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# Japan's Securities Markets and FinTech

## FinTech's Infrastructure and Service Layers

**F**inTech, a term created as an abbreviated form of “financial technology,” refers to the use of information and communication technology (ICT) to promote innovations and rebundling of finance, financial settlements, and financial services. FinTech is now being used to refer to financial-related technologies in a wide range of fields. It is increasingly used with the adjective “disruptive” because FinTech is also a phenomenon that is significantly innovating the functions provided by conventional financial services and reconfiguring the value chain.

The ICT industry is generating a constant stream of innovations through its efforts to accelerate data processing and support open forms of contracts, such as cloud computing, and resource procurement management. These innovations include artificial intelligence (AI) and machine learning, robotics, the Internet of Things (IoT), and self-driving vehicles (i.e., the fourth industrial revolution). In addition, the widespread use of smartphones and the expansion of e-commerce and so-

cial networking services (SNS) are bringing about dynamic changes to consumer behavior and lifestyles. The emergence of people and ideas from outside the financial industry that are trying to shake the existing financial order by bringing together various innovations may be considered another FinTech-induced trend.

The financial functions that FinTech seeks to innovate and rebundle can be broadly divided into two layers – the infrastructure layer and the service layer.

FinTech's core technologies and concepts are its infrastructure layer. Blockchains or distributed ledger technology (DLT), which are the mechanisms supporting the Bitcoin virtual currency are part of FinTech's infrastructure layer, as are the mechanization and automation of financial services or digitalization of transactions using machine-learning AI and big data.

Meanwhile, the technologies and concepts used to provide financial services that end users access are called the service layer. An example of this service layer of FinTech is the ability to display the status of a customer's assets and make investment portfolio proposals using an application programming interface (API), an interfacing and linking mechanism that enables customers to use remote programs and software to connect to a system and use its functions.

The figure below shows the areas of the securities business value chain that FinTech can impact. The rest of this article presents the current status of the main ar-

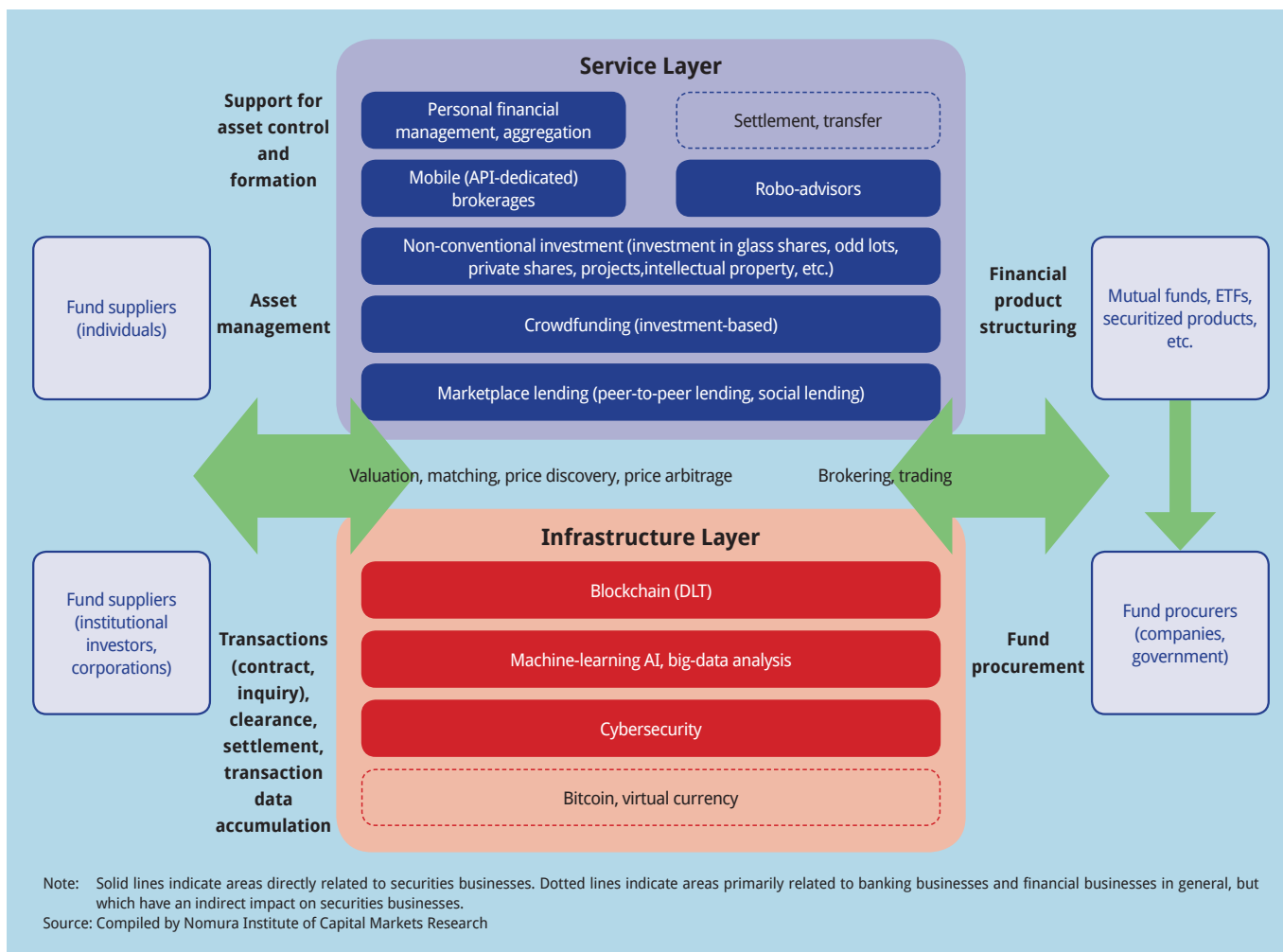
reas in which FinTech is having an impact on Japan's securities industry and an overview of representative business models.

