Provisional translation

December 13, 2023

Report of the Expert Panel on CBDC

1. Introduction

(1) Background

In recent years, the digitalization of the economy and society has been rapidly proceeding due to the evolving information and communication technologies and the changes in people's behavior under the COVID-19 pandemic. Daily payments for goods and services are no exception in this digitalization trend. The use of cashless payment services with credit cards and smartphone apps is becoming more prevalent in place of the use of cash (i.e. banknotes and coins).

As the cashless payment service providers are increasingly diversified, such service providers now include not only private financial businesses (e.g. banks and credit card companies) that have traditionally provided payment services, but also other non-financial businesses. Those businesses include fintech companies — those providing innovative financial services making use of information technology —, telecommunication, transportation, and retail companies. The reason behind such diversity is that they see data as a new source of value; as a result, data on payment, which is inseparably linked to economic transactions, is becoming more important than ever.

While users have greatly benefited from such diversity and the improved convenience in payment services, there are also concerns about the lack of coordination among payment services and the implication of oligopolistic market structure due to further consolidation of those service providers. There are also concerns related to data security and privacy protection.

Along with the digitalization of the economy and society and the proliferation of cashless payments, a global stablecoin project was announced in 2019, which triggered many jurisdictions to consider possible introduction of CBDC (Central Bank Digital Currency).

CBDC is a new form of electronic central bank money issued as a direct liability of the central bank, denominated in legal tender of each jurisdiction. Many economies have been studying retail CBCD (general-purpose CBDC) for individual and business users[1] while a few, including the Bahamas, have officially introduced it.

In 2021, G7 Finance Ministers and Central Bank Governors published the "Public Policy Principles for Retail Central Bank Digital Currencies," which set out 13 principles, including monetary and financial stability. Large economies have not made a decision to issue CBDCs so far, and their researches and studies are underway.

In Japan, the Bank of Japan announced "The Bank of Japan's Approach to Central Bank Digital Currency" in October 2020. Since April 2021, the BOJ has been working on technical experiments on CBDC through their proof-of-concepts and pilot program.

On June 18, 2021, the Cabinet decided the "Basic Policy on Economic and Fiscal Management and Reform 2021" which called for the government and the BOJ to articulate the Design Outline of CBDC. Accordingly, the Ministry of Finance, which has jurisdiction over the currency framework, launched the Expert Panel in April 2023. On June 16, 2023, the Cabinet further decided the "Basic Policy on Economic and Fiscal Management and Reform 2023" which requested the government and the BOJ to coordinate for the Design Outline of CBDC in line with a report by the Expert Panel to be given around the end of 2023, while assessing developments in other jurisdictions.

(2) Summary of discussions at the Expert Panel

Based on the above background, the Expert Panel has held eight meetings for hearings from experts and private businesses and had intensive discussions on the form of currency that is desirable for the digital economy where cashless payments will become more prevalent in the society. The summary of discussions are as follows.

[1] In addition to retail CBDC, there is wholesale CBDC for limited entities, such as financial institutions for large-value payments. In this report, retail CBDC is simply referred to as "CBDC" unless otherwise specified.

Japan's CBDC examined by the Expert Panel is a digital currency that is expected to be used for payments in a similar way to private digital payment services, such as electronic money and QR code payments via smartphone apps or physical cards. Just like cash (e.g. 10,000-yen banknotes (bills) and 500-yen coins), CBDC would be available for day-to-day transactions, including shopping at stores. It would function as a means of payment even for online shopping, where cash is hardly used.

There are some differences between private digital payment services and CBDC. In contrast to private digital payment services which may not be accepted in every shop and remittance across different payment services is not always available, CBDC will be designed as a payment means anyone could use anytime and anywhere.

Another significant difference is that CBDC would be issued and circulated as a liability of the BOJ, the central bank in Japan, while private digital payment services are not. Therefore, users can safely use CBDC without credit risk, as is the case with cash. Settlement can be completed immediately, and users can receive CBDC securely.[2]

Given that users acquire cash through financial institutions instead of the BOJ counters, it is unrealistic that the BOJ interacts directly with CBDC users. Moreover, it is important to provide a variety of services that meet the diverse user demands while improving its convenience with digital technology. From these perspectives, a "two-tiered model" (indirect issuance), in which the private sector mediates CBDC transactions through the provision of smartphone apps and physical cards for CBDC, is appropriate.

The relationship between CBDC and existing private payment services, including digital ones, should also be considered. Since the public can use a variety of convenient private payment services in Japan, it is necessary to consider how CBDC and those services should coexist and play respective roles.

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[2] For example, when an individual makes a payment to a store by a private payment service, the store often receives it in the form of a bank transfer from the private payment service provider after the payment. In the case of CBDC, however, it is assumed that a store will be able to receive at the time of the payment in principle.

Although private payment services have already provided users with a variety of convenient payment options, available options may vary from store to store. Hence, it is possible that CBDC will play a role as a common infrastructure connecting different types of payment services. In addition, while complementing each other in normal times, CBDC may contribute to securing redundancy[3] of the payment system as a whole especially in times of crisis.

