Conversation 6

Innovation in Financial Services and Supervision

ABSTRACT

This conversation centres around innovation in the financial services sector and the related regulatory supervision. Three 'Techs' are especially relevant: FinTech, RegTech and SupTech. 'FinTech' combines the words 'financial' and 'technology' and refers to technological innovation in the delivery of financial services and products. 'RegTech' joins 'regulatory' and 'technology' and describes the use of technology by businesses to manage and comply with regulatory requirements. 'SupTech', finally, unites the words 'supervisory' and 'technology' to refer to the use of technology by supervisory authorities such as financial services authorities to perform their functions. Particular approaches presented in this session include regulatory sandboxes to promote innovative technology in the financial sector, automated data analysis, the collection and analysis of granular data, digital forensics and internet monitoring systems. The speakers also address collaboration between financial institutions and supervisory authorities, for example, in the creation of data collection formats and data sharing.

Speaker	Norichika Ikeda
Comments	Kiyotaka Sasaki and Akira Nozaki
Moderators	Felix Steffek and Mihoko Sumida
Concluding Conversation	Felix Steffek and Mihoko Sumida
Questions for Further Thought	Felix Steffek

WHY THE FSA ENGAGES WITH INFORMATION TECHNOLOGY

Sumida: Today, we again have splendid guests and experts allowing us to hear from the cutting edge in financial services. Our first guest is Professor Ikeda, Project Professor at the University of Tokyo's School of Public Policy. After serving as an

expert for the Japan International Cooperation Agency (JICA) dispatched to the State Bank of Vietnam he took the position of Director for Financial Markets Planning in the Financial Markets Division of the Planning and Coordination Bureau of the Financial Services Agency (FSA). Professor Ikeda joined the Financial Supervisory Agency – now the FSA – in 1999. In 2019, he became Director of the Asset Management Business Office in the Securities Business Division of the FSA Supervisory Bureau and assumed his current position in 2020. Now, without further ado, please welcome Professor Ikeda.

Ikeda: Thank you. Today, I would like to talk about the following three issues: (i) RegTech and SupTech, (ii) the FinTech Support Desk and FinTech Demonstration Hub and (iii) digital forensics and internet monitoring systems. I would like to start by talking about RegTech and SupTech, followed by an additional explanation of the other two issues, including my own personal experience.

You may have heard of FinTech, but you may not exactly know what RegTech and SupTech are. RegTech stands for Regulatory Technology, which allows private financial institutions to use information technology to efficiently comply with financial regulations imposed by the FSA. SupTech stands for Supervisory Technology, which is the opposite of RegTech on the private sector side and refers to information technology used by authorities such as the FSA and the Bank of Japan (BoJ) to make inspections and supervision more sophisticated and efficient. In short, RegTech is used by those who are regulated, while SupTech is used by those who supervise.

The FSA is now emphasising the need for RegTech and SupTech as a result of the Agency reviewing its inspections and supervision procedures. In the past, the FSA faced the 'bad loan problem'. After the loan bubble burst in the 1990s, it was not possible to recover loan monies in their entirety due to the insolvency of the borrower and the collapse of the price of real estate used as collateral. Since then, the monitoring of financial institutions has been centred on periodic inspections, such as once a year, once every two years, etc.

In the popular drama *Hanzawa Naoki*, Inspector Kurosaki walks into the bank saying something like 'it's been a while'. This is the very image of traditional monitoring. Recently, however, ensuring the banks' profitability has become more of an issue than detecting non-performing loans. It is no longer enough just to check for non-performing loans or to see if there are any suspicious borrowers, as has been the case in the past. In a nutshell, the banks are not making much money anymore. They have to do more to ensure their profitability. As a result, it is not enough to just look at where they are giving excessively risky loans. It is now necessary to understand and discuss whether the bank has a sustainable business model and whether it can remain profitable. If we want to have a substantive dialogue, we can no longer simply go to a bank every once in a while, have a look at some documents, and say, 'this company that you lent to is not doing very well' as Inspector Kurosaki does. It has become essential to collect and analyse more data on the operations of financial institutions.

Traditional monitoring is mainly operationalised by periodic inspections which come with the receipt of a lot of detailed data when on-site. Outside of the off-site monitoring period, the supervisory office regularly obtained basic data from the banks. We had a system in place to make sure that banks were submitting such basic data regularly, similar to periodic preventative health check-ups.

HOW TO COLLECT DATA ON FINANCIAL INSTITUTIONS

Ikeda: To accurately ascertain the substance of the situation in the bank, information must be collected off-site on an ongoing basis, and, when necessary, more detailed and accurate data must be gathered on-site. There is continuous monitoring, on- and off-site, where those who work in the bank and those who work in the supervisory authority work together. The concept of continuous monitoring that we are talking about here does not only apply when the inspector is on-site. It also applies during the rest of the time, in cooperation with the off-site people in the authority. This approach requires a system that is suitable. For example, we have recently developed the ability to analyse Big Data. This enables us to process detailed information. We also need to build an 'ecosystem' of cooperation between the public and private sectors, so that the authorities and banks can work together on various aspects of supervision.

As digitalisation progresses and technology that can process detailed data is developed, there is a need to develop a system we call RPA – Robotic Process Automation. With this system, operations, tasks and responses that previously had to be carried out by humans can be carried out automatically using robots, AI and cloud computing. In particular cloud computing has led to digitalisation in the field of financial institutions and FSAs. At present, complex tasks cannot be automated yet, but simple laborious manual tasks in particular can be.

Yet another thing is the introduction of APIs – Application Programming Interfaces. This refers to the connection specifications and mechanisms for calling up and using the functions and data of one application via another application. By opening up APIs to other companies – open APIs – FinTech companies can access the bank's data from outside. This allows them to securely utilise the bank's data and provide services that would otherwise be unavailable.

In light of the introduction of information technology and digitalisation in the field of financial institutions and supervisory authorities coupled with the need for more sophisticated monitoring, this is the right time for the FSA to promote RegTech and SupTech. In order to make monitoring more sophisticated and efficient, it is essential to upgrade and improve the efficiency of data collection, storage and analysis. The introduction of SupTech is indispensable since SupTech and RegTech are practically inseparable.

In 2017, the FSA set out three initiatives highlighting its own digitalisation efforts: (i) centralisation of data requirements and system links with the Bank of Japan; (ii) utilisation of granular data; and (iii) automation of data analysis using RPA. The digitalisation of information from financial institutions and the evolution of the

collection, storage and analysis of information received from financial institutions by the FSA means that, instead of authorities and financial institutions developing their own technology, both need to join hands and work together. The reasons for this will be explained later. The public and private sectors will cooperate in these three areas, starting with those that seem easiest to tackle. We aim to work towards practical implementation through experimentation.