## FinTech in Japan's Securities Industry

### Customer services, information management, investment advisory, and asset management

**Personal Financial Management (PFM):** PFM refers to a service for generating household accounts by aggregating data from banks, credit card companies, electronic money accounts, point cards, and other sources. By enabling automated aggregation from various sources and envisioning of financial status, PFM can enhance financial service business' ability to deliver essential value to their retail customers. Using the log-in ID and password provided by a customer, financial managers utilize a technology known as “scraping” to access the website of the customer's financial institution. However, it has been pointed out that this practice exposes customers to information security breaches. In response, financial managers have begun to access a customer's accounts at fi-

**Figure 1: Securities Business Value Chain and FinTech**



financial institutions by connecting through APIs, which does not require submission of the customer's ID and password.

In the U.S., FinTech services such as Intuit's Quicken Online, Yodlee, and Mint.com appeared soon after the Internet became widely used in the 1990s. More recently, we have seen the emergence of companies that are providing services that bring additional value to PFM. For example, Credit Karma offers advice on improving credit scores, Digit offers an automatic savings function, and Personal Capital provides an automated asset management function combined with consulting services offered over the phone or by financial planners.

In Japan, the rapid proliferation of smartphones since 2010 has led to the emergence of startups offering app-based services, such as Zaim, Money Forward, and Moneytree. In recent years, we have seen these mobile app providers begin to integrate their services and promote tie-

ups with traditional financial services. For example, Money Forward has begun collaborating with SBI Sumishin Net Bank, a number of regional banks, and Tokai Tokyo Securities.

**Robo-Advisors:** Robo-advisors are online services that (1) create an investor profile that is then used to (2) formulate an individualized investment policy that is used to provide an automated asset management service, including discretionary investment in ETFs, investment trusts, and other instruments. An algorithm based on the customer's answers to a simple questionnaire automatically puts together an optimal investment portfolio and conducts automated rebalancing and reallocation during the management period.

In the U.S., a number of startup firms offering robo-advisor services – such as Betterment, Personal Capital, Future Advisor, Wealthfront, and SigFig – were established in the years immediately following

the 2008 financial crisis. The past 2–3 years have seen the startup of robo-advisor services by a number of major well-established investment advisors, including Vanguard, Charles Schwab and BlackRock, which acquired Future Advisor. Other recent trends include combinations with aggregators, such as Envestnet's 2015 acquisition of Yodlee, and the emergence of companies specializing in providing system tools to independent registered investment advisors (RIAs).

