendices provide an independent appraisal of Hong Kong as a FinTech centre, the possible outlook of a FinTech-enabled financial centre, reference actions taken by overseas jurisdictions to promote FinTech and the risks and concerns associated with FinTech.

¹ FSDC, *Hong Kong – Building Trust using Distributed Ledger Technology*, May 2017. Blockchain or distributed ledger technology can be regarded in part as a segment of FinTech, but it has potential applications reaching far beyond finance.

2. What FinTech Is

2.1 Development of FinTech

‘FinTech’ is a loose term embracing a wide range of applications of technology in the context of financial services, including offerings that change pre-existing models of the relationship between the financial service provider and the customer. FinTechs (a term covering in particular start-ups but also other new entrants) tend to focus on very specific customer propositions (which may be neglected by incumbent financial services companies) and offer an efficient and compelling user experience that often cuts across traditional business models. FinTechs are often asset-light, low-margin, innovative, able to scale, and unburdened by legacy systems. They tend to be compliance-light, exploiting regulatory loopholes or otherwise minimising the need for regulatory registration.

Why the ‘Fin’ in FinTech? Finance is an information business, susceptible to information technology. The finance sector is large, profitable, and has pockets of inefficiency. Partly because of heavy regulation, in developed countries the pace of financial sector change is slow, giving rise to anomalies and disconnects from social needs. Agile FinTechs can exploit these anomalies, disintermediating incumbents who still have largely physical or paper-based offerings. In developing countries there are often insufficient financial services for large segments of the community, providing FinTech with a green field of opportunity.

The main segments of FinTech are generally regarded as: finance (including P2P (peer-to-peer) lending, crowdfunding, WealthTech/ InvestTech (investment advice and trading activities including robo-advisory) and InsureTech (insurance technology); payments and settlement; data (including analytics, monetisation and cybersecurity); customer interface (such as smartphone, social media and internet applications). RegTech (regulatory technology) and blockchain-related impact and interact across all of these segments.

- **P2P lending** is a form of debt crowdfunding in which money is raised from individuals or organisations, often via a public process (if exemptions from public offering laws are available), in the form of a loan for business or personal use. Unlike a bank, the P2P platform does not take a position in the loan itself or assure repayment; rather, it puts the lenders and borrower together directly (as ‘peers’), performing a kind of matching or brokerage service or quasi-securitisation that bundles small loan amounts together to meet borrowers’ needs. The platform, which needs no or very little capital, and no physical presence, may also provide ongoing service support for the relationship by

handling payments of interest and repayment of principal. Borrowers' creditworthiness is evaluated in an innovative manner using online sources, with the loan generally provided more cheaply as well as more quickly than a traditional bank loan. Originally aiming to 'democratise' finance, many P2P platforms now source lending funds from banks and traditional financial institutions and investors.

- **Crowdfunding** is the raising of small amounts of money from individuals or organisations and may take two forms: rewards-based and equity. Rewards-based crowdfunding typically involves advance purchase of goods or services or even charitable contributions. Equity crowdfunding involves investment in equity capital by individuals or organisations, via a private or (where relevant exemptions exist) public process. The platform does not provide capital itself, nor does it usually guarantee or underwrite the offering, but rather sets some minimum requirements for disclosure and supports continuing disclosure and interaction between the fund-raising entity and its shareholders. Equity crowdfunding can be used to fund small projects or business start-ups. It helps fill a gap left by the public securities markets which are generally for larger and more mature companies.
- **Robo-advisory.** A robot investment adviser handles the management of an investor's portfolio in response to input from the investor. Automated investment management tools have been in use for some time, but were formerly available only to in-house personnel in the financial institution concerned, while services to the investor were bundled with a human adviser. Now, robo-advisers are available to the investor directly; their charges are lower and they handle lower minimum amounts than traditional advisers. Other attractions include consistency, reliability, accessibility, and the provision of an audit trail.
- **Payment and settlement.** Electronic payment and settlement of transactions is a major area of FinTech, including for startups. Payments FinTechs provide infrastructure that supports individuals and enterprises making payments or money transfers (remittances). There are three FinTech payment models depending on the type of ledger (recording method) used – separate ledgers, central ledger and distributed ledger.² The service is simple, often requiring just an email account, with the transfer authenticated by email ID.

² Bank of England, *Finance Version 2.0?* 7 March 2016, page 19.

- **Big data and analytics.** FinTechs use algorithms to trawl through online channels to detect patterns of behaviour – velocity, volume and variety – that can be actioned. FinTechs operate in the areas of credit scoring, customer acquisition and customer retention, risk management, trading and investment management. In the securities markets, algorithmic traders seek to profit from price and volume trends. Big data FinTechs may work for themselves or may help incumbents improve their offerings.
- **Cybersecurity** is a major concern of the financial sector, with online fraud and hacking at financial institutions replacing traditional theft of banknotes and bullion. The various dimensions of cybersecurity³ include threat intelligence, cloud protection, identity and access management, mobile security, web security, and anti-fraud. FinTechs in this space work with incumbents but also early-stage ventures to develop initially a culture of cybersecurity and resilience.
- **Blockchain-related** (distributed ledger-based) FinTechs seek to provide a secure, efficient proposition through the use of smart contracts, encryption and a ledger compilation dynamic that dispenses with the need to trust a central authority such as a bank. The technologies together provide the capability to create and control digital assets and digital autonomous organisations, to trace individual transactions, and to trace and tag copies so that intellectual property is protected and royalties are paid. Examples of services include remittances, identity, and venture funding. (See separate FSDC paper on distributed ledger technology.)

A distinction can be drawn between FinTech operators that seek to provide financial services to customers directly (B2C), and those which seek to help incumbent financial institutions and other financial services businesses improving their own offerings (B2B). FinTechs providing direct customer services tend to focus on retail and small and medium enterprise (SME) users, whereas in corporate and investment banking because of the need for sophisticated expertise, deep relationships and capital, FinTechs more often partner with incumbents. Incumbents (including financial institutions as well as major IT, ecommerce and technology firms) are also making efforts to develop FinTech internally.⁴

³ See Flanders Investment and Trade Market Survey, *Cybersecurity and FinTech in Israel*, 2016.

⁴ PwC, *Blurred Lines – How FinTech is shaping financial services*, March 2016, <https://www.pwc.se/sv/pdf-reports/blurred-lines-how-FinTech-is-shaping-financial-services.pdf> (“PwC Report”)

The FinTech start-up sector is growing rapidly. Total capital investments globally in 2015 reached a record US\$46 billion, falling back in 2016 to a still-historically high US\$24 billion across 1,076 deals in the face of political uncertainty and perceptions of slowing growth in China.⁵ By comparison, in Hong Kong, investment stood at US\$169 million for 2016. Venture capital investment globally in 2016 rose to a record US\$13.4 billion led by the US\$4.5 billion Ant Financial placing. Worldwide there are currently 21 FinTech ‘unicorns’ (billion-US dollar enterprises).⁶

At the same time, the potential risks of FinTech should be recognised. These include increased interconnectedness and complexity, greater herding and liquidity risk, more intense operational risk, and opportunities for regulatory arbitrage. Regulatory authorities need to recognise and monitor and, where appropriate, address these risks through such measures as a sharper focus on the regulatory perimeter, more responsive prudential requirements, improved resolution regimes, and a more disciplined approach to operational and cyber risks. Education and professional training on risk are needed. Please refer to **Appendix 6** for more detail on the risks of FinTech.

The impact of technology on financial services is not new; rather, the current FinTech trend is distinguished by the speed of technological change and the increasing range of new entrants.⁷ This FinTech trend is still relatively young – the ‘best’ of FinTech may be yet to come. Conversely, FinTechs have not yet gone through the full business cycle and have yet to prove their ability to survive downturns. FinTechs are largely operating outside the main ambit of financial regulation, especially where they do not compete directly with incumbents and promote financial inclusion by targeting underserved groups. However, FinTechs must eventually come within regulation, and may thereby lose part of their competitive advantage. FinTech-enabled incumbents may prove resilient and beat off or absorb FinTech challengers. The eventual landscape of the coming FinTech-enabled world is difficult to predict.

2.2 Leading global FinTech centres

Mainland China has the world’s largest FinTech sector, with the sophisticated offerings from companies like Alibaba’s Ant Financial and Tencent’s WeChat attracting hundreds of

⁵ KPMG, *The Pulse of FinTech Q4 2016*, 21 February 2017.

⁶ CB Insights, Current Private Companies Valued at \$1B+, <https://www.cbinsights.com/research-unicorn-companies>, viewed on 24 February 2017.

⁷ Arner et al, “The Evolution of FinTech: A New Post-Crisis Paradigm?” (Vol 47, October 2015) *Georgetown Journal of International Law*, 1345-1393.

millions of users. This relates partly to the underdeveloped nature of the incumbent Mainland financial system which favours state-owned enterprises and leaves large segments of the population and the private sector largely unbanked.

Among developed countries, one commentator rates the UK⁸ as the leading global FinTech centre. In August 2014, the UK Chancellor of the Exchequer announced the goal of making the UK the global capital of FinTech. Since then, concerted efforts have been made by the government and regulators, in coordination with the private sector. The UK can claim to be the leading FinTech regulators, with the Financial Conduct Authority (FCA)’s Innovation Hub being particularly well-regarded. See **Section 2.1** below and **Appendix 3** for more on the UK’s initiatives.

Selected leading FinTech centres are profiled in **Table 1** below.⁹

| Table 1. Leading International FinTech Centres (developed economies) | | | | |
|---|--------------------------------|-----------------------|-------------------|---|
| Centre | Market size (Revenue £) | Investment (£) | Employment | Overall comment |
| UK | 6.6 bn | 524 m | 61,000 | ‘All-rounder’ |
| California | 4.7 bn | 3.6 bn | 74,000 | ‘Established and efficient’ |
| New York | 5.6 bn | 1.4 bn | 57,000 | ‘Proximity to expertise and customers’ |
| Singapore | 0.6bn | 44 m | 7,000 | ‘Increasingly progressive regulatory regime’ |
| Germany | 1.8 bn | 388m | 13,000 | ‘Large but complex’ |
| Australia | 0.7 bn | 198 m | 10,000 | ‘Up and coming’ |
| Hong Kong | 0.6 bn | 46 m | 8,000 | ‘Potential – relatively nascent, emerging market’ |

Source: E&Y FinTech, Note: For discussion of Mainland China, see section 3.4 below.

It is also worth mentioning Sweden’s Stockholm, and Berlin which has an eye on London’s FinTechs in the post-Brexit uncertainty.¹⁰ Other notable centres include Israel with a focus on cybersecurity, the Netherlands and Belgium on payments, Dublin (Ireland) on fund administration, Malta and the Isle of Man on cryptocurrencies, and Estonia on financial

⁸ E&Y, *UK FinTech – On the cutting edge*, February 2016 (“**E&Y FinTech**”).
⁹ *Ibid.*, page 14-15. The centres were selected by the UK’s HM Treasury. In November 2016 E&Y and DBS Bank produced a separate report identifying China as, ‘the undoubted centre of global FinTech innovation and adoption’ – see section 3.4 below.
¹⁰ Guy Chazan, “Berlin bids to replace London as post-Brexit FinTech capital”, *Financial Times* (6 July 2016), Fintech.

identity. Toronto, with particular strength in cybersecurity, is also well-regarded, ranking fifth in a January 2017 Survey in which London ranked first and Hong Kong seventh.¹¹

¹¹ Toronto Financial Services Alliance & Z/Yen Group, *Trends and Innovations in Financial Services* January 2017.

3. Selected Jurisdictions' Support for FinTech

FinTech developed in the US through the support of private sector incubators/accelerators and venture capitalists, without much in the way of explicit government support beyond generous research funding. In Mainland China, the FinTech sector has emerged as a result of entrepreneurial initiative – again without direct governmental support beyond a tolerance in recognition of their financial inclusion and growth benefits that allowed FinTechs to operate largely unregulated. However, some jurisdictions coming later to FinTech have taken a much more proactive role, hoping to build domestic FinTechs and exploit their jurisdiction's strategic niche. Hong Kong needs to take the proactive course.

The UK, Singapore, and Australia are three noteworthy cases of government involvement, while Mainland China has the largest FinTech market. These jurisdictions are discussed briefly below. Please refer to Appendices 4 and 5 for more detail, including comparison with Korea, Taiwan, India and Hong Kong.

3.1 UK

The UK, already arguably the world's leading international financial centre and a strong technology player, came to FinTech with substantial strengths. Then-Chancellor George Osborne accordingly set the UK Government's sights high, aiming for London to be, 'the global capital of FinTech'. As of early 2017 (per section 2.2 above), that goal appears to have been achieved, with the UK rated ahead of California and New York (separately) as well as of other global FinTech centres. The UK is particularly highly regarded on the policy front, and its regulators are generally felt to be the most FinTech-friendly in the world. However, Brexit, which threatens the ability of UK-based FinTechs both to passport their products into Europe and to hire EU nationals, is a cloud over the UK FinTech scene.

Key initiatives undertaken by the government and regulators in the UK include the following:

- The FCA's Project Innovate, which incorporates an Innovation Hub to help businesses bringing new products to market.
- A regulatory sandbox (safe place) to provide regulatory space for FinTechs to experiment with new business models.
- A clear structure within the regulator with responsibility for servicing FinTech.

- Efforts to level the playing field among financial institutions (eg compelling big banks to share SME credit data).
- A commitment to develop an open banking standard for application programming interfaces (APIs) to enable FinTechs to access customer data to provide services.
- Informal means of communicating regulatory and compliance issues to FinTechs, such as themed weeks and informal steers.
- Various specific regulatory guidelines, e.g. on robo-advice.

The constructive attitude to FinTech is shown by all the UK financial regulators. Nonetheless, the sandbox and the Innovation Hub provide only limited relief: core regulations remain unchanged and require considerable compliance effort.

3.2 Singapore

Singapore has been promoting itself strongly as a FinTech centre, with frequent support particularly from the Deputy Prime Minister and the Managing Director of the Monetary Authority of Singapore (MAS). Within the government, a FinTech Office has been created to coordinate the government's FinTech strategies and promote Singapore as a FinTech centre. In November 2016, a FinTech Innovation Village, LATTICE80, was established in the heart of the financial district of Singapore.