UNIFY FSA AND BOJ DATA

Ikeda: I will now explain the current status of the three initiatives, starting with the centralisation of data requirements and system links with the BoJ. In addition to the data collected by the FSA from financial institutions, there is also data collected by the BoJ from financial institutions. Some of the data collected by the BoJ overlaps with or is similar to data collected by the FSA from financial institutions. This similarity is a tricky thing. If there are duplicates, only one request for information is needed. However, similar means similar but slightly different, so financial institutions have to produce two sets of documents, one for the FSA and one for the BoJ, with similar but not identical content. It is costly to produce two similar but slightly different documents for two different destinations. In order to keep costs down, we should review the 'similar but slightly different' parts to see why they are different and unify them as much as possible. If we can make things consistent in this way, there is no duplication of efforts on the side of the regulators either. This means that we have to centralise such data collection as much as possible.

Once we have one set of data, the next step is to create a secure data-sharing mechanism between the FSA and the BoJ, so that we have a single point of reporting. That way, the reports that used to be sent to each of the FSA and the BOJ would only need to be sent to one of them. For example, if there is a mechanism whereby reports are sent to the BoJ and then automatically sent to the FSA as well, companies need not send them to two different places. We would expect this to be more efficient.

First, we started coordinating between the FSA and the BoJ to centralise similar data, and at this point, we have centralised two types of data. Of course, there is a mountain of 'similar data' and two is not enough at all, but it got us started with what we could do with regards to the centralisation of similar data. In fact, the FSA and the BoJ are continuing to discuss this kind of 'data sharing'. We have formed a task force including both parties and we are continuing to study the centralisation process. Currently, financial institutions still submit their reports to both the BoJ and the FSA, but we are considering merging this process.

SHARING DETAILED DATA ON BORROWERS WITH THE FSA

Ikeda: The second initiative, 'utilisation of granular data', is developed against the background of monitoring extending to more detailed business models. It is no

longer enough to use one-size-fits-all data. It will also be necessary to collect detailed background data, for example, not only on the number of loans but also on the type of people to whom loans are provided. When we received large amounts of such information in the past, the FSA was not able to digest it. So, we would say, 'we can't collect that kind of data'. Now digitalisation is in progress and the capacity of data processing has improved. Now there is room to analyse more detailed data. We have also started working with regional banks, in particular, to collect such detailed data.

Specifically, when the FSA and regional financial institutions engage in dialogue, we gain a detailed understanding of individual financial institutions' portfolios and their regional characteristics. Now, we do not only obtain figures on the number of loans but also solid data to understand the background, such as where the borrower is located, what type of business the borrower has, how big it is, what kind of creditors it has, etc. It is necessary to have detailed information about the borrowers.

In addition, together with the FSA collecting information from various financial institutions, the FSA sometimes gives feedback to the financial institutions, such as 'this is how your financial institution is doing'. If we provide high-quality feedback, the financial institution can realise that they are, perhaps, lacking in an area and that they need to strengthen this area. We want to get good quality information in order to give the financial institutions feedback of high value.

'NORMALISING DATA' TO REDUCE THE BURDEN ON BANKS

Ikeda: In order to make efficient use of data we also provide data to others who need the kind of data we have. Creditworthiness, for example, is the kind of data that we give to other organisations, such as credit bureaus. If there is a difference between the credit management datasets sent to the FSA and the datasets sent to credit bureaus, then companies will have to create two types of datasets, one for the FSA and one for credit bureaus. This creates unnecessary work and should be improved.

Some of the data includes 'unscheduled ad-hoc data'. The FSA receives such data when it asks financial institutions to 'give us as much information as they can by tomorrow'. This happens when there is a need for urgent information on something that has caught the agency's attention. Such urgent matters are irregular and different from normal business, so the burden on the financial institution to submit the information is quite high. In such a context, we need to ask: 'Can you submit the information in the first place? How long does it take to find out?' When I was supervising at the FSA, I used to ask my contacts at the financial institutions these questions. Reducing the burden on banks to submit their documents will be an issue that we need to consider intensely in the future.

Against this background, we selected a few regional banks and asked them, 'how much detailed ad-hoc data can you provide?' and 'how much effort will be required to create this data?' We have been considering measures to minimise the burden on the banks as much as possible so that they can provide the data as they have it in their system. Based on the results of such fact-finding, we will discuss how to obtain

more detailed data in the future. When we obtain information on the competitive environment, e.g. supply chains and the state of financial intermediation, we need to conduct regional analyses reflecting regional differences. We need to understand the region, whether we are in a rural or urban area, or whether we are in a depopulated mountainous area with fewer branches than in an urban area. In rural areas deep in the mountains, the number of bank branches may be reduced, for example. If we manage to collect detailed data on industries and time series, we will be able to analyse the situation from various angles, such as how it is now and how it was in the past.

Until now, the FSA would regularly ask to submit data in a predefined format. Having the data in a format that suits the FSA's system is essential for system management on the FSA side. It is also useful in terms of comparing data of other banks. Obviously, the FSA data format is not convenient for everyone. In particular, the regional banks do not store the information in the format that the FSA prescribes. So, we decided to just ask the regional banks to submit the information in their own format. We call the associated process 'normalisation of data', which is the process of putting the data into a format that can be processed by the FSA's systems. Essentially, we ask the regional banks to submit the data saying, 'The FSA will normalise the data, so please just submit it as it is. If you don't, you will have to put every single piece of detailed information into the FSA format, which will require a mountain of work, so we ask you to just submit the information as you have it.'

In the process of verifying such granular data, we will need to know how much data can be collected and processed in the first place, what kind of feedback can be given based on the analysis, and how the data will actually be used.

EFFECTIVE USE OF THE CORPORATE NUMBER

Ikeda: In addition, in the area of 'data utilisation', there is the utilisation of companies' 'My Number'. The corporate My Number – or simply, corporate number – is a 13-digit number. If you look it up on the internet, you can find out how many corporate numbers a company has. The Commercial Code stipulates that the same trade name cannot be used more than once in the same area. However, there is no problem if the company has the same name but a different type of business. This is why financial institutions are also required to check the corporate number.

The corporate number is also useful for financial institutions. When the FSA receives the data, it also includes such corporate numbers. This allows the FSA to link credit information to the corporate numbers. As a result, the FSA's information on the creditworthiness of the borrowers becomes more robust. The FSA can also use the corporate number to make various comparisons, such as Bank A lending at this rate but Bank B lending at a better rate. It is hoped that this will ultimately lead to more sophisticated credit management. If we can link corporate numbers, we can compare and contrast the credit systems of financial institutions and their systems for exercising their financial intermediary function.

Furthermore, in cases where lending information is provided by banks to different authorities, we will also start matching it with the data from such authorities, e.g. tax authorities. The aim is to have a single set of data that can be used to respond to requests from all sorts of authorities. We are now in the process of conducting experiments to enable more detailed information to be used in a variety of places.

DETAILED DATA COLLECTED IS ORGANISED BY ALGORITHMS

Ikeda: The more granular and detailed the data collected this way, the more work is required on the part of the FSA to digest it. Furthermore, if each bank is allowed to use its own format in order to reduce the amount of work required on the submission side, the work involved in collecting and analysing this data on the FSA side becomes even more complicated. Hence, we are trying to reduce the workload of the people handling the data at the FSA. This is where the third of the three pillars, 'automation of data analysis' and the promotion of Robotic Process Automation (RPA), comes into play.