If CBDC were to induce sudden or continuous deposit outflows, it could adversely affect Japan's financial system and economy. It should be carefully designed to avoid such risks from materializing.

It has been pointed out that cross-border payments require much time and high fees. Bearing these caveats in mind, it is important to promote international cooperation through the standardization of CBDC technologies while considering the design of cross-border payments from a broader perspective.

The Expert Panel also analyzed risks and concerns on CBDC and discussed measures to address them. CBDC should be available all the time as a means of payment. To this end, effective measures for cyber and information security should be well-prepared, to prevent illicit activities, and to protect personal information. It is necessary not only to take *ex ante* security measures for preventing security incidents but also to adopt *ex post* recovery measures in case they materialize.

When introducing CBDC, the government should squarely address the public concerns about how privacy will be secured and whether the access to cash will be ensured. With regard to securing privacy in particular, the CBDC should be designed to prevent the BOJ from obtaining or holding information about CBDC users or transactions as much as possible, based on the concept of "privacy by design" to incorporate personal information protection measures for the design. The government shall, in principle, receive information for public policy objectives including anti-money laundering, when necessary. In this respect, it should clarify in advance the purposes and subject for its collection.

[3] Redundancy refers to designing a system pursuing to avoid the suspension of the entire system even if some part of the system fails.

This report does not prejudge whether or not to introduce CBDC in Japan. Its aim is to summarize the deliberation by the Expert Panel regarding "Design Outline of CBDC," which is expected to clearly identify the basic considerations on main issues and its possible options for CBDC introduction.

2. Developments in Japan and abroad

(1) Cash usage and other payment services in Japan

Japan's currency[4] consists of coins and Bank of Japan Notes (banknotes) (hereinafter referred to as cash). There are six types of coins (excluding commemorative coins) and four types of BOJ notes issued.

The circulation of cash begins when the BOJ disburses it to banks (issuance[5]) and ends when the BOJ accepts it from banks (redemption), indicating a "two-tiered model" where banks mediate cash circulation.

Cash in circulation in Japan continued an upward trend, totaling about 127 trillion yen as of the end of FY2022. Among cash-holding sectors, households have been increasing cash holdings. Banknotes that account for most of cash in circulation have been increasing; in particular, 10,000-yen notes have posted a remarkable increase. By contrast, coins in circulation have been decreasing in recent years after an upward trend.

Among payment means used by individuals, cash is used less frequently for larger-value payments. The cash use rate has been on a downward trend irrespective of the size of payment value in recent years. As for cashless payment services, the rate of use for electronic money or code payments goes down as the value of payment increases, as is the case with cash. However, the rate of use for credit cards is higher for larger-value payments.

The ratio of cashless payments relative to individuals' final consumption expenditure was 36.0% in 2022 while the government aims to increase it to about 40% by 2025. The cashless ratio, nevertheless, is estimated to reach

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[4] Refers to the currency stipulated in Article 2, Paragraph 3 of the Act on Currency Units and Issuance of Coins (the Currency Act).

[5] Coins issuance occurs when they are delivered by the government to the BOJ.

about 50-70% when bank account transfers are included. As such, it is fair to say that cashless payments have prevailed to a considerable extent in Japan, contributing to productivity growth in the private sector despite shrinking labor force under the declining birthrate and aging population.

From an international perspective, cash in circulation in Japan as a percentage of nominal GDP has been on an increasing trend, as seen in Europe and the United States, standing at a relatively high level. Regarding access to cash, the number of automated teller machines (ATM) and bank branches in Japan is comparable to that of other developed countries. More than 99% of residents in Japan have bank accounts at financial institutions.[6]

(2) Situations in other jurisdictions

Large economies, although having made no clear decision to issue CBDC, have been conducting research on CBDC.[7] In Europe, the European Central Bank (ECB) launched an investigation phase of a digital euro in October 2021 and ended the two-year phase in October 2023. It started a preparation phase in November 2023, planning to conduct further experiments and formulate rulebooks. The European Commission published a legislative proposal on the digital euro in June 2023.

In the United States, the Federal Reserve Board (FRB) published a discussion paper in January 2022, which analyzed the use and functions, and potential benefits and risks of CBDC. In September 2022, the U.S. Department of the Treasury released the report titled “The Future of Money and Payments,” which encouraged the FRB to continue its investigation and research on CBDC and recommended the establishment of an inter-agency working group led by the U.S. Department of the Treasury.

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[6] Questionnaire report on building better banks by the Japanese Bankers Association (FY2021)

[7] This report refers to the following documents indicating views in major economies.
Europe: ECB investigation phase progress reports (1st-4th), “Progress on the investigation phase of a digital euro” (September 2022, December 2022, April 2023, July 2023)
ECB investigation phase report, “A stocktake on the digital euro” (October 2023)
United States: Federal Reserve Board discussion paper, “Money and Payments: The U.S. Dollar in the Age of Digital Transformation” (January 2022), and U.S. Department of the Treasury report, “Future of Money and Payments” (September 2022)
United Kingdom: HM Treasury/Bank of England consultation paper, “The digital pound: a new form of money for households and businesses?” (February 2023)

In the United Kingdom, HM Treasury and the Bank of England (BOE) jointly published a public consultation paper on the digital pound in February 2023 to launch the design phase over the next few years and solicit opinions on the idea of the digital pound.