Aiming to develop a Smart Financial Centre, as part of the Prime Minister's Smart Nation Programme, the MAS has undertaken a number of measures to promote and develop FinTech. The aim seems to be to foster FinTechs that enable incumbent banks to achieve greater efficiency rather than disrupting them.¹² Proportionality of regulation, not stifling innovation, and focusing on risk are hallmarks of the MAS's approach to regulating FinTech. A regulatory sandbox has been created. Ownership of innovation is left with financial institutions – they are allowed to rely on their own risk assessments when introducing new products and services, without needing to consult the MAS.

Other notable FinTech initiatives of the MAS include the following:¹³

- Creation of a S\$225 million fund to invest in FinTech projects over 5 years.

¹² "Singapore tries to become a FinTech hub", *The Economist*, 12 January 2017, Finance and Economics.

¹³ Revi Menon (Managing Director of MAS), "Singapore's FinTech Journey – Where We Are, What Is Next", *Speech at Singapore FinTech Festival on 16 November 2017*.

- A national KYC utility, to be based on the MyInfo service developed by the Ministry of Finance and GovTech (lead agency for digital and data strategy).
- An all-in-one payments system. The MAS has published a Singapore Payments Roadmap.¹⁴ The Roadmap calls for a streamlined and strengthened regulatory framework that will be applied on an activity basis, a new governance model incorporating a national payments council comprising both users and providers, and key infrastructure projects to encourage take-up of electronic payments.
- A Blockchain infrastructure for cross-border interbank payments, to replace correspondent banking networks – in cooperation with Singapore Exchange, eight banks and the R3 consortium.
- An open API architecture to allow banks to share aggregated data, establishing Singapore as a centre of excellence for financial services APIs.

On 1 December 2016, it was announced that Financial Services – Information Sharing and Analysis Centre (an international collaborative association mainly of banks) would establish an Asia-Pacific cyber intelligence centre in Singapore jointly with the MAS.¹⁵

3.3 Australia

The Australian government has conducted a review of the nation’s FinTech needs and potential, as part of a broader review of the financial system as a whole. A FinTech Advisory group has been appointed to advise the Treasury, which aims to work with the industry to make Australia the leading market for FinTech innovation and investment in Asia.

Key initiatives include the following:

- Australian Securities and Investments Commission (ASIC)’s creation of a regulatory sandbox for FinTechs.
- ASIC’s establishment of an Innovation Hub.
- Government procurement and active support of FinTech solutions (‘ProcTech’).
- Reform of insolvency laws to reduce deterrents to angels investing in start-ups.

¹⁴ MAS, *MAS Sets Out Strategies for Electronic Payments in Singapore*, 19 August 2016.

¹⁵ MAS, *FS-ISAC and MAS Establish Asia Pacific (APAC) Intelligence Centre for sharing and analysing cyber threat information*, 1 December 2016.

- Promotion of greater data availability, including standard APIs to support FinTech innovators.
- Tax concessions for investments in FinTech.
- A national cybersecurity centre.
- A global innovation strategy, including overseas ‘landing pads’ for Australian FinTechs to operate in overseas.
- A regulatory framework to support equity and debt-based crowdfunding.

3.4 Mainland China

Mainland China is by far the world’s largest and most established FinTech market, regarded by one commentator as, “...the undoubted centre of global FinTech innovation and adoption – thanks to developments across multiple hubs, such as Shanghai, Hangzhou, Beijing, and Shenzhen.”¹⁶ Forty percent of consumers in China are using FinTech for payments compared to 4% in Singapore; 35% are accessing FinTech-based insurance products, compared with 1-2% in many Southeast Asian markets. In the context of poor or non-existent service provision by financial incumbents to swathes of the retail and SME population, e-commerce providers Baidu, Alibaba (via Ant Financial), and Tencent (Wechat), collectively BAT, stepped forward with increasingly sophisticated FinTech offerings that have attracted hundreds of millions of users. Seven major FinTech verticals have emerged: (i) payments and e-wallets, (ii) supply chain and consumer finance, (iii) P2P lending, (iv) online funds, (v) online insurance, (vi) personal finance management, and (vii) online brokerage. International expansion is another priority for China’s large FinTechs – in January 2017 Alipay bid US\$880 million for US-based Moneygram International¹⁷ as well as acquiring a majority state in India’s PayTM.

The Mainland government has been generally supportive of FinTech, recognising its ability to provide financial services to the unbanked segments of the population and the private sector (financial inclusion), and prior to mid-2015 generally refrained from regulating it. In this permissive environment, innovation flourished. For example, as many as 3,500 P2P platforms were active by 2015. The rash of new platforms unfortunately included many problematic

¹⁶ DBS and E&Y, *The Rise of FinTech in China*, November 2016, page 4.

¹⁷ “Alibaba’s Online Payments Arm is Buying a U.S. Money-Transfer Giant”, *Fortune*, 26 January 2017, <http://fortune.com/2017/01/26/alibaba-moneygram/?iid=sr-link1>

and fraudulent operators. Nine hundred P2P platforms closed in 2015,¹⁸ the scandals including eZubao which apparently operated a Ponzi scheme.

Accordingly, in mid-2015, China's State Council issued a new policy approach, based on building a comprehensive regulatory system to cover FinTech. As one example, the China Banking Regulatory Commission (CBRC), together with the Ministry of Industry and Information Technology, the Ministry of Public Security and the Cyberspace Administration of China have issued regulations¹⁹ governing online P2P lending – believed to be the world's first. According to the regulations, a P2P intermediary may not provide credit itself, accept deposits, or issue or distribute financial products. Client funds intermediated must be held by a commercial bank for safekeeping. The P2P intermediary should carry out assessments of borrowers to ascertain risk; data security and privacy are also mentioned. By January 2017, some 2,200 P2P platforms were in operation with outstanding loans of RMB850 billion, around one-fifth of total consumer credit.²⁰

Looking forward, China's consumers are key drivers of FinTech trends, being keen adopters of technology and open to online personal finance products. Mobile payments are becoming ubiquitous for small transactions, topping RMB22 trillion for the first three quarters of 2016, nearly two-thirds of all non-cash payments. SMEs, which contribute large shares of economic activity and employment, are still a barely-tapped market. SME needs are moving from borrowing to transaction banking (effective supply-chain financing solutions and digitised cash-management systems) and asset management. Another FinTech development driver will be the nation-wide Social Credit System (SCS), expected to be operational by 2020, which will assign a credit score to every citizen and business in China. Meanwhile, China's National Internet Finance Association has launched its Internet Financial Industry Information Sharing Platform.

¹⁸ Raymond Tsoi, "China FinTech world full of frauds", ejinsight.com, 1 March 2016, <http://www.ejinsight.com/20160301-china-fintech-world-full-frauds/>

¹⁹ *Interim Administrative Measures on Business of Online Lending Information Intermediaries*, Order No. 1 [2016] of the China Banking Regulatory Commission, the Ministry of Industry and Information Technology, the Ministry of Public Security and the State Internet Information Office, 17 August 2016.

²⁰ "The age of the appacus", *The Economist*, 25 February 2017, Finance and Economics.

4. Present State of FinTech in Hong Kong

Hong Kong has a large financial sector which contributes 18% of its GDP and employs 220,000 people or 6% of the workforce. There has been a recent surge in FinTech start-ups, with about 160 entrants although most are still very small, and there is an active accelerator/incubator scene, with the Cyberport providing dedicated co-working space. The financial sector is aware of the potential of FinTech and financial institutions are exploring FinTech solutions.²¹ In fact, Hong Kong made an early start in FinTech with the launch of the Octopus card in 1997, and although the card has been subject to regulatory constraints, Octopus was recently granted a stored value facility (SVF) licence,²² being one of current 13 providers.²³ A successful FinTech Week during November 2016 provided further momentum. However, as a whole, Hong Kong's FinTech is still at an emerging stage, not commensurate with its stature as a financial centre. See **Appendix 1** for a third-party review of Hong Kong's present FinTech capabilities. Another review ranks Hong Kong fifth among global FinTech centres, with room for improvement in innovation and government support.²⁴

In February 2016, a Government-appointed Steering Committee reported with five recommendations:²⁵

1. Promotion via developing a vision and holding an annual FinTech event and competitions.
2. Facilitation through establishment of a one-stop shop, efforts to attract accelerators, and standard-setting measures.
3. Regulations: establishing contacts points within the financial regulators to explain current regulations to FinTechs.
4. Funding: to improve dissemination of information on funding sources.
5. Talent: to encourage young people to consider FinTech, and to disseminate information overseas on Hong Kong's visa policy.

²¹ See discussion in FSDC, *Strengthening Hong Kong as a Retail Fund Distribution Centre*, December 2015 (“**FSDC Distribution Paper**”).

²² “HKMA grants five e-wallet providers SVF licenses”, *Computerworld*, 29 August 2016.

²³ HKMA, *Register of Stored Value Facility Licensees*, <http://www.hkma.gov.hk/eng/key-functions/international-financial-centre/regulatory-regime-for-svf-and-rps/regulation-of-svf/register-of-svf-licensees.shtml>, viewed on 23 February 2017.

²⁴ Deloitte, *Hong Kong ranks No.5 among the global top five FinTech hubs*, 30 October 2016.

²⁵ The Government of the HKSAR, *Report of the Steering Committee on Financial Technologies*, February 2016.

Responding to these recommendations, the Financial Secretary's 2016/17 Budget²⁶ introduced a number of measures to support FinTech. These included, a dedicated FinTech team under InvestHK; more incubator support for FinTechs at Cyberport; dedicated platforms at the financial regulators including the HKMA, the Securities and Futures Commission (SFC) and the Office of the Commissioner of Insurance (OCI, to be replaced by the Independent Insurance Authority) to enhance communication with the Fintech community; a cybersecurity programme; and exploration of the potential of blockchain technology for financial services.

Accordingly, in March 2016, the HKMA established its FinTech Facilitation Office, and other Hong Kong financial regulators created their own FinTech units. In September, the HKMA announced a Fintech Supervisory Sandbox,²⁷ albeit only for incumbent banks. A HKMA-ASTRI FinTech Innovation Hub was announced in November 2016. In addition, Hong Kong's Applied Science and Technology Research Institute (ASTRI) is engaged with an increasing range of private and public sector participants in building FinTech solutions, including partnering with the academic sector. The HKMA is also undertaking research into digital currency.²⁸

FinTech initiatives can benefit from new and existing funding schemes, including the Innovation and Technology Fund (ITF), as well as the Innovation and Technology Venture Fund and the Cyberport Macro Fund – altogether, a pool of about HK\$5 billion. These also include the potential for 40% matching of industry contributions to ITF supported projects. The ITF's Enterprise Support Scheme offers matching funds up to HK\$10 million for research and development.

The Financial Secretary's 2017/18 Budget²⁹ expressed continuing support for FinTech, noting the HKMA's development of a new Faster Payment System (FPS) and committing the Government to explore new payment channels for settling government bills and fees. The Budget also notes and supports blockchain exploration by ASTRI and the HKMA, and the HKMA's cybersecurity programme, hoping that the efforts of the public sector will dovetail with private initiatives.

²⁶ The Government of the HKSAR, *The 2016/17 Budget*, paragraphs 56 to 63.

²⁷ HKMA, "Circular on Fintech Supervisory Sandbox (FSS)", 6 September 2016.

²⁸ aastocks.com, *HKMA Studies Issuing Digital Currency with Note-issuing Banks*, 27 March 2017.

²⁹ The Government of the HKSAR, *The 2017/18 Budget*, paragraphs 127 to 132.

5. Strategy for Hong Kong's FinTech Positioning

5.1 Strengths

Hong Kong has a world-class financial sector, but only a nascent FinTech sector. The aim should be to develop Hong Kong's FinTech on a par with its mainstream finance, to secure a better future for the financial sector and for Hong Kong as a whole. Given the highly-regulated nature of finance, the change process will take time, more a journey than a campaign.

What can Hong Kong contribute in FinTech? Other financial centres are already staking their claims, while incumbents based overseas and in Mainland China are presently dominating the space. What can Hong Kong do?

Given the competition from other centres in the region such as Shenzhen, Shanghai, Singapore, Sydney, Seoul, and others, Hong Kong will need to specialise, focusing on its comparative advantages. These include the rule of law (inspiring trust), the strength of its business services (accounting for 12% of GDP and 13% of employment), its deep and sophisticated capital markets, its access to the Mainland China market, and its informal network of connections linking the East with the West. Safeguards for intellectual property and data protection provide further underpinnings for Hong Kong's FinTech proposition.

Hong Kong may have most advantages in respect of the following:

- Providing a base for new and established FinTechs which target Hong Kong and the Asia-Pacific region which, particularly given the large number of regional financial operations based in Hong Kong, constitutes the territory's natural catchment area;
- Focusing on B2B FinTech, ie FinTech firms and businesses that serve incumbent financial institutions, aiming to meet their regional needs;
- Attracting Mainland FinTech, IT and e-commerce companies to set up in Hong Kong as a base for regional and international expansion.

Hong Kong would also be able to support incoming international FinTechs seeking expansion into the Mainland, although given the relatively evolved state of FinTech on the Mainland this would be more challenging.

As regards specific FinTech segments, Hong Kong may have more potential focusing on areas of FinTech that serve B2B relationships, such as Cybersecurity, Big Data and Analytics, RegTech and Blockchain-related financial services. Given Hong Kong's key role in forex trading and international banking, payments and settlement at the B2B (interbank) level also have strong potential. Hong Kong is already world-leading in electronic payment and settlement wholesale transactions, particularly in RMB. RegTech is another candidate area in view of the standing and capabilities of Hong Kong's regulators combined with the significant presence of regional financial institution and other business headquarters.

Although Hong Kong may not be a target market for B2C FinTechs due to its relatively small population, it may have a role in piloting products aimed at larger markets elsewhere. Passporting of FinTech products and services into- and out of Hong Kong, particularly into Mainland and regional markets, would be an important supporting factor. Asset and wealth management, a Hong Kong strength, would be another promising area for future development (ie WealthTech and InvestTech), particularly in respect of robo-advisory, big data and AI.

5.2 Barriers

Due to the nature of Hong Kong's economy and financial system, there are barriers to the development of FinTech. While these obstacles are not insuperable, they need to be taken account of in formulating strategy.

Government will have an important role in addressing these barriers. Numerous agencies and institutions within the public sector have a role in FinTech, including: the Financial Services and Treasury Bureau, the Innovation and Technology Bureau, the financial regulators, InvestHK, Cyberport, ASTRI, the Science Parks (including eventually the Lok Ma Chau loop), universities, and the FinTech offices of the HKMA and other regulators. There appears scope for communication and coordination to be improved, so that opportunities are not missed and resources are better utilised.

