Bank of Japan Review 2025-E-9

Circulation Status of the New Series of Bank of Japan Notes

Currency Issue Department

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The Bank of Japan introduced a new series of Bank of Japan notes on July 3, 2024. The transition to the new Bank of Japan notes has progressed steadily. Recently, however, as illustrated by the advancement of cashless payments, the environment surrounding cash has changed significantly, and the ratio of the new Bank of Japan notes to the total volume of banknotes in circulation has remained at a low level compared with when the Bank of Japan notes were renewed in 2004. This is thought to be due to (1) the increase in banknotes in circulation; (2) the decrease in receipts and payments of banknotes between financial institutions and the Bank; and (3) the difference in the scale of demand for the new Bank of Japan notes, reflecting differences in social conditions. The Bank of Japan will continue to make every effort to ensure the smooth circulation of the new Bank of Japan notes.

Introduction

The Bank of Japan introduced a new series of Bank of Japan notes (hereinafter referred to as "the new banknotes") on July 3, 2024.

The transition to the new banknotes has progressed steadily with the cooperation of many stakeholders, including financial institutions, cash-in-transit (CIT) companies, and retailers.

Recently, however, as illustrated by the advancement of cashless payments, the environment surrounding cash has changed significantly, and the pace of the transition to the new banknotes has differed from when the Bank of Japan notes were renewed on November 1, 2004.[1]

This paper reviews the circulation status of the new banknotes following their introduction and the change in environment surrounding banknotes.

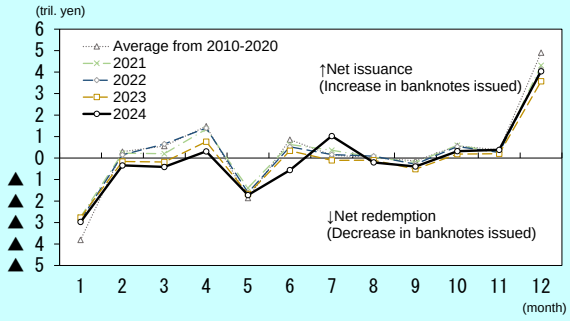
Receipts and Payments of Banknotes in 2024

In 2024, developments in receipts and payments of banknotes between financial institutions and the Bank varied from previous years, which demonstrates the impact that the introduction of the new banknotes had on banknote demand.

Banknotes are redeemed when financial institutions deposit banknotes received from customers into their current accounts at the Bank, and they are issued when financial institutions withdraw banknotes to be paid out to customers from their current accounts at the Bank.

After the turn of 2024, the receipts/payments of banknotes shifted more than usual toward net redemptions. In June, the balance fell into net redemptions, as opposed to net issuance in the corresponding month in previous years. In July, the receipts/payments of banknotes turned significantly to net issuance. This implies that financial institutions had anticipated high demand for new banknotes and had prepared by gradually reducing banknote withdrawals from the Bank ahead of July 3rd (the date of first issuance of the new banknotes) and by meeting customer needs with banknotes they had on hand (Chart 1).

[Chart 1] Monthly Comparison of Receipts and Payments of Banknotes



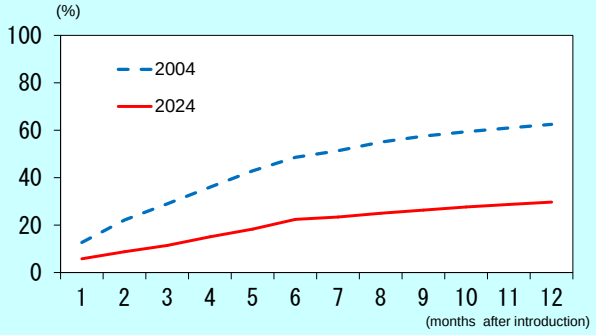
Source: Bank of Japan.

Transition to the New Banknotes

As of the end of June 2025, about 5 billion of the new banknotes had been issued by the Bank, which accounts for about 30 percent of the total volume of banknotes in circulation.[2,3] This suggests that the transition to the new banknotes has progressed steadily.