Whereas the stated purposes and goals of CBDC in each jurisdiction are different, they mainly pursue to secure public's access to central bank money in the digital age to ensure monetary sovereignty, monetary and financial stability, resilient and efficient domestic payments, improved cross-border payments, and financial inclusion.[8] CBDC is supposed, as existing cashless payment services, to be for remittances between individuals, their payments to businesses, and payments between individuals and the government, with smartphone apps or physical cards.

In China, the People's Bank of China (PBOC) started the pilot R&D projects in 2019 and has gradually expanded the area of the pilot. As of the end of 2022, it expanded the pilot area to 26 regions across 17 provinces, with CBDC in circulation estimated at about 13.6 billion yuan (as of the end of 2022, accounting for 0.13% of cash in circulation).

Some jurisdictions,[9] for example the Bahamas, have officially introduced CBDC, but CBDC in circulation remains far less than cash. Among Asian countries, with which Japan has close economic relations, South Korea, Thailand, and India are conducting CBDC experiments, investigations and researches.

According to a report by the Bank for International Settlements (BIS),[10] about 90% of the 86 central banks that responded to a survey in 2022 answered that they are engaged in CBDC-related works. Primary motivations for CBDC are financial inclusion and the improvement of domestic payment efficiency mainly in emerging and developing countries.

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[8] In Europe, the concept of "digital financial inclusion" (providing financial services appropriately to those who do not have access to financial services, as well as those who will be adversely affected by the digitalization of financial services) has been presented.
[9] Besides the Bahamas, those include the Eastern Caribbean Currency Union, Jamaica, and Nigeria.
[10] BIS survey report, "Making headway - Results of the 2022 BIS survey on central bank digital currencies and crypto" (July 2023)

(3) BOJ's experiments

In October 2020, the BOJ published "The Bank of Japan's Approach to Central Bank Digital Currency". Its approach indicated that it would consider conducting experiments, with the idea that "While the Bank of Japan currently has no plan to issue CBDC, the Bank considers it important to prepare thoroughly".

Under the approach, the BOJ experimented basic CBDC functions in an experimental environment as its Proof of Concept (PoC) Phase 1 from April 2021 to March 2022. Furthermore, the BOJ implemented additional functions (holding limits, scheduled remittance instructions, etc.) to the Phase 1 experimental environment as its PoC Phase 2 from April 2022 to March 2023. Concurrently, in March 2021, the BOJ established the "Liaison and Coordination Committee on CBDC" to share information with business entities and the government on the progress of technical experiments. In May 2022, the committee published its Interim Report to explain the progress of the experiments and summarize the committee's deliberations.

In the PoC Phase 1, the BOJ experimented three ledger designs from two perspectives: (1) whether the ledger is managed only by the central bank or management is split between the central bank and intermediaries, and (2) whether the ledger employs account balance or monetary data. The PoC Phase 2 checked additional functions. The BOJ confirmed no significant performance degradation in any of the patterns.

In April 2023, the BOJ launched a pilot program to confirm the technical feasibility, which was not covered by the previous PoCs, and to leverage technologies and knowledge of private businesses. At present, the pilot program does not entail actual transactions involving any retailers or consumers. In this program, the BOJ convenes a "CBDC Forum" to discuss and explore a wide range of topics along with private businesses in retail payment field. To test the end-to-end process flow, the BOJ develops a system for experiments to conduct performance tests.

3. Key considerations for the Design Outline of CBDC

People's lifestyle and daily transactions vary by country. So do payment landscapes, such as access to financial services and the popularity of cashless payments. Reflecting this background, the purposes and goals of CBDC, as well as motivations for exploring CBDC, differ across jurisdictions.

In articulating the Design Outline of CBDC in Japan, therefore, it is important to ensure that it should fit well into Japan's current circumstances and meets the demand of users from the multifaceted perspectives. The Outline also needs to take into account Japan's inherent economic situations and its payment landscape whilest giving due consideration of progress in other jurisdictions.

At the same time, it is desirable to analyze whether challenges associated with conceptualizing the CBDC design share a common ground with those of the existing private digital payment services, and then to consider how to address those challenges.

Since basic considerations on main design issues will have to be consistent with the purposes and goals of CBDC, it is vital that we set our own purposes and goals in Japan's context and they should be presented to the public using a simple and concrete language.

As the digitalization of the economy and society progresses and cashless payments are accelerating in Japan, CBDC, as a currency suitable for the digital economy, should be designed as a highly convenient digital payment means that can be used safely and securely by anyone, anywhere, anytime.

Therefore, main issues to be explored here include: (1) how we should consider the relationship between the BOJ and intermediaries so as to make CBDC a highly convenient means of payment, taking into account the diverse demands of users; (2) how CBDC and other various payment services would play respective roles in order to ensure the stability and efficiency of the overall payment systems, given that various payment services have already been provided in Japan; and (3) how to make CBDC always available as a means of payment and address the public's concerns about privacy.