In Japan, "THEO" was launched by Money Design in February 2016 and "WealthNavi" was launched by WealthNavi later that year in July. These independent service providers are offering discretionary asset management services for investment in ETFs and investment trusts, based on discretionary managed account agreements signed with their customers. In addition, several financial institutions have established robo-advisor services, including SBI Securities' "SBI FundRobo", 8 Securities' "8 Now!"

and “Chloe”, Nomura Securities’ “Nomura Goal-Based”, Matsui Securities’ “Toshinkobo”, Monex-Saison-Vanguard Investment Partners’ “MSV Life”, and Rakuten Securities’ “Raku Wrap”. However, these financial institutions’ robo-advisor services are positioned as a tool for leading customers to invest in wrap (balanced) funds. In any case, it is anticipated that these services will provide a means to approach asset-forming households that may not have been sufficiently serviced in the past.

### Fund procurement: Crowdfunding

Crowdfunding is an example of FinTech used in the field of fund procurement. Crowdfunding is a new form of financial service that enables the procurement of small amounts of funds via the Internet from a large number of unspecified small-scale investors. Crowdfunding is categorized according to the type of return received by fund providers. Crowdfunding types seen thus far include lending-based (interest is earned and principal is repaid), investment-based (shares are received in exchange for investment, with the possibility of dividend payments), donation-based (donations with zero return to fund supplier), and prepurchase-based (products and services are received, with no monetary return). Among these, lending- and investment-based types of crowdfunding are considered to be closely related to securities businesses.

**Lending-based Crowdfunding:** Lending-based crowdfunding is a financial intermediation service that connects fund providers and fund procurers via the Internet. This type of crowdfunding has also been called social lending, marketplace lending, and peer-to-peer (P2P) lending. Lending-based crowdfunding uses AI to analyze various types of personal data not previously used in lenders’ credit checks. These include PFM and cloud accounting data, credit card settlement information, records of e-commerce transactions, and information extracted from social media. This multifaceted analysis is expected to enable lending to a class of borrowers who previously were not eligible for bank loans. Intermediaries providing the platform receive fees equivalent to around 1–3% of the value of the loan. Borrowers receive better terms than they would from conventional financial institutions, and lenders can expect to earn a higher return than when investing in traditional financial assets. The actual loan is extended by a bank that has partnered with the intermediary, and in many cases beneficiary rights are issued

to the lenders. It has therefore been pointed out that this type of crowdfunding may lead to the creation of a new collateralized loan obligation (CLO) market.

Growth of the lending-based crowdfunding market in the U.S. was driven by the startup firms Prosper and Lending Club, respectively founded in 2005 and 2006. In October 2016, Goldman Sachs launched its own online lending platform, called Marcus, and going forward the market is likely to see the entry of other major financial institutions.

Japan’s Money Lending Business Act, which requires money lenders to be registered, has inhibited the emergence of P2P transactions, but alternative methods of transferring funds from lenders to borrowers are being devised, such as the use of silent partnerships. The first lender to use this form of lending was Maneo, a startup established in 2007. Similar services have since been launched by AQUISH, SBI Social Lending, Crowd Bank and others. Lending-based crowdfunding in Japan accounts for a small share of the global market for this type of lending, but the domestic market is growing and is expected to continue developing in the years ahead.

**Investment-based Crowdfunding:** Investment-based crowdfunding is an Internet-based scheme that enables soliciting capital subscriptions to share issues from large numbers of unspecified investors. Investment-based crowdfunding makes it possible for startups to procure a certain amount of capital by issuing shares to many investors without listing on a stock exchange. This scheme also has the potential for creating new types of relationships between companies and their shareholders by, for example, turning the fans and supporters won over through Internet-based presentations of their business models into shareholders. Unlike donation-based and other types of crowdfunding, investment-based crowdfunding is likely to be subjected to national regulations regarding the issuance and trading of securities.

In the U.S., enactment of the Jumpstart Our Business Startups (JOBS) Act in 2012 removed the ban on investing in shares through crowdfunding websites. AngelList, founded in 2010, and other companies have established platforms to connect investors (nicknamed “angels”) and entrepreneurs through social media. However, these platforms have not been fully utilized to date, partly due to delays in the establishment of Securities and Exchange Commission rules needed for implementation of the JOBS Act.

In the UK, both fund-based crowdfunding using collective-investment schemes and equity-based crowdfunding exist. However, the former is subject to strict restrictions on investment solicitation. As a result, equity-based crowdfunding is currently the core form of investment-based crowdfunding in the UK. In 2014, the UK’s Financial Conduct Authority introduced new regulations pertaining to equity-based crowdfunding, which included specific requirements regarding the information to be provided to investors and other conditions to be met by intermediaries. Following these improvements in the regulatory environment, the number of crowdfunding deals and the total amount procured increased sharply in 2015. As a result, equity-based crowdfunding is steadily becoming a core fundraising method for startups in the UK. Founded in 2010, Crowdcube has become well known as the country’s largest equity-type crowdfunding platform.