The penetration rate of the new banknotes, that is, the ratio of the new banknotes to the total volume of banknotes in circulation (Chart 2), has remained at a low level compared with when the Bank of Japan notes were renewed in 2004. This can be attributed to the following factors: (1) the increase in banknotes in circulation; (2) the decrease in receipts and payments of banknotes between financial institutions and the Bank; and (3) the difference in circumstances -- in particular, that there was extremely strong demand for new banknotes when Bank of Japan notes were renewed in 2004, reflecting a rapid increase in counterfeit banknotes, which had become a social problem, whereas such circumstances were not observed in 2024. These three factors will be elaborated below.

[Chart 2] Penetration Rate of New Banknotes



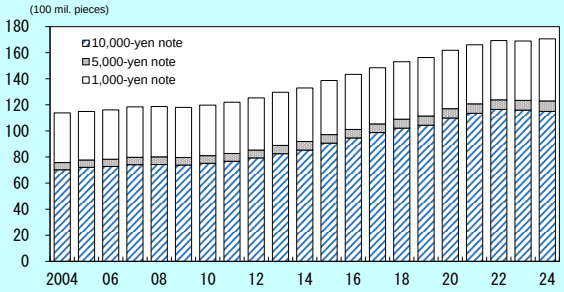
Source: Bank of Japan.

Note: The horizontal axis shows the number of months passed after the introduction of new banknotes (data is at month-end and begins in the month when new banknotes were first issued). "2004" points to when the Bank of Japan notes were renewed on November 1, 2004.

Increase in Banknotes in Circulation

First, looking at the change in the volume of banknotes in circulation since the Bank of Japan notes were renewed in 2004, we see that it has increased by about 6 billion (Chart 3). The volume of banknotes in circulation is used as the denominator when calculating the penetration rate of new banknotes, and its increase is likely to be one of the reasons why the penetration rate of the new banknotes has remained at a low level compared with when the Bank of Japan notes were renewed in 2004.

[Chart 3] Banknotes in Circulation



Source: Bank of Japan.

Note: Data at year-end.

We generally experience fewer opportunities to pay in cash when cashless payments become widespread (as discussed below), and yet the volume of banknotes in circulation has increased. This contradiction has been observed not only in Japan but also in the United States and the euro area, and is widely referred to as the "paradox of banknotes."[4] This phenomenon is explained by (1) the prolonged low interest rate environment, which has reduced the opportunity cost of holding cash; (2) the rise in precautionary demand for banknotes to be held on hand in anticipation of future uncertainties; and (3) structural factors, such as demographic composition.[5]

When calculating the volume of banknotes in circulation by denomination, a notable increase was observed in 10,000-yen notes. Specifically, the volume of banknotes increased from 7 billion at the end of 2004 to 11.5 billion at the end of 2024. This suggests that the total volume of banknotes in circulation was pushed up by high-denomination notes, and not by low-denomination notes such as the 1,000-yen note.[6] While, in general, low-denomination notes are held primarily for use in transactions of goods and services, high-denomination notes tend to be held not only for transactions but also for store of value purposes. A disproportionate increase in high-denomination notes suggests that a larger volume of notes was held for non-transactional purposes, which includes savings "kept under the mattress."

Estimation of non-transaction demand

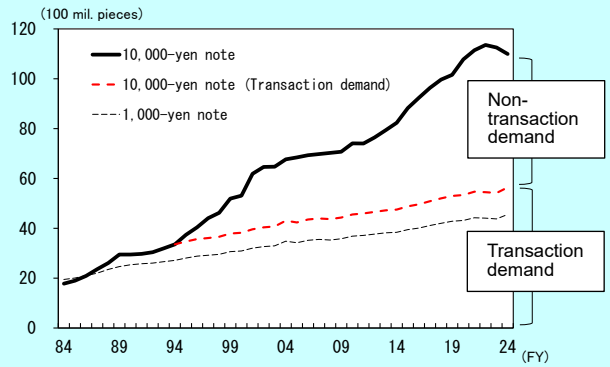
Whereas banknotes held for transactional purposes (hereinafter referred to as "transaction demand") are used by the public and returned to the Bank through financial institutions, banknotes held for non-transactional purposes (hereinafter referred to as "non-transaction demand") are seldom used by the public and

returned to the Bank. This being the case, it is probable that the transition to new banknotes would be sluggish as per non-transaction demand.

