TECHNOLOGY AND PENSIONS

The potential for FinTech to transform the way pensions operate and how governments are supporting its development

OECD

Please cite this publication as:

OECD (2017), Technology and Pensions: The potential for FinTech to transform the way pensions operate and how governments are supporting its development

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Foreword

Technology is rapidly transforming the way that the financial sector is operating, and the management and delivery of pensions is no exception. Innovative applications of technology for financial services, or FinTech, are already being used to improve communication with consumers and their engagement with their pension plans. FinTech also has great potential to help pension providers make their internal processes more efficient and improve their risk management. The possibilities that new technologies offer are driving changes in business models and the way in which financial products are delivered to consumers. These changes can lead to increased consumer benefit through lower costs and increased accessibility of pensions.

While regulators are keen to promote innovative ideas that can lead to consumer benefit, they also have to proceed with caution to ensure that consumer protection is not overlooked. Many jurisdictions are dedicating significant resources to keep up with the rapid technologically-driven changes so that the regulation can strike a balance that is both adequate and appropriate in this new environment.

This report provides an overview of how technology is being used to improve pension design and delivery and how regulators are managing these changes. The discussion on the challenges that regulators face to support FinTech draws mainly on insights from a roundtable held at the G20/OECD Task Force on Financial Consumer Protection meeting in March 2017 that brought together both regulators and industry participants to discuss these issues. The report contributes to the OECD Going Digital project which provides policy makers with tools to help societies prosper in an increasingly data-driven and digital world. For more information, visit www.oecd.org/going-digital.

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Introduction

This report explores the early regulatory implications of the growing role of technology in pension provision, and look at what governments are doing more generally to support its development for the benefit of consumers.

Financial technology ("FinTech") and related technological developments such as RegTech (using technology to facilitate regulatory compliance) have the potential to re-shape private pension design and delivery. Individuals are increasingly required to make complex choices about their pension finances, and consumer engagement with financial services in general is becoming more digital. FinTech can improve the ways in which pension providers interact with individual members: enhanced communication techniques can encourage greater engagement; digital disclosure can reduce compliance costs; robo-advice can make financial planning more accessible. New technologies are also relevant to pension providers' internal processes, including product design, transaction processing, risk management and compliance. The improvements in efficiency that technology allows can also translate into lower costs both for pension providers and for members.

Reliance on technology can also create new risks. Less educated and less well-paid workers might be excluded from technological progress because they cannot or will not engage with new methods of communicating. Non-regulated entities from other sectors might cherry-pick some aspects of pension provision, leaving traditional players with less profitable businesses and creating regulatory risks. There are also concerns over data protection and data security as well as consumer protection issues relating to the suitability of the services and products offered.

Regulation must therefore achieve a balance between the objective of encouraging the development of FinTech-enabled solutions to benefit consumers and that of ensuring adequate protection against the potential risks to consumers. Several jurisdictions have been addressing this balance through programmes that intend to work directly with providers to foster and encourage the development of FinTech-enabled services, while at the same time closely monitoring and mitigating the potential risks that emerge in the process. These types of programmes go by several names, but typically include those referred to as innovation hubs, FinTech accelerators or incubators, and regulatory sandboxes. Such programmes can be useful tools to ensure that the financial consumer risks presented by technological innovations are mitigated while also ensuring that protections in place do not inadvertently stifle innovation, thereby maximising the ultimate benefit for consumers.

The key findings of this report are:

- FinTech applications are increasing the accessibility of investing in pensions to a broader consumer base and making communications with pension savers more effective.
- FinTech is increasing the efficiency of the operation of pension schemes through risk management applications, the automation of investment processes and the facilitation of regulatory compliance.
- Governments are making substantial efforts to support the development of FinTech.
- Innovation Hubs are becoming a key component in regulatory support to help new businesses understand how existing regulation applies to their ideas.

- Regulatory sandboxes are emerging as a way to offer flexibility in how regulation applies for new business models and ideas.
- Effective engagement with all stakeholders will be a key factor in successfully supporting innovation in financial services.
- Engagement with international regulatory counterparts will be necessary to try to ensure a certain level of consistency in the regulations and their interpretation and application.

The structure of the report is as follows:

Section I of the report discusses how technology is being used to improve communication with pensioners.

Section II looks at the impact that technology is having on the internal processes of pension providers.

Section III highlights the potential impacts to pension business models.

Section IV underlines some of the potential risks associated with the greater use of technology.

Section V looks in detail at the approaches that regulators are taking to support the development of FinTech that has the potential to benefit consumers.

Section VI discusses some of the challenges that regulators are facing.

Section VII concludes with some key takeaways from the discussion.

Section I: Using technology to enhance interactions with pension members

FinTech is being deployed across a range of financial services to enhance interactions with consumers. FinTech can help to increase trust in financial products, by making them more accessible, transparent and comprehensible. It can improve data collection and analysis, aiding product design and personalisation. It can encourage participation in financial decisions through gamification and education. These developments are likely to be especially valuable in interactions with millennials, who expect to use technology to access financial services and who are now entering the workforce.

Financial advice is the area where the impact of FinTech is most evident. Although its primary application is currently in wealth management, insurance companies are also adopting the technology. Robo-advice is generally cheaper and more accessible than "human" advice and so could be especially useful for DC plans where members are faced with a number of financial choices and where accumulated savings may be relatively small. According to the UK Government's Chief Scientific Adviser, FinTech companies can increase the availability of financial advice to previously under-served populations, thanks to their "lower cost structures, greater customer reach or superior ability to monitor or score risk".