For articulating the Design Outline of CBDC while considering these main issues, this section will lay out the Expert Panel's basic considerations and possible options at present.

(1) Relationship between the BOJ and intermediaries (vertical coexistence)

(2) Relationship between CBDC and other payment means (horizontal coexistence)

(3) Security and user data

(4) Other issues

Note that the basic considerations and possible options should be further elaborated and updated as necessary in light of a) the progress in CBDC exploration in other jurisdictions, b) changes in Japan's economic and social background as well as its payment landscape, c) further clarification of purposes and goals of the CBDC introduction in Japan, and d) future technological developments.

(1) Relationship between the BOJ and intermediaries (Vertical coexistence)

Today, the BOJ distributes cash through private financial institutions, instead of directly interacting with users. Given that it is unrealistic that the BOJ directly meets the diverse demands of users on CBDC, it would be appropriate to adopt a two-tiered model (indirect issuance), just like cash, in which private entities mediate CBDC transactions between the BOJ and users.

Since intermediaries are involved in the distribution of CBDC, the BOJ can minimize the scope of data that it handles on users and their transactions.[11] In the two-tiered model, intermediaries would be able to improve user experience and generate revenue by appropriately handling user data and their transactions. These considerations also lead to the same conclusion: the two-tiered model would be desirable.

At this stage, the basic flow of transactions relating to CBDC issuance and distribution can be described as follows. First, users will take due procedures with intermediaries to initiate their use of CBDC. Second, they will request for CBDC in exchange for cash or bank deposits from intermediaries. At this stage,

[11] For the handling of information on users and their transactions, see 3. (3)(ii).

upon the request from intermediaries, the BOJ will issue CBDC to them whose deposits at the BOJ will be deducted. Users will then make payment instructions through intermediaries to initiate CBDC transfers.

(i) Role of the BOJ

As the BOJ would exclusively issue CBDC as its own liability, it is appropriate for the BOJ to manage CBDC arrangements (ledgers, etc.) to ensure the accuracy and verification of recording on CBDC transactions. In addition to managing these arrangements, the BOJ could be expected to play a role as a "catalyst," which will contribute to generating value-added services by the private businesses through enhancing innovation.

To fulfill such a role, the choice of technologies the BOJ will likely adopt is one of the important issues. In this regard, the BOJ should investigate based on two perspectives. First, it should adopt technologies that will enable the necessary functions in the CBDC ecosystem. Second, it should realize functions within the constraints of technological developments without resorting to any specific ones. As the technological innovation in the payment field progresses at a rapid pace, large economies have not prejudged the use of any specific technology in their research. Therefore, technological considerations, including whether to introduce token-based CBDC and/or DLT, should be explored further, based on the results of PoCs and the pilot program at the BOJ and future technological developments.

The basic functions necessary for issuance, distribution, and redemption of CBDC should be designed to have robustness and accuracy to ensure the safety and reliability of the CBDC system. As for designing the other functions, agility and more flexibility should be pursued to accommodate future technological developments.

(ii) Role of intermediaries

In the two-tiered model, intermediaries would provide services related to the issuance, distribution, and redemption of CBDC, mediating between the BOJ and CBDC users. Specifically, they would act as a counterparty to the BOJ when undertaking operations regarding the issuance and redemption of CBDC to provide basic payment services to CBDC users. Furthermore, they would

act as a counterparty to CBDC users to whom they are responsible for opening/closing accounts, customer management, providing interfaces,[12] and operations regarding distribution of CBDC such as payout, transfer, and acceptance (hereinafter referred to as core services).

As private businesses, which could act as intermediaries, significantly vary in their business model and size, it is not viable to assume that all intermediaries will take the same duties and responsibilities. Therefore, they would provide services in accordance with their respective business conditions, judgments, and capacities. From this viewpoint, all the intermediaries may not have to be responsible for the full range of intermediary services. For example, some intermediaries may be allowed to be responsible for part of those services such as core services.

In addition to making CBDC available safely and securely by anyone, anywhere, anytime, it is important to envision CBDC to provide improved convenience comparable to other payment services, and furthermore to pursue any added-value that stems from its unique characteristic of the digital nature. To this end, intermediaries may provide "add-on services"[13] that improve usability, such as accounting service for households and conditional payments. Such add-on services should be open to private businesses which are not intermediaries. For promoting innovation in the private sector, not only private businesses that currently provide payment services but also other entities should be able to provide add-on services while ensuring a level playing field.

(iii) Scope and regulation for intermediaries

The scope of intermediaries should be specified concurrently with clarifying the definitions of and boundaries between core services and add-on services. It should also reflect discussion related to services required for intermediaries, and the distribution of costs.[14] In this respect, banks and other businesses that currently provide payment services would be possible candidates for

[12] Interfaces refer to tools that allow users to use CBDC. Specifically, they are assumed to include smartphone apps and physical cards.
[13] Some large economies concern that imposing limits based on the usage, transaction period, and regions may impair the uniformity of currency and pose additional risks to users. On the other hand, a member said that there should be room left for private businesses to provide conditional payments as add-on services while taking into account future technological advances and consumer demands.
[14] For details on how relevant costs should be allocated, see 3.(4)(iii).

intermediaries.

