# Securities Businesses in the Age of FinTech

**June 2018**

**Research Group on the Securities Industry and FinTech**

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As of March 31, 2018

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| | Tadashi OMAE |

Executive Director, Japan Securities Research Institute

**Meetings of the Research Group on the Securities Industry and FinTech**

- First Meeting (June 1, 2017)
  "Summary of *Report of the Survey Group for the Research on the Securities Industry and FinTech*"
  Yuta SEKI (Senior Managing Director, Nomura Institute of Capital Markets Research)
  "Overview of Japan's Securities Companies"
  Kiyoshi NIKAMI (Chief Representative of Osaka Office, Japan Securities Research Institute)

- Second Meeting (August 4, 2017)
  "Strategic FinTech Innovation: Toward FinTech 2.0"
  Hiroyuki OGAWA (Director, SBI Securities Co., Ltd.)
  "Thoughts on the Impact of FinTech on the Securities Industry"
  Kimihiro MINE (Executive Director, Monex, Inc.)

- Third Meeting (October 2, 2017)
  "WealthNavi"
  Kazuhisa SHIBAYAMA (Founder & CEO, WealthNavi Inc.)
  "From Saving to Investment: Role of the Robo-Advisor, THEO"
  Jin NAKAMURA (CEO, Money Design Co., Ltd.)

- Fourth Meeting (November 9, 2017)
  "Business and Industry Outline and Outlook for bitFlyer"
  Yuzo KANO (Co-Founder and CEO, bitFlyer, Inc.)
  "The Securities Market and FinTech"
  Atsushi SANTO (Head of FinTech Laboratory, New Business Development, Corporate Strategy Department, Japan Exchange Group, Inc.)

- Fifth Meeting (December 27, 2017)
  "Toward the Use of Financial Data"
  Toshio TAKI (Director and Head of FinTech Research, Money Forward Inc.)
  "Development of Open API Systems in Japan and Overseas"
  Yoshio FUKUDA (Senior Manager, Global Financial Business Unit, NTT Data Institute of Management Consulting, Inc.)

- Sixth Meeting (January 12, 2018)

  "Report on Crowdfunding for Investment in Silent Partnerships by Type II Financial Instruments Business Operators: Deepening Impact Investments"

  Masami KOMATSU (President & CEO, Music Securities, Inc.)

  "Features of Fund Procurement through Equity-Based Crowdfunding"

  Naoya ARIYOSHI (Partner, Attorney at Law, Nishimura & Asahi)

- Seventh Meeting (February 28, 2018)

  "The Future of FinTech and Finance: What Will Be Valuable in Financial Businesses 10 Years from Now"

  Hayanari UCHINO (Managing Director, Financial and Capital Market Research Department, Daiwa Institute of Research Ltd.)

  "FinTech Initiatives of US and European Financial Institutions"

  Tsuyoshi OKI (Senior Economist, Financial Business Research Unit, Financial Research Department, Mizuho Research Institute)

  "Electronic Ledgers and Securities Businesses from the Perspective of Economics"

  Hajime TOMURA (Associate Professor, Faculty of Political Science and Economics, Waseda University)

- Eighth Meeting (March 20, 2018)

  "Impact of Cryptocurrencies and ICOs on the Securities Industry"

  Naoyuki IWASHITA (Professor, School of Government, Kyoto University)

  "Discussion on Draft Report"

  "Chair's Summary"

  Noriyuki YANAGAWA (Professor, Graduate School of Economics, University of Tokyo)

Note: Titles and affiliations are as of the date of each meeting.

## Major Acronyms

AI: Artificial intelligence
AML: Anti-money laundering
API: Application programming interface
DLT: Distributed ledger technology
ICO: Initial coin offering
KYC: Know your customer
P2P: Peer to peer
PFM: Personal financial management
SNS: Social networking service
UI: User interface
UX: User experience

## Introduction

The Research Group on the Securities Industry and FinTech (hereinafter, "Research Group") was formed under the aegis of the Japan Securities Research Institute. Based on the issues raised by the Japan Securities Dealers Association, the Research Group aims to perform a fundamental evaluation of the implications of FinTech for the securities industry, following up on *Report of the Survey Group for the Research on the Securities Industry and FinTech* published in January 2017.

The Research Group held eight meetings between June 2017 and March 2018 to investigate how FinTech may change the future of securities businesses (what securities businesses should look like in the age of FinTech). In the course of these meetings, the significance of FinTech for Japan's securities industry was discussed based on presentations made by researchers and business experts. This Report presents a summary of the Research Group's discussions.

In the securities industry, it is not that there is growing sense of conflict between established players and FinTech. However, given the ongoing changes in customer needs and infrastructure innovation, all players will have to formulate FinTech strategies at some point in the future. In this process, they will need to consider how to interact with startups and players from other business domains from among the following available forms of collaboration: (1) contracts, partnerships, and tie-ups, (2) incubation accelerators, (3) equity investment, (4) acquisition and integration as group company, and (5) creating ecosystems and becoming platform providers.

Developments in crowdfunding, cryptocurrency transactions, and ICOs are particularly noteworthy from the perspective of securities markets and financial asset transactions because it is possible that these have already begun forming new markets. The knowhow developed to date by securities businesses in such areas as investor protection, information disclosure, and the segregated custody of customer assets can be expected to function as a key source of knowledge in the future development of these prospective markets.

Ongoing technological innovation can be expected to highlight the functions performed by securities firms, prompting them to identify areas of decreasing value-added and separating such areas from functions that remain viable. In this process, it is possible that

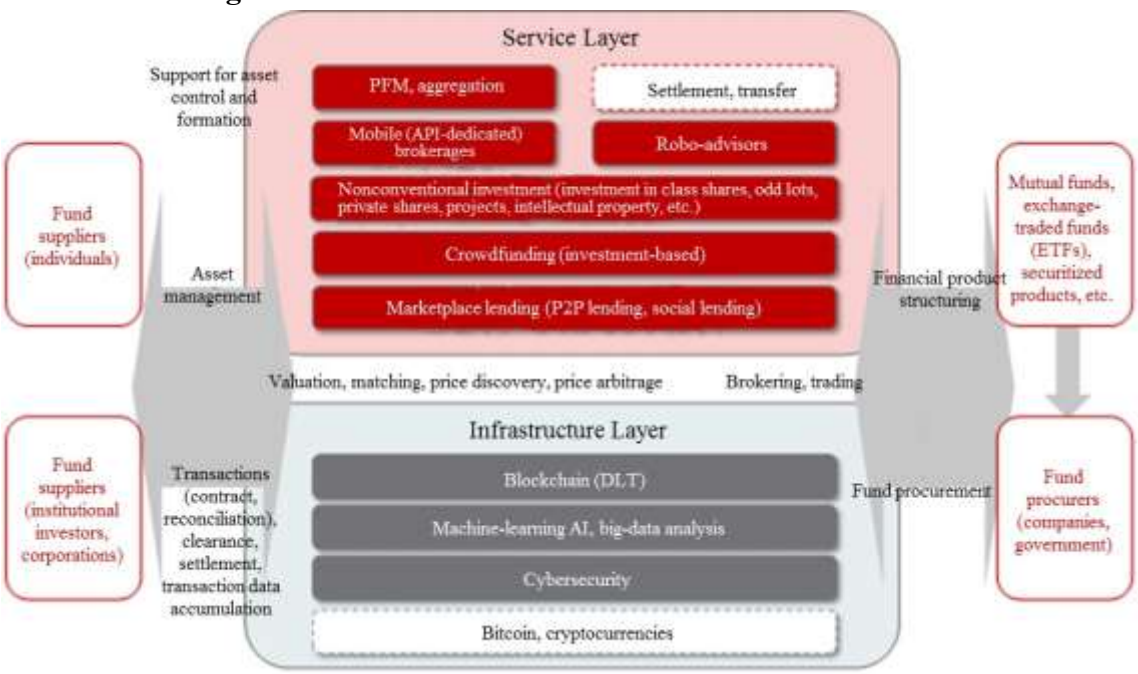
the importance of certain functions, such as price discovery and risk money supply, that have been traditionally performed by securities businesses will be recognized anew.

# I. Securities Businesses and FinTech

FinTech is a term created by combining "finance" and "technology," and refers generally to information and communications technology (ICT)-based innovation and rebundling of finance, settlement, and financial services. The discussions of the Survey Group for the Research on the Securities Industry and FinTech, which preceded the Research Group, focused on the current status of FinTech and attempted a fundamental evaluation of the implications of FinTech for the securities industry. The findings of the Survey Group are summarized below to outline the relation between securities businesses and FinTech.

FinTech can be conceptualized as being composed of two layers. The first, referred to as the infrastructure layer, consists of the core technologies that underlie FinTech. The second, referred to as the service layer, is supported by the infrastructure layer and consists of the actual financial services with which customers (end users) interact (see figure 1).

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




Note: Solid lines indicate areas directly related to securities businesses. Dotted lines indicate areas primarily related to banking businesses and financial businesses in general, but which have an indirect impact on securities businesses.

Source: Compiled by Nomura Institute of Capital Markets Research.

