

Executive Summary of the Conference on “FinTech and the Future of Money”

Co-Hosted by the Center for Advanced Research in Finance (CARF), the University of Tokyo, and the Payment and Settlement Systems Department, the Bank of Japan on November 18<sup>th</sup>, 2016

The Center for Advanced Research in Finance (CARF), the University of Tokyo, and the Payment and Settlement Systems Department, the Bank of Japan, co-hosted a conference entitled “FinTech and the Future of Money” on November 18<sup>th</sup>, 2016.

Nowadays, academia and international policy forums are paying a great deal of attention to the issue of how the proliferation of digitalized payment instruments and the application of information technologies such as distributed ledger technology (DLT) will influence the future of money as well as payment and settlement systems. The conference focused on these up-to-date topics, on which the conference participants exchanged their views in a lively manner. In the light of development in information technology, the participants raised a number of issues, such as the following:

- (i) Future payment instruments could convey not only monetary value but also various information attached to payments, and could work even as tools for executing contracts.
- (ii) Competition could emerge regarding the dominant “platform” between traditional payment tools (e.g., cash) and digitalized payment instruments, and between private entities and central banks. Also in this respect, possible new functions of future payment instruments, such as conveying relevant information and executing contracts, could be the key.

From the perspective of information processing Yanagawa (Professor of the University of Tokyo) categorized wide-ranging payment instruments into two criteria: “distributed-type” instruments such as traditional cash (banknotes and coins) and bitcoins, and “centralized-type” instruments such as bank deposits (including central bank deposits). In addition to those two, Yanagawa proposed the third criterion of “communication-type” instruments such as those used in loyalty card businesses, in which payments instruments could also be used for conveying various information that had not been used in the past. Since each of those instruments could be issued by either private entities (e.g. commercial banks) or central banks, Yanagawa presented the 2 x 3 matrix (with six criteria) for categorizing various payment instruments. He also added that there could be payment

instruments falling in “between” those six criteria.

Based on such an analytical framework, Yanagawa expressed the following opinions:

(i) Given the costs needed for the verification of transactions (e.g., “proof of work” or “mining”) in “distributed-type” and “private-issued” virtual currencies such as bitcoins, these virtual currencies are unlikely to be widely used as ordinary payment instruments. (Nonetheless, these virtual currencies could be popularized in countries where the credibility of sovereign currencies has deteriorated due to factors such as hyperinflation.)

(ii) As long as the central bank can issue fiat money as its liabilities without any problems, it will not find any visible benefits or necessity to issue by themselves “distributed-type” digitalized currencies (e.g., central bank digital currencies or CBDC) that could replace fiat money.

(iii) If the central bank wants to issue its own digitalized “central bank digital currencies” applying DLT, they are likely to have “centralized-type” structures.

Yanagawa also pointed out that, since it would continue to be difficult to perfectly “synchronize” all the demands for and supplies of goods and services, people would definitely need some payment instruments in order to fill the “gap” caused by the timing of this demand and supply. He added that, as long as the central bank could successfully provide such payment instruments, its monetary policy could also continue to be effective. He also argued that more and more private entities would want to provide payment instruments in order to obtain the benefits from “economies of scale” of its payment platform, or to make more use of the relevant information attached to payment transactions. Based on those views, Yanagawa argued that the competition between private entities and the central bank for popularizing their own payment platforms would become more intense in the near future.

Tomura (Associate Professor of Waseda University) argued that, even if traditional cash (banknotes and coins) became extinct, the central bank could still remain the provider of collateralized payment instruments to the interbank payment system by functioning as the custodian of collateral. Tomura, however, also expressed a concern that the extinction of cash might make the central bank lose its unique status as the issuer of legal tender, and thus the special legal protection for the safety of its liabilities. If that happened, private financial institutions might lose incentive to use central bank liabilities as payment instruments. In the Q&A session, one participant raised an issue as to whether a private entity would be able to provide collateralized payment instruments to the interbank payment system on behalf of the central bank.