The government needs to review regulation for intermediaries from multiple perspectives, as it involves user protection, including personal information protection and security among others. The regulation should be arranged in tandem with elaboration of the Design Outline of CBDC, while taking into account how far private businesses have discretion to choose a) the scope of intermediary services they conduct, b) the extent of requirements that are appropriate for respective intermediary services, and c) the extent of harmonization in those requirements in the existing regulations.[15] In addition, appropriate supervision for intermediaries should also be in place while giving due consideration not to impose excessive burden on them.

(2) Relationship between CBDC and other payment means (Horizontal coexistence)

(i) Interoperability

Currently, there are a wide variety of payment means for individuals. These include cash, bank deposits, electronic money, code payments, credit cards.[16] Users pick up the ones based on the characteristics of each payment means.

Under these circumstances, even if Japan introduces CBDC, various payment services most likely coexist in a manner that fulfills their respective functions and roles, thereby securing user choice, improving usability, and maintaining the overall stability and efficiency in the payment system.

A premise for this is that CBDC can be converted smoothly with other payment means (cash, bank deposits, electronic money, etc.),[17] with the CBDC system being connected smoothly to existing private payment systems and ensuring enough flexibility for future updates.[18]

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[15] With regard to the relationship with existing financial regulation, a member said that it should be developed based on the current legal system, while taking into account additional requirement for the introduction of CBDC. With respect to prudential regulations of intermediaries, a member said that it should be taken into account that CBDC differs from bank deposits, which are the debt of intermediaries.

[16] In addition to deposits at banks, deposits and savings at depository institutions are included.

[17] A member said that a relevant issue would be whether intermediaries should be required or incentivized to smoothly convert CBDC with other payment services.

[18] A member said that it would be desirable to require the technical standardization of private payment systems, including security measures.

One issue on the development of infrastructure for CBDC will be how to use existing private payment infrastructure. The BOJ should consider this issue while taking into account the opinions of relevant businesses.

(ii) Relationship between cash and CBDC

Cash has such characteristics as universal access (i.e. available for anyone), resilience (i.e. available anytime and anywhere), and anonymity. In addition, there is high trust in cash in Japan. Given those characteristics, demand for cash will remain somewhat even if CBDC is introduced.

Therefore, the government and the BOJ have shown their commitment to supplying cash as long as there is demand from the public, even if CBDC is introduced. CBDC and cash will coexist for the time being.[19]

From this perspective, CBDC and cash will, in principle, complement each other instead of CBDC replacing cash.[20] Taking into account the fact that cash will continue to exist together with CBDC, the specific design choices of CBDC — a) offline functions (resilience) and b) anonymity compared to cash — should be examined from the perspective of whether those choices are necessary and what risk, if any, they may entail.

First, offline functions[21] will enhance, on one hand, the resilience of CBDC since it will sustain CBDC's availability in situations such as communication failures and power interruptions caused by natural disasters. On the other hand, those functions are provided, risks such as double spending and counterfeiting of CBDC may increase. Hence, while details of offline functions and the timing for their introduction should be determined following future technological development, it appears that there is no strong reason for those functions to

[19] Regarding the policy of the government and the BOJ on cash supply, a member said that it would provide a sense of security to people who use cash as a means of payment in their daily life. Another member said that attention should be paid to the possibility that rapid decline in demand for cash would signify a sense of burden on intermediaries and stores.

[20] With regard to mutual complementarity, there was an opinion that it would be important to give CBDC unique digital characteristics, such as add-on services, from the perspective of broadening the range of payment means options for users, rather than having CBDC perform the same roles and functions as cash.

[21] Regarding the offline functions, several patterns can be considered depending on whether neither the terminals of payers and receivers are online (connected to the Internet).

be introduced at the outset of introducing CBDC, considering that cash continues to exist.

Second, anonymity should be examined in light of the possibility that CBDC may enable frequent/large-value transfers easier at a time when AML/CFT[22] measures are an important issue.[23] It should also be considered in the context of the continued availability of cash.

CBDC is expected to serve as a unit of account as Japan's currency. Since it will circulate together with cash for the time being, any remuneration on CBDC could undermine the convertibility with cash at par and would be difficult to assume.[24] Going forward, in light of discussions in other countries and following changes in Japan's economic and social conditions, the technical feasibility of remuneration on CBDC and the assessment of its necessity and risks could be further explored.

(iii) Relationship between bank deposits and CBDC

Bank deposits play an important role as a means of storing value and payment for users (depositors). They also undertake the function of credit creation which supplies money that is essential for the economy. While CBDC is a liability of the central bank, it does not play such credit creation function; however, some of its roles overlap with those of bank deposits. There could be a sudden or persistent outflow from bank deposits to CBDC, affecting the soundness of Japan's financial system and economy. Therefore, safeguard measures would be necessary to prevent such negative impact.

Potential safeguard includes quantity measures, such as holding limit on CBDC; alternatively, there are price measures, such as fees on CBDC holdings above a certain threshold.