## 1. Infrastructure Layer

The infrastructure layer consists of a number of underlying technologies including blockchain (DLT), machine-learning AI, big-data analysis, and cybersecurity. These technologies can have an impact on such securities operations as transaction (contract and reconciliation), clearance, settlement, and the accumulation of transaction data. At the same time, they affect the form of various FinTech services that are provided on the infrastructure.

An example of a component of the infrastructure layer is the blockchain (DLT) technology that supports cryptocurrencies. As blockchain (DLT) can improve transaction security and stability while reducing cost, it is expected to radically change the financial transactions infrastructure. In connection with securities businesses, efforts are being made to utilize this technology primarily in post-trade processing. Various initiatives are also being pursued in such areas as transactions in unlisted shares, bonds, and over-the-counter derivatives.

Machine-learning AI and big-data analysis may also be viewed as tidal forces driving the transformation of securities businesses. Traditionally, securities businesses have handled a wide variety of data including market prices, interest rates, and customer information. Moreover, responding to the recent proliferation of social media, cloud computing, and other emerging technologies, securities businesses have made significant advances in accumulating big data including unstructured data. Through appropriate analysis and use, this rapidly growing body of data can be utilized for various purposes such as supporting customer interaction and asset management, and improving the efficiency of back-office operations.

Cybersecurity is a necessary precondition for worry-free use of new digital services by customers. Because a trade-off often exists between the level of security and the ease of use, the pursuit of equally high levels of security and convenience constitutes a constant theme for FinTech services that handle diverse types of information.

## *2.* Service Layer

The FinTech services actually used by customers are predicated on the existence of the underlying infrastructure layer discussed above. Included in these services are services that may partially replace certain functions traditionally performed by securities businesses, such as support for asset control and formation, asset management, financial product structuring, and fund procurement.

PFM plays an important role in the field of asset control and formation support. Under the traditional structure, the control of financial assets held by individuals was separated and compartmentalized under the respective accounts they have at banks, securities companies, credit card companies, e-money providers, loyalty program operators, and other entities. PFM refers to a service for automatically generating and visualizing household accounts by using an aggregation function to collect data from these separate accounts and display them by type. PFM and APIs, which will be discussed later, complement each other, and the spread of open APIs can improve the speed and security of PFM services. In particular, because smartphones provide the closest interface to customers, smartphone-based PFM services can serve as a gateway to a broad range of external collaborative financial services.

In the asset management field, mobile brokerages are emerging that specialize in providing services through smartphones and other mobile terminals. In the traditional structure, securities transactions and asset management services were generally provided by sales representatives through face-to-face advice and guidance. However, non-face-to-face customer interaction has been made possible by the proliferation of personal computers and smartphones. Efforts are now being made to improve mobile terminal UX and UI with a focus on offering simple and accessible investment styles to customers.

Robo-advisors have emerged across the fields of asset management and asset formation support, and function by posing several questions to a customer through a personal computer or smartphone. Customer responses are fed to an algorithm that automatically calibrates the customer's risk tolerance level and other metrics and proposes an optimal portfolio based on customer attributes. Discretionary investment services are also available that automatically select stocks, execute transactions, rebalance the portfolio, and perform other functions. A notable feature of robo-advisors is that they allow investors to access investment advisory services based on portfolio-theory, which were previously available only to a certain class of wealthy individuals and institutional

investors, at low cost and for small investment amounts.

Crowdfunding represents a use of FinTech in the fields of fund procurement and financial product structuring. Crowdfunding provides a scheme for entities with funding needs to procure small funds via the internet from large numbers of unspecified individuals. Based on the type of return obtained by fund suppliers, crowdfunding can be placed under the following four categories: (1) donation-based crowdfunding (no reward), (2) reward-based crowdfunding (fund procurer provides goods or services), (3) lending-based crowdfunding (fund procurer makes interest or principal payments), and (4) investment-based crowdfunding (fund procurer distributes business earnings). Investment-based crowdfunding can be further divided into two subcategories consisting of equity-based crowdfunding (acquisition of shares) and fund-based crowdfunding (acquisition of share in fund).

Other appellations of lending-based crowdfunding include social lending, marketplace lending, or P2P lending. In addition to personal information traditionally used in credit examination (age, income, credit score, etc.), lending-based crowdfunding employs AI to undertake multifaceted analysis of types of data not used by established financial institutions. These include PFM and cloud accounting data, credit card settlement information, records of e-commerce transactions, and information extracted from social media. This analysis facilitates lending to classes of customers who normally would not be eligible for receiving bank loans. Borrowers are able to access funds at lower interest rates than traditional bank loans, and lenders can charge higher interest rates than they would receive by depositing their money in a bank.

In equity-based crowdfunding, the fund procurer (normally an unlisted company) issues shares that are subscribed for and purchased by investors who have applied through the internet. Equity-based crowdfunding is similar to traditional public offerings of new shares in that large numbers of investors are solicited to invest in equities. However, this scheme does not utilize traditional capital markets and is characterized by its use of the internet to procure funds from the general public.[1]

[1] Measures were taken under the revision of the Financial Instruments and Exchange Act and revision of the regulations of the Japan Securities Dealers Association that came into effect in 2015 to develop a regulatory framework for investment-type crowdfunding. Those measures include establishing monetary conditions for small amount electronic public offerings (less than 100 million yen for total value of issue, and up to 500,000 yen subscription per investor), as well as reducing minimum capitalization and other entry requirements.

In fund-based crowdfunding, the fund procurer solicits investment in its fund, and shares in the fund are subscribed for and purchased by investors who have applied through the internet. This scheme contains certain characteristics of reward-based crowdfunding in that investors are frequently motivated by empathy and support for the investee. In Japan, the market for investment-based crowdfunding has been led by fund-based crowdfunding. This has led to the observation that this subcategory of crowdfunding is following a unique path of development in Japan that is not seen in other countries.

The emergence of the technologies and services mentioned above is ready to restructure the value chain of securities businesses and the traditional function of the securities industry to stand between procurers and suppliers of funds, mediate information and assets, and help create value through investment. This Report examines these developments. Chapter II reviews developments in FinTech that have occurred since the publication of the Report of the Survey Group. Chapter III outlines the implications of the principal forms of FinTech for securities businesses. Finally, Chapter IV presents an outlook for the future role of securities services and intermediaries based on the foregoing examination.

# II. Securities Business and FinTech Developments in the Past Year

## 1. Regulatory Developments

Recent regulatory developments that are strongly related to securities businesses and FinTech are reviewed in the following sections by geographic region.

### *Europe*

#### (1) The Revised Payment Services Directive and the General Data Protection Regulation

In overseas developments, there were two particularly notable developments impacting not only securities businesses but also the entire financial sector. These are the European Union's revised Payment Services Directive (PSD2) and General Data Protection Regulation (GDPR). Preparations for compliance with PSD2 and GDPR following their enforcement in January 2018 and May 2018, respectively, were not limited to players within the EU, and extended beyond the boundaries of the EU region to include players linked to the EU through the existence of data, which has emerged as a new class of cross-border asset.

PSD2 affects the settlement domain while GDPR addresses issues related to personal information. While they target different domains, the two regulations share a common aim: returning the control of customer data possessed by a financial institution to the customer and, if consented and confirmed by the customer, allowing that data to be used by other financial institutions, companies in other business domains, and third parties for the provision of new financial services beneficial to the customer or of more sophisticated and diversified versions of services currently being offered by the financial institution. These developments are expected to interact with open APIs[2] and lead to the creation of new customer-centered financial ecosystems that will emerge through collaborative efforts involving established financial institutions and FinTech startups. Some major UK banks are already moving to offer aggregation functions enabling unified control of all customer assets including assets held in other banks. By offering a

[2] An API constitutes an interfacing and linking mechanism that allows the functions of a system to be used through external programs or software. In open APIs, financial institutions and others open their standardized spec APIs to external entities (subject to certain conditions) so that external operators, including third parties, can use data from the financial institution under secure conditions to develop applications and services of use to customers.

form of PFM function that allows comprehensive asset control, it can be said that banks are seeking to strengthen their positions as financial hubs and are moving in the direction of eventually developing into a kind of platform providers.

The impact of this trend may go beyond the banking sector to affect securities businesses as well. That is, the domains handled by securities companies may be incorporated into the scope of customers' comprehensive financial transactions and financial assets. This may require securities businesses to undertake further steps toward opening data. In fact, even before the enforcement of PSD2 and GDPR, new entrants into the UK banking sector, known as challenger banks, were enhancing their presence through digital innovation and by offering novel services. In continental Europe, new types of banks capitalizing on digital technologies, such as smartphones and APIs, began to emerge even before the European Central Bank issued its guidelines on FinTech banks in September 2017. In order to provide customers with useful FinTech services, some of these banks have been offering FinTech services developed by external operators on their own platforms. These include robo-advisors and other asset management services.

### (2) The Markets in Financial Instruments Directive 2

The EU has been the source of another regulation that has a direct bearing on securities businesses: the Markets in Financial Instruments Directive 2 (MiFID 2) that came into force in January 2018. MiFID 2 is a comprehensive regulation that seeks to render the European financial markets more robust while also enhancing their transparency. MiFID 2 affects the institutional investor domain as well as the retail domain of securities businesses. As a result, it may indirectly impact FinTech in various ways. For example, it has been pointed out that under the guidelines on MiFID 2 issued in July 2017 by the European Securities and Markets Authority, the collection of necessary information may be more restricted in the case of investment advice and portfolio control provided by robo-advisor services as compared to traditional face-to-face services. For this reason, providers of robo-advisor services are also pressed to comply with the new regulations to ensure investor protection.