The main barriers to FinTech in Hong Kong are the following:

- **Demand.** FinTechs, whether local or overseas, need customers. For B2C FinTechs, Hong Kong's consumer market (retail customers and SMEs) is unpromising – except in respect of asset and wealth management. With 7.3 million people, the market is small, and although it is augmented by the large visitor stream (56 million arrivals in 2016, the majority from the Mainland), the market is already heavily served by incumbents. For

B2B FinTechs, the customer base is large, but Hong Kong's financial institutions are mainly headquartered elsewhere; key purchasing decisions are taken in London, Zurich, New York or Beijing, leading to a challenging sales cycle. This is not true of every purchasing decision – banks' global platforms may not meet local and regional needs, providing opportunity for Hong Kong-based FinTechs – but incumbents' demand for B2B FinTech services is less than the scale of Hong Kong's financial sector might suggest.

On balance, demand for B2B may be more promising than for B2C, but given the size of the Hong Kong market, FinTech products will ultimately have to be exported – to the Mainland and the Asia-Pacific region.

- **Technological capability.** This is the 'Tech' part of FinTech. Hong Kong's Information and Communications Technology (ICT) sector employs over 80,000 people (including internal IT staff within enterprises), and contributes 6.6% of GDP. However, Hong Kong has historically been more of a buyer and adapter of technology developed elsewhere than a technological innovator. International technology firms do more marketing than development work in Hong Kong. Some of Hong Kong's universities have strong science and technology faculties, but are less strong at developing business-useable applied research. Cyberport, the Science Parks, ASTRI and other Hong Kong public sector institutions play a role, and Hong Kong is adjacent to Shenzhen, not only a Mainland but a global technology centre. Nonetheless, building the capability for technological innovation is a constraint and challenge for Hong Kong.
- **Financial regulation.** Hong Kong financial regulation is very much based on traditional business models with dedicated regulators for banking (the HKMA), securities (the SFC), insurance (the OCI/IA), and pensions (the Mandatory Provident Funds Schemes Authority, MPFA). Separate regulations govern the institution-types, with approaches to KYC, AML and international regulatory requirements such as FATCA and the Common Reporting Standard (CRS) not necessarily standardised. Regulatory processes tend to be paper-based, requiring physical verification of documentation. KYC/client onboarding requirements involve face-to-face meetings and lengthy analysis of client financial needs and the trend has been worsening. It has become very difficult in recent years for any new enterprise to open a bank account due to increased AML/KYC requirements.

None of this is helpful to FinTech. FinTech business models may cut across traditional business lines, and are online rather than based on paper and physical meetings. Some

FinTechs in Hong Kong find regulatory niches – P2P lenders obtain a moneylender’s licence – but such regulatory coverage may not be adequate to protect the public or to provide for business expansion. In the few cases where regulation specifically recognises FinTech, it is demanding – SVF (e-wallet) providers are required by the HKMA to have capital of HK\$25 million.

5.3 Strategy

Given Hong Kong’s mix of strengths and weaknesses, the still-nascent state of its FinTech development, and the intensity of regional and international competition, it is clear that Hong Kong does face some challenges. Some dimensions of FinTech are unpromising for Hong Kong. Nor would it be helpful merely to address the barriers. Financial regulation needs reform, but – however facilitative the regulations – with limited demand for their services few FinTechs may come.

The strategy suggested here is to focus on a limited set of areas, and craft a set of initiatives that simultaneously play to Hong Kong’s strengths, stimulate demand, and address specific regulatory issues so that a functioning ecosystem can develop. Such an ecosystem will include financial incumbents (including early-stage financing firms), FinTech start-ups, established FinTechs from overseas, and local and international tech companies, and will involve a range of business suppliers as well as public institutions including government, regulators, ASTRI, Cyberport, the Science Parks and universities. The objective would be to capture, not just front office functions like sales and marketing in which Hong Kong has tended to specialise in the past, but operations and development as well, in order that the ecosystem be fully functioning and deep-rooted, able to support future innovation, employment and competitiveness.

To galvanise such an ecosystem involves investment on the part of the government and public sector. However, the payback in terms of future business revenues, jobs and overall role for Hong Kong can be substantial.

The five suggested areas of focus are the following:

- Cybersecurity;
- Payments and securities settlement;
- Digital ID and KYC utility;

- WealthTech and InsurTech: Data analytics, automation and AI;
- RegTech.

Each area should be the subject of a programme of action, outlined in the following section. Creating a FinTech Office within government would greatly help coordinate and oversee public sector involvement.

While the focus should be on these priorities, other areas of FinTech should proceed in a ‘business-as-usual’ fashion. Indeed, any breakthrough in the targeted areas would have spill-over benefits for the rest of FinTech, as well as benefitting Hong Kong as a whole.

Please refer to **Appendix 2** for what a FinTech-enabled future for Hong Kong might look like.

6. Proposed FinTech Programmes and Government Oversight

In this section, an outline description is provided on each of the five programmes, covering their nature, present status, issues and barriers, and recommended actions. Each area requires fuller study, but it is not necessary to wait until such study has been completed before starting to act. The need is clear and pressing.

6.1 Cybersecurity

Cybersecurity is concerned with preventing online attacks which disable facilities or otherwise destroy or steal value. For the financial sector, online fraud and hacking of digital accounts has largely replaced traditional theft of banknotes and bullion. Healthcare is another targeted sector, as healthcare records often contain valuable private information – 113 million US healthcare records were compromised in 2015.³⁰ The aims of cyber-attackers reach beyond theft to the disablement, ransoming, or embarrassment of the institution and denial of service to its clients. The motivations for cyberattacks range from economic in the case of theft, to anti-establishment political or geopolitical agendas, to individual disgruntlement or thrill-seeking. Cyber-attackers correspondingly range from conventional criminals to foreign state actors to disaffected employees. As more and more activity takes place online, supported by technologies such as smart phones, cloud computing, and the Internet of Things, vulnerability to cyberattacks is increasing. World-wide cybersecurity spending topped US\$75 billion in 2015, and is expected to more than double by 2020. Meanwhile, the cost of cyberbreaches is expected to reach US\$2.1 trillion by 2019, up almost fourfold from 2015.³¹

Cybersecurity is a major and a growing concern, not just for Hong Kong's financial sector, where the potential for loss of value and disruption is perhaps greatest, but for all of the economy and indeed society. The recent theft of the entire electoral roll³² and announcement of hacking losses at brokerages³³ highlighted the breadth of the problem. An improved cybersecurity capability would benefit Hong Kong as a whole, not just its financial sector.

Present status

³⁰ Nshikan Akpan, "Has health care hacking become an epidemic?" *PBS Newshour*, 23 March 2016.

³¹ Steve Morgan, "Worldwide Cybersecurity Spending Increasing To \$170 Billion by 2020", *Forbes.com*, 9 March 2016, <https://www.forbes.com/sites/stevemorgan/2016/03/09/worldwide-cybersecurity-spending-increasing-to-170-billion-by-2020/#5ebcd9b66832>

³² Ng Kang-chung, "Laptops containing 3.7 million Hong Kong voters' data stolen after chief executive election", *South China Morning Post*, 28 March 2017.

³³ Enoch Yiu, "Hong Kong watchdog to tighten cybersecurity at brokers after hackers steal HK\$110m over 18 months", *South China Morning Post*, 19 April 2017.

Cybersecurity is already a priority issue for Hong Kong financial institutions. All financial institutions have systems in place and most are reviewing and upgrading them. The Hong Kong Police Force has established a Cyber Security and Technology Crime Bureau. Numerous institutions such as ASTRI have penetration-testing units, but resources are divided, and there is a lack of channels for sharing information.

In terms of specific initiatives, the HKMA has developed a Cybersecurity Assessment Framework to make sure that the banks' cybersecurity is up to standard. A Cyber Threat Intelligence Sharing Platform is being developed by the ASTRI for Hong Kong Association of Banks (HKAB). This will cover threat intelligence in English and Chinese; the HKMA has indicated that it can be extended to non-bank financial institutions. A certification and accreditation programme (open to the entire financial sector) is to be developed by ASTRI and run by the Hong Kong Institute of Bankers, using expertise provided by UK CREST.

Proposed actions

The objective should be to establish a more dynamic and connected cybersecurity ecosystem.

The core of the ecosystem should be a major government-funded Cybersecurity Centre – which may be developed from the initiatives described above. The centre would bring together cybersecurity capabilities from the public sector and act as a focal point for collaboration between public and private sector, including the academia and overseas parties. It would conduct research, development, education and training on cybersecurity. Reference may be made to Australia's cybersecurity centre and its national cybersecurity strategy.³⁴ The centre would cooperate with related institutions in the field, and provide services such as penetration-testing, where appropriate on a commercial basis, to the financial sector and to other sectors at need.

Coherence in policy and regulation is needed. The HKMA's Cyber Security Assessment Framework is a good start. Other Hong Kong financial regulators should subscribe to it or adopt frameworks which are compatible with it. The Cyber Threat Intelligence Sharing Platform should likewise be extended to non-bank financial institutions (and indeed other

³⁴ The Australian Government, *Australia's Cyber Security Strategy*, April 2016. It is also worth noting, among others, the UK's GBP1.9 billion 2016-2021 cybersecurity strategy, albeit that the UK with its large economy and military commitments is perhaps a less relevant comparator for Hong Kong.

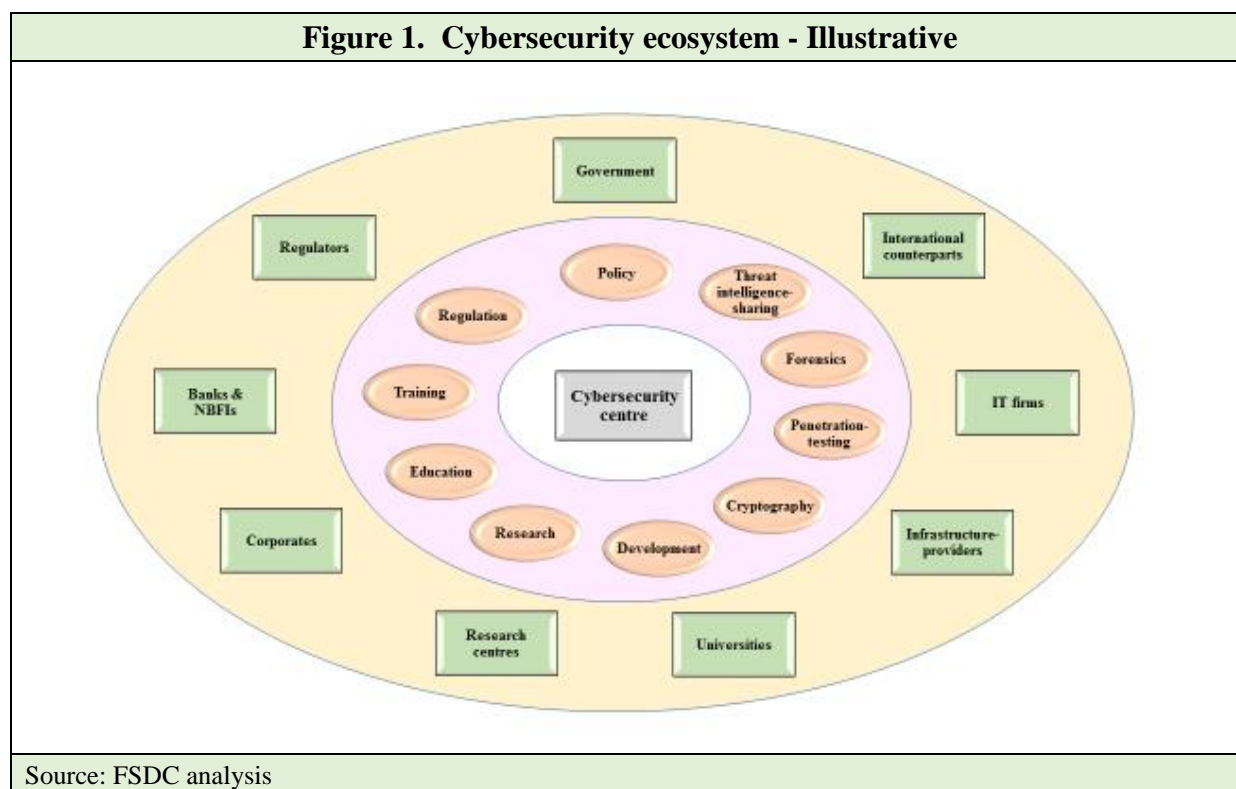
types of enterprise and institution) and shared appropriately with regional and international regulators.

Data security is a global concern. Issues in Hong Kong include: regulatory standards (which may differ slightly among regulators within Hong Kong as well as internationally); standards for cloud computing; and the various government agencies involved, e.g. the Innovation and Technology Bureau, the Privacy Commissioner for Personal Data. There is a need to align regulations and improve coordination among concerned government departments and regulators on data security. The proposed Cybersecurity Centre can play a leading role here, not only in Hong Kong but in the effort to coordinate regional regulations.

The universities should be encouraged to conduct research into cybersecurity-related issues and knowledge areas such as cryptography, and establish a Cybersecurity programme (at present the University of Oxford in the UK appears to be the only major institution with such a programme).³⁵ The development of software for big data analysis (for threat intelligence) and other cybersecurity functions should be supported. These initiatives, important in themselves, will also enhance the demand for cybersecurity professionals across the whole of the financial sector, and will help foster the ecosystem – see **Figure 1** on the next page.

³⁵ See Cyber Security Oxford, University of Oxford, <https://www.cybersecurity.ox.ac.uk/>, viewed on 21 October 2016.

Figure 1. Cybersecurity ecosystem - Illustrative



Israel is a global leader in the cybersecurity field. Consideration should be given to building cooperative links with Israeli institutions to foster two-way knowledge flow. It would also be important to develop links with the Mainland China institutions concerned with cybersecurity, particularly the country's top internet regulator the Cyberspace Administration and the newly-founded Cybersecurity Association. Mainland China has its own approach to cybersecurity, manifest in the recent adoption of a draconian cybersecurity law.³⁶ Hong Kong has the opportunity to develop a more transparent and predictable cybersecurity regime, and at the same time to find ways to bridge the expectations of Mainland China and international users on this sensitive topic. China has recently launched a satellite which among other things will contribute to secure message transmission using quantum entanglement.³⁷

³⁶ Zhuang Pinghui, "China pushes through cybersecurity law despite foreign business fears", *South China Morning Post*, 7 November 2016.