Japan has two main types of investment-based crowdfunding – silent partnership-based and equity-based crowdfunding, with the silent-partnership type being the main market growth driver to date. A representative player in this market is Music Securities, which was founded in 2001. The company mainly manages funds for local specialty products, with cumulative investments exceeding JPY 50 billion yen. Meanwhile, a regulatory framework for equity-based crowdfunding was created by the 2014 revision of the Financial Instruments and Exchange Act. The revised Act lowers the minimum capitalization requirements for Type I financial instruments business operators from JPY 50 million to JPY 10 million. The revised Act also stipulates that total value of small-scale electronic equity offerings must be less than JPY 100 million and sets the maximum subscription from an individual investor at JPY 500,000. Following the changes to the regulatory framework, Japan Cloud Capital registered as a Type I small-amount electronic public offering business operator in October 2016. In January 2017, the company launched its FUNDINNO equity-based crowdfunding platform. Equity-based crowdfunding offerings in Japan are still relatively few, but the availability of a new fund-raising method for startups should be welcomed. This new fund-procurement method is expected to see greater use in the future.

## Brokering and trading

In the institutional brokerage and trading domain, technologies for automation, mechanization, and high-speed processing were introduced at an early stage, and various ICT innovations have been enthusiastically adopted. On the other hand, research and other areas have been slow to adopt innovations in automation and mechanization. However, the application of AI and big data could produce major changes in these areas. In particular, advances in social media, IoT, and sensor technologies have led to an explosive increase in unstructured data that is expected to generate new value when combined with machine-learning AI. For example, natural language processing is already being used in the U.S. to automatically generate regular reports, such as earnings releases. Two prime examples of these natural language generation platforms are Narrative Science's Quill and Automated Insights' Wordsmith. These innovations will probably lead to more advanced analysis of market fluctuation factors and momentum in the near future.

Securities brokerage and trading businesses targeted at individual investors are developing new investment services, such as social trading and copy trading based on shared information available to members of an online community, and taking advantage of the proliferation of smartphones by introducing apps that make it

easy for individuals to conduct trades on their devices.

The smartphone era has seen the emergence of mobile brokerages, which specialize in providing services via smartphone apps. Robinhood, a U.S. company established in 2013, offers customers commission-free trading and instead derives its revenues from interest earned on investing customer funds deposited with the company and from charges for its premium service. Acorns, another U.S. mobile broker, provides a service where amounts on purchases made using credit cards and debit cards are rounded up to the nearest dollar, with the rounded-up amount automatically transferred into specified ETF and investment trust accounts. Both companies are enjoying strong support from young adults.

In Japan, One Tap BUY launched a service in June 2016 for easily trading 30 U.S. blue chip stocks using only three taps on a smartphone. The company makes investment decisions easier for its target customer base of younger, inexperienced investors by providing information on the companies targeted for investment and historical stories about their founders in easy-to-understand cartoon strips. Imitating Acorns, WealthNavi in spring 2017 started a service for SBI Sumishin Net Bank customers that transfers to investment accounts a rounded-up amount tacked on to purchases made using electronic money and credit cards.

## Settlements and infrastructure: Blockchains

Blockchain is a technology that compiles transactions made during a defined period of time into one unit (block) and then registers the blocks to form a continuous link. Instead of maintaining encrypted transaction ledgers in a central institution such as a stock exchange, the information is distributed and shared among participants in P2P networks (DLT). Blockchain technology is expected to improve safety and stability of transactions while also lowering costs. Possible uses in the securities field include trading in unlisted shares and bonds and over-the-counter derivatives. Blockchain was made famous as the core component of the digital currency Bitcoin, but the application of this technology to securities transactions faces a number of hurdles. First, all transactions are visible to all participants, which means that large transactions and positions, as well as prices in negotiated transactions, are exposed to public view, which is unacceptable to most users. Second, authentication takes too much time in proof-of-work mining. To overcome these hurdles, consideration is being given to designing systems that require approval for network participation, appointing an actual network administrator, and not requiring agreement from all participants when making transactions. At present, numerous standards, including Ethereum, Hyperledger, and Corda,





are competing to become the mainstream standard.