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[22] AML/CFT measures include not only anti-money laundering and countering the financing of terrorism measures but also measures to counter financing for proliferation of weapons of mass destruction.

[23] Large economies have also indicated that CBDC is at a higher risk of being used for money laundering and terrorist financing than cash because it is in a digital form and hence it is not feasible or appropriate to make CBDC as anonymous as cash. For the handling of user and transaction information, see 3. (3) (ii).

[24] At present, Europe and the United Kingdom indicate no remuneration on CBDC. On the other hand, the United States mentions the possibility of remuneration on CBDC.

The holding limit is likely to directly cap the shift from bank deposits to CBDCs. By contrast, fee-based measures are likely to indirectly restrict the shift through reducing the attractiveness of CBDC holdings. Those might not work as intended in times of financial stress and their impacts are not necessarily clear. Owing to these concerns, the focus on safeguard measure should be on limiting CBDC holdings.[25] While safeguard measures should be effective in normal times, appropriate safeguard measures may flexibly change in accordance with economic and social conditions and may require additional measures in times of financial stress.

In terms of the holding limit, it should be considered together with how the limit works when users are allowed to have multiple CBDC accounts and their payments or receipts exceed such limit.

When CBDC is received in excess of the holding limit, for example, such a receipt can be automatically transferred to a pre-registered account (such as a bank deposit account). When it is paid in excess of the limit, such a payment can be automatically charged from a pre-registered account. Although these functions would be important from the viewpoint of improving user experience, it should be kept in mind not to exclude users without any bank accounts.

When discussing the details of these safeguard measures, it should be noted that a) they are intended to limit the outflow from bank deposits to CBDC and b) they could be used for other policy objectives, such as AML/CFT, and foster CBDC's coexistence with other payment means.

(iv) Relationship between other payment means and CBDC

Other payment means include cash and bank deposits, as well as electronic money and QR code payment (for example, a called "XX Pay" service using a smartphone app or an IC card issued by transportation or retail businesses).

[25] In Europe, price-related safeguard measures are viewed as indirect measures to reduce the relative attractiveness of CBDC compared with other financial assets. In Europe and the United Kingdom, therefore, consideration focuses on limiting CBDC holdings. On the other hand, in the United States, the holding limit and an option of lowering interest on CBDC when it is remunerated are considered. In this regard, a member said that there should be room to consider not only the holding limit but also potential fee-based safeguard measures in the future.

While fair and free competition between various payment services is important for securing user choices and improving user experience, there is a risk that network effects may be undermined due to issues such as differences in the coverage of payment services accepted at each store and the lack of availability in remittance services across different payment services.[26]

However, CBDC is expected to play a certain role in improving interoperability among various payment services, promoting their competition and further enhancing network effects.[27] This means that CBDC, instead of competing with other payment services, may serve as a common infrastructure to support other payment services by securing their convertibility and thereby contributing to competition as well as maximizing network effects.

It should be noted that private businesses that currently provide various payment services have already invested in developing infrastructure and customer acquisition, and might have gained profit opportunities through users' payment information. Given the possible effect that CBDC introduction will have on private business operators' business models, dialogue among relevant authorities and related private parties should be deepened.

(3) Security and user data

(i) Ensuring security

CBDC should always be available as a means of payment for users. To this end, all appropriate and effective measures for cybersecurity and information security should be in place for ensuring resilience to cyberattacks, preventing illicit use, and protecting personal data in an appropriate manner. Future technological developments should be considered as technologies in relation to information and communication and those securing privacy are constantly evolving.

To ensure security, all the stakeholders including the BOJ, intermediaries, private businesses, and users (including interfaces they use) should take

[26] In the hearing from the Japanese Bankers Association (JBA), they explained that the "COTRA Remittance Service" was launched in October 2022, which achieved free person-to-person remittances with a smartphone app.

[27] In the United Kingdom, CBDC is viewed as having a potential to serve as a 'bridging' asset between private digital money.

respective measures. Given that there are various security risks, not to mention cyberattacks, robustness and redundancy should be ensured in the payment system as a whole.

To prevent system failures and incidents, *ex-ante* security measures should be ensured, based on lessons learnt from the past experience. Furthermore, *ex post* measures should also be prepared because payment infrastructure serves as the foundation for daily economic transactions. Therefore, a business continuity plan (BCP) should be established in advance. It is important to enhance its effectiveness through drills and build capacity for early recovery.

(ii) Handling user and transaction data

As CBDC is a digital payment means, its design should put priority on ensuring privacy from the perspective of protection of personal data. The design should be considered in accordance with the concept of "privacy by design," in which personal information protection measures should be incorporated from the outset of design phase.

In doing so, the possible design should strike a balance between improving convenience, including the provision of add-on services through leveraging user and transaction data, and addressing the requirements from the public policy objectives such as AML/CFT. User and transaction data may be used in an appropriate manner that serves public interests.