³⁷ Stephen Chan, "China's hack-proof quantum satellite leap into space leads the world", *South China Morning Post*, 16 August 2016.

6.2 Payments and securities settlement

B2B payments and securities settlement are already important areas of activity for Hong Kong in which the territory has world-class infrastructure. Innovation is needed, but it is also important to secure Hong Kong's existing role in these areas as conditions change.

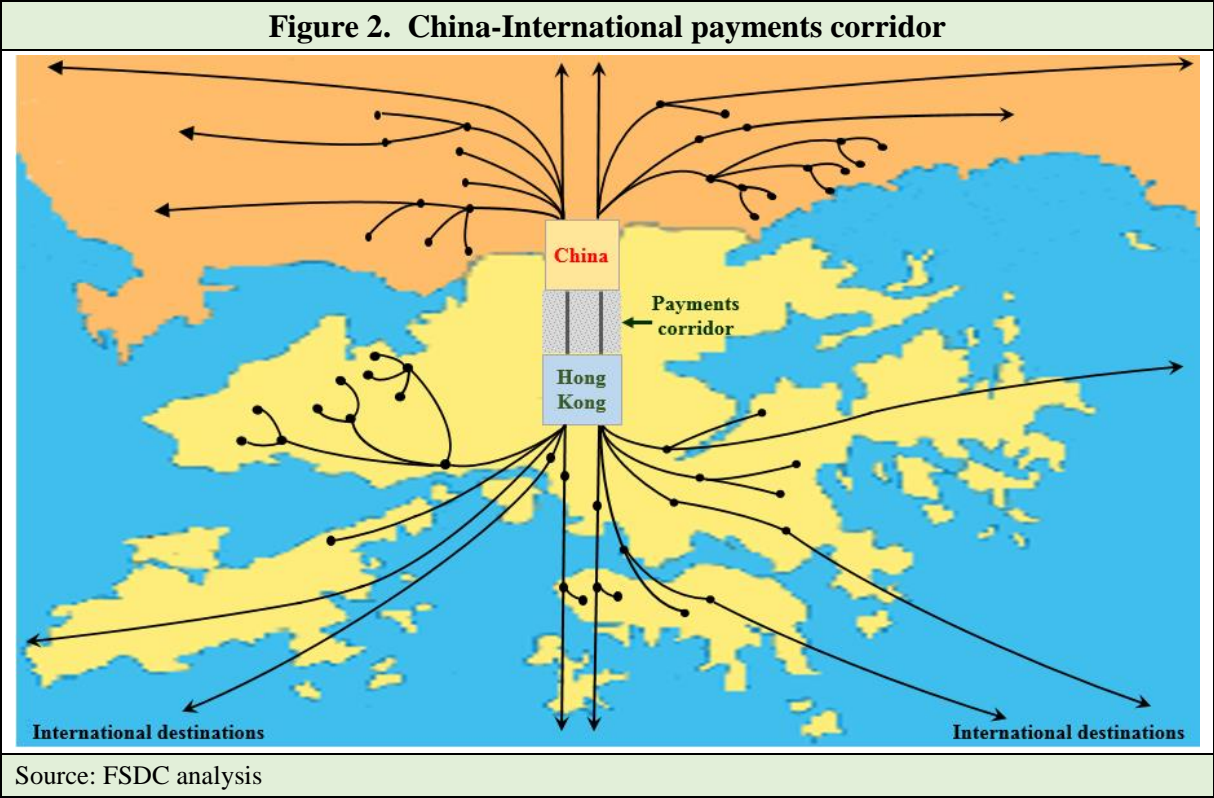
Payment is a major area of FinTech investment. Most payments FinTechs handle are in the B2C and C2C dimensions, enabling retail and SME users to conduct payments and remittances with near-wholesale levels of timeliness and low cost. As regards B2B payments, banks may continue to almost monopolise large-value cross-border payments for the foreseeable future because households and corporates still store the bulk of their liquid assets in banks, though this appears to be changing rapidly in Mainland China. Domestic interbank payments are via the respective RTGS (Real Time Gross Settlement System) of the jurisdiction concerned, while banks and large corporates generally use SWIFT for international payments. Nonetheless, FinTechs (whether internally-developed or external) may help banks with payment and securities settlement and related risk management in the middle and back office. FinTechs are increasingly working with non-bank payments giants like Apple, Google, and Amazon to help the latter break into the payments space,³⁸ as has been achieved by BAT in Mainland China.

In terms of local interbank payments, Hong Kong has an admirable suite of RTGS systems for Hong Kong dollar, RMB, US dollar and Euro transactions, in addition to a range of other settlement linkages. Internationally, because of its forex trading role (ranking fourth in the world by volume) and dominance (90%) of RMB trade settlement, Hong Kong is the leading SWIFT Asian payments hub. At present, RMB is settled via a link between the Hong Kong and Shenzhen branches of the Bank of China. In future RMB international settlement is expected to move to China's CIPS (Cross-border Interbank Payment System).

Currently all cross-border payments, including those by Mainland banks, use SWIFT MT messages. However, in recent years, due to AML (anti-money-laundering) and CTF counter-terrorist financing) requirements, the fields available in SWIFT MT messages are insufficient, so a single payment has to be carried by two SWIFT MT messages. An increasing number of domestic payment systems, including Euroland Target 2 and China's CNAPS (China National

³⁸ Capgemini, *Top 10 Trends in Payments in 2016*, 7 January 2016, https://www.capgemini.com/resource-file-access/resource/pdf/payments_trends_2016.pdf

Automated Payment System) and CIPS now run on an XML format. ISO 20022 has more fields and accommodates Unicode characters like the Chinese characters. The Mainland-Hong Kong clearing bank channel (through Bank of China (Hong Kong) Limited) is now using ISO 20022, but Mainland correspondent banking still has to use SWIFT. Hong Kong needs to keep abreast of these and other developments to ensure that it maintains its role on the China-international payments corridor – see schematic in **Figure 2** below.



At the retail/SME level, because of user preference, barriers to interoperability and regulatory constraints, payments in Hong Kong are predominantly by cheque, credit card and cash (with very small payments via Octopus). Facing a similarly underdeveloped payments profile estimated to be wasting 0.5% of GDP, the Singapore authorities commissioned a review and launched a suite of initiatives under a newly-established Payments Council to promote electronic payments.³⁹ As noted in section 4 above, Hong Kong’s HKMA has granted Stored Value Facilities (SVF) licences to 13 mobile e-wallet service providers, and is planning a Faster Payments System (FPS), which SVF providers will be able to access via a settlement bank. The SVF framework (banks also have SVF licences) and the FPS are promising, and if built upon appropriately could transform the payments environment. In particular, oversight

³⁹ KPMG, *Singapore Payments Roadmap*, August 2016.

of bank charging for access to FPS is needed to make sure that there are no unreasonable impediments. In addition to improving efficiency in the local economy, a better payments environment would enable Hong Kong to act as a testing ground for payments services aimed at a wider audience, indeed, serving as a China-international payments rail at B2C/C2C level.

In terms of securities settlement, Hong Kong again has extensive central infrastructure. Local clearing and settlement of bond transactions is handled by Hong Kong Interbank Clearing. The HKMA's Central Moneymarkets Unit (CMU) provides clearing and settlement services for Exchange Fund Bills and Notes. Clearing and settlement of Hong Kong listed securities is handled by HKEX's Central Clearing and Settlement System (CCASS). The HKMA's CMU has links with overseas central bond depositories, while HKEX's CCASS has links with the Mainland securities market (Stock Connect). The 'Northbound' channel of Stock Connect enables Hong Kong and international investors to participate in the Mainland market via Hong Kong-based HKEX participant brokers and custodians. A Bond Connect is expected to follow during 2017.

However, parts of the securities settlement infrastructure are antiquated (CCASS commenced operation in 1992) and compare poorly in terms of flexibility, cost and time-to-market with those of leading overseas institutions, some of which are not only upgrading but experimenting with new technology such as blockchain. Modernisation is needed. The securities settlement infrastructure also needs closer linkage with the payments infrastructure to realise the full potential of the foregoing initiatives and to position for the future.

6.3 Digital ID and KYC utility

Verifying customer identity and ascertaining suitability and preferences, both on acceptance of a new customer and ongoing KYC onboarding, is a major burden for the financial sector as well as a major barrier to FinTech development. Please refer to **Appendix 3** for an outline of the relevant Hong Kong regulations. There is an opportunity for a FinTech solution – a central repository of individual and corporate identity to which authorised users such as banks and other financial institutions and regulators would refer. Such solution would be welcomed by financial sector participants and would in turn support the development of a range of new services, to the benefit of consumers and businesses alike. Pending rollout of the proposed digital ID/KYC utility, the authorities should endeavour to find interim solutions to provide near-term relief to the industry where possible.

The proposed digital ID utility might be literally a single database, or a federation of (existing and new) databases compiled under common standards, or some other format. Whatever the precise form, data security would be paramount, as would acceptance by the three main Hong Kong financial regulators (albeit that each might mandate data content of its own). The digital ID utility would be overseen by an appropriate body in the public sector. Reference can be made to the Singapore's initiative to establish a national KYC utility (see section 3.2 above); indeed, cooperation and eventual interoperability with Singapore's initiative – and other equivalent initiatives overseas – should be considered.

It is important to note that the proposed ID utility would require regulatory support, including amendment of existing regulations (which generally require face-to-face customer contact, production of physical documents, and extensive verification of customer financial circumstances – as well as prohibiting the use of data collected for a different purpose), and regulatory endorsement of alternative methodologies such as biometric identifiers.

Within the proposed Hong Kong utility, each participating Hong Kong individual and corporate customer would have a digital profile comprising identity, preferences and transaction history, which, once established, should be owned and updated by the customers themselves.⁴⁰ It would be important to build assurance into the system that data would be kept confidential, used for appropriate purposes, and secured against hacking. Ideally, there would be compartmentalisation of the identity profile, enabling different elements to be shared for different purposes.

Individual identities would be based on the forthcoming biometric Hong Kong ID card. Alternatively, or in addition, individuals might authorise their existing financial services providers as custodians of their identity. Reference should also be made to the accumulated experience in Hong Kong of sharing mortgage-related credit data.⁴¹ An equivalent identification system for corporates, using the custodian method, should be developed. The identification system can start with Hong Kong-incorporated companies and overseas companies registered in Hong Kong. The utility would be referred to, not just by financial institutions presently serving the customer but future service providers, and the regulators as well. The utility could constitute a 'Hong Kong ID' with a broader range of uses beyond

⁴⁰ As recommended in *FSDC Distribution Paper* (footnote 21), page 6.

⁴¹ Privacy Commissioner for Personal Data, *Consultation Report on the Sharing of Mortgage Data for Credit Assessment*, 21 March 2011.

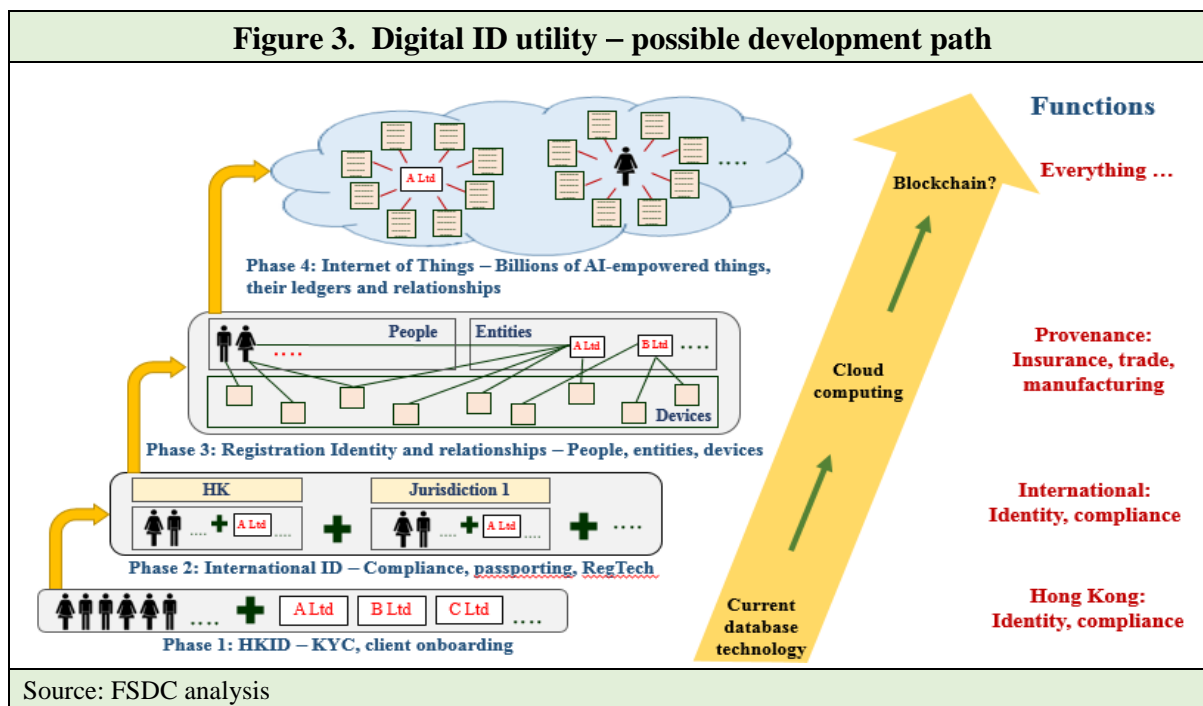
finance. In the longer run, such database, once established, might be the kernel of a larger region-wide system, or at least be interoperable with similar databases overseas once these come into existence.

Although a public ID utility of this nature would be advanced, there are already precedents overseas, including Estonia's e-identity system, and perhaps most notably, India's Aadhaar system under which more than 1 billion digital identity numbers have been allocated to Indian citizens.⁴² Interestingly, India's biometric ID system is already being used to support payments, in effect converting the individual's smartphone into a bank.⁴³ There may be existing solutions available commercially for the proposed Hong Kong ID database. Upgrades in technology, from today's database software to cloud-computing and perhaps ultimately blockchain, would be envisaged in the future. Shenzhen has firms and institutions with capabilities in this area. It should be possible to attract and cooperate with such firms, as well as with local and international suppliers.