Digital communications

FinTech can help to generate member engagement through the use of digital technologies in communications, including periodic reporting, marketing communications and other information. Digital communications can involve simply the storage and delivery of documents electronically, or it can involve "smart" communications, which use of other media, gamification, personalisation, or interactivity to attract readers.

The trend away from paper documentation and towards electronic communications is being recognised by regulators, who increasingly permit financial service providers to use electronic communications as the default option for regulatory disclosure. For example, the SEC allows mutual funds to post their prospectus on line, and ASIC (Australia) has a "publish and notify" regime. Electronic communications are cheaper than printed communications and it is easier to track who has received and read them. However, digital disclosure poses certain risks in terms of disclosure standards: framing of the information is important so that readers are not distracted from the most relevant information by additional features. Providers could face liability risks if there is a discrepancy between the framing of the printed information and the electronic information. Regulators may therefore need to provide best-practice guides for digital disclosure to help make sure that consumers will read and understand the most relevant information.

Overall, digital technologies are likely to enhance the quality and effectiveness of interactions between pension providers and their members. Smart communications can take advantage of behavioural insights; for example, by using push notifications to nudge people into checking their balances or increasing contributions. The UK Competition and Market Authority's inquiry on personal current accounts found that "annual interest statements have virtually no effect on consumer actions, but given immediately actionable information – text alerts and internet banking – overdraft charges can be reduced by consumers by almost 25%." FinTech enables on-demand interaction between pension providers and their members outside the regulatory reporting periods. In Australia, members of superannuation schemes can access their accounts through a mobile phone app; in the UK, Aviva's Shape My Future app provides online tools and calculators to help members visualise their lifestyle in retirement.

Platforms and dashboards

Digital technologies could also encourage greater transparency and allow people to manage their own data more efficiently, ultimately increasing their bargaining power and lowering the cost of private pensions (especially personal pensions). E-aggregators facilitate comparison sites or allow people to aggregate and analyse their own data. Ultimately, individuals might be able to manage all their finances from a single platform.

A number of countries have created "pensions dashboards" to give members and beneficiaries an easy-to-use overview of their likely pension finances (see Box 1). These dashboards vary in terms of the depth of the data they contain and the functionality they offer, but research indicates that they can be a powerful tool for transmitting information, encouraging people to take action, and in particular for keeping track of multiple pension pots as individuals move between several different employers. There are considerable technical challenges and costs in building a dashboard, however, and policy considerations include both funding and governance in addition to functionality. For example, whether the dashboard should be funded by the private sector or whether advertising should be allowed need to be considered.

As for digital disclosure, it is important to ensure that such platforms do not lead to less engagement or encourage members to skip important information. For example, plans to launch an auto-consolidation of small DC pots on Australia's pensions dashboard were postponed because inactive accounts in some cases offered better protection than active accounts; users of pension dashboards should be given all the relevant information as well as a simple "one click" option to take action.

Box 1. Pensions Dashboards

A pensions dashboard provides a one-stop shop for individuals to see their pension situation. Depending on the functionality of the dashboard, they can see their public and private pension entitlements, compare different private schemes, enter personal information (such as a change of address) just once for transmission to multiple providers, receive regulatory and marketing communications, compare different payout options, and consolidate small pots.

While dashboards can provide considerable utility to both pension providers and pension members, and bring transparency, a number of questions need to be addressed in setting them up:

- *Cost*: upfront costs may be paid by the government or private providers; ongoing costs will ultimately be borne by members unless private sponsorship or advertising is permitted, which raises consumer protection and competition issues.
- *Technical challenges*: individual records will need to be cleaned, standardised and digitised.
- *Quality and scope of information*: the content and display of information needs to be controlled so that individuals are not tempted into making a decision such as consolidation on the basis of attractively-displayed but incomplete information.

AUSTRALIA

The Australian Tax Office portal provides up-to-date valuations of all an individual's super accounts and of any unclaimed money in "lost" accounts. Individuals can trigger the process of consolidation on the portal. It is estimated that streamlining processes and consolidating smaller pots could save AUSD 1 billion per year in running costs.

THE NETHERLANDS

The government set up a website in 2011 to increase engagement and awareness of pension entitlements. It includes information on state and occupational pension rights on both a gross and net of tax basis. Occupational schemes are legally required to provide data, but information and functionality are relatively limited, though a pension simulator may be included in the future. Work is also being conducted to look at the feasibility of including personal pensions.

SWEDEN

The minpension site was established in 2004 and has evolved to provide real-time information about state and DB pensions, the current value of pension entitlements, a projection of retirement income and a simulator to model changes in the projection at different retirement ages. Around half of eligible users are registered with the site and data suggests that people are most likely to use the site as they get close to retirement age.

UNITED KINGDOM

The government has set a goal of establishing a pensions dashboard by 2019 where individuals would be able to view all of their pension pots, including state pensions, in one place. As a preliminary step, the government has launched a pension finding service to help individuals easily locate unclaimed pensions. An initial prototype of what the dashboard could look like has also been developed in collaboration with the industry. Participation by the industry has not yet been mandated, however, and it is not clear how the project will be funded.