In the beginning, we spent less than 200 hours on RPA. As the years went by, the amount of time spent has increased rapidly. By having various tasks automated, the time spent requiring human input is reduced and the people who used to do that work can now focus on tasks that only a human can do. Unlike in the past, government offices are gradually becoming stricter as regards long hours of overtime work, a trend that RPA supports.

Until now, the person in charge had to download data from the government system by pressing a button, find the location of the folder and click again in order to save the data in the designated folder. Now, the system itself can download and store the data. There are about 100 Regional Banks and about 400 Credit Associations and Credit Cooperatives. So, downloading and so on for each item is a routine task, but a very laborious one.

Tasks such as emailing financial institutions, preparing documents and organising documents submitted by local financial bureaus and financial institutions are now automated at a rate of 96 per cent. In the past, all of these documents were manually stored in folders by young officials who worked very hard. Often, half a day would pass just taking care of these tasks. Thanks to automation, officials can now focus on analysing the documents created by RPA. Many of the automated tasks are still rather rudimentary. As more complex tasks can be taken over by computers, more time can be spent on human thinking and analysis. So, I think, it is necessary to continue to promote this approach in the future.

FINANCIAL INSTITUTIONS AND AUTHORITIES WORK TOGETHER TO DEVELOP DATA SYSTEMS

Ikeda: If RegTech and SupTech are progressively promoted and digitalisation progresses, financial institutions will be able to utilise digitalised information and

become data-driven in their management. Of course, the authorities must also become data-driven supervisors. At present, financial institutions have not progressed that far and are only collecting and accumulating digitised information or utilising it on a departmental basis. Financial institutions as a whole still have a long way to go. Some financial institutions are, for example, not using the corporate number.

Nevertheless, the FSA will continue to monitor the use of information by financial institutions, while making good use of digitalisation. As the level of digitalisation of financial institutions increases, the level of digitalisation of the FSA will also need to increase. However, if we follow the financial institutions' progress in using information and say, 'the financial institutions have made a lot of progress, so we will develop a data system too', then we need to be aware that it will take around three years to develop such a system. In the meantime, the systems of financial institutions will evolve. So, when the system we commissioned three years ago is finally completed, it may happen that the financial institutions are no longer using the systems we were working towards.

As Professor Sasaki will explain later, in order for financial institutions and the FSA to solve their respective problems in collecting, storing and utilising information, they need to work together to create an ecosystem in which they can simultaneously raise the level of RegTech and SupTech to a more advanced level. Without this, it is difficult to make progress. In short, the idea of a RegTech/SupTech ecosystem is for the financial institutions and the FSA to work together.

Ikeda: What kind of things must be in place for the ecosystem to work? First, effectiveness, which refers to improving the accuracy of monitoring. Secondly, efficiency, which, as mentioned many times, refers to the need to centralise data and correct discrepancies between similar datasets. Third, flexibility, such as the ability to respond properly to new technologies and the flexibility to deal with non-financial players. Fourth, timeliness, i.e. new information is immediately communicated to everyone concerned. Fifth, interactivity, means that it is not a one-way report from the financial institution to the authorities or from the authorities to the financial institution, but a conversation. Sixth, simplicity: a system that is simple and can be developed quickly in an agile way is better because a heavy system takes a long time to develop and when it is ready, it is already outdated and useless.

Even if the system is easy and flexible, it should not be vulnerable to information leaks. If the system is to include the BoJ, the Financial Services Agency and the financial institutions, it needs to be secure and confidential such that shared information is not leaked to anyone not involved. Based on this concept, and with clear goals in place, this public-private collaboration should be carried out.

WHERE TO START IMPROVING EFFICIENCY

Ikeda: At the start of such changes, it is not possible to suddenly change everything at once. It is better to focus on a limited number of issues. Our policy is to start with small target areas and business categories and gradually expand the target areas and

business categories where it is deemed appropriate. In the construction of this public-private ecosystem, we proceed from small to large areas in order to realise this concept in a responsible and sustainable way.

A specific area we are considering is 'data sharing through API collaboration'. This is often discussed in FinTech, where FinTech companies use bank data for their business. A similar mechanism could be used to submit bank data to government authorities. Connecting municipal offices and financial institutions via APIs, allows the municipal office to see new data as soon as a financial institution changes the data it has registered. This means that financial institutions no longer have to report every time they make a change in their own systems. They would automatically be able to complete the registration of the change. This would be very efficient, as the authorities would always be able to see the most recent and up-to-date data.

The reporting burden could also be reduced if questionnaires, etc., were conducted on platforms, or if Know Your Customer (KYC) and customer verification data could be used to improve credit decisions, for example. If customer data is used properly, it can add value to the risk management of financial institutions. If it can be shown that 'because the customer has this kind of characteristics, we can provide this kind of loan', then it would be good to experiment in this direction. This is what the FSA has in mind in the RegTech/SupTech area.

TOWARDS INNOVATION WITH FINTECH

Ikeda: There are two more topics that I want to address. One is the FinTech Support Desk, and the other is the FinTech PoC (Proof of Concept) Hub. First, the FinTech Support Desk was established by the FSA in December 2015 as a central consultation and information exchange telephone point for FinTech. FinTech-related businesses sometimes offer new services that are very difficult to understand. Sometimes it is very difficult to understand what the business is in the first place, legally speaking. It may be difficult to determine which rules the service falls under in terms of current law, for example, whether it is related to the Banking Act, the Financial Instruments and Exchange Act or the Payment Services Act.

One-way consultations by email are usually not very clear, so we often have a direct hearing over the phone, where we can exchange views and give advice after a thorough dialogue. The FSA website also publishes FAQs on the most frequently asked questions since its launch. These FAQs are useful if you are thinking of engaging in related business and want to know more about the FSA's views, but are not active enough to make a phone call.

The FAQs include: 'How to register as a business', 'Relevant rules for transactions', 'I want to engage with cryptoassets', 'Open API and electronic payment agency businesses' and other areas closely related to FinTech companies, such as robo-advisors, electronic money and loyalty points as well as fund transfer business. The items related to crowdfunding – a method of fundraising in which the purpose

of fundraising is set out and small investments are solicited from an unspecified number of people to achieve the goal – which is often seen on TV, and insurance products using technology such as InsurTech were among those for which many enquiries were received.

The second topic is the PoC Hub. In the governmental Growth Strategy 2017, which was approved by the Cabinet in June 2017, it was stated that steps should be taken to promote innovation in FinTech and that the FSA would take measures 'to facilitate demonstration experiments in the area of FinTech'. As part of the facilitation measures, the FinTech PoC Hub was established in September 2017 as a contact point for FinTech companies and financial institutions to dispel any hesitation they may have when conducting unprecedented experiments.