The idea of a digital ID utility has the potential to reach far beyond financial compliance purposes. Such a utility, once established, can be extended to registering all kinds of assets. Unique and reliable identification can be used to support insurance claims, accounting and assurance, and ultimately provenance-related functions, which in turn are relevant to trade and manufacturing. Ultimately, such a database can be used to facilitate tracking and control of the myriad intelligent devices that are forming the Internet of Things – see schematic in **Figure 3** on the next page.

⁴² Unique Identification Authority of India, AADHAAR Data Portal, <https://portal.uidai.gov.in/dashboard.do>, viewed on 31 October 2016.

⁴³ Una Galani, "India lays foundation for a FinTech revolution", *Reuters.com*, 14 September 2016, <https://www.reuters.com/article/idUS312992507220160914>



6.4 WealthTech and InsurTech

In addition to its status as a global banking centre (with one of the highest concentrations of banking institutions in the world) and premier offshore RMB centre, Hong Kong is a major centre for wealth management and insurance. These functions are increasingly impacted by technology, with examples including computerised and algorithmic trading, robo-advisory and AI. Thus, FinTech in these areas – WealthTech and InvestTech – is not only rapidly evolving in Hong Kong but also carries the risk of lagging and losing existing competitiveness. The same trends are affecting insurance – InsurTech. In addition, there is significant growth potential in AI and robo-advisory beyond these areas.

In relation to robo-advisory, most Hong Kong financial institutions already provide online facilities for automated service delivery (self-service by the customer). However, trusted advice is a key component of financial services, particularly in asset management and insurance, and in Hong Kong advice is generally bundled with a human adviser. This increases cost, and exposes the customer to the risk of error and fraud. It is crucial for Hong Kong financial service providers to move beyond human delivery agents in order to reduce costs, improve service quality, and reach customers in broader geographies. Since automated advice incorporates its own audit trail – indeed, can be monitored in real time not only by the institution’s compliance department but even by the regulator – it is also more secure.

WealthTech, InvestTech and InsurTech utilities require care in design and oversight. The firm has to commit resources, and the regulator also has to adopt a new approach. Regulations governing robo-advice need to be developed, for which overseas experience provides reference. In particular, emphasis needs to be placed on the design stage – the controls and procedures applied – while in operation the robot itself can provide rich data on its interactions with customers. Ultimately, APIs can provide the regulator with a direct view of the robot and the ability to analyse and interrogate it in real time – a form of RegTech, see section 6.5 below.

Robo-advice has issues of its own, particularly in these early stages. One commentator has warned of a mis-selling scandal in the UK if the regulator does not get a firm grip on the emerging sector.⁴⁴ The UK regulator, the FCA, has dedicated a four-person team within its Project Innovate to support robo-advisers.⁴⁵

Robotic automation can also be applied to the trading process via algorithm – algorithmic trading. Algorithmic trading is already well-established in Hong Kong, and the SFC has a developed regulatory approach. Numerous Hong Kong FinTech start-ups focus on algorithmic trading since regulatory compliance is more straightforward than for other areas of FinTech.

More generally, robotic process automation (RPA) is applicable to middle and back office processes of the asset management, trading or insurance firm. RPA can be overlaid across legacy systems, without the traditional systems integration effort.⁴⁶ Some FinTechs specialise in helping such firms automate, or in the case of smaller investment advisory firms provide the entire operations platform. RPA and platform provision are of course applicable to other financial services areas, and indeed to other industries. They are areas with important growth potential. In the long run, distributed ledger technology may enable the development of unified solutions for the entire wealth management value chain (trade execution, clearing, settlement, depository and custody) and the insurance value chain.

⁴⁴ Monira Martin, “UK robo-advice financially unviable, warns investment firm SCM”, *Portfolio Adviser*, 8 July 2016, <http://www.portfolio-adviser.com/news/1030310/uk-robo-advice-financially-unviable-warns-investment-firm-scm>

⁴⁵ Justin Cash, “FCA throws £500k into new robo-advice unit”, *citywire.co.uk*, 5 July 2016, <http://citywire.co.uk/wealth-manager/news/fca-throws-500k-into-new-robo-advice-unit/a928498>

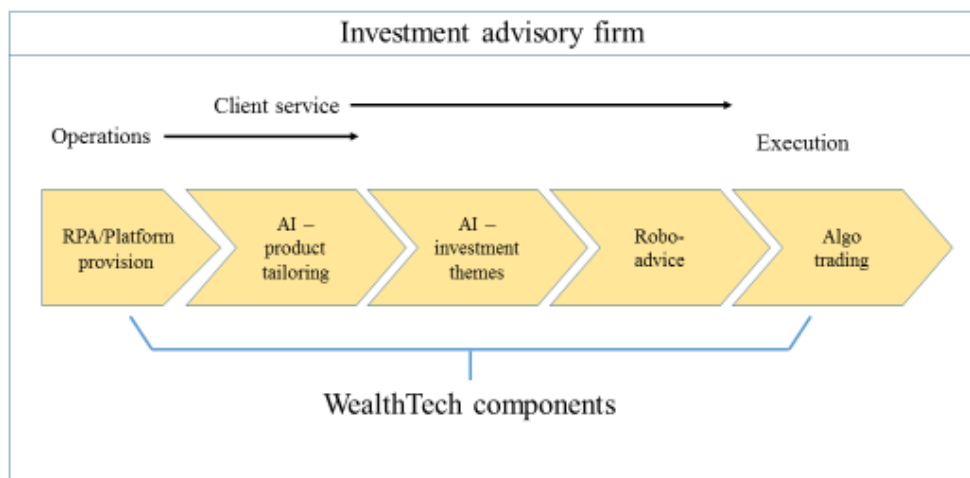
⁴⁶ E&Y, *What will it take to win the wealth tech revolution?* (2016) [http://www.ey.com/Publication/vwLUAssets/EY_Funds_Global_Asia_article/\\$FILE/EY-funds-global-asia-article.pdf](http://www.ey.com/Publication/vwLUAssets/EY_Funds_Global_Asia_article/$FILE/EY-funds-global-asia-article.pdf)

A further strand of the analytics and automation complex is the application of AI to Big Data, particularly social media data, to identify opportunities. Based on what is trending on Facebook, Twitter or other social media, data analytics can develop investment themes. Big Data analysis can also be used to support ‘mass customisation’ of investment and insurance products – analysing client data to tailor the product to the individual client’s preferences. Please refer to **Figure 4** on the next page for the various aspects of AI and automation in wealth management.

InsurTech firms are developing highly-customised policies, and social insurance, and are using data from internet-enabled devices to price premiums dynamically in response to the insured’s behaviour. Examples of InsurTech propositions include – robo-advisors to handle the tasks of insurance brokers or to identify the appropriate mix of policies to meet an individual’s insurance needs; apps to manage different policies on a single platform; on-demand insurance for micro-events like a day trip; and peer-to-peer insurance with customised group coverage, incentivising positive choices through group rebates.

New InsurTech models, platforms and apps improve transactional transparency and efficiency. AI can transform and improve overall customer experience and engagement. Distributed ledger technology may eventually help minimizing fraudulent and multiple claims relating to the same event, and track the status of life insurance policies. Telematics can help to promote pay-as-you-use and more tailored motor insurance products, and can improve road safety. Big Data analysis can support fine-tuned actuarial calculations, leading to lower premiums and more appropriate payouts.

Figure 4. Aspects of WealthTech: Data analytics, automation and AI



Source: FSDC analysis

6.5 RegTech

Following the Global Financial Crisis in 2008, financial regulation globally has become more onerous, with KYC, AML/CTF and capital regulations among the most demanding. In Hong Kong, compliance with KYC/AML/CTF regulations is especially challenging because the regulations require client onboarding to incorporate face-to-face meeting with clients and production of extensive physical documents (see [Appendix 3](#)). The regulations are not necessarily congruent across the three main financial regulators. When a customer switches from one institution to another, the onboarding process has to begin afresh. Further issues arise from the sheer volume of financial reporting – both in terms of production of reports on the part of the institutions and receiving and digesting them on the part of the regulators. Technological solutions are needed, and FinTech – RegTech – can help. Given that Hong Kong is a centre for regional financial operations, there is an opportunity to develop regional RegTech solutions, and to become a model for the region.

A prerequisite for the application of technology is that digital approaches are accepted by the regulations. Hong Kong’s financial regulations need to be adapted to accept digital information sources, and accept online account-opening without the need for the customer to

be physically present, e.g. via biometric identifiers.⁴⁷ These regulations need to be made congruent among the three regulators, with common protocols. The ability to share customer information across the three regulators is also needed.

Once digital methodologies become acceptable, a clear solution to the KYC/AML/CTF burden is to establish a central utility for customer identity in Hong Kong, as per section 6.3 above.

On a broader front, Hong Kong regulators should drive for digital solutions to regulatory compliance, to lighten the burden on themselves as well as their charges. The FCA has issued a call for RegTech,⁴⁸ and is presently working with regulated firms to develop technological approaches to compliance. The Institute of International Finance has issued a report⁴⁹ identifying seven priority areas for RegTech solutions, namely: (i) Risk data aggregation for capital and liquidity reporting; (ii) Modelling, scenario analysis and forecasting for stress testing and risk management; (iii) Monitoring payments transactions (particularly in real-time); (iv) Identification of clients and legal persons; (v) Monitoring the institution's internal culture and behaviour; (vi) Trading in financial markets; and (vii) Identifying new regulations applying to the institution. Tools to help develop solutions include: Machine learning, robotics, artificial intelligence and data-mining algorithms; Improvements in cryptography; Biometric client identification; Blockchain and other distributed ledgers; APIs and other systems allowing interoperability; and Shared utility functions and cloud applications.

The goal should be to move from periodic regulatory reporting to online regulatory access via API to the institution's transaction recording systems, so that the regulators have full real-time insight, and institutions no longer need to compile onerous reports.⁵⁰ Both institutions and regulators would need to automate. The regulators, in particular, would need to develop the capability to analyse large volumes of data in real time (Big Data analysis). This should be the announced direction – such message would draw RegTech suppliers to Hong Kong and

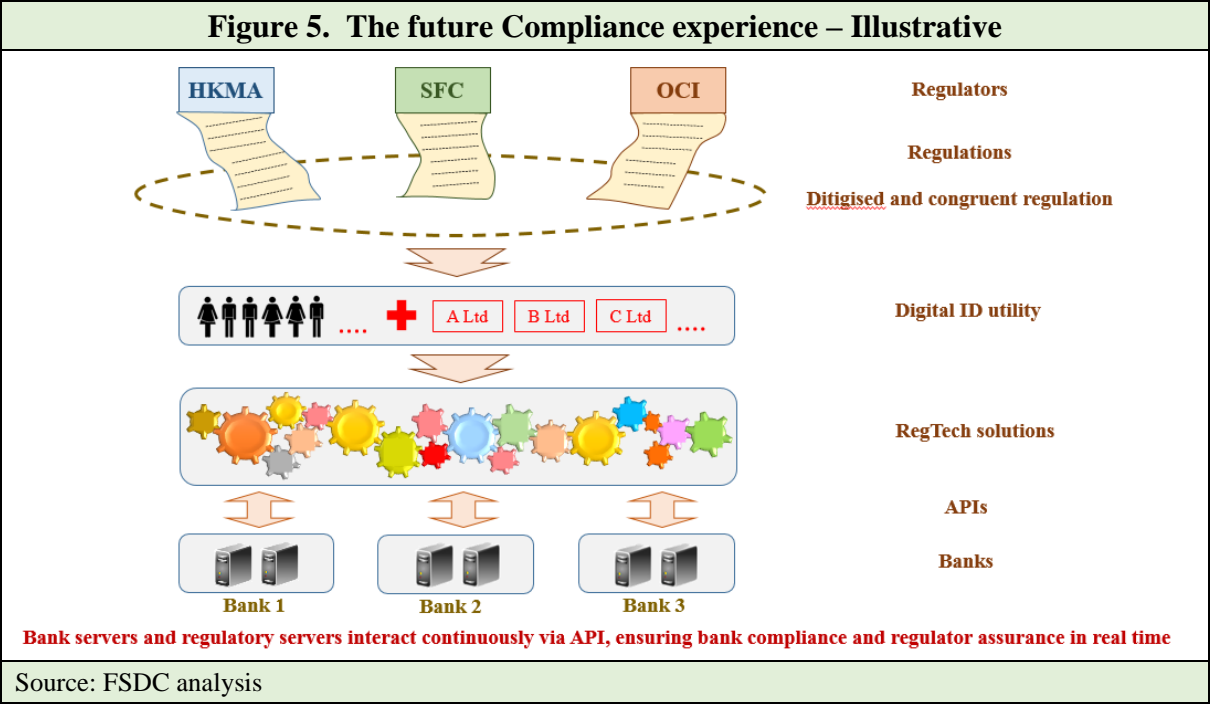
⁴⁷ The SFC has confirmed its acceptance of overseas certification authorities recognised by the Hong Kong Government in the client identification process, see, SFC, “Advisory Circular to intermediaries Client identity verification in account opening process”, 24 October 2016.

⁴⁸ FCA. *Call for input: supporting the development and adoption of regtech*, 23 November 2015.

⁴⁹ Institute of International Finance, *RegTech in Financial Services: Technology Solutions for Compliance and Reporting*, March 2016.

⁵⁰ See Arner et al, “FinTech, RegTech and the Reconceptualization of Financial Regulation”, *Northwestern Journal of International Law & Business* (October 2016), on this new regulatory paradigm.