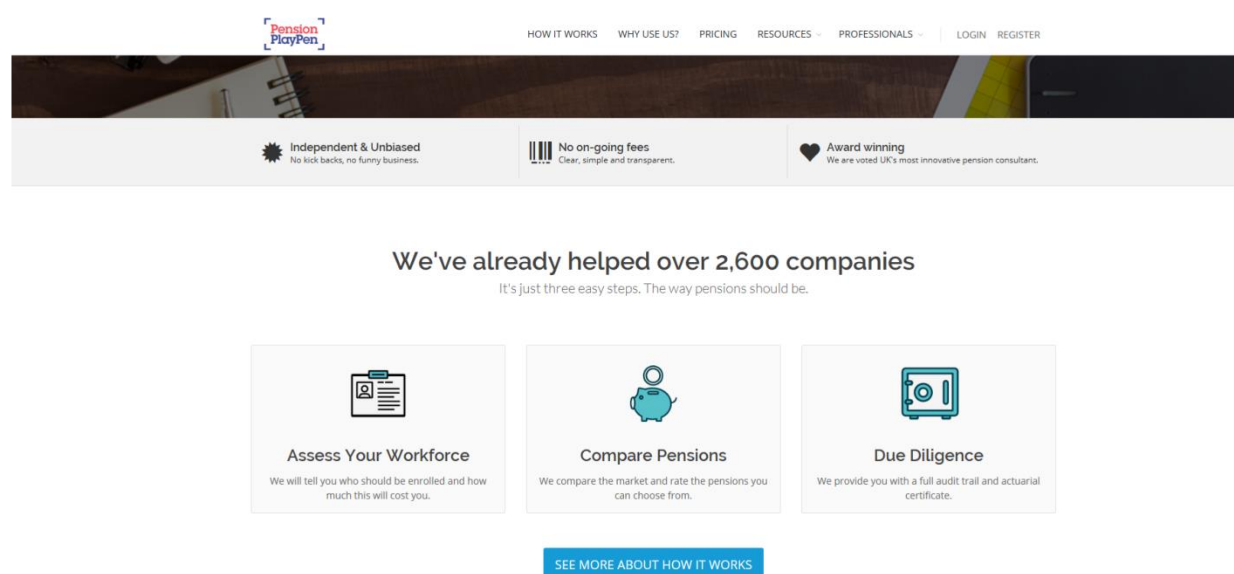
Source: (Johnson, 2016), (Royal London, 2016)

Section II: Impact of technology on internal processes

Scheme management

FinTech can also help to facilitate pension scheme administration and risk management, particularly for smaller plan sponsors who may have fewer resources and could benefit the most from lower costs and improved efficiency. For example, FinTech has been used to create platforms to facilitate the management of pension schemes for employers by providing a digital auto-enrolment platform (see Figure 1). These are especially useful for small employers who may not have the resources or expertise to select a scheme or connect it with their payroll systems.

Figure 1. Digital Auto-Enrolment Platform Example



FinTech can also facilitate risk management for pension providers. Financial software such as RiskFirst gives smaller pension schemes access to the same risk management and reporting tools as larger schemes. Improved risk estimates and forecasting could be particularly powerful in avoiding large downward swings in DC pots, for example.

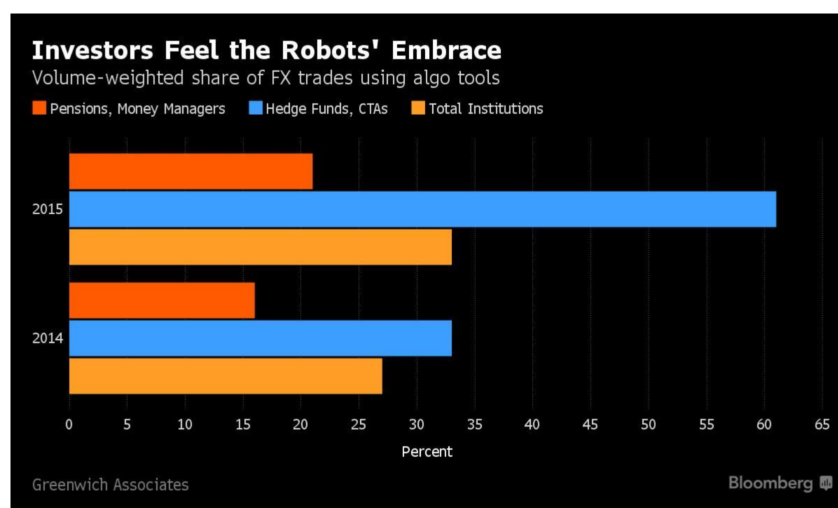
New analytical techniques and big data could lead to the creation of more efficient and more personalised retirement solutions, in particular for the pay-out phase. Financial data and analytics improve our understanding of consumers and their savings and spending habits, therefore solutions for financing retirement could be better tailored to individuals' specific circumstances.

Investment management

Lowering investment costs is recognised as an important contributor to increased portfolio returns. FinTech is helping to reduce the cost of portfolio management, through low-cost investment products such as bespoke tracker funds and automatic portfolio rebalancing and algorithmic trading. Several robo-advice firms are positioning themselves as business-to-business operations, offering automated portfolio management

services to businesses providing pensions for their employees. Direct trading between players on the buy side, especially in the corporate bond market, are helping to offset the decline in market making as investment banks withdraw liquidity, but in doing so they transfer trading risks to investors and make markets less transparent, so may need additional supervision. FinTech is also enabling the emergence of entirely new asset classes, such as peer-to-peer lending.