The PoC Hub provides ongoing support to FinTech firms and financial institutions in their experiments, particularly with regard to issues they wish to sort out, such as compliance and supervisory risks as well as practical issues relating to the interpretation of laws and regulations that may arise when providing services to the general public. The policy is to form teams within the Agency for each individual experiment and to provide ongoing support. We are currently dealing with some of these issues. In fact, I was in charge of one of these teams this month, just as I was in my previous position as an asset management business supervisor.

IS THE PDF VERSION OF THE PROSPECTUS A PROBLEM ON A SMARTPHONE?

Ikeda: PDFs are optimised for paper, but nowadays, people are viewing them on their smartphones. However, unlike PCs, smartphone screens are small, so the paper version is very small and difficult to read. If you use HTML format instead of PDF, it is displayed at the optimum size and is easy to read when viewed on a smartphone. However, the screen is a little different from the paper version, and as you know, when you zoom in, the position of the line breaks in the text can be misaligned. If you ask me whether I prefer PDF or HTML, I would normally say that the one that is easier to read is better, so why not use HTML format. From the point of view of financial institutions, this can also be a problem. However, at the end of the day, it is better to have a large, easy-to-read format, so when we encourage them to switch to HTML, they are willing to carry out this kind of experiment.

In addition to the FSA, the BoJ has also established a FinTech Centre. It was set up within the Payment and Settlement Systems Department in April 2016. Governor Kuroda, in his speech on the opening of the FinTech Centre, said: 'To foster FinTech, communication among a wide range of players, including those affiliated with traditional finance industry and academic community, is required. [...] The Bank will also endeavour to play an active role as a catalyst for promoting interaction among financial practice and innovative technologies,

research and study as well as the needs of the commercial society.'[1] The FinTech Center has been very active overseas and in the academic world, organising FinTech forums, conducting joint research with the European Central Bank and contributing to and giving lectures on a wide range of topics.[2]

DATA ERASURE AND POLICING

Ikeda: This brings us to the last topic, which is a little different from those discussed thus far, and that is policing. Digital forensics concerns the preservation of electromagnetic records stored on PCs and smartphones and their use as evidence. The FSA has a department called the Securities and Exchange Surveillance Commission (SESC), which investigates violations of the Financial Instruments and Exchange Law. This includes violations of disclosure rules such as insider trading, market manipulation and securities reports and requires specialised equipment and personnel. Specific systems are also put in place for financial inspections, in line with the efforts of the SESC. There was a scene in the *Naoki Hanzawa* drama in which the data on the internal network of a securities company was erased, and I thought while watching TV that if there was a real digital forensics team, they would have easily solved the case.

One typical activity that digital forensics teams engage in is copying electromagnetic records from electronic devices that have been secured in an investigation. In some cases, they can do things like restoring records that have been erased. The records are then viewed and searched by the investigator. In some cases, work is also carried out to secure the data in a suitable form so that it can be used as evidence in litigation or for other purposes in court or elsewhere.

Electronic devices are evolving. Smartphones are being used more and more, and equipment and software need to be constantly updated as various data technology innovations and forensic methods themselves are updated. As equipment and software are upgraded, the personnel who handle them also need to update their knowledge. It is necessary to train people internally or acquire them externally such that they know or can learn the latest technology. Having our people participate in training courses where they can learn cutting-edge technology can build up our knowledge as an organisation so that we are always able to use the most up-to-date equipment. I am not sure if this falls into the FSA's SupTech category, but this is what we do in terms of law enforcement using technology.

Another example is the Internet Patrol Monitoring System. The internet is full of all sorts of information about financial instruments, including so-called rumour spreading. This is spreading false information for the purpose of impacting the price of securities. Attempts are made to manipulate markets with stories such as 'there is a

[1] Bank of Japan, Message from Governor Kuroda on the Occasion of the Establishment of the FinTech Center (1 April 2016) <www.boj.or.jp/en/paym/fintech/message.htm/>, accessed 1 November 2023.

[2] For more information on the Centre's activities, see Bank of Japan, FinTech Center <www.boj.or.jp/en/paym/fintech/index.htm/>, accessed 1 November 2023.

person who is raising the price of certain shares'. The SESC constantly monitors the internet. The challenge is that such posts can easily be updated and deleted. As a result, the SESC has to flag social networking sites where such posts are made, storing the data and conducting searches to ensure that they are not missed or deleted. Even if you make a small post and then immediately delete it, there is a record of it, so we know who did it. We are looking at even small instances of false information to provide effective deterrence.

I could go on and on, but I think that's enough explanation, so I'll hand over to the moderators. Thank you very much.

Sumida: Thank you very much for explaining a wide range of very advanced topics from an insider's point of view in a way that was easy to understand. We will now have comments on Professor Ikeda's presentation. The first commentator is Professor Sasaki, who also appeared in the previous session. He graduated from the Faculty of Law at the University of Tokyo, joined the Ministry of Finance and was seconded to the OECD and the IMF before becoming Director General of the Strategy Development and Management Bureau of the FSA in 2018 and retiring in 2019.

WHERE IS THE BLOCKCHAIN?

Sasaki: Thank you very much. Professor Ikeda mentioned SupTech and RegTech. I would like to talk about three things in this regard. One is that the way enforcement must change with the advancement of innovation, including digitalisation and DX – digital transformation. The enforcement that I am referring to here is not limited to the financial sector. It also includes, for example, the police and other authorities, which will have to change their way of enforcement. As I explained in my last lecture, the key to innovation is the digitalisation of information. Everything becomes electronic data, and such data can be used as evidence. The challenge for authorities then becomes how to obtain that data, how to analyse the data obtained and what actions to take based on the results of that analysis.

In the past, there was a lot of information that had not been converted into data. In order to obtain it, the authorities had to talk to various people and analyse paper documents. From now on, everything will be converted into electronic data, and analysis will be possible using Big Data approaches. Accordingly, the way we get data and the way we analyse it is changing.

To give you some specifics, about two years before I left the FSA, I was investigating virtual currencies and cryptoassets. As you may know, cryptoassets and records of transactions using those cryptoassets are located on the blockchain. When I started this job three years ago, I was a complete novice when it came to cryptoassets, and I asked questions like 'where is the blockchain?' For data from ordinary bank transactions, the recording data is stored on a server in the bank's computer and the FSA authorities can obtain it from there. In contrast, the blockchain, where the records of virtual currency transactions are kept, is virtual. It doesn't physically exist somewhere. If the cryptoasset is on the blockchain, you

wonder how you can access the relevant data. The authorities have the power to access this data through inspection and supervision. They can ask virtual currency exchanges to submit data. But how do they get the data on the blockchain: by email, via files or through other tools? And even if they can obtain it, can the data obtained be analysed by the FSA's IT systems? In other words, when I asked, 'where is the blockchain?', I was essentially asking 'how do you access the blockchain, how do you get the data, how do you analyse it, and can it be done on the FSA's computers?' As it turned out, the answer is no.