From this point of view, as with the other payment services, intermediaries (including other private businesses if they are allowed to enter the CBDC market for add-on services, the same applies hereinafter in 3.(3)(ii)) should appropriately obtain, use, hold, and manage information regarding users and their transactions in accordance with relevant laws and regulations, such as the Act on the Protection of Personal Information, which requires, for example, to identify data use purposes in advance and to delete such data when no longer needed.[28]

[28] With regard to handling of user and transaction data by intermediaries, a member said that multiple intermediaries might jointly hold and manage such data in pursuit of economic rationality while paying attention to their data management.

As intermediaries are assumed to handle most user and transaction data, the scope of such data that they can access to should be analyzed further. In this respect, the range of data collected and used in relation to CBDC may not exceed that of existing bank deposits and digital payment services. Moreover, the purposes for those intermediaries to use data should be acceptable from the public's viewpoint and the use of data should not cause a disadvantage to those users.

Furthermore, leveraging data by intermediaries should be explored further, while taking into account the facts that their appetite for using user and transaction data may vary by their business models, and that even anonymized information can still be valuable for some specific purposes.[29]

As the BOJ would issue CBDC exclusively as its own liability, it would need to manage CBDC arrangements (ledgers, etc.) to accurately record and verify CBDC transactions. To this end, the BOJ should minimize the scope of user and transaction data it would handle.

For example, CBDC should be designed for the BOJ to obtain and hold as minimum data on individual users and transactions as possible.[30] In addition, even if personal data is obtained and held, the BOJ is expected to take measures such as anonymization, or should hold such data only during periods when it is required and delete it immediately when it is no longer needed.

As with the current framework, the principle is for the government to receive user and transaction data as required for AML/CFT and other public policy objectives, while it does not receive them on a regular basis. In doing so, the government should clarify in advance the purposes of data use and the scope of data from the perspective of addressing public concerns about privacy.

With regard to harmonizing privacy protection with public policy objectives, for instance, it should strike a balance between ensuring privacy and adopting

[29] A member said that it would be necessary for private businesses to secure opportunities for making profits through the use of data. Another member said that such data might be leveraged for the society as a whole.
[30] A member said that even if the BOJ does not obtain or hold information, it would be possible to meet public policy requirements if intermediaries could identify users.

measures countering illicit activities such as AML/CFT. From the viewpoint of counter-measures against illicit activities, CBDC users should be subject to identity verification process, as is the case with existing payment services.[31]

For ensuring privacy, for example, the extent of KYC procedures can be based on the level of transaction limits.[32] It should be considered further, while assessing future developments in the international community.

As for the CBDC access by non-residents such as foreign tourists in Japan, consideration should be made by taking into account the fact that identity verification for foreign tourists is difficult while they have already been able to easily use other payment services, such as credit cards. The primary scope of CBDC users, for the time being, would be residents in Japan, while access by non-residents is set aside for future consideration from the perspective of promoting inbound foreign tourists.[33]

(4) Other issues

(i) Legal consideration

Cash (banknotes and coins) is stipulated as legal tender under the Bank of Japan Act and the Currency Act. In the currency legal framework, CBDC should be legal tender founded by the law to be convertible with cash and accepted widely as a means of payment.

Even when currency is designated as legal tender, other payment services can be chosen for transactions when agreed between payers and payees. In some cases, stores may not accept CBDC; therefore, measures to promote

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[31] A member said that the joint use and sophistication of existing AML/CFT measures could be considered to reduce intermediaries' investment burden. In a hearing with the Japanese Bankers Association (JBA), the JBA explained that it plans to establish a joint anti-money laundering organization for enhancing and sharing the AML/CFT operations between financial institutions and to provide an "AI scoring service" that would assign scores which show possibility for being categorized as suspicious transactions or transactions to be rejected.

[32] A member said that privacy could be relatively prioritized on condition that transaction sizes are restricted assuming that CBDC will be mainly for small retail payments. In addition, another member said that it would be possible to create a simple arrangement because differences between existing arrangements and CBDC one may impose some burden on intermediaries. Another member said that this issue should be discussed based on opinions of related private parties.

[33] The United Kingdom presents the idea that non-residents could have access to CBDC. In Europe, however, it is envisaged that only euro area residents may have access to CBDC at the initial release, and access for non-resident euro area citizens could be part of the subsequent release.

the wider public acceptance of CBDC should be considered.[34]

The CBDC introduction is expected to have various effects on the current legal framework in addition to its definition in the currency framework. These include how intermediaries should be regulated including the protection of personal data, how civil laws address the ownership and transfer of CBDC as intangible asset, and how criminal laws prevent the unauthorized use of CBDC. Therefore, the assessments on laws and regulations should be conducted in cooperation with relevant government ministries as elaboration of CBDC design progresses. In this respect, it is crucial that the three aspects of CBDC discussions (i.e. the design-related, legal and technological ones) should be well orchestrated.

(ii) Cost allocation

As the design of CBDC becomes more elaborated in the future after articulating the Design Outline of CBDC, a decision on whether or not to introduce CBDC would be made, following discussions with the public. When making such a decision, the overview of the costs for the CBDC, including the development and operation of the infrastructure system, should be presented in addition to clarifying the purposes and goals of the CBDC.