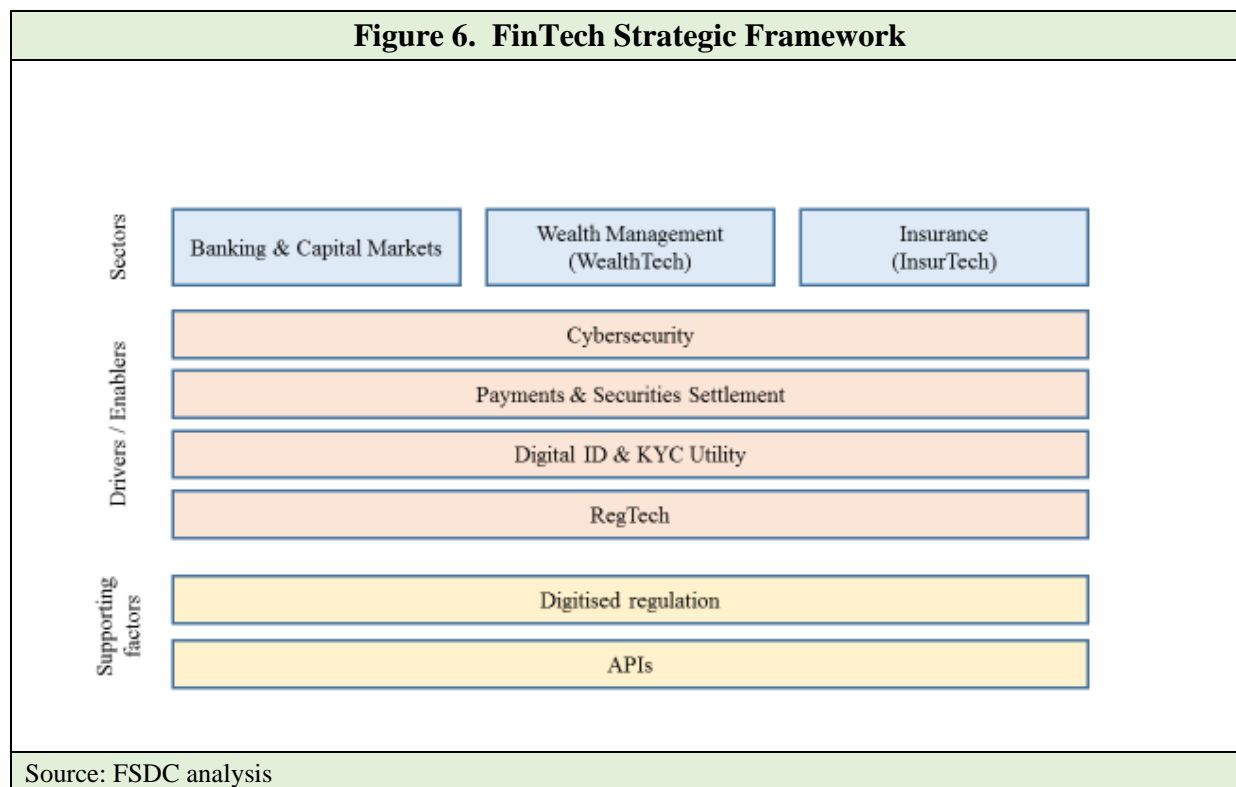
help build expertise in the territory. See **Figure 5** below for an illustration of the future Compliance experience.



6.6 A FinTech Strategy

The five FinTech programmes set out above feed into and support one another to form a strategy. The crucial foundation for the FinTech ecosystem is facilitative regulation that recognises and supports digital approaches to financial activities. The digital ID and KYC utility can then come into operation, as can the introduction of APIs, both in turn supporting a multitude of new services. Cybersecurity and RegTech are further facilitators to an expanding range of FinTech-enabled services. It will take time to fully implement the various components of the strategy, but the general direction should be clear at the outset. Please refer to **Figure 6** on the next page for the FinTech Strategic Framework. The FinTech Strategy should cohere with government initiatives in the areas of Smart City, digital certification, and cyber strategy generally.

Figure 6. FinTech Strategic Framework



6.7 FinTech Office

In order to drive the development of FinTech policy in Hong Kong, it will be necessary for the Government to create a FinTech Office. The Office should be charged with overseeing FinTech-related policy, regulation and other initiatives and ensuring that the goals of the FinTech Strategy are met.

At present, FinTech matters in Hong Kong are handled by the three financial regulators as well as by various other institutions and government departments. This brings a welcome breadth of resources and minds to bear on this important area. However, there are opportunities for greater coordination among these institutions, and for avoidance of duplication or conflicting approaches to common issues. More importantly, FinTech as the future of finance needs a dedicated establishment that can look beyond the concerns and issues of the incumbent financial sector and, where necessary, take strategic decisions. The FinTech Office is therefore help to implement the FinTech Strategy proposed in this paper and to coordinate territory-wide efforts in FinTech.

Other jurisdictions, recognising the importance of FinTech and its special needs, have created dedicated high-level institutions for the emerging sector. In Singapore the Managing Director of the MAS has taken the lead in launching FinTech initiatives. The MAS is supported by a

FinTech Office which reviews FinTech-related government funding schemes, identifies gaps and proposes strategies for industry infrastructure, talent development, manpower and competitiveness; and promotes Singapore as a FinTech hub. In Taiwan, the FinTech Office within the unified financial regulator, the Financial Supervisory Commission (and led by its chairman), is responsible for planning and promoting FinTech and coordinating other government agencies. Both institutions in Singapore and Taiwan appear to have been effective in their respective jurisdictions in getting regulatory changes and other initiatives launched within a short period of time - see detail in [section 3.2](#) and [Appendix 4](#).

The FinTech Office in Hong Kong would coordinate relevant public sector initiatives and policies, and act as a channel for private sector input into the policy process. To ensure that the FinTech Office remains in tune with the industry, it should be supported by an Advisory Committee of FinTech experts to help monitor the evolving FinTech ecosystem in Hong Kong, identifying issues and blockages as these arise, and seeking action to address them. The Office should have sufficient stature and resources to take charge of FinTech Strategy for Hong Kong, further developing and renewing the strategy as needed, initiating implementation of the strategy, and monitoring its implementation. It should also seek to ensure that the regulators and the industry appropriately address significant FinTech-related risks. The FinTech Office would need to have connections and involvement with a wide range of stakeholders. Overall, the proposed FinTech Office would make a crucial contribution to the progress and profile of FinTech initiatives.

7. Conclusion

FinTech – financial innovation through technology – has the potential to deliver substantial improvements in productivity and financial service quality to Hong Kong, which the territory can then export to the region and beyond. FinTech is also about financial inclusion – empowering consumers and SMEs as well as larger businesses with more control over their financial affairs and a richer array of services. For Hong Kong, seeking to increase innovation, FinTech is a logical next step, securing a place in the future of financial services.

Hong Kong, with its large financial sector, is positioned to gain from the FinTech trend, and to lose to other centres if it does not act. This report proposes a FinTech Strategy comprising five FinTech programmes – Cybersecurity, Payments and Securities Settlement, a Digital ID and KYC utility, WealthTech, InsurTech, and RegTech – supported by a FinTech Office through which the territory can move decisively forward. This FinTech Strategy would stimulate the growth of the FinTech ecosystem in Hong Kong, and have benefits reaching far beyond the finance sector. Through the proposed FinTech programmes, Hong Kong would secure an important role for itself in a FinTech-enabled future, with consequent benefits in employment, revenues, innovation and societal well-being.

Appendix 1 - Appraisal of Hong Kong as a Fintech Centre⁵¹

Table 2. Benchmarked ranking of FinTech ecosystems 2015

| Region by rank | Talent Availability Pipeline | Capital: Seed Growth Listed | Policy: Regulatory Govt programmes Taxation | Demand: Consumers Corporates Financial institutions | Total points |
|----------------|------------------------------|-----------------------------|---|---|--------------|
| 1. UK | 2 | 3 | 1 | 3 | 9 |
| 2. California | 1 | 1 | 6 | 2 | 10 |
| 3. New York | 3 | 2 | 7 | 1 | 13 |
| 4. Singapore | 4 | 7 | 2 | 6 | 19 |
| 5. Germany | 6 | 4 | 5 | 5 | 20 |
| 6. Australia | 5 | 5 | 3 | 7 | 20 |
| 7. Hong Kong | 7 | 6 | 4 | 4 | 21 |

Source: *E&Y FinTech*, footnote 8.

Comments on Hong Kong:

Talent availability

- The current availability of tech talent is high in Singapore and Hong Kong, although entrepreneurial talent is comparatively limited in these regions.
- Entrepreneurial talent is weakest in Hong Kong and Singapore. The reasons for this appear to be largely cultural, with their cultures characterised by risk aversion, limited networking and poor perceptions of entrepreneurs in terms of status and career choice.
- “There is a lack of appetite, mindset and culture to build or work for start-ups.” FinTech, Hong Kong.

Talent pipeline

Singapore and Hong Kong have the most supportive regimes of in-scope regions, driven by:

- Less time (and steps) required to process visas for skilled workers;
- The lack of quotas that control the inflow of skilled workers;
- The availability of longer-term residency options.

⁵¹ *E&Y FinTech*, footnote 8.

Despite overall supportive immigration regimes in Singapore and Hong Kong, interviewees commented that the high cost of living in these regions can make it difficult to incentivise foreigners to relocate there.

Capital

- Small and nascent seed funding market, but with increased focus from government; compared with Singapore, represents a smaller market with lower availability of seed funding.
- A number of recent government initiatives, including a FinTech Steering Group and an Innovation and Technology Venture Fund, to co-invest in local innovation and tech start-ups with private VC firms on a matching basis.
- “There is not much of a fund-raising problem in HK. There is a sizeable amount of money available and willingness to invest, however, the FinTechs in HK don’t appear to be very profitable and hence attract low levels of investment.” Investor, Hong Kong

Policy

- Initiatives are more government-led than regulatory-led, and specifically aimed at engagement with and support of FinTechs.
- Interviewee sentiment:
 - “Hong Kong does not have a clear regulatory framework, creating a high barrier to entry for new FinTechs.” Accelerator, Hong Kong
 - “The government needs to clarify the regulatory framework, while improving effective communication channels to improve FinTech engagement with the regulator.” FinTech, Hong Kong
 - “Hong Kong has a “regulate first” culture, setting up an environment of high regulatory pressure before accommodating businesses.” Accelerator, Hong Kong
- Overall: Hong Kong lacks clarity, transparency and innovative engagement | Barrier to sector growth
 - Hong Kong, Singapore and Australia are the easiest regions in which to set up a new business, with the least number of days and procedures required to do so.

- “InvestHK has been critical in speeding up set-up processes for FinTechs.” FinTech, Hong Kong

Demand

- Consumers: The US regions and Hong Kong are currently the highest adopters of FinTech products.
- SMEs: Hong Kong SMEs are typically late adopters of innovative technology solutions. However, recent government initiatives and increased marketing are raising awareness.

Government: (HK ranks last)

- FIs: In Singapore, Hong Kong and Australia, at this stage, incumbent engagement with FinTech is primarily through support for FinTech hubs (incubators and accelerators) rather than through explicit use of FinTech services.
- “There are barriers to selling our products to FIs. Most of the big banks’ decision makers are in the US or Europe, that’s where master agreements and contracts are negotiated. Our FinTechs don’t have the branding and connectivity to engage with large FS incumbents.” FinTech, Hong Kong

Appendix 2 - A FinTech-Enabled Financial Sector

What would a FinTech-enabled financial services sector look like in Hong Kong's future?

The landscape in terms of dominant firms would be difficult to predict. It may feature new FinTech entrants, both start-ups and established FinTechs from the Mainland and overseas as well as IT, e-commerce, communications and traditional financial and professional services firms. The boundaries between financial services and adjacent sectors such as e-commerce, IT and telecoms may blur, albeit regulation would constrain change. Nonetheless, incumbent financial institutions with FinTech-upgraded offerings may also maintain their position and prosper.

The offerings of the financial service providers are perhaps easier to predict. A possible outline is suggested as follows.

- **Access.** Every adult individual and every business would have access to financial services. Account opening would be straightforward.
- **Lending.** Although in the current low interest rate environment, loans are readily available in many areas, there are still pockets of very high interest rates for example credit card loans (typically APRs exceeding 30%) and SME loans. P2P lenders would arbitrage these anomalies away.
- **Payments.** At present through the banking system, payments are costly and time-consuming to arrange, and take two days or longer to clear; foreign exchange remittances involve poor rates and further fees, and may even go astray. In the FinTech era, payments should be quick, easy and cheap to arrange, and settle immediately and reliably.
- **Insurance.** With the benefit of Big Data analysis, insurers will be able to personalise premiums based on the insured's risk profile, resulting in lower premiums for many. Insurance may also become transactional, delivered just in time in response to impending events. New models will be possible, such as P2P insurance, mobile delivery, and consumer-vendor-insurer groupings that supersede the existing high-cost broker-based approach. Robo-advisers may replace humans. All these factors will enable more people to obtain proper insurance coverage at lower rates – especially sectors such as the young who are traditionally underinsured.
- **Asset management.** Robo-advisers, Big Data, social media and online capture of risk and performance metrics will relieve investors of reliance on the present high-cost

adviser model, drive lower costs and more choice through the industry, and provide more investors with services presently restricted to those with high net worth.

- **Mandatory Provident Fund.** The MPF system has many drawbacks, including very high administrative costs, low transparency, and a long settlement cycle. FinTech can provide solutions, for example through a shared account management utility which provides employees and employers with near-real-time information and settlement capabilities.
- **Customers** will be relieved of the present compliance burden, enjoy a richer array of services at lower cost, and be empowered with greater control over their financial affairs.
- **Investors** will enjoy access to a range of higher-interest paying opportunities via P2P platforms, insurance pools, and other media, as well as the ability to support start-ups and community projects conveniently through crowdfunding.
- **Enterprises** would enjoy improved access to loans and financial services, and would be able to invest surplus funds through a wider range of channels.
- **Regulation.** Financial regulation is at present highly onerous, for financial institutions and their customers – and even for regulators themselves. With RegTech, much of today’s compliance burden can be automated, giving regulators a clearer view of markets and new analytical capabilities, and institutions and customers clarity and control over their affairs. Social media and biometrics can be utilised for customer identification; data mining, pattern recognition and simulations can highlight risks; regulatory reporting can be automated.
- **Government** is a major financial player, requiring and initiating large volumes of payments each month, as well as myriad transactions involving registration, deregistration and updating of information. These processes can be automated, relieving government and the community of much tedious labour, enabling improved services and the creation of new services, and bringing greater transparency to the government-citizen relationship.

The improvement of service quality and immediacy, the lowering of cost, and the greater transparency will transform the financial services experience for users, as well as enabling new services, with knock-on effects across the economy. New jobs will be created; new channels for business creativity will open for young people as well as for established

entrepreneurs. These effects of empowerment and relatedness will to some extent propagate through society as a whole, helping to relieve the divisions that have plagued Hong Kong in recent years.

Appendix 3 - Regulatory Requirements around KYC

An important part of financial regulation is the whole approach to KYC (know your client), which applies in both the context of AML/CDD (customer due diligence) and suitability, as well as with respect to other reporting requirements such as FATCA and CRS (common reporting standards). In turn, this has implications with respect to the rules applicable to data protection and privacy.