Figure 2. Volume-weighted Share of FX Trades Using Algo Tools



Source: Bloomberg

Regulatory compliance

Technological applications can support risk management and compliance through making Management Information Systems, compliance monitoring and risk training more efficient and transparent. Technology can support labour-intensive regulatory and compliance processes such as real-time transaction analysis, online registration, risk-weighted asset calculations, data analytics and aggregation; modelling, scenario analysis and forecasting; monitoring internal culture and behaviour and complying with customer protection processes. Data-mining algorithms can organise and analyse large sets of data, including qualitative data such as e-mails and recordings.

Technology could also facilitate data sharing between regulators within or across jurisdictions, or the creation of open-source compliance tools, although this would require harmonisation of data. As financial regulation requires more and more data, new technologies might help to streamline both data capture and data analysis. New mathematical tools could lead to more powerful risk models; emerging techniques such as agent-based modelling to simulate the likely impact of new policies such as MiFID II before they are introduced; while smart contracts (computer protocols that can self-execute, self-verify and self-constrain the performance of a contract) could reduce the need for some areas of supervision.

Blockchain

Many of the technologies described above rely on blockchain, or distributed ledger, technology (Box 1.2). Although the application of blockchain to pensions is so far limited, it has potential use in dashboards, trading and many Regtech solutions.

Box 2. Blockchain Technology

Blockchain – or distributed ledger – technology makes it possible to connect multiple parties to each other without passing through intermediaries. These multiple parties all have access to identical copies of a digital record (for example, a contract or transaction data), they can update these records to register a transaction that has taken place and have their amendments validated by the other parties in close to real time.

This makes transactions cheaper and in some ways safer. For example, company shares can be traded by investors without passing through multiple custodians, as the shareholder register can be updated directly once an exchange takes place between buyer and seller. The existence of multiple copies of the transaction means that there is less risk of a single systems failure reversing the transaction. Once validated, transactions cannot be reversed.

Distributed ledger technology is potentially applicable to a number of aspects of pensions:

PORTFOLIO MANAGEMENT - Trading (including bespoke derivatives contracts), reconciliations, foreign exchange management, portfolio rebalancing and proxy voting could all be made more efficient through the use of dedicated blockchains.

COMPLIANCE - Blockchain would facilitate many aspects of pensions administration, such as automated identification solutions (KYC) and data recording and transfers. By giving sponsors, trustees and tax authorities access to a unified, tamper-proof database, the need for reconciliation of transfers/contributions would be sharply reduced.

DASHBOARDS - Dashboards that allow transactions, such as consolidating multiple pots, could use this technology.

Source : (UK Government Office for Science, 2015)

Section III: The impact of technology on business models

Technology is changing business models in financial organisations in two main ways. Within internal operations, it is leading to disintermediation between front, middle and back offices. Within commercial operations, it is changing consumer behaviour and so forcing adaptation by providers. These trends are already evident in other financial institutions but they are likely to affect pension providers in the future. De Nederlandsche Bank suggests how insurers might be faced with new types of competition for certain parts of their business, making them less able to bear the cost of their legacy books (DNB, 2016).

Incumbent pension providers may be at a disadvantage to newer players in exploiting new technologies, because they are constrained by existing IT infrastructure that is expensive to change or replace. This could enable new entrants with lower costs to enter some areas of pension provision, as has already been seen in the area of advice. As an example of the potential costs of upgrading legacy systems, UBS is reported to have invested USD 1 billion in redesigning processes across its wealth management operations to introduce robo-advice in the UK.

FinTech is bringing increased transparency and a greater use of comparison sites. This trend could lead to pressure on pension providers to provide more granular reporting on their cost structures and the fees they charge, ultimately leading to a drop in pricing.

Section IV: Risks associated with the greater use of technology

Each of the potential advantages of FinTech carries corresponding risks. Some of these risks are not new, although they may be more acute because of the applications of new technologies, for example data security and privacy risks. FinTech also has the potential to create new types of risk, such as structural changes in the financial services industry and the entry of non-regulated players. Regulators may wish to impose new training requirements on pension providers, sponsors and trustees to address FinTech risks as well as build their own internal capacities to supervise these risks.

In the area of interaction with members, there are a number of potential risks. FinTech could aggravate financial exclusion for those who do not engage with digital communications; conversely, there is some concern that consumers will place too much trust in technological solutions and so the fall-out from any problems with FinTech will be particularly damaging. One example of this is crowd funding, where small investors might take more risk than with traditional investment products.

Data privacy and security risks are heightened with the introduction of technologies that rely on the capture, storage and analysis of large quantities of data in order to provide improved services. FinTech providers that use cloud-based IT services may put data beyond the reach of regulators.

Technological advances may lead to a greater degree of advice from and outsourcing to specialised providers, for example enhanced analytics companies. These companies may fall outside the scope of pensions regulators, but a failure by them could have negative consequences for confidence in private pensions.

Section V: Regulatory approaches to FinTech

Regulation of FinTech has to strike a balance between encouraging innovation in order to reap the potential benefits of lower costs, improved transparency and higher consumer engagement, providing space for the evolution of business models, and ensuring that consumers are protected and incumbents are not faced with unfair competition from non-regulated entities. It also needs to be adaptive in order to accommodate the impacts of future, unanticipated technological developments and encourage knowledge-sharing between regulators, supervisors, incumbents and potential new entrants to the pensions industry.