To what extent, then, does non-transaction demand account for banknotes in circulation? There is no way to identify the motives for holding banknotes which provide a high degree of anonymity and whose holders are unknown, and there is no established method to estimate non-transaction demand. Nevertheless, we adopted two approaches based on past trends to make a rough estimate of the scale of non-transaction demand.[7]

In the first approach, we focus on the fact that the volume of low-denomination notes in circulation is influenced predominantly by transaction demand, while the volume of high-denomination notes in circulation is influenced both by transaction and non-transaction demand. To elaborate, we assume that the growth in transaction demand for 10,000-yen and 1,000-yen notes is equal; and we calculate the difference between the rate of increase in the volume of 10,000-yen and 1,000-yen notes, based on the assumption that this captures the growth in non-transaction demand (Chart 4). A review of the figures shows that, until the first half of the1990s, the rate of increase in the volume of 10,000-yen and 1,000-yen notes in circulation followed a similar trend; but since the latter half of the 1990s, the rate of increase in the volume of 10,000-yen notes has widely exceeded that of 1,000 yen-notes. Thus, non-transaction demand for 10,000-yen notes is estimated from 1995 onwards.[8]

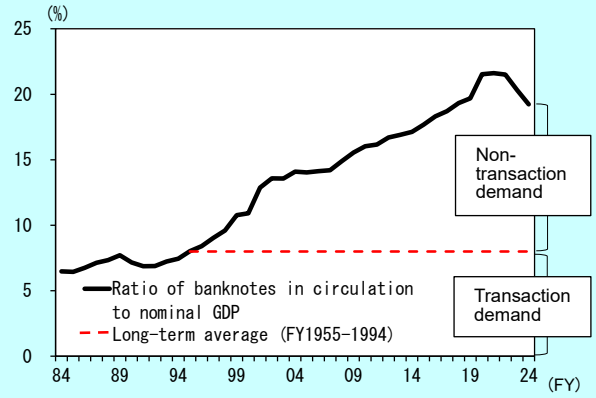
[Chart 4] Estimation Based on Banknote Data by Denomination



Source: Bank of Japan.

In the second approach, we assume that the ratio of transaction demand (on a value basis) to nominal GDP is fixed and that any values that exceed this threshold are non-transaction demand (Chart 5). This shows that the ratio of banknotes in circulation to nominal GDP remained stable at around 8 percent from 1955 to the first half of the 1990s but started to rise gradually from the mid-1990s. Thus, non-transaction demand is estimated from 1995 onwards.[9]

[Chart 5] Estimation Based on GDP Data



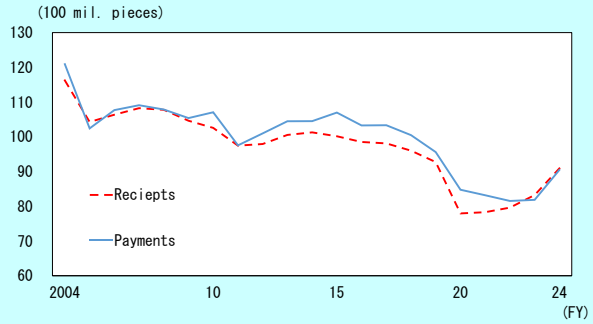
Source: Estimated by the Bank of Japan, based on GDP data released by the Cabinet Office.

The results indicate that non-transaction demand has been on an increasing trend and could possibly account for up to about half of the banknotes in circulation. However, the results produced by the two approaches are rough estimates based on certain assumptions, and they should be viewed with some latitude. In addition, banknotes in circulation include those which have been destroyed by fire or for other reasons and those taken abroad. It should thus be noted that the estimated non-transaction demand is not equivalent to savings " kept under the mattress."

Decrease in Receipts and Payments of Banknotes

Moving on to the second factor, the receipts and payments of banknotes between financial institutions and the Bank has been trending downward (Chart 6). This implies that, while the "stock" of banknotes to be switched over to the new banknotes has increased, the "flow" of banknotes, which underpins the switch to the new banknotes, has decreased. This has contributed to the overall moderate pace of the transition to the new banknotes.