CONTRADICTIONS WHERE AUTHORITY EXISTS BUT CANNOT BE ENFORCED

Sasaki: Legally, there are powers to supervise, inspect and obtain data. The powers are there, but the infrastructure is not in place to effectively exercise those powers and fulfil the associated responsibilities. This is a typical enforcement challenge. Therefore, and this is true not only in Japan, but in all countries, even if the authorities have the authority under statutes and regulations, the mere fact that they are empowered to enforce the law does not guarantee the effectiveness of enforcement. This is a problem that cannot be solved by law alone. The law is effective only in so far as it is enforced. The challenge I am addressing is becoming greater in the context of digitalisation. Specifically, we not only need to create new laws, but we also need new systems to enforce them. This is what we mean by SupTech, the technology used by regulators and law enforcement.

Here, too, it is not enough to just use new technology. The people who use the technology, analyse information and make decisions based on the results are crucial to the success of law enforcement. Even if the authorities were to use artificial intelligence (AI) to obtain information, analyse it and find that certain conduct is illegal, the court would not be able to make a decision based only on the AI's conclusions. I believe that AI-only decisions would not stand up in court. Therefore, while it is necessary to make enforcement more sophisticated by using SupTech and AI, at the end of the day, enforcement is a question of judgement. Authorities need to be able to explain their methods of data analysis and their basis for taking action to the parties concerned, society and Parliament.

With the increasing sophistication of technology, the question of how to ensure accountability becomes more important. Especially when using technologies such as AI, where there is a risk of a 'black box', we need to question how we can ensure accountability to Parliament and the public in our use of technology. This presents a substantial challenge. As a result, the very nature of enforcement itself has to change considerably. This is my first point.

WHAT IS THE GPS FUNCTION IN A SMARTPHONE FOR?

Sasaki: Second, as mentioned by Professor Ikeda, ecosystems are becoming more important. Traditionally, when a financial institution developed a system, the

authorities would develop a system to supervise and inspect it based on a thorough understanding of the purpose of the system. In essence, the regulatory model was that the authorities developed the systems after the private sector. This is no longer viable. We need to think in terms of an ecosystem, where the development of systems by the private sector and the development of systems by the authorities are carried out in unison and in parallel.

A concrete example concerns the GPS in smartphones. The GPS function is essential for smartphones, to the point that there is no current smartphone without GPS functionality. When a crime occurs, the police and other investigative agencies may seize the suspect's smartphone and check its location at the time of the crime. While the police authorities are legally empowered to obtain and analyse GPS data from smartphones, manufacturers are not required by law to include GPS functionality in their smartphones.

Smartphones are developed by the private sector, but their GPS function is very beneficial to the police and investigative authorities, which is part of the ecosystem. GPS is a plus for us as individual smartphone users, and investigators can use it, which of course requires authorisation. The private sector takes the lead in the development of this technology, and this also creates advantages for the authorities. If, for example, GPS were made mandatory by law, it would be difficult to call this an ecosystem since it did not evolve naturally. In short, it is necessary to create a win-win-win situation for users, market participants and the authorities, so that everyone benefits. This is my second point.

DIGITALISATION ISSUES BLOCKED BY THE COURTS

Sasaki: Now to my third point. I have already mentioned that the way investigative authorities engage in enforcement must change, not only in terms of their legal powers but also in terms of their systems, human resources and work methods. The enforcement side, especially the financial authorities and the police, will introduce certain technologies, obtain and analyse data and finally impose penalties or prosecute financial institutions based on human judgement. These developments will have a significant impact on the way the courts work.

The enforcement side, specifically the financial authorities, police and prosecutors, is trying to respond to the RegTech movement, but I think that in the courts, these discussions have not yet progressed far. In my experience, the courts are still paper-based instead of taking advantage of digitalisation. Now that the world as a whole is going digital, and enforcement is also going digital, I think we need to urgently consider how the courts will respond to digitalisation.

I believe that technology is a tool. Therefore, the question is not whether it is important to adopt technology, but what we do with the tools of technology. In short, there is a possibility that the very nature of court proceedings and the very nature of the courts themselves will change. If this happens, the fundamental nature of the law, including the way trials are conducted, and the qualities required of judges, may also change.

I do not think this issue has been discussed in Japan yet. As a result of the COVID-19 pandemic, the courts have finally started to have a system where parties can engage with the court and each other online and remotely. However, this does not mean that the traditional court procedure itself has been digitalised. Rather, only parts of the trial, such as the collection and management of evidence, have been subject to digitalisation. However, if the way enforcement agencies do things before trials is changing, what should be the way trials related to enforcement should be conducted? In short, my third point is that we need to think about not just the positive law, but also about technology and human resources, including the role of judges, in the future.

Sumida: Thank you very much for your very valuable comments. I would now like to invite Mr Akira Nozaki, Director of the FinTech Office in the FSA's Policy Division, to make further comments.

Mr Nozaki joined the Financial Supervisory Agency (now the Financial Services Agency) in 2000 and has worked as an Assistant to the Prime Minister, Deputy Director of the Corporate Disclosure Division of the Coordination and Planning Bureau of the FSA and as a Senior Policy Analyst at the OECD, before taking up his current position as Director for Organisational Strategy and Human Resources Policy and Head of the FinTech Office at the Strategy Development and Management Bureau of the FSA in 2020. He is a science graduate who majored in physics at the University of Tokyo.

BANKS MAY DISAPPEAR, BUT FINANCIAL SERVICES REMAIN

Nozaki: Thank you very much for giving me this opportunity today. The most important points have been covered in the earlier talks by Professor Ikeda and Professor Sasaki, in particular the advancement of financial supervision and the regulatory response through digitalisation in the form of RegTech and SupTech. We are now in a phase where we are re-examining the fundamentals of what financial regulation and supervision are needed for in the first place. The term 'FinTech' has been heard more and more frequently since around 2015. The trend to solve social issues, such as improving customer experience, through the fusion of finance and technology, is spreading in the private sector. Some people say they do not need a bank, they just need Banking as a Service (BaaS). In this light, the role of the financial supervisory authority also needs to be reconsidered.

There are many ways to define the role of financial supervisors, such as dealing with financial system stability, customer protection and cross-border supervision. In terms of financial system stability, we are talking, for example, about how to deal with new risks, such as the moral hazard and adverse selection problems that can be caused by platform providers on P2P lending platforms. Other issues range from user protection and the issue of accountability, as mentioned by Professor Sasaki, to providing tailor-made services by analysing customers' personal data using Big Data and AI, rather than conventional uniform services, and dealing with the issues of data ethics. We believe that the financial authorities need to be aware of these issues

and work on them. In relation to today's theme, 'Innovation in Financial Services and Supervision', the blockchain issue that Professor Sasaki mentioned earlier, particularly in relation to decentralised finance, is a major challenge for the authorities.

The blockchain itself has tremendous potential. When you think of blockchain, many people think of cryptoassets such as Bitcoin. But it can also be used to create reliable transaction records that ensure traceability, for example, for the purposes of food safety. The significance of being able to ensure traceability, whereby the entire history of past transactions can be viewed, is enormous. There are advantages to combining this with financial services, which can lead to significant improvements in convenience. On the other hand, there are also risks such as money laundering, reduced consumer protection and legal ambiguity. The legal ambiguity of decentralised finance may render it difficult to ensure the effectiveness of financial regulation in this space.