Regulators also need to be vigilant that the benefits of technology are indeed passed on to pension members and beneficiaries. Philippon argues that the financial services industry has so far kept IT efficiency gains for itself, and that the role of the Regulator is to ensure that disruption is allowed to take place (Philippon, 2017). The regulatory framework needs to accommodate such disruption and ensure that the same rules are applicable for both new entrants and incumbents.

Government sponsored programmes to support innovations in the provision of financial services have been implemented in numerous jurisdictions. The ultimate objective of these programmes is to ensure that innovation is encouraged, that these developments are

in consumers' interests, and finally that any consumer risks resulting from these innovations are adequately mitigated and financial consumer protection ensured.

These programmes can intervene in various stages of an idea's development, from the initial brainstorming phase to the implementation or even expansion of the resulting product or service:

- ***Idea stage***: to promote the generation of ideas to improve the provision of financial services and benefit consumers
- ***Compliance stage***: to facilitate the identification of applicable regulations and the process of compliance
- ***Financing stage***: to facilitate the raising of capital to fund the implementation of the project
- ***Implementation stage***: to provide a controlled and safe environment for testing the idea in the market and to use the feedback and information learned to adapt product offering or regulation which may be inadequate or inappropriately constrictive
- ***Expansion stage***: to facilitate the exportation of the idea to other markets and allow consumers to benefit more rapidly

These stages of development are not necessarily chronological and the programmes offered may span several stages of development, which is often the case for incubator-type programmes which offer end-to-end services. Programmes may also target specific stages, such as an agreement between two jurisdictions to facilitate cross-border expansion.

While the criteria for a FinTech candidate to participate in these types of programmes generally includes having an innovative idea that will improve financial services for consumers and result in a tangible consumer benefit, the types of participants targeted may vary across jurisdictions. Some programmes explicitly target start-ups, such as the 10,000 Start-up programme in India, while others favour developments by incumbents such as banks, as is the case in Hong Kong, China. Many programmes, however, are open to any market participant having an innovative idea to benefit consumers and improve financial services with technology.

The sections below provide some details on the specific types of support that various programmes can offer in each stage of the FinTech's development.

Idea stage

Several jurisdictions have developed programmes or incentives to engage with the industry and to encourage ideas to be put forward for the application of technology to solve certain challenges observed in the market and to benefit consumers. These initiatives typically take the form of a network or community which facilitates the exchange of ideas, support to vet ideas for specific applications in financial services, or organised competitions to develop concrete FinTech solutions to specific challenges.

A few governments have established or funded efforts to facilitate idea generation and communication to capture the potential benefits that technology can offer to financial consumers and engage in discussions with the industry. The Hong Kong Monetary Authority has created a FinTech Facilitation Office, which includes a dedicated platform to liaise with the FinTech sector. This platform facilitates the exchange of ideas among stakeholders to find applications of technology for financial services. It also initiates

research with the industry on specific applications of FinTech, for example the application of blockchain technology to financial services. The Belgium government sponsors the “B-hive”, a platform intended to facilitate innovation and the liaison between traditional financial service providers and FinTech start-ups. Australia has established a digital advisory committee made up of industry representatives, academics and consumer representatives to provide feedback on how the regulators/supervisors are engaging with the sector and to identify which issues are the most important to address. Canada has a similar committee, and also invites venture capitalist and tech experts to the table to understand the challenges they face with particular regulations.

Other governments have established dedicated support for businesses to bring solutions to solve particular market challenges and benefit consumers. The Advice Unit established by the Financial Conduct Authority in the United Kingdom is one such an initiative. The Advice Unit provides regulatory feedback and published resources for businesses developing models to provide automated advice, either in the form of a personalised recommendation or through automated investment management services. Businesses wishing to benefit from the service must meet a number of criteria, including the potential for lower cost services, consumer benefit and a clear and well thought-out proposal.

Another emerging trend is to host FinTech competitions, commonly referred to as “hackathons”, to generate ideas for solving specific challenges presented in financial markets, including those related to financial consumer protection. While more common in the private sector, one of the first government sponsored events was the TechSprint sponsored by the Financial Conduct Authority in the UK, a two-day event where market players came together to develop ideas to use technology to improve the efficiency and effectiveness of financial regulation. More recently, the Canadian securities regulator sponsored a hackathon for FinTech applications for regulatory compliance, Know-Your-Customer requirements and improving financial literacy. The United Arab Emirates has sponsored a virtual hackathon for applications of blockchain technology, with one objective being the reduction of financial fraud and cybercrimes.

Compliance stage

Assisting businesses in understanding the regulatory requirements applicable to their business idea is the most common approach governments have used to encourage innovation in financial services and ensure that appropriate consumer protections are in place. Such services or programmes are commonly called “innovation hubs”, FinTech incubators or FinTech accelerators, though there is no universally agreed definition across jurisdictions. The goal of these services is to help FinTech companies understand how the regulation applies to their ideas and to facilitate the registration or licensing process, which can significantly reduce start-up costs and time-to-market. These services often operate based on a 'hub and spoke' model (e.g. Australia, Canada, United Kingdom), with a dedicated team being the central point of contact who can refer specific issues to relevant contacts in other departments as need be.

This approach helps to ensure that the business models are compliant with requirements put in place to protect consumers. Often, the regulators/supervisors will also try to reach out to and engage with market participants who may not realise that the activity they are engaging in is subject to regulation. The OSC in Canada, for example, provides a website that uses plain language (no legalese) and provides plain examples of how securities law may apply, and issues media releases to make participants aware of required regulation where a lack of awareness has been observed for a specific type of situation.