[Chart 6] Receipts and Payments of Banknotes between Financial Institutions and the Bank



Source: Bank of Japan.

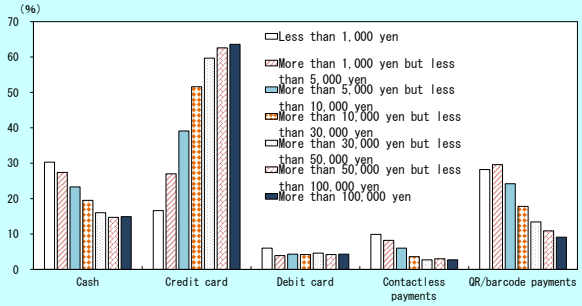
Recycling of banknotes by financial institutions

The decrease in receipts and payments of banknotes between financial institutions and the Bank is attributable not only to economic activity at the time but also to several structural factors. One example is the change in financial institutions' cash handling behavior. In the past, it was common for financial institutions to frequently deposit banknotes received from customers into their current accounts at the Bank and withdraw the banknotes needed for payouts to customers from those accounts. However, in an effort to maintain the balance between the opportunity cost of holding cash and transportation costs to and from the Bank, an increasing number of financial institutions have started to directly use a portion of the banknotes received from customers for payouts to customers. At the same time, many financial institutions have adopted recirculating ATMs (which use banknotes received from customers for payouts to customers) to reduce the frequency of cash lodgments. This trend of "banknote recycling" could be one factor behind the decrease in receipts and payments of banknotes between financial institutions and the Bank.

Advancement of cashless payments

Though quantitative evidence is limited, there is also a possibility that the advancement of cashless payments has affected the demand for banknotes, which, in turn, could have caused the decrease in receipts and payments of banknotes between financial institutions and the Bank. Although until recently, cashless payment instruments were used primarily for large-value settlements and cash for small-value settlements, payment habits have changed in that cashless payment instruments have become increasingly preferred even for small-value settlements (Chart 7).

[Chart 7] Payment Instrument Used by Settlement Range

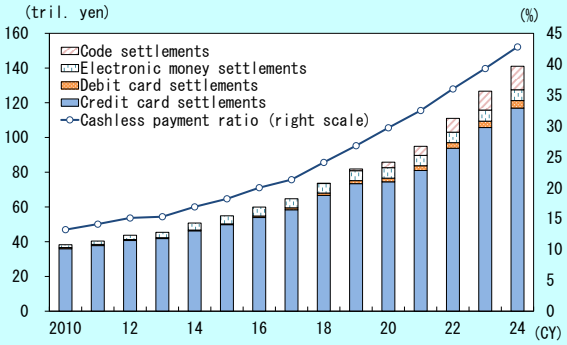


Source: Ministry of Finance.

Note: Aggregated response to the question "On the premise that all payment instruments indicated below are usable, which would you use for your daily shopping, payments at restaurants, etc.? Please choose all that apply for each of the settlement range provided" (multiple answers allowed) (*excluding fees paid for public transportation).

The cashless payment ratio in Japan has increased gradually. Recently in particular, code-based payments have become more widespread in terms of small-value settlements (Chart 8). In addition, the environment for using code-based payments has been enhanced. For example, the Japanese government authorized the use of "digital salary payments" on April 1, 2023, which under certain conditions offers the option to pay salaries to accounts held at funds transfer service providers.[10]

[Chart 8] Cashless Payment Ratio



Source: Ministry of Economy, Trade and Industry.

Note: The Ministry of Economy, Trade and Industry refers to the "National Accounts of Japan (SNA)" compiled by the Cabinet Office to use the private consumption data (nominal values) as the denominator when calculating the cashless payment ratio.