Given that MiFID 2 requires the buy side to handle research as an independent and separate service from transaction execution, a new type of operator known as a research aggregator is emerging to provide online access to research reports generated by

multiple research providers. While those aggregators primarily target institutional investors, some serve individual investors as well. A salient feature of the business model of research aggregators is that data collected on the most frequently accessed research reports and other meaningful variables can be analyzed and separately offered to customers as a new value. Potentially, this service can also provide a new approach to evaluating research reports and the analysts that produce them.

This type of FinTech platform providers that capitalizes on regulations as a business opportunity in a sense constitutes a form of regulation technology (RegTech). It will be interesting to observe whether this service matches customer needs and will be able to grow.

### (3) UK's Regulatory Sandbox

In the United Kingdom where regulatory authorities are playing a leadership role in promoting FinTech, the regulatory sandbox, a space for experimenting with innovations and new financial services under the supervision of the authorities, stands out as a representative undertaking. The first group of applications was received in June 2016, and the fourth group of applications was closed at the end of January 2018. A total of 207 companies filed applications in the first three groups, of which 60 met the requirements and proceeded to the testing stage. Companies with head offices located in areas other than London accounted for 40 percent of the third group of applicants, indicating that the initiative is steadily expanding its geographic scope. Furthermore, the UK Financial Conduct Authority (FCA) has outlined its concept for a global sandbox for joint testing with the financial authorities of other countries. The concept reflects the realization that many elements of the financial market and FinTech are essentially transnational in nature. The FCA has suggested that innovative solutions for AML and KYC are possible themes for experimentation.

### (4) UK's Innovative Finance Individual Savings Account

The UK's Innovative Finance Individual Savings Account (IFISA) is another notable example of the promotion of FinTech in the country. Under this initiative, investment in funds established by P2P lending platforms was added to the scope of an Individual

Savings Account, the existing framework for preferential tax treatment. Taking advantage of this opportunity, a leading UK platform operator began offering funds targeting individual investors in February 2017, and has been followed by the nation's other major P2P lending platform operators who have also been licensed to offer IFISA. The entire P2P lending segment can be expected to continue expanding with the increased participation of investors as fund suppliers and the development of secondary markets facilitating the secondary sale of assets. Furthermore, an acceleration of sound competition between P2P lending and established banking businesses that provide comparable forms of conventional lending, as well as securities businesses that are engaged in asset management, can be anticipated.

***United States***

In contrast to Europe, FinTech in the United States has been primarily led by the private sector. From a regulatory perspective, in addition to various elements that come under the jurisdiction of the federal government, individual states have also developed their own regulations in many cases. As a result, the regulatory regime can potentially become a patchwork of inconsistent rules and regulations. To counter this problem, state financial authorities are creating mechanisms for unified procedures that straddle multiple states.

On the other hand, the multilayered US regulatory structure contains features that provide viable paths for responding to the dynamic changes and innovations that are inherent to financial businesses such as FinTech. For example, in the case of cryptocurrencies and blockchain (DLT), the position of the US authorities continues to be carefully watched as a predictor of future developments. At the present time, regulations applicable to businesses trading and exchanging cryptocurrencies are centered on the money transmitter regulations of individual states including New York State's BitLicense.

Cryptocurrency futures, options, and derivatives fall under the jurisdiction of the Commodity Futures Trading Commission (CFTC). Consequently, cryptocurrencies, as the underlying asset in these transactions, have been defined to be commodities by the CFTC. However, the CFTC has taken the position that its supervisory authority does not extend to cryptocurrency spot transactions. These judgments made by the CFTC resulted in the listing of Bitcoin futures on the Chicago Board of Trade and the Chicago Mercantile Exchange in December 2017.

The Securities and Exchange Commission (SEC) has issued a number of alerts and bulletins regarding cryptocurrencies. With regard to electronic tokens issued in conjunction with an ICO, the SEC ruled in July 2017 that tokens determined to constitute securities pursuant to the so-called Howey Test,[3] criteria for determining whether an investment contract qualifies as a security, require SEC registration. In tandem with this announcement, the SEC investigated a widely noted ICO by the DAO during April and May 2016, and determined that the tokens sold in conjunction with this ICO did constitute securities. Following this decision, the SEC has stepped up enforcement and action against unlawful ICOs, including issuance and sale of unregistered securities and false claims that an ICO is backed by assets when the issuer does not in fact hold the assets. In September 2017, action was taken in two ICOs involving the same issuer, followed by another action in December 2017.[4] Also in December 2017, the SEC took preventive action in one case, followed by another action taken in January 2018. In March 2018, the SEC released a statement requiring exchanges handling tokens determined to be securities to be registered with the SEC as a national securities exchange or as an alternative trading system. According to media reports, the SEC has subpoenaed dozens of individuals and companies suspected of violating the Securities Act through ICOs.

***Asia***

In China where innovation is moving forward at a remarkable pace, the regulatory authorities have in certain cases started to take restrictive actions against overheated FinTech-related markets. For example, China's P2P lending markets have expanded at an accelerated pace during the past several years. Although the accuracy of the figure has not been verified, it is said that at times several thousand platforms have been in operation. Fearing misconduct and excessive expansion of lending, the regulatory authorities have introduced restrictive measures over several stages. In 2018, the authorities started to regulate loan securitized products related to P2P lending services.[5]

[3] A standard established in the course of the 1946 dispute between the SEC and Howey Company, the Howey Test defines securities as pertains to the Securities Act of 1933 and the Securities Exchange Act of 1934.

[4] The December 2017 case was the first action taken by the Cyber Unit formed by the SEC's Enforcement Division in September 2017. The Unit was formed to develop cyber-related expertise and is tasked to address such threats as DLT- and ICO-related misconduct, the spreading of false information through social media, and hacking of transaction platforms.

[5] These refer to asset-backed securities.

In September 2017, Chinese government authorities ordered the closing of cryptocurrency exchanges and the suspension of ICOs. Further steps were taken in 2018 to totally ban the trading of cryptocurrencies. As a result, renminbi-denominated transactions, which previously accounted for a very large share of legal tender-denominated transactions in Bitcoin and other cryptocurrencies, appear on the surface to have decreased.[6]

Cryptocurrency transactions appear to have become overheated in South Korea as well. Responding to this situation, the Financial Services Commission released a statement in September 2017 banning ICOs and margin transactions in cryptocurrencies. With AML in mind, a further regulation was introduced in January 2018 requiring all cryptocurrency transactions to be linked to bank accounts held under true names.

In Singapore, the Monetary Authority of Singapore (MAS) announced its position on ICOs in August 2017. While no special provision has been made for regulating cryptocurrencies, MAS has determined that it will regulate all digital tokens that are either sold or issued in Singapore and are considered to constitute a financial product subject to regulation under the Securities and Futures Act. MAS has also reiterated the concern that ICOs are exposed to the risk of being used for money laundering and financing of terrorism.

***Japan***

Japan's revised Payment Services Act that came into force in April 2017 is a recently introduced FinTech-related regulation. This law established Japan's legal definition of cryptocurrency for the first time and requires related business operators to be registered as cryptocurrency exchange operators. To date, 11 companies were registered in September 2017 followed by five more in December. These registrations have helped provide momentum to public awareness of cryptocurrency-related services. It will be interesting to see whether this field, which is still taking shape, will undergo sound growth as a service that delivers value to customers and society.[7] Given the extremely rapid pace

[6] At present, availability of official statistics on cryptocurrencies is limited. Data from private-sector information providers is also considered problematic due to lack of clarity of definitions and calculation methods.

[7] Coincheck Inc., a deemed operator with pending Financial Services Agency (FSA) application for registration as a cryptocurrency exchange operator, revealed in January 2018 that it had lost approximately 520 million XEM (unit of the NEM cryptocurrency) through illegal access. In March 2018, the FSA took administrative disciplinary action against seven cryptocurrency exchange operators, including deemed operators. Furthermore, in February and March,

of change in the cryptocurrency industry, relevant parties must constantly endeavor to ensure high standards of customer protection. This requires achieving proper standards of cryptocurrency management and control, information security, and reliable systems operation. One possible approach would be for self-regulatory organizations to collaborate with the authorities in establishing self-regulatory rules. It was announced in March 2018 that the 16 cryptocurrency exchange operators currently registered with the Financial Services Agency (FSA) have agreed to establish a self-regulatory organization. It is hoped that this move will contribute to the sound development of the industry.

The revised Banking Act enacted in May 2017 and scheduled to go into effect in June 2018 requires the registration of electronic settlement agents, which covers PFM businesses and cloud accounting businesses. The revision also establishes the obligation of reasonable effort pertaining to the introduction of open APIs. The stated aim of these measures is to promote appropriate partnership and cooperation between financial institutions and FinTech businesses and ensure user protection. It is the hope that these measures will contribute to creating an environment where diverse players can move forward on open innovation through trial and error, and that this will promote the development of new financial services that meet customer needs.