An example of a dedicated team is the Innovation Hub in the United Kingdom, which is dedicated to working on innovation and supporting the growth of FinTechs. The Innovation Hub provides qualified applicants with a dedicated advisor who sees them through the compliance process, identifying the relevant aspects of the regulatory regime, facilitating the application for authorisation, and providing support for up to a year following authorisation.

Short of having a dedicated advisor, most jurisdictions with a programme in place to support innovation in financial services will at least provide a service to help aspiring innovators to understand the applicable regulations. This is true in Abu Dhabi, Australia, Brazil, Canada, France, Hong Kong, China, Indonesia, and the Netherlands, for example.

Financing stage

While not as common, governments may also provide assistance for innovators to raise capital or cover the costs for the development of their projects, with the end-goal that these projects will ultimately benefits consumers. The B-hive platform in Belgium, for example, facilitates the creation of partnerships between start-ups and traditional market players to help the business concepts scale-up their idea. The programme 10,000 Start-ups in India, supported by the government, helps innovators by providing direct access to venture capital and angel investors. In France, innovators can have access to government grants or contracts which will help to ensure future revenues. The French government may also help with operational costs by providing office space, for example. The Abu Dhabi Global Market assists start-ups connect with potential investors and helps them with logistical resources.

Implementation stage

Programmes which offer support for the implementation of the innovative idea are most often in the form of what has become commonly known as a regulatory sandbox. The principle of the sandbox is to provide a controlled environment in which the business idea can be tested in real time and where some licensing and/or regulatory requirements may be relaxed. It also provides a safe environment for the idea to be tested where risks to consumers are controlled. This not only speeds up the time-to-market, but provides valuable feedback both to the participant and to the regulator as to how the regulation does and should apply, including rules relating to consumer protection. This feedback can then be used to either adapt the product or service offering, or to adapt the regulation itself. As such, these services are typically reserved for innovative business models for which there is no direct precedent as to how the regulation should apply, as these types of ideas require more interactive support. The participating businesses also need to have considered potential risks to consumers and how to mitigate them.

Jurisdictions which have implemented a sandbox-type approach (date of launch in parentheses) include Australia (Dec. 2016), Bahrain (June 2017), Canada (Oct. 2016), Hong Kong, China (Sept. 2016), Indonesia (Nov. 2016), Iran (Dec. 2016), Malaysia (Oct. 2016), the Netherlands (Jan. 2017), Thailand (Oct. 2016), Singapore (Nov. 2016), United Arab Emirates (Nov. 2016) and the United Kingdom (May 2016). China has also announced that it will launch a regulatory sandbox.

One type of flexibility that sandboxes may offer is relaxed registration or licensing requirements. The sandbox in the United Kingdom allows participants a temporary form of authorisation which allows them to try their idea within a defined period of time, after which they may apply for full authorisation. In Abu Dhabi, firms are allowed to operate

in the 'RegLab' for up to two years without a traditional license, but may be subject to limitations such as the number of products, types of consumers, size of transactions and the geographies where products and services are offered. The Netherlands allows for 'light' licensing requirements, granting temporary licensees to test-run ideas. Australia has issued a licensing exemption for businesses offering products to a small number of clients or for small amounts, and also offers modular licensing, where participants can be licenced to provide specific services and/or products.

Sandboxes may also have the power to relax certain regulatory and compliance requirements. In the United Kingdom, certain rules can be 'switched off', allowing the business to freely test their ideas, albeit within an agreed set of parameters. A 'no enforcement' action may also be offered, so that in the event the product does not work the supervisor will not take enforcement again against the company. While not officially a 'sandbox', the US Consumer Financial Protection Bureau issued its policy on innovation in February 2016, which establishes a process for FinTech companies to proactively seek ‘No Action’ letters so that regulatory uncertainty does not hinder innovation.

The OSC Launchpad in Canada and the RegLab of the Abu Dhabi Global Market have the power to tailor regulations for individual companies. In Hong Kong, China, compliance requirements can be relaxed to allow banks to experiment with new ideas, and Singapore allows new products to be offered to consumers that are subject to relaxed compliance rules for a limited amount of time. In Iran, regulation and tax rules can be relaxed for start-ups. The Astana International Finance Centre planned in Kazakhstan will offer flexible regulations for start-ups. Where principles-based regulations apply, providing another interpretation as to how the regulation should apply may be sufficient and a modification of the rule may not be necessary.

As relaxing licensing and compliance requirements can potentially expose consumers to additional risks, other measures can be taken or controls put in place to ensure that adequate consumer protections are in place. In the United Kingdom, applicants must first be qualified to offer the product or service. The process also requires that the innovators have a dedicated advisor to follow the process and check the outcomes. In the event that consumers are harmed from a product or service being tested, the company is required to provide redress to the consumer to avoid enforcement action. Also, certain rules, such as suitability requirements, may not be allowed to be relaxed. In Australia companies must maintain basic requirements such as having professional indemnity insurance, joining an approved external dispute resolution service and meet conduct and disclosure obligations such as best interest standards for advice and responsible lending obligations for credit. Senior executives may also be required to have previous financial services experience. In Malaysia, requirements relating to confidentiality, appropriate handling of assets and anti-money laundering must be adhered to.