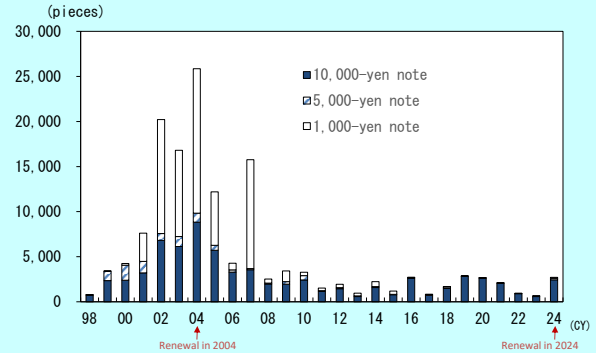
Nevertheless, it should be noted that the increase in the cashless payment ratio does not necessarily result

in a concurrent decrease in cash usage. For example, research indicates that some people use cash to add money to (or charge) cashless payment instruments.[11] It is necessary to continue to monitor carefully how the advancement of cashless payments is affecting the demand for banknotes and banknotes in circulation in Japan.

Difference in Demand for New Banknotes

Lastly, the third factor: there was strong demand for new banknotes when the Bank of Japan notes were renewed in 2004 because the rapid increase in counterfeit banknotes had become a social problem. For this reason, the Bank ordered an unprecedented volume of banknotes to be printed by the National Printing Bureau, which created an environment that was more conducive to the transition to new banknotes (Chart 9). This was not the situation when the new banknotes were introduced in 2024, and there has been no urgent need to switch from the old banknotes to the new banknotes. This could also be one reason why the penetration rate of the new banknotes has remained low compared with when the Bank of Japan notes were renewed in 2004.

[Chart 9] Counterfeit Banknotes Discovered



Source: National Police Agency.

That said, there has recently been a slight increase in the number of counterfeit banknotes discovered, the majority of which are old banknotes introduced before November 1, 2004. This may be because the introduction of the new banknotes in part stimulated the exchange of old banknotes for the new banknotes, which resulted in the discovery of more counterfeit old banknotes.

Toward a Stable Supply of Banknotes

The ratio of banknotes in circulation to nominal GDP in Japan is higher than in other countries,[12] and cash is expected to continue to be used for settlements in a variety of circumstances. This is owing to the fact that (1) there is relatively good cash access, (2) cash can be used in most face-to-face payments, and (3) the number of counterfeit banknotes discovered in Japan is lower than in other countries.[13] This is supported by the cooperation of many stakeholders, including not only the Bank and relevant authorities but also private financial institutions, CIT companies, and retailers.

As such, cash, including banknotes, is a secure payment instrument that can be used by anyone, anywhere, and is expected to continue to play a major role even if cashless payments become more widespread. However, it goes without saying that this cannot be achieved without maintaining a safe and efficient cash supply system and distribution network.

When faced with a deterioration of their cash infrastructure, central banks and other authorities have worked to maintain and strengthen this infrastructure. This demonstrates the importance of cash and the need for cooperation among a wide range of stakeholders to make cash infrastructure sustainable (see Box, below).

At present, Japan's cash infrastructure appears to be functioning properly. As long as there is demand for cash, the Bank will take responsibility for the maintenance of a safe and efficient cash supply system.

Concluding Remarks

This paper examines the circulation status of the new banknotes that were introduced on July 3, 2024, taking into account recent changes in the environment surrounding banknotes.

The pace of the transition to the new banknotes has been moderate compared with when the Bank of Japan notes were renewed in 2004, due to factors such as the increase in banknotes in circulation, the decrease in receipts and payments of banknotes between financial institutions and the Bank, and the difference in the scale of demand for the new banknotes. However, for banknotes that are actually in circulation, excluding non-transaction demand, the transition to the new banknotes has proceeded smoothly.

The Bank will continue to work with relevant stakeholders to ensure the smooth circulation of the new banknotes.