FREE AND OPEN BLOCKCHAIN BRINGS MANY CHALLENGES

Nozaki: I want to make six points on the challenges of blockchain. First, in terms of specific examples of risk, in a decentralised financial system, there is no intermediary that fulfils something like a traditional financial intermediary function. In the case of blockchain, such as Bitcoin, all people have the same data. If you search 'bitcoin.com' on the internet, all people can see the same data. In such a situation, while there is no intermediary and a free market is maintained, there is a concern that the targets of regulation will be too vague and numerous for enforcement. It is not possible to regulate everyone who is trading on the blockchain. It is also not possible to limit the scope of who is subject to regulation any further.

My second point concerns autonomy. Bitcoin will continue to be traded incessantly, as it cannot be stopped by third-party intervention. The FSA may publicly state that trading bitcoin is a violation of the law and that trading should be stopped immediately, but this is ineffective. The autonomy of Bitcoin from traditional financial institutions and regulation means that Bitcoin is something that cannot be stopped – even if the FSA tried to ban it, or even if all the financial authorities in the world tried to ban it.

The third and crucial issue is anonymity. The blockchain has the advantage of making transactions transparent but, on the other hand, the technology allows transactions to be conducted highly anonymously. This means that there often is no possibility of tracking the identities of those who transact on the blockchain.

The fourth point is resistance to tampering. As network participants cannot amend or delete data on the blockchain, it is not possible for the authorities to go beyond issuing a cease-and-desist order by ordering the correction of records on the blockchain or the rescission of transactions. This means that ex-post corrections to the blockchain cannot be made.

The fifth point is internationality. In the digital world, global transactions can be realised without any restrictions, so borders are being crossed more and more. Even

if the Japanese FSA, Germany's BaFin and the British FCA work together on regulation, they may find themselves out of control since they lack jurisdiction in other countries.

Sixth is openness, meaning you do not need to get permission to engage in decentralised finance. Anyone with a PC can develop and build such a decentralised financial system. Since there is no need to obtain permission from the FSA, the risk is that it will be unclear who takes responsibility for damages arising from such a system.

While these issues have already been recognised, there is still no effective solution and, as Professor Sasaki said, it is a very difficult problem to solve. Instead of trying to address all the issues by the authorities alone or by legislation alone, discussions started in February 2020 on how the various stakeholders around the world, including authorities and private sector technicians, can work together to address the issues. That is the Blockchain Governance Initiative Network, and we have set up such a network also for Japan.

HOW DIGITAL INNOVATION WILL CHANGE JOB QUALIFICATIONS IN THE FINANCIAL MARKETS

Sumida: Thank you very much indeed. You have provided valuable information from a variety of perspectives and raised some fascinating issues. There is one point I would like to know more about. As the FSA is an authority with a strong history of dealing with digitalisation issues, I would like to ask you to share your experience of what the FSA in particular has done in this regard.

Nozaki: Thank you for your question. Perhaps it would be better for you to ask Professor Sasaki about this, as he had a very strong influence on the issue when he was at the FSA. He was one of the first to tackle the blockchain issue when he was at the FSA, and he was a strong proponent of improving the technological literacy and mindset of staff to allow them to understand the situation.

The FSA also employs a number of professionals from the private sector, such as cybersecurity experts. This has been a feature of the FSA since its inception, with around 30 per cent of its staff being professionals from the private sector, including lawyers and accountants. In terms of improving the skills of the FSA's own staff, we consider the strengthening of the data science field in particular to be a medium- to long-term challenge. It is necessary to face digitalisation from the perspective of both the immediate import of skills from the private sector and the medium- to long-term skill development of career staff. Professor Sasaki will be able to talk more about this.

CREATING A CULTURE WHERE FAILURE CAN BE POSITIVE

Sasaki: I agree with most of what Mr Nozaki has said. I have studied law at university, and I am a complete amateur when it comes to technology. I do not know how to use a smartphone or a computer that well. But the field of finance, which I have had experience in over the last twenty years, is virtual and global in

nature. The major factors today are technology, innovation and digitalisation. As a supervisor of financial businesses, you have to understand the law, you have to understand the economy, and at the same time, you have to understand technology. I do not know about the technical aspects of blockchain and AI, about what is in the black box. I understand that AI, blockchain and innovation can be quite transformative for finance, but at the same time it can be quite a big risk, and it can be a risk for the authorities.

Even though I understand the risks and that these issues are important, it remains an area that I do not understand. So, I have to bring in people who do understand. If those people are not in the FSA, I have to bring them in from the outside. So, I recruited more and more people from the science sector and the private sector, including Mr Nozaki.

Many of you are experts in law. I am sorry to say this, but the legal approach is basically to analyse what has happened in the past – ex post facto – and how to apply it to the next issue. In the field of innovation, I think there are areas where we do not know what will happen and the past is not very helpful. In that sense, we have to change the way we think about studying the law.

In reforming the FSA, it is important to be agile and start from where you can. In the traditional way of working, you work hard for a long time to understand the details and only then move on to action. This is no longer the case. We just have to start. This is still a minority approach in the Japanese bureaucracy, but this kind of approach is becoming more and more necessary. Speaking of mindset, we are also trying to change the personnel evaluation system. Even if you fail to take an agile approach, you can be evaluated as a 'good failure'. If you take on a challenge, you are evaluated for taking on the challenge itself. We are not 100 per cent there yet, but the FSA is changing a lot, at least compared to traditional government offices.

Sumida: Thank you very much. That was a very informative and encouraging talk for the young people in the audience. Felix, do you have any questions or issues you would like to raise?

IS A DATA COLLECTION FORMAT NEEDED?

Steffek: First, a great thank you to all three speakers. I very much enjoyed the presentation and comments. I have, in fact, many comments and questions. I will first concentrate on two issues if that is okay. My first area of questions concerns data because all three of you mentioned data. One question I had while you were speaking was whether we need new processes for establishing data collection and formatting data because all three of you emphasised how important data is. I found it very interesting that you also went into the practical aspects of collecting data. Then I started thinking about how we determine which data is collected. You showed, for example, that different banks have their own data collection systems and then there is the FSA data collection and there is the BoJ gathering data, and the collected data needs to be adjusted. So, one question is whether we can make things easier by

somehow unifying the data collection format and the data collection processes. While we want unified data and standardised data, on the other hand, we need to be flexible and allow private actors to collect new data. Are there ways to innovate and have better data collection processes?

One idea I had is this: Would it make sense to form collaborative bodies where you have public bodies and private representatives of, perhaps, the financial institutions to think about data collection standards? However, I do see the trade-off between the advantages of unification and standardisation versus the problem of allowing flexibility for financial institutions to collect new data. The data collection process is, perhaps, something that we can delve further into.