Following the observations during the testing of the product or service, lessons learned may be used to adapt existing regulation to ensure that appropriately accommodates the new business model or product while maintaining adequate levels of consumer protection. The OSC Launchpad in Canada, for example, uses this feedback to modernise regulations and remove the pain points for these businesses.

Expansion stage

Governments are increasingly putting agreements in place which facilitate the expansion of innovative and successful ideas that benefit consumers into new markets. These may take the form of agreements to fast-track the application process to participate in the

innovation hubs of other jurisdictions or platforms to facilitate the exchange of information or ideas across jurisdictions.

Some jurisdictions have entered into agreements which directly facilitate businesses from one market to enter into another. The Financial Conduct Authority in the United Kingdom has made bilateral agreements with Australia, Canada, Hong Kong, China and Singapore which allows each jurisdiction to refer FinTech firms to the other, which enables the firms to more quickly test their ideas in the new market. A French initiative in Korea has launched the "French Tech Seoul", which facilitates the entry of FinTech entrepreneurs from one market into the other. In the same vein, the B-hive of Belgium has signed a Memorandum of Understanding with Innovative Finance, the trade body for Britain's FinTech sector, facilitating collaboration between the two bodies. The Abu Dhabi Global Market has established a FinTech bridge with the Monetary Authority of Singapore to establish a strategic framework to assist innovators to understand the respective regimes and provide support in the authorisation process and facilitate joint innovation projects.

Agreements facilitating more general collaboration and the exchange of information relating to FinTech innovations are also becoming more common. An agreement between the United Kingdom and Korea allows the regulators of the two jurisdictions to more easily share information regarding emerging trends, innovative ideas and regulatory issues. Such agreements can also help to identify and share any emerging risks to consumers which may result. Australia has signed a similar agreement with Kenya, Indonesia and Singapore.

Section VI: Challenges to implementing successful programmes to support the development of FinTech

There are numerous challenges to successfully implementing programmes to support the development of FinTech. These challenges relate to the motivation for developing such programmes and their focus, and having appropriate rules in place and ensuring the effective functioning of such programmes.

The first challenge that oversight bodies may have to address before establishing a programme to support the development of FinTech is the need to ensure there is sufficient scope within their existing mandate to do so. The Financial Conduct Authority in the United Kingdom is unique in having a mandate to promote competition in the financial markets, and it uses this mandate to support its regulatory sandbox programme as a way to encourage innovative new entrants into the market. A more common mandate for oversight bodies is to promote market efficiency, which many jurisdictions felt was sufficient to allow them to take measures to support businesses with innovative ideas using technology in a way which would reduce the firms’ operating costs and in turn the costs for consumers. Nevertheless, even just having a mandate for consumer protection should be sufficient in many cases to support those businesses which are rendering costs that are typically very opaque for consumers, such as the spreads charged on currency exchange rates, more transparent.

The culture of the organisation also plays a role in the extent to which programmes will be able to successfully interact with FinTech businesses. Many programmes are centred on a hub which offers direct support to the businesses. However, while these hubs will certainly be geared towards technology and innovation, new businesses will ultimately still have to interact with other areas of the organisation to ensure their ideas are

implemented and become operational. The hub therefore also needs to engage with other areas of the organisation to help spread the type of culture which embraces change and innovation and get the buy-in from senior executives in all areas of the organisation. Having this buy-in may also help to overcome the functional and practical constraints that come with the necessity of having many different types of knowledge and functions involved in the process. Professional biases may contribute to the difficulty in cultural adaptation, so additional human resources may need to be called upon, ones who not only have experience in technology but also have a better understanding of the potential risks involved. The language used to communicate with companies may also need to be adapted to facilitate understanding. In this context, several jurisdictions are making an effort to simplify the language used on websites to avoid "legalese" and make the application of the regulations clearer.

Another challenge is finding the right balance to allow regulatory barriers to be lowered without compromising on the core principles of the regulatory framework. Given the speed of the evolution in this area, the framework in place needs to be nimble enough to facilitate growth while ensuring that the risks are mitigated effectively. Technology and innovations are also being directed at reducing frictions in transactions. However, eliminating all frictions may not be desirable as this could result in reduced consumer engagement and attention with respect to the transactions that they are executing and which they may not fully understand.

Clarity in regulation is clearly desirable but not always so easy to achieve. Many unanswered questions remain about how certain innovations should be regulated, such as the legal issues around the use of distributed ledger technology or settlement finality. Yet it is very difficult to keep pace with the changes arising from innovation to make sure that this clarity can be provided effectively without unnecessarily slowing down the pace of innovation.

Numerous challenges also present themselves for the effective functioning of these programmes. First is whether the necessary structures and rules are in place. Structural issues which are not adapted to a digital world such as local ownership requirements, bank-focused regulation, and non-electronic requirements to comply with "Know-Your-Customer" rules will impede innovation. Consistency of regulatory treatment and interpretation so that businesses know how they will be treated and can scale-up is a second challenge. Even where rules are technically the same, interpretations of their application may differ not only across jurisdictions but even within the same jurisdiction. The target of these programmes may also be unclear, as the term FinTech lumps together many concepts, such that it is not always apparent what is meant, which works against developing a consistent focus and approach to oversight. The programmes need to be designed to work for innovative businesses that come in myriad forms and sizes.

A final challenge is the limited resources available to the regulator or oversight body. If the demand for regulatory support and tailored regulations exceeds the resource capacity of regulators and supervisors, the regulatory body will not be able keep up with demand and scaling these programmes could prove difficult. Industry led solutions, such as the industry sandbox being proposed by Innovate Finance, could potentially help to meet some of this demand, but would still require the active involvement of regulators.