With the emergence of FinTech comes the need to consider the applicability of this existing regulation. Financial regulation in Hong Kong is very much based on traditional business models. KYC/onboarding processes tend to be paper-based, requiring face to face meetings or physical verification of documentation. In relation to suitability, there is an increasing need for lengthy analysis of a client's financial circumstances, investment objectives and risk tolerances. None of these models or requirements works well in the context of FinTech, given that FinTech business models cut across these traditional approaches. FinTech business models are not paper-based; they do not incorporate face to face meetings or customer interaction.

Each of these requirements, whilst falling under the overall umbrella of KYC, in fact have quite different outcomes. For example:

1. AML/CDD requirements: these stem from the Anti-Money Laundering and Counter-Terrorist Financing (Financial Institutions) Ordinance (AMLO) and the various AML Guidelines issued by the HKMA, SFC and OCI) / IA. The AMLO and AML Guidelines set out the requirements and expectations to conduct CDD, including identification and verification of customers' identities using reliable, independent source documents, data or information. Most recently in its 24 October 2016 Circular,⁵² the SFC stressed the essential element played by client identification in effective CDD, and continues to advocate a cautious approach while acknowledging it will keep in view of technology development. The HKMA, on the other hand, has accepted that in applying appropriate and effective CDD measures banks should be mindful not to take steps that would undermine financial inclusion and adopt a proportionate approach (HKMA 8 September

⁵² SFC, "Circular on client identity verification in account opening process", footnote 52.

2016 circular).⁵³ That same inclusive approach should be applied in the context of FinTech.

Not only should the approach to KYC and AML be made congruent among the HKMA, SFC and IA, but the regulations should be adopted to accept digital information sources, including the consideration of establishing a central utility where each customer has a digital profile comprising identity, preferences and transaction history.

In addition, a key function of AML is the reporting of suspicious transactions. A central utility where each customer has a profile comprising has/her transaction history may also lend itself to more easily identifying any suspicious transactions.

2. Suitability/KYC: this stems from GP4 and Chapter 5 of the SFC Code of Conduct for Persons Licensed by or Registered with the Securities and Futures Commission, requiring an intermediary to take all reasonable steps to establish the identity of each customer and of each customer's financial situation, investment experience and investment objectives. The whole regime with respect to suitability has become enhanced currently culminating in a consultation with respect to 'Online Distribution and Advisory Platforms'. However, even in the current regulatory environment the HKMA and SFC adopt some slightly different approaches; in particular for private banks, where for example it is possible for an HKMA regulated bank to adopt a "portfolio based" assessment for "private banking customers", as set out in the HKMA's 12 June 2012 circular.⁵⁴

Not only does the approach to suitability need to be made consistent across the three main Hong Kong regulators, but consideration needs to be given to developing innovation, and new or relevant, best practices towards suitability as business models and technologies evolve.

3. SFC Client Rule ID Policy: an intermediary is required to know with whom it is dealing, the ultimate beneficiaries originating a transaction, when dealing in securities or futures contracts on the Stock Exchange of Hong Kong or the Hong Kong Futures Exchange or derivatives therein.

⁵³ HKMA, "Circular on de-risking and financial inclusion", 8 September 2016.

⁵⁴ HKMA, "Circular on selling of investment products to private banking customers", 12 June 2012.

4. FATCA/CRS: this stems from US FATCA regulations and OECD CRS guidelines. Hong Kong financial institutions are subject to FATCA and CRS regulations by virtue of the Intergovernmental Agreement (IGA) for implementation of FATCA entered into between Hong Kong and the US, and the Inland Revenue (Amendment) (No. 3) Ordinance 2016, which implements CRS. FATCA/CRS imposes extensive due diligence requirements on Hong Kong financial institutions to identify and verify personal information of accountholders, including where they are tax resident. This due diligence process requires more than just soliciting information from customers through a self-declaration form. CRS in particular requires financial institutions to verify the “reasonableness” of the information obtained and if they have reason to believe that the information may be false or misleading, they must ask customers for further explanation or substantiation. Failure to do so is an offence under Hong Kong's CRS regulations if the financial institution (or its agents) is found to have facilitated the provision of false or misleading information. Technology will be able to help financial institutions' ability to satisfy FATCA/CRS due diligence requirements, especially when it comes to managing and analysing large volumes of data. Technology can more efficiently and accurately identify potential conflicts with statements or self-certifications a customer may have provided to other persons. However, being able to satisfy the “reasonableness” standard under the CRS legislation still remains largely subjective even under the detailed guidelines issues by the Inland Revenue Department. Hong Kong's CRS regulations and guidelines do not provide any safe harbours if financial institutions rely on FinTech models or processes to facilitate due diligence and onboarding.

Accordingly, in order for FinTech to address these very real barriers posed by existing financial regulation with respect to KYC some thought is urgently needed to provide workable solutions.

Of course, all of the above necessitates the collection, use and sharing of personal data. It is crucial therefore that such personal data is not compromised and so any solution requires careful consideration of the Personal Data (Privacy) Ordinance, as well as ensuring the most robust approach to cyber security including business continuity and incident management plans.

Appendix 4 - FinTech Initiatives of Selected Jurisdictions – Australia, UK, Singapore and Hong Kong

| Initiative | Australia ⁵⁵ | UK ⁵⁶ | Singapore ^{57,58} | Hong Kong |
|--------------------------|--|--|---|--|
| <i>Overall framework</i> | | | | |
| Policy | A comprehensive government-led review, part of a broader review of development of the nation's financial system. Government initiatives respond to industry priorities | Stated governmental ambition to make the UK the global capital of FinTech, ⁵⁹ fleshed out in numerous supportive measures, see below. | Monetary Authority of Singapore (MAS) Smart Financial Centre initiatives (part of Smart Nation Programme under PM's office) | Financial Secretary expresses support |
| Institutional | FinTech Advisory Group to advise Treasury | – | The FinTech Office (established by MAS and National Research Foundation, with other government units) to review FinTech-related government funding schemes; identify gaps and propose strategies for industry infrastructure, talent development, manpower and competitiveness; and promote Singapore as a FinTech hub. ⁶⁰ | A Steering Committee is formed, now disbanded. |

⁵⁵ The Treasury of the Australian Government, *Backing Australian FinTech*, 2016.

⁵⁶ The UK HM Treasury, *Consultation paper on draft innovation for financial services*, 22 April 2016.

⁵⁷ FinTech Singapore, *Singapore Gears Up to Become A Fintech Leader*, MAS Announces Major Initiatives, 13 April 2016, MAS, *Consultation Paper on FinTech Regulatory Sandbox Guidelines*, June 2016 and MAS, *MAS sets up new FinTech & Innovation Group*, 27 July 2015.

⁵⁸ Revi Menon (Managing Director of MAS), "A Smart Financial Centre", *Keynote address at Global Technology Law Conference 2015 on 29 June 2015*.

⁵⁹ UK Chancellor's speech at the launch of the new trade body for FinTech, 'Innovate Finance' on 6 August 2014, <http://www.mondovisione.com/media-and-resources/news/uk-chancellors-speech-at-the-launch-of-the-new-trade-body-for-fintech-innovat/>

⁶⁰ MAS, *New FinTech Office*, 3 April 2016.

| Initiative | Australia⁵⁵ | UK⁵⁶ | Singapore^{57,58} | Hong Kong |
|---|--|--|--|--|
| Regulation of FinTech | | | | |
| Structure within regulator | ASIC Digital Finance Advisory Committee | – | MAS FinTech & Innovation Group, comprising Payments & Technology Solutions Office, Technology Infrastructure Office and Technology Innovation Lab | Hong Kong Monetary Authority (HKMA) has FinTech Facilitation Office, Securities & Futures Commission (SFC) has a FinTech contact point |
| Regulatory approach | ASIC to provide regulatory sandbox for FinTech enterprises via waivers and reliefs Technological neutrality in regulation | Financial Conduct Authority (FCA) regulatory sandbox FCA Themed weeks and informal steers (rather than rulings) | MAS regulatory sandbox Innovation owned by FIs –no need to ask MAS provided FIs do own risk assessment Co-creation of solutions with MAS Proportionate, risk-focused regulation | HKMA provides FinTech Supervisory Sandbox for banks |
| General regulatory support for FinTechs | ASIC: Innovation Hub, shortening time for FinTechs to obtain full licence | FCA Innovation Hub helps businesses bring new regulated products to market FCA international regulatory cooperation on FinTech FCA helping FinTech firms provide RegTech services to FIs Payment Systems Regulator (PSA) Innovation and Horizon Scanning project PSA Payments Strategy Forum | 100 MAS- developed FinTech problem statements ⁶¹ for FinTech enterprises to solve on KYC/Identity Authentication, RegTech, Trade Finance, Insurance, Financial literacy, Financial inclusion/SMEs, Customer engagement, Payments, Portfolio Management, Capital Markets, General | Each financial regulator has a FinTech facilitation person |

⁶¹ Fintechnews Singapore, “MAS: 100 FinTech Problems to Solve for Singapore”, 11 August 2016, <http://fintechnews.sg/3268/FinTech/mas-100-FinTech-problems-to-solve/>

| Initiative | Australia ⁵⁵ | UK ⁵⁶ | Singapore ^{57,58} | Hong Kong |
|--|---|--|--|------------|
| | | <p>to foster collaboration</p> <p>Prudential Regulatory Authority (PRA) lower start-up bank capital requirements</p> <p>PRA New Bank Start-up Unit</p> <p>Bank of England (BoE): easier access to Bank facilities for small banks, building societies</p> <p>BoE: One Bank Research Agenda, fostering dialogue with research community on policy frameworks and interactions; evaluating regulation, resolution and market structures; policy operationalisation and implementation; new data, methodologies and approaches; and response to fundamental change.</p> | | |
| FinTech-specific regulatory measures | <p>Guidance on robo advice, eg clarity on ‘best interests’</p> <p>Guidance on marketplace lending and on cyber resilience measures</p> <p>Consideration of support for new insurance models such as micro-insurance, peer-to-peer insurance</p> | <p>FCA unit for robo investment advice;</p> <p>FCA: AML for digital exchanges</p> <p>FCA: Addressing disproportionate bank de-risking for businesses opening bank accounts</p> <p>PRA: Exploring proportionate application of EU rules</p> | <p>Activity-based regulation for payments innovations.</p> <p>Guidelines for secure cloud computing.</p> <p>Enabling digital financial advice and insurance.</p> | e-payments |
| <i>Other policy initiatives</i> | | | | |

| Initiative | Australia⁵⁵ | UK⁵⁶ | Singapore^{57,58} | Hong Kong |
|------------------------|---|--|----------------------------------|------------------|
| Government procurement | ‘ProcTech’: Government supporting FinTech procurement solutions and active use of FinTech by Government departments. | – | – | – |
| Insolvency | Reforms to insolvency law to reduce deterrents to angels investing in start-ups: (a) Reducing default bankruptcy period from 3 years to 1; (b) Introducing ‘safe harbour’ for directors from personal liability for insolvent trading if appoint restructuring adviser to develop turnaround plan (c) Making ipso facto clauses, which allow contracts to be terminated solely due to insolvency event, unenforceable if company is restructuring. | – | – | – |
| Credit data | Comprehensive credit reporting. Expanding utilisation of CCR data | Legislating to require big banks to share SME credit data so alternative finance providers are more able to compete and make effective lending decisions | – | – |
| Greater data | Non-sensitive government | Commitment to develop open | MAS aims for FIs using open | – |

| Initiative | Australia⁵⁵ | UK⁵⁶ | Singapore^{57,58} | Hong Kong |
|----------------------|--|---|---|--|
| availability | data open by default; More standardised practices on data aggregation; Standard APIs to support FinTech innovators and give Australians better ways to manage their finances. | banking standard for APIs to create an ecosystem for FinTech firms to use customers' financial data in innovative ways to provide value-added services to consumers. Driving improvements in Current Account Switch Service (CASS) and 'midata', so customers can compare personal current accounts and switch for better deal | APIs to share aggregated data. | |
| Other infrastructure | Blockchain encouragement. (No specific measures) Domestic non-AUD settlements. Improving FinTech enterprise access to (foreign) banks which may be reluctant to deal with them | PSA Competition Initiative: Reviews of indirect access to payments systems, and ownership and competitiveness of infrastructure provision | MAS considers peer-to-peer "all-in-one" payments system for citizens to pay using a mobile number, email address or social media account, without bank account. MAS considers unified point-of-sale terminal that can read all kinds of cards at retail and hospitality outlets. | HKMA planning to develop Faster Payments System to allow banks and SVF providers to make 24-hour real-time payments. |
| Taxation | | | | |

| Initiative | Australia⁵⁵ | UK⁵⁶ | Singapore^{57,58} | Hong Kong |
|-------------------------------------|--|------------------------|---|--|
| Investment | <p>A 20% non-refundable tax offset on investment capped at A\$200,000 per investor per year.</p> <p>A new 10 year capital gains tax exemption for investments held for 12 months.</p> <p>Investments in FinTech enterprises eligible for existing and new tax concessions for Early Stage Venture Capital Limited Partnerships</p> | – | – | – |
| Other | GST treatment of digital currency, to avoid double taxation. | – | – | – |
| <i>Government programmes</i> | | | | |
| | <p>A\$8 m Incubator Support Program to provide matching funding for incubators</p> <p>A\$30 m for national Cyber Security Growth Centre</p> <p>Global Innovation Strategy: A\$36 m over 5 years to improve Australia's international innovation and science collaboration, including establishment of 5 overseas 'landing pads' (Tel Aviv, San Francisco, Shanghai and 2 other</p> | – | <p>MAS S\$225 m fund to invest over 5 years in FinTech projects</p> <p>MAS organises FinTech Festival (inaugural November 2016)</p> | <p>Cyberport incubation programme for FinTechs. Dedicated FinTech platforms set up in financial regulators. HKMA's Cybersecurity programme</p> |

| Initiative | Australia⁵⁵ | UK⁵⁶ | Singapore^{57,58} | Hong Kong |
|--|---|----------------------------------|----------------------------------|--|
| | locations) to provide Australian FinTechs with shared workspace facilities enabling access to local innovation ecosystem – customers, talent, mentors and investors | | | |
| <i>Capital</i> | | | | |
| Seed capital, Growth capital, Listed capital | Equity crowdfunding introduced Dec 2015 Improvements under consideration (eg broadening eligibility, reviewing platform licencing requirements, reducing cooling-off periods) Debt crowdfunding under consideration | (Crowdfunding already permitted) | Crowdfunding introduced | Various government funding schemes available to FinTechs |
| <i>Talent availability</i> | | | | |
| | A new Entrepreneur Visa, which will target foreign entrepreneurs with innovative ideas and financial backing from a third party | – | – | Entrepreneur visa |
| <i>Talent pipeline</i> | | | | |
| | Investment in STEM education (science, technology, engineering, maths): A\$112m | – | – | Stepped up science programme for elite schools |