Ikeda: If there is a crisis in a certain region, at first, we try to collect data that we have to collect and require to make an assessment immediately, on an ad hoc basis. Then, when it becomes an ongoing need, we format it and keep collecting it. Eventually, people start saying things like 'don't keep that kind of data forever', and recently, they have started saying things like 'why are you collecting this data?' and 'please remove data that you do not use or do not need from the data collection list'. I think that is quite common. In many cases, new data is collected because something has happened, and that is the trigger for collecting it. I would appreciate it if Professor Sasaki and Mr Nozaki could follow up on this as necessary.

Nozaki: Thank you. First, I would like to answer Felix's question about data collection. The general answer is that the BoJ and the FSA are becoming more efficient as they work with each other to collect the data required for monitoring financial institutions. Other than that, I think we need to analyse more Big Data as well, rather than just taking traditional financial data. For example, we are considering whether combining data from credit card usage histories, individual company data from the Teikoku Databank and other data held by financial institutions might provide some insights. We think that we need to move forward with Big Data analysis. I think there is still room for ingenuity in this area, which is evolving on a daily basis.

Sumida: Felix, if you have any further questions, could you ask them now, please?

FINANCIAL SERVICES WILL BECOME TAILOR-MADE TO PUT THE CUSTOMER FIRST

Steffek: Yes, I have many questions, but I will only ask one. How will the changes that you talked about in terms of data collection and data analysis change the business of the financial institutions? We have discussed how it changes the business of the regulators, how it changes the FSA and how the FSA works, but ultimately, we are interested in creating a good ecosystem for the financial institutions and the actors. In the future, how do you think the framework for financial institutions will change? How will the practice change for, not just the regulators, but for those who are being regulated?

Nozaki: I think your question is about how financial institutions and financial services will change as data analysis and other technologies evolve. Until now, core financial functions, such as loans, fund settlement and deposit taking, have been performed by financial institutions that have built heavy, grand and stable systems and provide services within that framework. For example, if you look at an ATM terminal, you still see an old-fashioned screen with only five buttons, which you press, enter your PIN and take out money. On the other hand, the smartphones you have are becoming more and more functionally advanced. As a result, the way of providing financial services, where the customer has to adapt to the system created by the financial institution, has to change, and this is exactly what is going on now. Smartphones can now be used to make deposits and transfer funds. Household account bookkeeping software is also very advanced, allowing users to check their assets with their smartphones. Systems have been developed using AI to make recommendations on what investments to favour. This will probably lead to a shift from financial institution-centred services to customer-centred, tailor-made services for each and every customer.

In other words, banks will no longer need to offer deposits and loans as a combined set. Customers will be able to use providers of deposits and loans in any combination they wish. The very nature of finance itself will change. As a result, the supervisory authorities will not be able to ensure that financial services run smoothly if they only keep a close watch on financial institutions at the institution level. They will also have to monitor platforms, where they will be able to check what functions and services are provided as a whole, since various services are provided by various institutions.

WHAT IS YOUR SELF-ASSESSMENT OF THE FSA'S APPROACH?

Student A: Thank you very much. I have two quick questions. First, with regard to the three initiatives of the FSA that you introduced today, I am sorry to say this, but to the untrained eye, rather than doing something that is technically very difficult, it seems to me that the FSA is now doing things that should have been done earlier but were not done because they were considered too complicated then. How do you perceive this? My second question concerns the term digital transformation. Can simple digitalisation such as RPA and centralising data be called digital transformation?

Sumida: These are some edgy questions. Thank you very much.

Sasaki: I would like to answer your question by saying that you are 100 per cent right. I have been involved in the digitalisation of the FSA for twenty years now and, as you said, whether we are talking about RPA or digital forensics, which I started fifteen years ago, or data exchange with the BoJ, we are talking about pre-digital transformation. Since I was at the FSA, around 2015/2016, I am saying that these activities are about digitisation, not DX. Digitisation refers to digitising the paper

base, it is about not using paper. This should have been done a long time ago. You are right, this is digitisation, and the problem is that we did not do it when we should have done it.

The story of virtual currencies is somewhat different because the subject is digital in the first place. As you mentioned in your second question, digital transformation is not just about eliminating paper. Digital transformation is about changing the way work is done. Digitalisation is a tool. It is not clear enough what we are going to do with digitalisation or what we are going to do with DX. When I reformed the FSA, the ultimate goal was to strengthen the financial function. By going through the DX of financial institutions and the corresponding DX of the work of the FSA, we can see how financial innovation can benefit society and how finance can contribute to solving social issues. For the FSA, this means that supervising is more than just supervising financial institutions. Benefiting society is the ultimate goal, but we have not reached it yet.

What we are doing now is digitisation before DX and we are also trying to do something slightly closer to DX but, as you say, we are very far behind. I have been acutely aware of this since I was at the FSA. Professor Ikeda, Mr Nozaki and others are now working on it, but I still feel that we are lagging behind.

There are problems that cannot be solved by the authorities alone. This issue will not change unless we change the business model of the authorities, especially in terms of system development and supervision. So, first of all, we need to digitalise the conventional type of supervision and get information into digital form. You are right that this is still a work in progress. In the end, the whole way of supervision has to be changed.

Ikeda: What Professor Sasaki has said is true. Personally, I see that technology is catching up with the timing of the FSA's upgrading to live monitoring. The technological conditions are just right, so we are trying to do it right this time. The centralisation of data with the BoJ is not something that is new, but something that has been requested for a long time, since Professor Sasaki was at the FSA. Due to various restrictions and other priorities, it has been difficult to achieve thus far. However, in this day and age, it is no longer acceptable to leave it unattended. The current situation is that the FSA is finally getting to grips with the heavy lifting.

In terms of highly granular information, the FSA is now trying to use it in order to strengthen the oversight of the financial intermediary function, for example, to improve the flow of finance to the private sector. Also, technological advances have enabled both financial institutions and the authorities to analyse very detailed data. The timing of this has coincided with the introduction of the new data analysis system. Until now, valuable detailed data was contained in the large amount of data we received, but it was buried without being utilised at all even though it was digitised.

ABOUT THE FINANCIAL SURVEILLANCE SYSTEM

Student B: This may be a little bit off the subject of finance, but you mentioned in your talk that digital forensics and ways to constantly monitor and store social

networking sites and other information when cracking down on finance-related crimes will also be necessary. If that entails private citizens being monitored all the time, it would be scary. I feel like my right to free speech is not guaranteed if I am being monitored. I am curious about the kind of legal guarantees in place in this regard.

Ikeda: The current practice is a little different from strictly monitoring the internet. It is a system that automatically patrols and saves. It does not involve monitoring or manually storing anything that is not allowed on the internet. From the perspective of lawyers who support victims of malicious posts on the web or leaked images, it is very common that once something is written or uploaded on the web, no matter how many requests are made to delete it, it is difficult to erase it completely and it remains forever. In that sense, I understand that the authorities are not the only ones engaging in data storage. The general public can also save data if they want to. What the FSA does is a somewhat systematic collection of such data.