In the overview, not only the volume of the costs but also the way in which the costs are allocated should be assessed in the future. Possible approaches could be that various beneficiaries within the overall CBDC ecosystem to bear its costs and that the public sector to bear the costs for providing the public infrastructure.[35]

In any case, it is necessary to consider how the costs should be distributed from a wide range of perspectives, such as determining who will benefit from the use of CBDC and how to ensure an environment for fair competition for payment services, as the Design Outline of CBDC becomes more concrete.

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[34] A member said that the promoting the acceptability of CBDC in stores should be explored, with future technological developments taken into account. Another member said that the digital divide among users, including micro-businesses, should be addressed. In Europe, there is an idea for setting safeguard measures to prevent intermediaries from charging excessive fees to merchants assuming that CBDC is legal tender.

[35] With regard to public sector's costs, it should be noted that even if the BOJ bears any costs, the public will ultimately bear the costs even though it is hard for the public to recognize.

(iii) Cross-border payments

International organizations, such as the Financial Stability Board (FSB) and the BIS, have been taking initiatives to address global challenges for cross-border payments. Those initiatives aim to make such payments faster, cheaper, and more transparent.[36]

Wholesale CBDC is seen as one of the possible options to address these issues. However, given that it will require much time to introduce CBDC by jurisdictions, as the first step, promoting international cooperation in terms of technological standardization for ensuring interoperability among CBDCs should be considered.

In this regard, the BOJ has been actively participating in and contributing to international discussions on technological standardization. The Expert Panel expects the BOJ to continue its efforts.

It should be noted that achieving interoperability among CBDC or other payment systems alone does not entirely solve the challenges associated with cross-border payments. Those payments not only entail exchanges between national currencies but also impose operational requirements on financial institutions since AML/CFT and other regulatory standards differ from country to country.[37]

In improving cross-border payments, therefore, future consideration should aim at ensuring the interoperability among CBDC and payment systems in each jurisdiction. Moreover, consideration should be given to addressing other issues, such as harmonization of regulations and legal systems among countries.[38]

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[36] In order to improve cross-border payments, the BIS and central banks in each jurisdiction are conducting technical experiments on wholesale CBDC. In addition, initiatives for connecting instant payment systems are progressing mainly among Asian countries.

[37] The United Kingdom also indicated that CBDC would not themselves alleviate frictions caused by different AML/CFT standards between jurisdictions. In the United States, it is reported that there are issues regarding the compatibility of governance and regulations between various jurisdictions.

[38] A member said that it was necessary to take into account the fact that there had been no progress in the private sector on the cross-border payment issues. Another said that there were also issues related to cross-border data transfer under personal information protection systems.

4. Conclusion

As currency is the foundation of daily economic transactions, the currency framework has a large impact on the people's daily lives. Accordingly, the future of the currency framework should be explored further while incorporating broader perspectives.

Furthermore, developments in large economies, such as Europe and the United States, as well as other regions, including Asia with which Japan has close economic relationships, should be carefully analyzed. Meanwhile, technological progress will continue at a rapid pace.

Given the situation above, the Expert Panel asks the Ministry of Finance, in coordination with other relevant ministries and the BOJ, to articulate the Design Outline of CBDC. Further elaboration and updates should be made while assessing the developments in other jurisdictions and future technological advances. This preparation will help Japan introduce CBDC in the future without delay if the decision were made after discussions with the Japanese public.

It is essential to address the public using a simple and concrete language about how CBDC could overcome social challenges in the digital era and how security and privacy would be ensured. In addition, continued discussions based on opinions from a wide range of stakeholders, including related private entities, will play an important role in building a sound ecosystem for CBDC.

The Expert Panel expects that the government and the BOJ will continue to closely cooperate each other in proceeding with their consideration of CBDC, bearing in mind that trust and confidence in the nation underpin the foundation of its currency.

(References)

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Note: ◎ indicates the chairperson, ○ indicates the deputy chairperson.
(Honorifics omitted, in order of Japanese syllabary)

(Observers)
Bank of Japan, Financial Services Agency

(Secretariat)
Ministry of Finance (Treasury Division, Financial Bureau)

2. Meetings

1st meeting: April 21, 2023
- Situation of currency and payments in Japan (explained by the MOF)
- BOJ approach on CBDCs (by the BOJ)

2nd meeting: May 24
- Recent payment system developments (by the Financial Services Agency)
- CBDC's roles in a digital society (by Mr. Kobayakawa)

3rd meeting: June 16
- Initiatives to sophisticate domestic payment infrastructure (by the Japanese Bankers Association)
- Situation and mechanism at payment services companies (payment services providers, prepaid payment instrument issuers) and initiatives for user convenience (by the Japan Payment Services Association)
- Fintech and cashless trends (by the Fintech Association of Japan)
- Future vision of the currency system and the potential of private digital currencies (by the Digital Currency Forum)

4th meeting: September 5
- Discussion (i) (vertical coexistence)

5th meeting: September 26
- Discussion (ii) (horizontal coexistence)

6th meeting: October 13
- Discussion (iii) (ensuring security and handling of user information, etc.)

7th meeting: November 22
- Discussion for report

8th meeting: December 13
- Completion of report