Appendix 5 - FinTech Initiatives of Selected Jurisdictions – Taiwan, Korea and India

| Initiative | Taiwan ⁶² | Korea | India |
|--------------------------|--|--|--|
| <i>Overall framework</i> | | | |
| Policy | The Financial Supervisory Commission (FSC), as the government authority for financial matters, enacts FinTech-related policies to support FinTech development | Fintech Center, a FinTech supporting body under the FSC (Financial Services Commission) | Comprehensive review of risks involved and the emergence of new models in FinTech by Reserve Bank of India (RBI) committee. Payments Bank licenses non-bank companies |
| Institutional | FinTech Base is founded by several governmental and non-governmental organizations, associations and companies with a view to speeding up FinTech innovation, incubating FinTech talent and promoting collaboration among FinTech-related industries | <p>Fintech Center:</p> <ul style="list-style-type: none"> • Business consulting by financial or related organizations expert • Supporting for mutual cooperation between Fintech companies and financial sector • Funding for small businesses and founder <p>FinTech security certification tech support centre (under review):</p> <ul style="list-style-type: none"> • provides facilities for Fintech companies to test their latest technologies • cooperates with various FinTech service developer like biometric recognition, security tech, payment • provides secure Fintech services include security consulting • helps Fintech companies commercialize their innovations | National Payments Corporation of India (NPCI) for servicing retail payments system in India |

⁶² The Taiwan Financial Supervisory Commission, *FinTech Development Strategies White Paper*, May 2016.

| Initiative | Taiwan ⁶² | Korea | India |
|---|---|--|--|
| Regulation of FinTech | | | |
| Structure within regulator | FinTech Office is a task force established by and within the FSC to plan and promote FinTech development, including analysing and researching FinTech-related information, planning relevant policies and coordinating relevant units | FSC Electronic Finance Division: <ul style="list-style-type: none"> • Electronic financial trade, electronic security policy, licensing for electronic financial services etc. Financial Supervisory Service (FSS) IT & Financial Information Protection Department: <ul style="list-style-type: none"> • IT support for examination, Financial consumer data protection, Electronic banking and payment settlement, IT Examination Office | RBI has put together an inter-regulatory Working Group (WG) in July 2016 to study regulatory issues relating to FinTechs ⁶³ Introduction of Unified Payments Interface (UPI) with NPCI to improve digital payments Insurance self-network platform by Insurance Regulator and Development Authority of India (IRDA) |
| Regulatory approach | TFSC is considering adopting a regulatory sandbox | FSC and FSS plan to provide ‘regulatory sandbox’ for Fintech companies | Release of a consultation paper on regulating P2P lending market in India RBI has set-up a committee to understand the possibility of using blockchain technology and to determine appropriate regulatory policies Relaxed norms for Insurance Self-Network Platform by IRDA to undertake selling and servicing of insurance through e-commerce and other FinTech companies. |
| General regulatory support for FinTechs | FinTech Development Strategies White Paper by the TFSC From 1 January 2015, consumers may make online applications to the banks | FinTech supporting group (by FSC, MSIP (Ministry of Science, ICT and Future Planning), SMBA(Small and Medium Business Administration), FSS, Finance Association, VC Association etc.); debate | The Securities and Exchange Board of India (SEBI) has relaxed many restrictive norms for the technological start-ups to get listed on exchanges. ⁶⁴ |

⁶³ Banking Tech, “Reserve Bank of India to tackle fintech regulations”, 15 July 2016, <http://www.bankingtech.com/533892/reserve-bank-of-india-to-tackle-FinTech-regulations/>

⁶⁴ SEBI press release, “SEBI Board Meeting”, 23 June, 2015, http://www.sebi.gov.in/cms/sebi_data/pdf/files/31307_t.pdf

| Initiative | Taiwan ⁶² | Korea | India |
|-----------------------------|--|--|--|
| | <p>for 12 financial services FinTech-related bills are under review and discussion by the FinTech Office</p> | <p>on supporting FinTech KOFIA (Korea Financial Investment Association) establish task force team for developing measures to activate FinTech and new revenue model Banks: support IT tech services and FinTech start-ups Insurance: develop foster program to growing FinTech start-ups</p> | <p>Plan to issue ‘<i>Differentiated banking licenses</i>’ for specific product/service. Paper out for comments till September 2016⁶⁵ Payment Banks licenses to companies providing retail payment services Moving away from highly restrictive policy of issuing banking license once in every 10 years As per SEBI norms, stock exchanges will have separate institutional trading platform for listing of start-ups from the new age sectors SEBI has relaxed the mandatory lock-in period for the promoters to six months, as against three years for other companies Relaxation of disclosure norms relating to use of funds raised in maiden public stock offering by start-ups Relaxation in norms post which start up is no longer required to be profitable in order to get listed on the stock exchange. As per new SEBI rules, Venture Capitals and Angel Investors will be now be able to exit much easier than before IRDA has allowed differentiated pricing of policies through self-network platform</p> |
| FinTech-specific regulatory | FinTech enterprises may be 100% owned by FIs | FSC pushes ahead with robo-advice; allows online advisory and discretionary business | Working to formulate a policy specifically for account aggregators |

⁶⁵ Vishwanath Nair & Aparna Iyer, “RBI details plans on differentiated bank licences”, *LiveMint*, 6 April 2016, <http://www.livemint.com/Industry/bgEsPaOgRnqOIsg7yDxKPN/RBI-to-offer-other-differentiated-bank-licences.html>

| Initiative | Taiwan ⁶² | Korea | India |
|---------------------------------|--|--|---|
| measures | | | |
| <i>Other policy/initiatives</i> | | | |
| Government procurement | – | – | Jan Dhan Yojana to provide access to formal banking services to the unbanked population Digital India Program to encourage transformation of public services through the use of IT E-Governance system promoted by current government facilitate transparency by in setting up new business |
| Insolvency | – | – | – |
| Credit data | Joint Credit Information Center to collect and provide credit information to its member FIs for these FIs to make effective lending decisions. The credit information is personal information and the use and management of the credit information shall be in accordance with the Personal Information Protection Act and any other relevant rules and regulations announced by FSC and other competent authorities. | Guidance on measures about non identification of personal information for using credit data between financial parties | Credit Information Bureau India Limited (<i>CIBIL</i>) collects and maintains records of an individual's payments pertaining to loans and credit cards |
| Greater data availability | Non-sensitive government data will be available to public. | FinTech Open Platform (inaugural August 2016): <ul style="list-style-type: none"> • Integration of Open API and Test-bed • Open API provides financial inside data that is about customer or products to FinTech enterprises | Aadhar's Unique Identification system for individuals to provide important enabling platform for technology innovators |

| Initiative | Taiwan⁶² | Korea | India |
|------------------------------|--|--|--|
| Other infrastructure | <p>Promote the use of relevant innovative products by insurance companies to make more accurate decisions in determining insurance fees</p> <p>Promote online fund distribution platform, and broaden the scope of funds and amount of funds that can be purchased</p> <p>Build the Financial Information Safety Sharing and Analysis Center</p> <p>Build a safe Online ID Verification System</p> | <p>Banks : Introduction of Blockchain systems</p> <p>Payment systems;</p> <ul style="list-style-type: none"> • mobile payments with MST has been stabled • consideration of broadening NFC affiliate | <p>Dedicated portal for start-up registration</p> <p>Start-ups will get support from the government in expenses of facilitators for their patents filing, trademark and other design work.</p> |
| Taxation | | | |
| Investment | <p>FinTech that meets relevant conditions may apply for tax deduction under the Statute for Industrial Innovation</p> <p>FSC is currently discussing to revise the rules of applications for tax deduction tailored for financial institutions.</p> | – | <p>Tax rebates for merchants accepting more than 50% of their transactions digitally</p> <p>80% rebates on the patent costs for start-ups.</p> <p>Income tax exemption for start-ups for first three years.⁶⁶</p> <p>Exemption on capital gains tax for investments in unlisted companies for longer than 24 months</p> |
| Other | – | – | <p>The Start-Up India initiative launched by the Government of India in January 2016 includes USD 1.5 billion fund for start-ups⁶⁷</p> |
| Government programmes | | | |

⁶⁶ DNA India, “Budget 2016: Start-ups get 100 per cent tax exemption for 3 years on profits”, 29 February 2016, <http://www.dnaindia.com/money/report-budget-2016-start-ups-get-100-tax-exemption-for-3-years-on-profits-2183981>

⁶⁷ “India’s Modi Launches \$1.5 Billion Funds for Startups”, *Fortune*, 16 January 2016, <http://fortune.com/2016/01/16/modi-india-startup-fund/>

| Initiative | Taiwan⁶² | Korea | India |
|--|--|---|---|
| | A FinTech Development Fund of NTD 1 billion is established to invest in FinTech innovation enterprises and the incubation of FinTech talent. | Establishing Public FinTech management system for government subsidies, administering execution of govt subsidies in real time to control govt subsidies effectively and to activate the Fintech area | The Start-Up India initiative launched by the Government of India in January 2016 includes USD 1.5 billion fund for start-ups ⁶⁸ |
| Capital | | | |
| Seed capital, Growth capital, Listed capital | – | The following policies are introduced in July 2016: • Peer-to-Peer online lending platform • Equity crowdfunding platform | – |
| Talent availability | | | |
| | – | – | – |
| Talent pipeline | | | |
| | – | FinTech Base is founded for the purpose of incubating FinTech talents | – |

⁶⁸ *Ibid.*

Appendix 6 - Potential Risks Associated with FinTech⁶⁹

1) Cyber threat

- The launch of digital and mobile banking makes the financial services institutions more interconnected and interdependent which exposes the financial system to increasingly sophisticated and evolving cyber threats that require constant awareness and appropriate resources to identify and mitigate the associated risks.
- Timely and thorough software patch and update management, as well as strong end-user training, can help banks avoid phishing attacks and mitigate risks.

2) Data protection and privacy concerns

- Obviously the use of FinTech and the storage of more data radically increase the amount of risk an institution faces in keeping that data protected. The use of big data itself may become controversial and result in litigation based on privacy concerns.
- Continued vigilance, and smarter cyber practices are needed to protect data, that include strong authentication as well as current end-point software and malware detection.

3) People

- The young creative types who are seemingly vital to develop a technological edge also create a unique set of risks. Startups, and firms that hire young creative workforces, often face issues with harassment, discrimination and wrongful termination in higher numbers than more traditional staffed firms, they also demand a very different set of benefits similar to that being offered by non-financial technology companies.

4) Reliance on Third-Party Service Providers Increasing

- The adoption of FinTech is happening at such a frenetic pace that it is impossible for firms to develop the technology without the use of outside help.
- Traditionally financial institutions could rely on large well-capitalized service providers to meet these needs. In the current environment, financial institutions are

⁶⁹ PwC Report, note 4.

looking to smaller firms that are developing incredibly imaginative technology—but integration of those tools may require new types and limits of insurance to manage that risk.

- Many banks have increasingly leveraged and become dependent on third-party service providers, e.g. some FinTech solution companies to support key operations within their institutions. Over time, consolidation has increased in significant service providers similar to the consolidation that has occurred in the financial industry. This consolidation has increased banks' reliance on a smaller group of organizations.
- The use of third-party relationships to conduct all or a portion of consumer credit-related product development, implementation, and fulfilment, including AML and integrated mortgage disclosure requirements, can increase compliance risks.
- Fair lending risks may increase when banks engage third parties to conduct some or all of the loan application or underwriting processes, or to help banks make decisions regarding terms or pricing. Variations in loan approval and denial and pricing decisions may create increased exposure for fair lending issues and require increased monitoring. Indirect auto lending—an area of significant fair lending risk—continued to grow rapidly in volume for many banks with simultaneous changes in underwriting standards.

5) Compliance risk

- It remains high as banks continue to manage money laundering risks subject to resource constraints in an increasingly complex risk environment and implement changes to policies and procedures to comply with amended consumer protection requirements.
- KYC -- P2P lenders be required to meet traditional *know-your-customer* rules similar to traditional banks.
- AML -- New platforms and technology, such as bitcoin, which are enabling greater anonymity to cyber criminals and other groups to launder money and raise funds to pay for physical and cyber-attacks, pose substantial challenges for compliance with the BSA/AML laws and regulations.
- Antitrust / Monopoly -- The blockchain employs distributed ledgers to facilitate transfer of unique identifiable financial assets. A number of larger banks are already

discussing creation of *a private network of ledgers* for trading amongst the largest institutions.

6) Credit risk

- Central counterparties, which are increasingly used to clear financial transactions, can reduce bilateral credit risk and promote transparency and robust risk management practices.
- An increase in the volume and types of centrally cleared transactions, however, also increases the concentration of operational and other risks, requiring commensurate risk management by the central counterparties, and potentially affecting the risk profiles of clearing members. Foreign central counterparty membership may introduce additional risks from differences in rules, requirements, and authorities.

7) Other risks that may be related to FinTech adoption

- Failure to innovate to meet evolving needs or financial services may place a bank at a competitive disadvantage which leads to loss in revenue and affect the stability of bank funding. Strategic planning remains important as banks adopt innovative products, services, and processes in response to the evolving demands for financial services and the entrance of new competitors, such as out-of-market banks and FinTech firms.
- Banks continue to ease underwriting practices across a variety of commercial and retail credit products given their desire to boost loan volume and respond to competition from P2P and other nonbank lenders.
- Banks are seeking revenue from new products, services, and markets to compete with FinTech firms which often may involve issues that is perceived to be potentially significant but which may not be fully understood. It requires different, new, or stronger oversight and controls.

About the Financial Services Development Council

The Hong Kong SAR Government announced in January 2013 the establishment of the Financial Services Development Council (FSDC) as a high-level and cross-sector platform to engage the industry and formulate proposals to promote the further development of Hong Kong's financial services industry and map out the strategic direction for development. The FSDC advises the Government on areas related to diversifying the financial services industry, enhancing Hong Kong's position and functions as an international financial centre of our country and in the region, and further consolidating our competitiveness through leveraging the Mainland to become more global.

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