Sumida: I guess the question expressed a concern from a privacy point of view. The student seemed to worry that we are becoming a surveillance society.

Ikeda: We do not have the resources to store everything that you write. We have narrowed down our monitoring to the websites that are about stock prices. We are keeping an eye on inappropriate things that might be written. We do not have surveillance cameras everywhere. Unless you have been marked, you do not have to worry about it that much.

Sumida: Thank you all very much for your very valuable contributions today. It was a really precious opportunity to hear your frank comments and to raise important issues. I would like to now close today's session.

CONCLUDING CONVERSATION

Steffek: Norichika Ikeda, based at the FSA and also a professor at the University of Tokyo, spoke on the impact of technology on the financial sector and those who are regulating the financial sector. The focus of his presentation was on enforcement, i.e. on making sure that laws and regulations are not only in the books but that they become reality.

Sumida: What really struck me, in terms of highlighting the essence of this issue, was the comment by Professor Sasaki, who has led the financial services industry that the biggest challenge for law enforcement is dealing with technology. Even if the authorities have the 'legal' authority to obtain data, they cannot obtain it, analyse it, make decisions and take action without the necessary technology and skills. When the issue of virtual currencies was discussed, we heard that the first questions were: 'Where is the blockchain?' and 'Can the FSA get the data and analyse it?' This part of the discussion was very revealing. I think it is fair to say, however, that the financial sector itself has been one of the first to go digital and it's important to note that law enforcement has been a front-runner in terms of digitalisation.

Steffek: I agree. We are confronted with a new reality and, therefore, need to think about it. Law enforcement is an area where technology has the potential to make things better. However, we have also discussed the associated risks in this regard. I also found the part that explored the future direction of regulatory bodies like the FSA very interesting. Professor Ikeda emphasised that the mission of the FSA itself is undergoing a major change. He said that whereas in the past the FSA had aimed to identify problematic situations, such as banks that did not have enough assets to meet all of their claims, in the future the FSA's objective will be to ensure the success of financial institutions' business models. In other words, instead of detecting insolvency, the FSA is aiming to ensure profitability.

Sumida: Yes, he said that the mission of the FSA's inspection and supervision authority has shifted significantly from dealing with the bad loan problem to achieving a deeper dialogue that goes back to the business model in order to strengthen financial functions. He said that it is now necessary to collect and analyse a lot of data, including continuous on- and off-line monitoring and a detailed understanding of the actual situation.

Steffek: Indeed, it is data that is the key to success. Professor Ikeda's presentation also explored some of the challenges and possible solutions for data collection and analysis. One issue that I thought was particularly important was the issue of data protocols. For example, it is not enough that the FSA's data protocols and the BoJ's protocols are similar; rather, the data must be compatible. We will also need to take into account that data collection and analysis will need to be automated. In other words, there is too much data for comprehensive human involvement. Should we invest valuable human effort in reconciling the data? Professor Ikeda's presentation made it clear that those who deal with data and technological innovation need to solve granular data problems. This leads, I think, to the interesting question of whether lawmakers can support the generation of compatible data.

Sumida: That raises an extremely interesting question! By the way, in the meantime, a new administrative body called the Digital Agency has been established in Japan.[3] Not only the financial sector but also the entire Japanese government has taken a major step towards digitalisation and is now considering the issues we have discussed.

The hidden hero of the session may have been the student who dared to challenge the guest speakers (laughs). Although the project 'centralisation of data collection and system integration with the Bank of Japan' may indeed give the impression of 'simple digitisation that should have been done a long time ago', it needs to be seen in the larger context of a 'reporting dashboard'. The development

[3] For more information on the Japan Digital Agency, see <www.digital.go.jp/en/>, accessed 1 November 2023.

of a 'reporting dashboard' system is now underway. It will enable all applications, filings and reports to the FSA to be made online.[4]

Steffek: Kiyotaka Sasaki, Visiting Professor at Hitotsubashi University and former Director General at the FSA, pointed out further challenges regarding data collection. For example, it is not only the public institutions that have different data protocols. Also, individual financial institutions have all developed their own data formats over time. He therefore raised the interesting question of the need for a data ecosystem. He added that this ecosystem, ideally, should also include courts and other public bodies beyond the regulatory authorities. He also pointed out that ultimately everything can be turned into data. The next step is then to think about whether there is information that would be useful but that is currently not available as data.

Sumida: It is also important to add the keyword 'public-private collaboration' to this ecosystem. The background to this idea of a public-private ecosystem is the awareness of the problem that government-led system development is not enough. GPS on smartphones is a private-sector initiative, but as readers know, it is very important for investigations because it gives the authorities access to the data when a crime is committed. This public-private collaboration is also taking place in the area of data improvement, which caught my attention as well. As a practical example, Professor Ikeda has introduced us to the uses of the corporate number. As there are no restrictions on the use of this number, the FSA has added the corporate number to the loan details received from regional banks and returned the data to them. The FSA is examining whether this will contribute to a better understanding of the actual situation of customers and to more sophisticated and efficient credit management. This may seem like a modest step, but I thought it was an important step in terms of data improvement.

Steffek: Akira Nozaki, Director of the FSA's FinTech Office, introduced new perspectives in his comments. I found particularly interesting the risks he identified in the decentralised approaches facilitated by advances such as blockchain. Mr Nozaki pointed out that decentralised services, e.g. those based on blockchain, have no mediators. This makes them difficult to regulate as the target of regulation is unclear. Regulators such as the FSA do not have full control over decentralised systems. This means that the FSA has problems, for example, to stop trading in a decentralised system. I learned from this that decentralised systems raise particular problems for regulatory bodies.

Sumida: The discussion's shift in perspective towards 'How will digitalisation change the supervisor and the market?' has revealed the nature of the changes brought about by technology.

[4] 鬼頭武嗣・水井大「金融分野における昨今のRegTech/SupTechの動向」金法2015号24頁以下。

This reminded me of a question asked by Professor Koda in one of the other sessions: 'What should we think about the significance of the judicial system reforms of the 1990s in Japan?' How will the world of the twenty-first century face the challenge of integrating the unbanked into financial networks? This is not about building more financial institutions or reforming the education system to increase the number of people working in financial institutions. Today, looking at smartphones with payment applications installed, we are in a different world already. I will continue to think about this question and hope that regulators, legislators and the judiciary continue to think about it as well.

QUESTIONS FOR FURTHER THOUGHT

- Do we need to develop new approaches for the formatting and collection of data in regulatory environments?
- How can legislatures contribute to solving data challenges of regulatory bodies?
- Do we need new institutions concerned with data protocols mediating data requirements between different institutions?
- Which new data confidentiality issues arise if the regulators are not only collecting data identifying problems but also if data defines the core business models of companies?
- Is there scope to make some data collected by regulatory bodies public? Perhaps data that all businesses could benefit from, thereby increasing social welfare overall?
- Will data and technology change the power balance between market actors and public regulators in the future?
- How can regulators such as financial services authorities be put in a position to effectively control decentralised systems?