Another notable development is the FinTech Proof of Concept Hub scheme launched by the FSA in September 2017 to accelerate taking on challenges targeting FinTech-based innovation. The initiative aims to eliminate the hesitation and concern that FinTech businesses and financial institutions are inclined to have in conducting unprecedented tests. In November 2017, the first project to be supported under the scheme was announced involving an application submitted by a group of major banks and other companies. One of the aims of the experiment is to develop a customer identification system based on blockchain technology to be used jointly by financial institutions.

Advances in FinTech have generated widespread discussion of topics pertaining to the financial system. One such topic is the restructuring of the financial services industry from a functional perspective. The Study Group on the Financial System of the FSA's Financial System Council is also examining this point. The principal subject under discussion and study is to consider what the future financial system should look like, including the development of function-based and cross-sectional financial regulations, in

the FSA issued written warnings to two unregistered cryptocurrency exchange operators domiciled abroad. Moving into April, the FSA has taken administrative disciplinary action against five deemed operators of cryptocurrency exchanges as of April 13.

light of advances in information technologies and other changes in Japan's financial environment. Specific issues and approaches addressed in the discussions include the following: whereas the existing financial system has been organized based on business laws governing individual business domains, given accelerating innovation, the future financial system may need to be organized around functions (such as settlement, supply of funds, asset management, and risk transfer) so that the purpose of specific financial functions can be better achieved by applying the same rules to the same functions and risks.

Against the backdrop of technological development, the boundaries between business domains may frequently become blurred within the digital domain where online platforms and various other functions and services come together. In other words, players others than established securities firms may begin providing services similar to those of securities businesses. It may be possible to handle such situations more flexibly if the financial services industry were to be reorganized along functional lines. From the perspective of securities businesses, all such initiatives must be predicated on the principles of investor protection and appropriate control of customer assets. It is desirable for new customer-oriented services to be based on this foundation.

Other FinTech-related legislative actions in Japan include the revised Act on the Protection of Personal Information that came into effect in May 2017, and the Basic Act on the Advancement of Public and Private Sector Data Utilization that came into effect in December 2016. These laws establish rules governing personal information and data, which is an important theme not only for the financial services industry but also for all technology-based services. In light of these revisions, it will become even more important for society as a whole to promote greater security in tandem with access to information.

## 2. Developments in Technology Services

APIs, AI, robotic process automation (RPA),[8] big-data analysis, social media, blockchain (DLT), and cloud computing as underlying technologies, as well as smartphones and smart speakers (AI speakers) as interfaces,[9] are rapidly penetrating into the various front-, middle-, and back-office operations of securities businesses. The following sections focus

[8] RPA refers to initiatives for automating and improving the efficiency of routine tasks, or the software tools used for this purpose.
[9] Refers to information input-output devices.

on developments related to APIs, AI, and big-data analysis.

***API***

In the United States, the decision of major banks to block website access from providers of data aggregation services stirred up considerable controversy in the past. The decision reflected security concerns associated with screen scraping programs that were occasionally used by external services to obtain customer data from bank websites. Additionally, established financial institutions tended to view these service providers as free riders that took advantage of system platforms that had been developed at considerable expense to ensure secure and stable operation. Those financial institutions also balked at the acquisition of customer information through scraping because it involved the virtual transfer of customer log-in IDs and passwords to service providers. Taking the position that this information should remain under strict customer control and should not be made available to third parties, financial institutions looked at these services with considerable suspicion and questioned whether scraping was appropriate from the perspective of security and in compliance with agreements entered into with customers. Following this earlier period of friction with external operators, established financial institutions began to formally coordinate their systems through APIs with external operators that were frequently accessing their systems. JPMorgan Chase, Wells Fargo, Capital One, Silicon Valley Bank, BBVA Compass, and others entered into data sharing agreements with external operators providing PFM and other services. Financial institutions have now started to open their APIs or to make their API platforms available to developers within the framework of these agreements.

Among major US financial service companies, Fidelity—a provider of retail brokerage and asset management services—is moving toward opening its API to other financial institutions and FinTech startups in such areas as robo-advisor and PFM services. In the US securities industry, however, the move toward open APIs began earlier among some small-scale online discount brokers. Due to this head start, some FinTech startups are already playing an important role in realizing service concepts that include the execution and management of equities transactions.

With regard to APIs, the Japanese government's Investments for the Future Strategy 2017 set a key performance indicator for increasing the number of banks that introduce open

APIs. The goal is to achieve open APIs in at least 80 banks by June 2020. As previously noted, the revised Banking Act scheduled to go into effect in June 2018 requires the registration of electronic settlement agents, which include PFM businesses and cloud accounting businesses, and stipulates the obligation of reasonable effort for the introduction of open APIs. Given the growing interest in open innovation and support for improvements in the regulatory environment, financial institutions are moving to develop policies and systems for the introduction of open APIs, and are exploring the possible scope of open APIs (functions, inquiry- or update-related APIs, and so on) and future directions in API-based business models. It is fully possible that API-centered financial platforms will eventually start to grow and develop in Japan with the participation of startups and businesses from other domains. Securities businesses would not be an exception to such a trend and would very likely be linked to this development. In fact, some online securities firms in Japan have already committed to open APIs and have formulated policies for actively connecting with external FinTech firms. Even before the spread of open APIs, the concept of external systems connection existed as a fundamental element of the financial system. However, it can be said that it was only after system connectivity specifications were standardized that related players fully appreciated the advantages of open APIs—namely, lowering connectivity-related development costs while at the same time ensuring security and customer ownership of customer data.

In the future, startups and third-party vendors may work with established financial institutions through open APIs to expand the scope of their collaboration in various ways that deliver value to customers. In the context, it should be noted that free-of-charge access is not the only viable option in terms of a business model. Other possibilities include charging for API access or distributing earnings attributed to APIs (revenue share). The availability of additional options is deemed to be one of the advantages of this approach. Established financial institutions can be expected to increase their collaboration with mutually complementary businesses in ways that will eventually heighten the presence of players that are successful in delivering greater value to customers.

### *AI*

AI is beginning to make inroads into a broad spectrum of financial service domains. For example, as a result of significant advances in natural language processing, chatbots capable of responding to simple and basic questions are now nearing the level of practical

application. In fact, some securities firms are already using chatbots to handle inquiries. Advances in image recognition technologies and higher precision in handwriting recognition are also opening up new possibilities. As an extension to optical character recognition technologies that have been in use for many years, these new capabilities are expected to contribute to improving back-office efficiency. The same opportunities exist for improved voice recognition technologies that may be applied to various types of tasks, such as identity verification, and inquiry and acquisition of investment information and account information.

While not necessarily utilizing deep learning and other forms of machine learning that are being highlighted in AI, the adoption of RPA is spreading throughout the financial services industry as an automation and efficiency-boosting tool. Various administrative and clerical tasks have not been significantly computerized due to such reasons as each task's importance, volume, frequency, and level of standardization. In the past, these tasks were mostly handled manually or individually processed using Excel macros and other end-user computing tools. New RPA solutions are now becoming available by adding a recorder function that reproduces conventional mouse and keyboard operations, and improving interfaces to allow simple setting and the addition of elements that can be collectively managed. This has resulted in a broader range of options for improving administrative efficiency at low cost. Advances in these areas can be expected to facilitate the transfer of financial institution employees to higher value-added and nonroutine tasks.

### *Big-Data Analysis*

In its February 2017 report,[10] the International Organization of Securities Commissions focused on the emergence of various new services in securities businesses, which included cases where big-data analysis is used. One example is crowdsourced research networks, a service that offers investment ideas and projections based on crowd wisdom. These services obtain information on investment ideas and market projections not only from institutional investors but also at times from individual investors. In certain instances, this information is coupled with analyst reports and news articles. While information selected by a small number of experts constitutes the core of conventional investment research, these services seek to develop more refined projections based on a

[10] International Organization of Securities Commissions, *IOSCO Research Report on Financial Technologies (Fintech)*, February 2017.

vast volume of information that also contains the views of amateur investors. Other similar services include analyzing big data obtained from Twitter and other social media to compute market sentiment and provide it to investors, and services for sharing investment ideas among participants of an online community. Some services go beyond aggregating and supplying investment-related information. For example, a service that enables users to trade by simply copying the investment ideas of other investors is generally referred to as mirror trading, copy trading, or social trading. This type of service has generated a certain level of interest in various countries as an example of the use of FinTech in securities businesses.

Services that utilize large volumes of information obtained from numerous data sources including nonconventional ones are held back by certain drawbacks. For instance, the reliability of information ultimately delivered to investors may be doubted, and there is always the risk of market manipulation. Moreover, depending on the structure of the service, the regulatory status of operators handling investment-related information may be unclear, giving rise to certain concerns. On the other hand, such data-driven services can provide new ideas that cannot be readily accessed through conventional means, and can lower the psychological barrier for first-time investors. For this reason, data-driven services are expected to broaden the population of investors and raise the level of trading activity. It is anticipated that the abovementioned advances in AI-related technologies will increase the accuracy and scope of data analysis. Therefore, it may be worth examining whether these technologies contain elements that can be appropriately utilized within the current regulatory framework while ensuring investor protection.