In Japan, the Japan Exchange Group launched a two-part blockchain verification test in April 2016. In one part, Hyperledger was used in a test jointly conducted with IBM Japan. In the second part, Ethereum's consortium/private standard was used in a test jointly conducted with Nomura Research Institute and CurrencyPort. According to a report published in August 2016, the tests confirmed cost reduction and business continuity planning-related advantages in settlement and other post-trade operations. On the other hand, the report identified several issues that need to be resolved to realize widespread use. In the short run, data privacy requirements must be satisfied and smart contracts must be developed; in the long run, throughput performance must be enhanced to enable processing of large amounts of data and DLT-based settlements involving large amounts of funds must be realized.

## FinTech and Japan's Securities Market

Japan's securities industry has undergone dramatic changes since the 1990s as a result of such developments as liberalization of stock brokerage commissions and the emergence of Internet and online securities trading. In light of this past experience, the view that established securities players are under immediate threat from changes brought about by FinTech is rather muted when compared with the perceived threat to other financial businesses, such as those that are directly impacted by changes in settlement, transfer, lending, credit examination, and other systems. Nonetheless, assuming that FinTech will continue bringing innovations to the various parts of the infrastructure and service layers of the securities business, all players will eventually have to devise and implement FinTech strategies.

Lastly, the promotion of FinTech is likely to impact Japan's securities markets in three important areas.

The first will be the promotion of investment in securities as a means for building up the financial assets of Japanese households. At present, 52–53% of

the estimated JPY 1,800 trillion in Japanese individuals' financial assets are deposited in bank accounts with interest rates near zero. Investment in securities accounts for only 16% of Japanese households' financial assets. Despite the rather high IT literacy in Japan and concerns about the future of pension systems, conventional securities business operators have had difficulty attracting young people and the working-age population. FinTech may encourage these groups to invest in securities.

In addition, the use of FinTech and the development of new services are expected to promote greater use of new systems supporting asset formation by Japanese individuals. These new systems include the Nippon Individual Savings Account (NISA), a tax-free small-lot investment program, which will be enhanced by the start of an installment-type NISA in January 2018, and iDeCo, a defined-contribution pension plan for individuals (similar to individual retirement accounts in the U.S.), eligibility for which was greatly expanded in January 2017.

The second area likely to be significantly affected is the supply of risk money. Amid concerns about sluggish future economic growth in Japan, revitalizing the capital markets and securing an adequate supply of risk money to emerging and growth companies have become key issues. Crowdfunding, social lending and other FinTech developments are expected to facilitate angel investment and venture investment, thereby increasing the flow of risk capital to promising startups, technologies, and entrepreneurs. FinTech also may lead to the creation of new capital markets, such as markets for secondary trading in unlisted shares, securitized P2P lending, and big-data transactions.

The third area where we expect FinTech to have a significant impact is Japan's position as an international financial center. The highly skilled individuals and startup firms that are driving the advances in FinTech and the fourth industrial revolution increasingly are assembling teams without regard to nationality and have their sights set on global markets from the outset. This in turn is generating international competition for outstanding human resources and ideas. Japan's creation of an attractive ecosystem for FinTech entrepreneurs and startups could lead to an increase in inward foreign direct investment that would also contribute to maintaining and enhancing Japan's position as an international financial center. In addition, securing Japan's position as an international financial center will attract a large number of financial

institutions, asset management companies, venture capital firms, law firms, accounting firms, and other specialized businesses with an interest in pursuing FinTech innovations, which in turn will have a large positive impact on the Japanese economy.

Given the potential significance of FinTech for the Japanese securities market and economy as a whole, Japan's policy-makers and regulatory authorities need to be more aggressive in creating an environment conducive to the development of FinTech. Meanwhile, FinTech's generation of new products and services could give rise to issues and challenges that were not anticipated in the existing legal and regulatory framework. Going forward, all market participants must be ready to aggressively adopt FinTech innovations that add to the value of Japan's capital markets or enhance their international competitiveness, while also safeguarding the critical functions of the securities market, such as investor protection, market efficiency and fairness, and the stability of the financial system.

### Notes

This article is an updated and abridged version of the "Report of the Survey Group for Research on the Securities Industry and Fintech" (January 2017). The author served as chair of the survey group.

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He graduated from the Law Faculty of Keio University in 1990 and earned an MBA from Marshall School of Business at the University of Southern California in 1999.