Insights and suggestions to help make programmes successful

The suggestions made by participants at the roundtable to effectively support the development of innovation in finance centred around some key themes: culture, engagement and capacity.

First, regulators/supervisors need to shift their organisational culture to be more accepting of and adaptable to innovation and change. Having a dedicated team is just the first step towards achieving such a cultural shift in this new environment. The support of senior executive leaders of relevant business teams is also important for the success of this team and to support the alignment of outcomes for the regulator. Regulators and supervisors also need to learn from their interaction and experience with these programmes, and adapt their approach and/or regulations where necessary.

Another way to help achieve a cultural shift is to try to approach regulation through a lens of consumer benefit in addition to consumer risks. Such a shift in focus could also inform resource allocation. Measures of success of regulatory efforts could be used which align with this focus, such as measures of price or consumer satisfaction.

Engagement should be another priority. The engagement of regulators/supervisors with both internal and external stakeholders at the various stages of a business's development is crucial for regulators/supervisors to keep up with developments and to define their role within the FinTech ecosystem. Their role and objectives in supporting the development of FinTech will be defined in terms of their mandate. Having a mandate to promote competition is not necessarily needed in order for the regulator to play a role in this ecosystem. Rather, even just having a mandate for consumer protection should provide them with the means to encourage more consumer-friendly business models and transparent fee structures. Engaging with stakeholders will help them to identify where these objectives can align with their mandate, and internal engagement within the regulatory body can promote an integrated approach.

Engagement with external stakeholders will aid regulators/supervisors in building their knowledge and keeping up with new developments. Several jurisdictions have established FinTech advisory committees, which gather financial, technology and policy experts as well as stakeholders who may provide a source of funding. Such forums are useful to understand the challenges the industry is facing and the potential regulatory barriers that may exist.

Engagement with start-ups from a very early stage can facilitate communication and limit unnecessary costs of compliance. With early engagement, start-ups can build in the expected controls, for example, which could become quite expensive to implement at a later stage. Making an effort to engage with new businesses will also help to establish a common language and help these businesses to understand the regulator's expectations and requirements. Many jurisdictions have also observed that such engagement helps make firms more willing to be regulated and to embrace regulation as a means to gain consumer confidence and ultimately help their business expand. Furthermore, more regulatory focus and support could give investors more confidence to invest and thereby contribute to the growth of the sector, even though the financial sector remains more regulated than other sectors.

Inter-regulatory engagement will also be critical to improve the consistency of regulations and the consistency of their interpretation. While many participants acknowledged that having the same rules in all jurisdictions is not a realistic expectation at this stage, they

also lamented the lack of consistent interpretation and application even within Europe for rules implemented at the European level.

Finally, the new environment may call for new ways to engage with market participants and increase regulatory capacity. While regulatory sandboxes are a positive development and have been well received by industry participants, participants also acknowledged the difficulty in scaling up these types of solutions given the resource constraints faced by regulators/supervisors. Industry-led sandboxes could help to address these constraints and provide a solution to solve shared problems across the industry with the regulators/supervisors and help provide them with a good vantage point to follow developments. Nevertheless, regulatory involvement would remain a necessary component. Other formats to ensure that the design of policy is effective could also be envisaged. The traditional approach of issuing written consultations on proposed regulation may not effectively engage new market participants who could be most affected by the rules. One proposed solution was for the regulator to host hands-on workshops with industry participants to design policy that works for real-world cases.

Section VII: Key takeaways

The way in which pensions are set up, managed and delivered to consumers is transforming with the increased use and applications of technology. FinTech applications are increasing the accessibility of investing in pensions to a broader consumer base and making communications with pension savers more effective. FinTech is also increasing the efficiency of the operation of pension schemes through risk management applications, the automation of investment processes and the facilitation of regulatory compliance.

Overall, governments' efforts to support the development of FinTech and the benefits this can bring to consumers is a positive trend. Several jurisdictions have successfully hosted brainstorming 'hackathon' sessions to develop solutions to specific market or regulatory challenges. Innovation Hubs are forming a key component in such support to help new businesses understand how existing regulation applies to their ideas. Regulatory sandboxes are also emerging quickly as a way to offer flexibility in how regulation applies for business models and ideas that have no precedent. Nevertheless, as these types of programmes have only just started, and time will tell if they will be able to be truly effective in their aim to ensure adequate consumer protections without stifling innovation.

The regulator will need to define its role within this new ecosystem to support innovation in a way which is aligned with its mandate and will need to work to shift its organisational culture and capacity to align with these objectives. Significant engagement will be required to accomplish this, both internally to obtain the support at all levels of the organisation, but also externally to stay on top of developments and establish productive relationships with new businesses. Engagement with counterparts internationally will also be necessary to try to ensure a certain level of consistency in the regulations and their interpretation and application. Effective engagement will be a key factor in successfully supporting innovation in financial services, so new ways to engage with all stakeholders will need to be established to ensure that the organisation and regulations will be able to adapt to a constantly changing environment.

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Technology is rapidly transforming the way that the financial sector is operating, and the management and delivery of pensions is no exception. Innovative applications of technology for financial services, or FinTech, are already being used to improve communication with consumers and their engagement with their pension plans. This report provides an overview of how technology is being used to improve pension design and delivery and how regulators are managing these changes.

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