## 3. Market Infrastructure Developments

With regard to underlying technologies for market infrastructure and databases, continued efforts are being made through proof-of-concept testing to verify how blockchain (DLT) can be utilized in improving the efficiency of the back-office and other operations of securities businesses.

In other countries, the Australian Securities Exchange announced in December 2017 that it was collaborating with Digital Asset Holdings, a startup specializing in blockchain applications for the financial services industry, in incorporating blockchain (DLT) technologies into its new system that will replace its current Clearing House Electronic

Subregister System called CHESS, which handles such post-trade processing tasks as clearing and settlement for cash equities and shareholder registration. The new system aims to improve market efficiency through better record keeping, reduced reconciliation, more timely transactions, and higher-quality data by harnessing new technologies. While many details remain to be clarified, the development of this project will be closely watched.

Many other proof-of-concept projects are moving forward on the use of blockchain (DLT) in securities businesses. For instance, the Depository Trust & Clearing Corporation of the United States is testing the use of DLT in the post-trade processing of credit default swaps. Another US example is the CLS Bank, a provider of multicurrency simultaneous settlement services that is running trials for the use of DLT in foreign exchange reconciliation and netting. In Japan, having researched and studied DLT use, the Japan Exchange Group launched an industry-wide proof-of-concept project in March 2017 covering such tasks as contract reconciliation and KYC and AML operations.

As blockchain (DLT) remains in the development stage, some comment that there have been no cases in which this technology has been used in production environments or deployed effectively. However, with an eye to industry-wide applications of blockchain (DLT), it cannot be denied that opportunities are emerging for joint development and testing among companies that traditionally have been competitors. The financial services industry contains certain areas with slow progress toward digitalization and areas characterized by extremely complex business processes that cut across multiple organizations. Whereas, in such areas, processes may be innovated using conventional methods without relying on blockchain (DLT), it cannot be overlooked that one of the positive by-products of blockchain (DLT) is that these areas are beginning to attract renewed attention. KYC is an example of an area where, predicated on the maintenance of high levels of security, the industry needs to join forces in working toward lowering costs and improving efficiency. Raising the level of operational performance in such areas can be expected to lead to significant competitive advantages for the entire industry and ultimately result in improvements that benefit customers.

## 4. Notable Developments

The following sections discuss two developments in the financial services industry

including securities businesses. The first is the integration of financial and nonfinancial businesses, which concerns the industry internally. The second is initiatives for lowering barriers to investment, which concerns the industry's customers.

### *Integration of Financial and Nonfinancial Businesses*

Ant Financial is a financial services affiliate of Alibaba, China's e-commerce giant. Working together with other entities including Tianhong Asset Management, the group's asset management firm, Ant Financial is providing a money market fund (MMF) named Yu'E Bao, which has rapidly grown to become one of the world's largest with total assets under management reaching approximately 1.5 trillion yuan (about 25 trillion yen) as of the end of 2017. Its accelerated expansion is in part attributed to the nearly seamless linkage that has been established between asset management under Yu'E Bao and Alipay accounts, a smartphone-based payment system featuring low fees and easy operation that is based on a third-party settlement network. In other words, the scheme has succeeded in channeling idle funds to the world of asset management by linking into the source of all types of e-commerce payments. There are other pending possibilities for collaboration between major technology companies focusing on e-commerce and established financial institutions. Among these is a possible tie-up between Amazon and either JPMorgan or Capital One as reported in the US media. Reports indicate that this partnership could start with products resembling current accounts and later expand into lending and ultimately into asset management.

Services fusing e-commerce payments with robo-advisors are also beginning to appear. An example of this is Acorns, the leading US company in what are called "spare change investment services" where fractional amounts on credit card purchases are automatically transferred to be saved in an investment account. Acorns also ties up with e-commerce site operators to offer a unique service that allows them to reward buyers for purchases made on their sites and have the reward money automatically transferred to Acorns for investment. Furthermore, Acorns is beginning to offer a new function in some areas. In this service, machine learning is used to analyze and categorize the trends in a user's spending and saving behavior, and an alert is transmitted to warn the user in case of larger-than-normal spending. These undertakings transcend the traditional boundaries of business domains and are notable for focusing on providing services that are of high value from the perspective of customers. In other words, the customer can be seen as being

incidentally guided to securities services. In the future, both established securities firms and FinTech startups will have to avoid pushing programs that meet their own interests but do not necessarily meet customer needs and wants. Prolongation of such approaches will drain these businesses of their ability to compete with new services that deliver value to customers.

Services based on electronic reward points systems that are proliferating around e-commerce are beginning to make inroads into securities businesses and asset management services. Multiple examples have already emerged in Japan. Examples include using reward points to buy into investment trusts or to engage in pseudo investment. Although these services are still small in scale, given the customer base of e-commerce companies that is often larger than that of financial services firms, they have the potential of significantly expanding the population of investors through strategic integration. While all such initiatives will have to be predicated on maintaining high standards of compliance, it will be increasingly important to explore the development of appropriate linkages with nonfinancial businesses from the perspective of growing the customer base.

### *Initiatives for Lowering Barriers to Investment*

#### (1) Smaller Lots

Some overseas FinTech startups are offering services targeting retail investors featuring access to odd lots. These services, which may be viewed as a part of normal evolution resulting from advances in securities businesses and in technology, can be expected to expand the scope and population of investors by lowering the barrier to investment for people with no previous investment experience. In Japan, online securities firms are leading the way in dramatically lowering the minimum purchase amount for investment trusts. It is fully possible that technological advances will broaden the scope of business models by changing the cost structure of securities businesses.

#### (2) Commission Free

Services offering commission-free settlement and money transfer functions have been on the scene in Japan and other countries for some time. The commission-free concept

is now beginning to appear in securities businesses as well. An example is seen in Robinhood, a US retail securities firm specializing in smartphone-based services that has come to represent commission-free stock trades. The company's principal sources of income are thought to include fees charged on futures transactions, membership fees, returns earned by investing deposits into MMFs, and fees on telephone orders. On the other hand, Loyal3, a US investment platform providing commission-free stock trades, closed down in 2017. Loyal3 served its retail customers at zero commission by earning fees from issuers that were major consumer companies seeking to increase their shareholders as a marketing strategy to consumers. After closing down, the customer base was transferred to another investment platform that discontinued the commission-free business model.

In the United States, the fees and commission structure of online-centric discount stock brokerages has become increasingly standardized with fixed fees of less than 10 dollars per cash trade. Moreover, many of them allow certain ETFs and other products to be traded commission-free. One of the factors contributing to the lower commissions is smart order routing (SOR), which generates revenues from routing customer orders. Regarding this point, it was reported in August 2017 that the Massachusetts Securities Division was surveying seven major securities firms and had issued letters of inquiry to them. Meanwhile, the SEC decided in March 2018 to launch a pilot program for assessing the impact of SOR.

While differences exist in capital market mechanisms in the United States and Japan, technological progress is very likely to generate diverse business models in Japanese securities services, which will not be limited to commission-free services. When that time comes, the question will be whether such services and the various mechanisms that support them are in fact commercially viable, and whether they truly benefit end users.

## III. Principal Forms of FinTech and Their Implications for Securities Businesses

In this chapter, principal forms of FinTech will be once again reviewed with an eye to examining their implications for securities businesses.

### 1. PFM

PFM benefits users by automatically collecting and visualizing a broad spectrum of information on banking, securities, credit cards, e-money, reward points, and others. Under the traditional structure, this information was separated and compartmentalized by account and type of financial service. To gain an overall view of assets, users had to compute their total assets manually or input the information into a spreadsheet. Compared to this, PFM provides users with convenient visualization of their assets.

The visualization of separate and diverse assets enables more rational asset control, and can be expected to encourage thrift and saving. Compared to bank accounts, users are considered to have a higher need to access securities accounts for balance inquiries as those accounts contain equities and other products whose prices fluctuate daily. This indicates high levels of potential demand for PFM. Moreover, users with multiple securities accounts can utilize PFM for comprehensive control of their assets and as a tool for risk management.

By tying up with PFM operators, securities firms are able to meet the overall asset control needs of customers. Currently, most partnerships involve local financial institutions and dedicated online banks. However, a growing number of partnerships with securities firms can be expected in the future. The addition of accounts other than securities accounts to PFM will allow securities firms to gain a comprehensive view of customer assets. Access to this information would facilitate the development of various consulting and planning services.

### 2. Robo-Advisors

Simply by answering a number of questions, users of robo-advisors can enjoy fully automated discretionary investment services (in the case of discretionary investment),

including the presentation of recommended portfolio, stock selection, transaction execution, rebalancing, and profit and loss aggregation for tax optimization. Convenient access and use of robo-advisors has lowered the obstacles to the start of investment, and is encouraging people who have previously shied away from investment for reasons such as lack of time or knowledge to launch into investment.