Saito (Associate Professor of Nihon University) pointed out that crypto-currencies could

function not only as payment instruments (currencies) but also as “media for contract”, since their crypto-signature system could also work for securing the information constituting contracts. Saito then presented the result of his simulation as follows:

(i) If crypto-currencies convey only the information of value, and work only as payment instruments, they are unlikely to be widely used due to their high price volatility. (They could only be used in limited cases such as in the countries with high inflation.)

(ii) On the other hand, if crypto-currencies also function as “media for contract”, these crypto-currencies will become more likely to be used widely.

Kobayakawa (the Bank of Japan) talked about preliminary results of initial experimental studies on DLT made by the Bank of Japan staff on a laboratory environment of interbank payments. Kobayakawa summed up the following results:

(i) As the number of validating nodes increased, so did the time-lag between the issuance of payment instruction to the update to the ledger. This tendency became more prominent as the payment traffic -- in terms of the number of payment instructions per second -- increased.

(ii) Liquidity savings functions were enabled by “smart contracts” embedded in DLT.

In the panel session, Ueda (Professor of the University of Tokyo) first raised the issue regarding the decline in demand for base money (including banknotes) and the effectiveness of monetary policy. He made the following remarks:

(i) So far, central banks have not faced any particular difficulty in controlling their policy rates even in the countries, such as Scandinavian countries, facing a decline in the use of banknotes and the expansion of digital payment instruments, as long as these digital payment instruments continue to be denominated in sovereign currencies.

(ii) Nonetheless, if digital payment instruments that are not denominated in the domestic sovereign currency become widely used as ordinary payment measures, the effectiveness of monetary policy could be affected.

(iii) The above mentioned case (ii) is similar to the situation in which foreign currency-denominated transactions become widespread. Owing to the recent innovation in information technology, the cost of executing transactions in foreign currencies may be rapidly decreasing also in Japan.

(iv) In the near future at least, it is unlikely that private-issued virtual currencies or foreign currencies, instead of the Japanese yen, will be used widely in large-value payments. Thus, monetary policy would also continue to be effective.

(v) Nonetheless, since the competition between central bank money and digital payment instruments as well as foreign currencies could become more intense, central banks would have to make more efforts to improve the usability of their central bank money.

Toyama (Visa Worldwide Japan) illustrated the rapid diversification of payment services such as mobile payments and the settlements through the IoT (Internet-of-Things) related products, in addition to traditional credit card payments at the point of sale. In the light of such developments, he explained that Visa was making various efforts such as opening up their own networks and cooperating with wide-ranging companies so as to encourage the use of the Visa network. Moreover, he pointed out that customers were becoming more sensitive to data security and transaction security as more diversified payment services were becoming available. He stressed the importance of promoting payment innovation without sacrificing data security and transaction security.

Maruyama (FinTech Association) argued that FinTech could bring about various benefits as illustrated below:

- (i) FinTech could directly link counterparties in transactions without having any intermediary entities.
- (ii) FinTech could promote “sharing economy” businesses through enabling P2P (person-to-person) payments between individuals as well as the verification of these payments.
- (iii) FinTech could enable efficient “micro-payments” in which people could pay as they consumed, regardless of how small each payment would be.

Maruyama also argued that “open-innovation”, in which wide-ranging industries cooperate through sharing API (Application Programming Interfaces) would be the key to enhance the function of various payment instruments. He also pointed out that traditional payment instruments had experienced various innovations in accordance with the expansion of economic activities. Based on this perspective, he expressed the view that payment instruments would become closer to “digital currencies in global and digitalized cyber-space” in the future.

In the subsequent panel discussion, the panelists discussed various issues such as the expansion of digital payment instruments as well as their impacts on the economy and the financial system. There were also discussions on the following topics:

- (i) If the central bank issues its own digital currency, how should it strike the appropriate balance between safety and payment innovation led by private initiatives?
- (ii) To what extent should the central bank provide central bank money, the risk-free payment instruments with finality, to the overall economy?