Users of these services generally belong to the asset-building generation of society including members of younger generations, and are centered on people in their 20s through 50s. It is reported that many are first-time or inexperienced investors. The appeal of the abovementioned discretionary investment services to younger generations and members of the asset-building generation is thought to derive from the fact that these services effectively meet the needs of people who are interested in investment but are held back by lack of time or knowledge. More recently, obstacles to investment have been further lowered by the introduction of smaller minimum investment amounts and simplification of questionnaire items, among other measures. This points to the emergence of an environment that enables people to start investing more easily. By utilizing robo-advisors to begin investing, users tend to develop a keener interest in the economy and finance, which underscores the impact that these services have on investment education.

Japan's independent robo-advisor operators are primarily targeting the asset-building generation of society including the younger generations. In so doing, they are approaching a segment of society that differs from the traditional customer base of securities businesses. By signing on to robo-advisors to start investing, these new users are developing a keener interest in investment, which may help realize a broader scope of investors and larger markets in the future.

An increasing number of tie-ups between robo-advisor operators and local financial institutions have been seen in recent years. These collaborations are based on discretionary investment agreements entered into through links posted on the websites of local financial institutions that redirect customers to the websites of robo-advisor operators. The advantage to robo-advisor operators is that they gain access to the customer base of local financial institutions by providing customized services to the customers of their partners. On the other hand, local financial institutions benefit from the improved customer satisfaction that is achieved by offering robo-advisor services.

## 3. Crowdfunding

As previously discussed, crowdfunding comes under the following four categories: (1) donation-based crowdfunding, (2) reward-based crowdfunding, (3) lending-based crowdfunding, and (4) investment-based crowdfunding. Among these categories, investment-based crowdfunding (fund-based and equity-based crowdfunding) is most closely related to securities businesses.

### *Fund-Based Crowdfunding*

Fund-based crowdfunding has the following primary advantages: funds can be procured without assigning voting rights to investors or recognizing them as shareholders; funds can be procured with no restriction on total and per-investor subscription amounts;[11] and terms and conditions can be set with relative flexibility. The platform can also be used to present investors with project information accompanied by pictures and graphics. Thus, platforms can double as a marketing tool for conveying the appeal of a business as well as its products and services to investors. On the other hand, fund procurers must pay due attention to certain factors. First, a share of the earnings generated by the designated project or business must be distributed to investors as determined in the agreement regardless of the performance of the whole company. Second, the principal must be repaid after the passage of a certain amount of time.

It is mostly small- and medium-sized enterprises that are using fund-based crowdfunding to procure funds. Previously, their opportunities for fund procurement were limited to borrowing from banks and others, and enlisting capital subscriptions from venture capital firms. However, bank loans are difficult to obtain if the company is showing a loss in its latest financial statements, while venture capital firms show little interest in companies with no plans for public listing or no prospects for acquisition by other entities. The principal feature of fund-based crowdfunding is that it supplies equity capital (risk money) to small- and medium-sized enterprises that have difficulty procuring funds from banks and venture capital firms. Given the scale of household financial assets in Japan, this scheme can be considered to have high growth potential because it gathers funds from

[11] The following restrictions apply to platforms managed by an entity registered as a Type II small amount electronic public offering business operator: total subscription amount must be less than 100 million yen, and per-investor subscription amount must not exceed 500,000 yen.

a broad range of households.

Investors in fund-based crowdfunding choose where to invest not only based on the expected monetary return but also affected by the investor's desire to support the products or services that a project generates. In certain cases, investor choices are based on empathy and support for the social values generated by a project, such as contribution to local communities or poverty alleviation. Hence, this scheme is unique in that, in addition to such economic factors as the rate of return, it creates room for psychological factors, such as empathy and support for an undertaking, in investment decisions.

For platforms engaged in the intermediation of funds, partnership with local financial institutions is of critical importance in identifying funding needs. In the standard scheme, a for-fee business matching agreement is entered into with a local financial institution, which then introduces companies with funding needs from among its customer base. Benefits to local financial institutions include improved financial health of borrowers through infusion of equity capital, which then creates room for the financial institution to increase its lending to the company. There is also a beneficial marketing effect in that the bank's borrowers can develop public support for their products and services through the fund procurement process. This type of tie-up stands to gain from combining the respective strengths and expertise of the partners. That is, platforms contribute with their knowhow in fund structuring, and local financial institutions contribute with the availability of credit and powers of discernment. Partnerships between platforms and local financial institutions can be expected to move forward as an approach to cultivating investors.

### *Equity-Based Crowdfunding*

Equity-based crowdfunding is primarily used by unlisted startups in procuring funds and entails small-scale issues that normally would not quality for a public offering of new shares. The scheme can yield the following primary benefits: funds can be procured from investors that are not traditional capital market participants such as financial institutions and institutional investors; equity capital can be procured without becoming bound by covenants contained in an agreement; and audiovisual marketing materials can be used in enlisting people who empathize with the company as its shareholders. Another advantage is that the scheme provides a channel for bidirectional interaction between fund procurers

and individual investors. On the other hand, fund procurers must pay particular attention to the following factors: how to assess share value and determine issue price; providing investors with appropriate information (financial information, business plans, etc.); the possibility that the presence of a large number of small shareholders may increase the cost of shareholder management and diminish flexibility in management; reputational impact if the business fails; and fees and commissions payable to crowdfunding operators.

Benefits to investors include the following: opportunities to invest in startups that previously were unavailable or difficult to obtain; opportunities to invest in businesses that have achieved a level of empathy following a certain degree of vetting and information disclosure by crowdfunding operators; and opportunities for making small-scale equity investments. On the other hand, investors must pay special attention to the following factors: offering disclosure and continuous disclosure as stipulated under the Financial Instruments and Exchange Act may not be carried out, and timely disclosure as stipulated under the rules of exchanges may not be observed; necessary systems for ensuring the accuracy of disclosed information may not be in place; quotes and markets may not exist to serve as a reference in trading; investors may have difficulty recovering their investments by selling them due to low liquidity; and there are no redemptions at a certain future date nor dividend payments bound by agreement as in the case of investment funds and bonds.

## 4. Cryptocurrencies and Blockchain (DLT)

### *Cryptocurrencies*

Trading in cryptocurrency has increased sharply in recent years. However, this is in large part due to speculation motivated by the expectation of higher prices. Thus, while they are labeled as currencies, cryptocurrencies under current conditions are characterized primarily as investment products. For a securities firm to operate as a cryptocurrency exchange operator, it must be registered as a cryptocurrency exchange operator under the Payment Services Act, and must also apply for approval as services subject to approval under the Financial Instruments and Exchange Act. In this process, the securities firm must prove that providing the services for which approval is sought does not go against the public interest, nor does it hinder the protection of investors due to the difficulty in management of the risks of loss arising therefrom. The burden of proving these points,

however, is considered to be heavy.

In recent years, ICOs have been attracting attention as a possible method for fund procurement that is based on the issue of cryptocurrencies. ICO is the general name given to the procurement of funds from the public by businesses and others through the issue of electronic tokens. While the issuance of electronic tokens to procure funds is common to all ICOs, the specific contents of ICOs vary considerably. Consequently, at this time, there is no established definition of ICO. Moreover, numerous ambiguities remain concerning the application of regulations, and scams and various other forms of fraud are not uncommon.

ICOs provide the following primary advantages to fund procurers: they are able to procure funds without assigning voting rights to investors or recognizing them as shareholders; funds can be procured with no restriction on total and per-investor subscription amounts; and funds can be procured without any pledge of future economic payment in the form of refund of principal or distribution of earnings. On the other hand, special attention must be paid to the following factors: the application of regulations and tax system remains ambiguous; issuers must make their offerings attractive in order to gather funds from fund suppliers; and electronic tokens must be structured.

For fund suppliers, ICOs have the following main advantages: ICOs make it easy to invest in startups; (as compared to purchase of equities) tokens can be readily transferred to third parties; and the rising price of tokens may generate profits. On the other hand, the following points must be kept in mind: information disclosure by issuers may be inadequate; and rights acquired through the provision of funds have not been clearly defined and established.

There have been many ICOs related to fraud and hacking incidents. Moreover, a number of ambiguities remain concerning the application of regulations. For these reasons, securities firms will have to exercise due caution in determining how they should become involved in ICOs.

***Blockchain (DLT)***

Blockchain (DLT) is an underlying technology for cryptocurrencies, its most important

feature being that it renders a database virtually impossible to falsify. Use in post-trade processing has been suggested as a possible field of application in securities businesses.

Also known as distributed ledger technology, blockchain is a technology predicated on the existence of multiple distributed nodes, implying that effective innovations can be more readily promoted when an entire industry works together instead of each entity working separately. For example, the application of blockchain (DLT) to central depository systems or to KYC can lower the transaction costs common to the entire industry.

There is a long history of improving administrative efficiency in securities-related operations, such as stocks and investment trusts, using digitalization and work standardization. Blockchain can potentially accelerate these developments. Further cost reduction through greater administrative efficiency will make it possible to lower minimum investment amounts. This may proceed to an extent where the concepts of trading units and investment units are rendered more or less unnecessary and obsolete in the future. In their original sense, “securities” and “equities” imply the bundling of investments from or the distribution of ownership to multiple investors. However, in the long run, blockchain may force securities businesses to reconsider these basic concepts that underlie the products they handle.

## 5. Open API

Assuming that FinTech startups are able to ensure sufficiently robust standards of security, progress of open APIs among financial institutions will allow FinTech startups to access the high-level functions and information of bank systems and to use these as a foundation for developing new services. Given the growing diversity of customer needs, open APIs can therefore be viewed as a trump card in promoting open innovation based on ideas adopted from sources outside the industry. A subject of current interest is the opening of bank APIs to electronic settlement agents. It is possible that this discussion will spread to securities firms where several options for opening can be identified. In one scenario, securities firms may open their APIs to FinTech startups. In a second scenario, securities firms may assume the position of FinTech startups and use the open APIs of banks.

Open APIs offer the following advantages: a financial institution providing an open API

can increase its customer interface points via API users, enabling its services to be used by consumers that it would not be able to reach on its own; company recognition among consumers will be enhanced through exposure on the side of API users; and collaboration with API users may lead to developing new customer solutions. However, because these may not be directly linked to revenue, it is important to fully examine various factors when deciding to opt for open APIs. Specifically, the scope to which functions and data are to be opened, and the question of how open APIs may ultimately contribute to earnings must be examined.

As mentioned in the section on PFM, because securities accounts contain equities and other products whose prices fluctuate daily, users are considered to have a higher need to access those accounts for balance inquiries compared to bank accounts. Therefore, it is believed that there is strong potential demand for inquiry-related APIs in securities businesses. Regarding update-related APIs, these are already available in business-to-business settings and include those provided by Interactive Brokers and Saxo Bank as well as the kabu.com API provided by kabu.com Securities in Japan. In some instances, more advanced financial services have already been provided to customers, including trading tools developed by third parties using those APIs.

## IV. Future Role of Securities Services and Securities Intermediaries

### 1. How to Engage with FinTech

As described in the preceding chapters, FinTech-based innovations are making steady inroads into various fields of the securities industry. Throughout this process, there has been no significant buildup of negativism concerning the possible impact of FinTech on securities businesses as may be expressed in such statements as, "intensified competition between established players and FinTech (startups)" or "FinTech will destroy established players." The following factors may be affecting this outcome: compared to other financial domains that perform such functions as settlement, transfer, lending, and credit examination, FinTech is less likely to have a major direct impact on securities businesses; startups do not yet pose a significant threat; and the securities industry has already experienced changes brought on by the proliferation of online trading. Nevertheless, given the dramatic changes that are occurring in customer needs and infrastructure, all players will naturally have to formulate and implement strategies that address FinTech at some point in the future.

FinTech can be used for defensive purposes (such as for improving productivity of existing services) or offensive ones (such as for creating new customers). In either case, technological innovation is sure to have a widespread impact and will raise the general level of uncertainty. Given this outlook, rather than selecting and focusing on a particular direction, it will be critically important to figure out how to enter into flexible and wide-ranging partnerships and collaborative relations with startups and players from other industries.

Furthermore, it is important to note that recent developments in innovation show that the creation of markets results less from the introduction of new technologies, and that it is the linking of technology and platforms in the framework of open business relations that actually accelerates the creation of markets. Therefore, it should be assumed that in FinTech also, the linking of technology with services or data in an open setting would give birth to various disruptive businesses and players. Given this understanding, the question of how to engage with startups and with players from other domains and sectors that are leading the process of innovation becomes critically important for any established player considering how to engage with FinTech. A number of methods are available for engaging with FinTech, which include: (1) contracts, partnerships, and tie-ups, (2)

incubation accelerators, (3) equity investment, (4) acquisition and integration as group company, and (5) creating ecosystems and becoming platform providers.

### *Contracts, Partnerships, and Tie-ups*

The first method consists of contracts, partnerships, and tie-ups. As typically seen in markets for investment trusts and variable annuities, this method can be viewed to constitute relationship building between product/service manufacturers (FinTech startups) and distributors (securities firms). In the context of the ICT world, this can also be described as relationship building between vendors and users. Relationship building with FinTech-related players through contracts, partnerships, and tie-ups can prove to be particularly time- and cost-efficient if the necessary skills and human resources are not available within the company for expanding existing business models, diversifying products, improving operational efficiency, and promoting innovation in operations. However, this method has certain drawbacks. For example, it does not lead to the development and accumulation of skills within the company; and products and services may be supplied to other companies if an exclusive contract cannot be entered into with FinTech partners.

Furthermore, this method can be compared to the relationship between platform providers and application developers in the context of an open API environment. However, in this relationship, established securities firms may in certain cases stand on the side of the platform provider, and on the side of application developer in other cases. In the latter case, securities firms would participate in the relationship by providing APIs to platforms created by such players as banks, insurance companies, retailers, e-commerce operators, and ICT firms.

The fact that many regional banks and securities companies in Japan are already tying up with startups offering household accounts apps, robo-advisors, and other services is an indication that it is relatively easy to enter into this type of relationship.

### *Incubation Accelerators*

Options in incubation include hosting hackathon events and contests, as well as

accelerator programs that support startups through the provision of rental or joint-use office space, advice (coaching), and funding for a certain period of time. As providers of these forms of support, established financial institutions can mainly expect to realize the following benefits: financial institutions can identify and support startups that match their own strategic directions, and startups with technologies and human resources that the financial institution itself lacks; and collaboration with startups can stimulate internal human resources or help change corporate culture. It is also possible for financial institutions to engage in stage-by-stage support including the provision of additional loans and equity investment after the end of the program. Possible benefits to startups include the following: they can gain opportunities to identify the needs of major corporations and their customers and to obtain feedback on prototypes of products and software through distribution to relatively large numbers of people; and selection in an accelerator program can be helpful in future fund procurement and initial public offerings.

In other countries, accelerator programs (facilities) are more frequently spearheaded by public entities, including national and local governments and industry associations, than by private financial institutions. In Japan, major financial institutions are actively engaged in accelerator programs and in certain cases have created dedicated facilities for this purpose.

***Equity Investment***

In the context of the traditional experience of the securities industry, equity investment can be compared to investments in venture capital funds and corporate rehabilitation funds, as well as to principal investments (own-account investments). Benefits to securities businesses include: opportunities to participate in investee's management decision-making and to simultaneously absorb knowhow; and high compatibility with securities businesses that may help yield investment returns in the future. On the other hand, drawbacks include the following: holding illiquid assets places a strain on capital; invested funds may be lost; and strong influence cannot be exerted on management in case of minority interest.

In Japan, cases of equity investment in domestic FinTech firms by financial groups and established securities firms are increasing. In certain instances, these entities are making equity investments in private equity funds that invest in overseas startups. In the latter

case, investee selection and assessment of human resources and intellectual property can be left to fund managers and venture capitalists with the required expertise. Additionally, this approach can be expected to yield an investment diversification effect. Some companies are taking concrete actions toward equity investment by using their own funds to launch FinTech funds and similar vehicles.

### *Acquisition and Integration as Group Company*

Acquisition of a FinTech player and integration into the corporate group may yield the following advantages: the acquirer can obtain human resources, buy time and, integrate its existing products and services with the FinTech player's ones for improved marketing (theoretically possible to exclusively benefit from synergy effect); and the FinTech player's contractual relations and supply destinations can be controlled. On the other hand, this method has the following drawbacks: acquisition may be overpriced when it has been calculated to reflect synergy effects; the FinTech player's organization and corporate culture may be incompatible with that of the established partner (need for post-merger management); and integration with a specific player may become a limiting factor in taking advantage of business opportunities related to the technology or business model in question.

Until now, there have been very few cases of mergers and acquisitions (M&As) in the FinTech field. However, M&As are expected to increase with strategies aimed at expanding the scale of operations and capitalizing on synergy in corporate group management.

### *Creating Ecosystems and Becoming Platform Providers*

Although ecosystem was originally a scientific term, it is now being used in the ICT industry to denote "arrangements in which multiple companies or human resources link together and grow markets through mutual interaction while coexisting and co-prospering (cocreating)." In ICT- and biotechnology-related innovation, successfully commercializing a technology or an idea and creating new markets and growing them depends on a number of factors. These include: partnership between industry and academia; participation of human resources with management expertise; access to

production systems and sales channels (of major corporations); and access to funding. It is important for these to be appropriately supplied at each stage of growth and to be strategically linked to innovation. Similarly, in the FinTech field, it is thought that creating partnerships between startups and major financial institutions will be highly significant because startups typically lack the licenses and customer base that underpin trust, which is of absolute importance in the financial services industry.

The term “platform” has been used in the computer industry to denote such foundational technologies as operating systems, middleware, and hardware. More recently, the term “platform business” is being used in the ICT industry to denote a business model in which users are gained and market superiority is established by providing a space for underlying technologies and devices, or products, services and information to be brought together. Businesses providing this type of foundation or space are frequently referred to as platform providers. Examples of platform providers include Amazon in the field of e-commerce, and Apple and Google in smartphones (operating systems).

It would be natural to expect financial services to be a component of the core functions and services provided by both ecosystems and platform businesses. In the United States and Europe, however, there have been almost no cases in which platform providers have developed their own financial services or acquired FinTech firms. The involvement of platform providers in financial services has generally stopped at providing applications through tie-ups and partnerships. Several factors contribute to this outcome. First, in both the United States and Europe, financial regulation and supervision is complex and rigorous. Furthermore, the separation between banking and commercial activities and rules against conflict of interest are strictly enforced. Second, established financial institutions maintain a prominent presence. On the other hand, even while maintaining such functions as credit card processing, settlement, and transfers as their core business, VISA, PayPal, and other players are expanding their service menus and networks through acquisitions and tie-ups to cover an increasingly diverse range of fields. It is thought that Apple and other IT platform providers with large amounts of cash on hand have the financial resources necessary to engage in financial businesses so long as they are able to overcome regulatory barriers and cost-related issues. Furthermore, the Alibaba Group, a Chinese IT platform provider with e-commerce as its core business, provides a wide range of financial services including payment (Alipay), MMF (Yu’E Bao), P2P lending, and investment trust marketing through Ant Financial, a closely associated group company. Tencent and other Chinese platform providers are aiming to replicate this strategy.

Some Japanese financial institutions and securities companies have announced the intent to form ecosystems by going beyond FinTech to develop and provide a variety of APIs aimed at improving customer convenience. Also, FinTech startups engaged in services like PFM and robo-advisors are tying up with a wide range of e-commerce and communications businesses as part of a strategy to perform certain ecosystem functions. The trend toward open APIs and regulatory reform is expected to accelerate the establishment of various types of partnerships between financial and nonfinancial businesses, as well as between startups and major corporations.

## 2. Possibilities for Emergence of New Markets

Regarding the securities industry's competitive environment, the scenario of FinTech startups and newly emerging players completely replacing established players appears to be receding somewhat. However, the outlook differs when seen from the perspective of securities markets and trading in financial assets where a number of developments have emerged and gained momentum that could not even have been imagined a few years ago. This points to the possibility that new markets are beginning to be formed.

Crowdfunding is one of these developments. Even before the addition of equity-based crowdfunding in 2017, funds totaling more than 70 billion yen have been annually procured in Japan. (According to a study by the Yano Research Institute, the market size of crowdfunding came to 74.5 billion yen in 2016.) Given that it essentially involves the direct procurement of funds from large numbers of unspecified investors based on the disclosure of the purpose a project and other relevant information, crowdfunding closely resembles fund procurement via the securities market. Crowdfunding did not begin to take off until recently, although the necessary technological foundation was beginning to be formed in the 1990s through the proliferation of the internet. In addition to the lack of user knowledge and awareness, this lag can also be attributed to the lack of clarity in relevant rules and regulations. Conversely, it can be posited that the development of the regulatory framework and the accumulation of experience through ongoing projects point to a strong possibility for future growth in crowdfunding. For a number of reasons, it is inconceivable that crowdfunding would take over the functions of conventional capital markets. First, the volume of funds procured per project through crowdfunding is small. Second, crowdfunding investors are essentially motivated by the desire to support a

project or to make a social contribution rather than to earn a return on investment. Consequently, rather than to take away from the role of the existent capital markets, it is likely that crowdfunding will perform a narrowly specified role in the larger market. Nevertheless, responding to the expansion of the crowdfunding market, an increasing number of securities firms may opt to engage in crowdfunding platform businesses, a trend that merits observation.

Another notable development is the emergence of cryptocurrencies based on blockchain and of ICOs as a method for procuring funds through the issuance of new types of cryptocurrencies (tokens). In Japan, cryptocurrency exchanges have been subject to registration under the Payment Services Act since 2017. However, with regard to ICOs, regulatory definition and regulatory jurisdiction remain unclear. Similar situations are seen in other countries where a standard framework has yet to be established. In the United States, the SEC is signaling that it may treat ICOs as a form of fund procurement through the issuance and public offering of securities. This points to the possibility that in the United States and Europe, cryptocurrency trading and ICOs may be placed under securities regulations or a similar regulatory framework. In Japan also, it is very likely that significant numbers of participants in the trading of cryptocurrencies (and token) are not using these as a method for settlement or payment, but are rather drawn to them as a form of financial asset or investment target. This would imply that, in order to ensure the sound development of financial markets in their entirety, the basic ideasof investor protection, information disclosure, and segregated custody of customer assets contained in the framework of securities regulations should be invoked or introduced to cryptocurrency trading in the future.

Currently in Japan, the formulation of appropriate regulations for cryptocurrency trading and ICOs is being discussed in meetings of experts and others. It is hoped that self-regulatory organizations will also play a role in developing a viable approach to this very rapidly changing domain. In that process, the knowhow fostered by established securities firms would be an important source of expertise complementing the self-propelled initiatives of cryptocurrency exchange operators. In other words, for securities firms, this may be an opportunity to reaffirm the efforts and initiatives that have been pursued in the past to ensure the sound development of traditional financial markets.

## 3. Role of Securities Firms

In the current environment of wide-ranging innovation and rapidly evolving customer needs, established securities firms are coming under pressure to undertake major changes. Against this backdrop, it is certain that they will pay increasing attention to opportunities for using FinTech and entering into partnerships with FinTech firms. Moreover, it is highly likely that continued advances in technology and dramatic reductions in processing cost will lower the relative value of certain functions that securities firms have traditionally performed. The most directly affected will be such simple functions as intermediating and executing securities transactions. This calls for a review of the roles and functions of securities firms, and the identification of those that can be expected to remain intact. Specifically, it is likely that the significance of the following traditional roles and functions of securities firms will be called into question.

First is the price discovery function. One of the key functions of securities markets is price formation based on the constantly shifting interplay of expectations and supply and demand. Prices contracted in the market are transmitted throughout the world as a fair transaction price that reflects supply and demand, and are used as a reference in determining the economic behavior of persons who have not directly participated in the transaction. Certain conditions must be met to ensure the proper operation of this price discovery function. Specifically, rules and transaction methods must be in place to ensure the fair and efficient formation of contract prices, and an environment must be available where sufficient volumes of transactions are gathered to allow constant interaction among diverse views and expectations (market liquidity or market depth). Due to the growing volume of internet-based economic transactions and to blockchain (DLT) technology and other innovations, significant changes are beginning to occur in currency and settlement methods, and beyond that in the format of financial contracts and the structure of financial assets. The market-making activities of securities firms contribute to appropriate price formation in a broad range of financial assets, a function that stimulates all forms of economic transactions and leads to the efficient allocation of resources. The price discovery function of securities markets is based on a number of elements, which include not only the assessment of conventional information that focuses on the analysis of the government's economic indicators and corporate financial reports, but also a number of other elements, such as evaluation of the analysts who are making these assessments, as well as the use of crowd wisdom as seen in crowdsourced research networks mentioned earlier and of big data. Quite literally, there is no limit to the depth and breadth of

assessment methods and subjects of analysis. From a different perspective, it can be expected that traditional methods employed in the price discovery function of securities markets will become more efficient, more sophisticated, and more refined as a result of advances in FinTech and other technologies.

The second function is the function of supplying risk money. While it is highly likely that startups will lead the way in the social implementation of the technologies that underlie the fourth industrial revolution and in the creation of new markets, it should be noted that these firms will require large amounts of capital to realize innovation. At the same time, major corporations will be seriously impacted by the fourth industrial revolution. Faced with such dramatic upheavals as accelerated changes in customer needs, shorter product lifecycles, the lowering of barriers between industrial sectors, and the rearrangement of the value chains of industries, major corporations may experience large-scale restructuring in their industries. In pursuit of greater competitive strength and ultimate survival, businesses will be called on to make momentous decisions on M&As and other strategies and to undertake massive forward-looking investments regardless of their current stage of growth and development. Risk money refers to funds invested in companies and projects that lead this process of innovation and industrial restructuring. As such, it constitutes a critically important resource. For many years, Japan has faced the challenge of efficiently allocating the 1,800 trillion yen of financial assets held by households. With this in mind, the role to be played by securities firms in revitalizing the primary and secondary capital markets and acting through them to supply risk money to promising companies and projects can only become more important in the future.

In order to perform these functions, securities firms must convey and explain the relevant information and risks to market participants and ensure that these reach all corners of the market. Likewise, they must constantly engage in activities aimed at drawing new customers and investors to the markets. In this context, the importance of securities analysis and research activities, as well as investor education activities that securities firms have historically engaged in should be reaffirmed.

Even while technology continues to advance, the relative importance of face-to-face advisory functions leading to investment proposals that correspond to customer needs may actually increase. While the industry has always been aware of the significance of consultancy-based marketing and asset control support from a long-term perspective that takes into account customers' plans for the future, the importance of human contact-based

(non-digital) customer interaction may also increase, particularly in retail businesses structured to respond to the needs of the aging society. In pursuing such initiatives, appropriate combination with FinTech will facilitate the reallocation of human resources to higher value-added tasks and operations.

Instead of viewing the emergence of FinTech as an existential threat or approaching FinTech as merely a method for boosting short-term earnings, securities firms should take this opportunity to freshly examine and reaffirm what securities businesses should ideally look like. At all times, everything must be predicated on the basic principles of customer protection and the appropriate control of assets. With this caveat in mind, securities firms must examine the newly emerging class of innovations and adopt those that can contribute to the performance of their roles and functions. They must approach the emergence of FinTech as a fundamental change in the environment and view this as an opportunity to formulate strategies that further the interests of society and customers.