[Box] Initiatives to Address Deterioration in Cash Infrastructure

Country	Examples
United Kingdom	Based on legislation passed in 2023, the HM Treasury set a geographic proximity standard for cash sources such as ATMs, and the Financial Conduct Authority was designated as a supervisory authority to monitor compliance with the standard. Further, the Bank of England was given powers to oversee stakeholders involved in wholesale cash distribution (e.g., major financial institutions, CIT companies).
Germany	In 2024, the Deutsche Bundesbank, along with financial institutions, CIT companies, retailer associations, consumer associations, and vending machine operators, established the National Cash Forum, which is currently working to prepare recommendations for ensuring the sustainability of cash usage.
Netherlands	In 2022, stakeholders involved in cash distribution including the De Nederlandsche Bank (DNB) and CIT companies signed a covenant to ensure that cash continues to function properly. The Ministry of Finance has since then started to prepare legislation that provides the DNB with power to safeguard the availability of ATMs and the continuity of CIT services.
Sweden	In an effort to enhance cash access, the Sveriges Riksbank Act was amended in 2023 to mandate the Sveriges Riksbank to enhance its cash management offices by early 2026.
Switzerland	In 2023, the Swiss National Bank and the Federal Finance Administration co-hosted a roundtable on cash supply. Participants included financial institutions, CIT companies, retailers, and service providers. In addition to discussion on cash-related issues, a mutual understanding was reached that cash is needed in the continuous future. In 2023, the Swiss National Bank established the expert group on access to cash. Participants include financial institutions, etc. The group is currently working to propose solutions to ensure access to cash.
Australia	In 2024, the Reserve Bank of Australia facilitated financial assistance by major banks to a CIT company that had become the sole provider of CIT services through past mergers.

Source: Created by the Bank of Japan based on information disclosed in each country.

[1] For more information on the circulation status of new banknotes when Bank of Japan notes were renewed in 2004, see Currency Issue Department, Bank of Japan, "Atarashii nippon-ginkō ken no fukyū jyōkyō -- Kaisatsu kara 1 nen wo hete" [Penetration Status of the New Series of Bank of Japan Notes: One Year After its Introduction] (November, 11, 2005).

[2] As of end-June 2025, the penetration rate of the new 10,000-yen note was around 20 percent and that of the new 5,000-yen and 1,000-yen notes around 40 percent. Alejandro Zamora-Pérez (2021) "The Paradox of Banknotes: Understanding the Demand for Cash beyond Transactional Use," ECB Economic Bulletin, Issue 2/2021, indicates that, as of November 2020, the penetration rate of 5-euro notes (in the Europa series), which are primarily held for transactional purposes, was around 90 percent, while that of 50-euro notes, which are held for both transactional and non-transactional purposes, was around 70 percent. The penetration rates of high-denomination notes tended to be subdued, and this trend is common to Japan and Europe.

[3] "Banknotes in circulation" in this paper refers to 10,000-yen, 5,000-yen, and 1,000-yen notes in circulation, which corresponds to the denominations of the new banknotes.

[4] See Zamora-Pérez, "The Paradox of Banknotes: Understanding the Demand for Cash beyond Transactional Use," and Andrew Bailey (2009),"Banknotes in Circulation: Still Rising: What Does This Mean for the Future of Cash?" These two reports are further explained by Yoshizawa, K., Maebashi, K., Yanagihara, H., Kadokawa, Y., and Inada, M. (2021), "Developments in Banknotes in Circulation since the Start of the Pandemic" (Bank of Japan Review Series, 2021-E-6, 2021).

[5] See Footnote 4 above.

[6] The disproportionate increase in the volume of high-denomination notes has also been observed in other countries. See, for example, Gordon Flannigan and Stephanie Parsons (2018), "High-denomination Banknotes in Circulation: A Cross-country Analysis," Bulletin March 2018, Reserve Bank of Australia.

[7] See Otani, S. and Suzuki, T. (2008), "Background to the High Level of Banknotes in Circulation and Demand Deposits" (Bank of Japan Review Series, 2008-E-5, 2008), which attempts to estimate non-transaction demand by employing an approach based on banknote data by denomination and that based on seasonal variations in circulating banknotes.

[8] Specifically, we assume that, in 1994, the 10,000-yen notes in circulation consisted entirely of transaction demand. However, from 1995, we calculate the transaction demand for 10,000-yen notes based on the assumption that the year-on-year rate of increase in transaction demand for 10,000-yen notes is equal to that in the 1,000-yen notes in circulation. We then estimate the

non-transaction demand for 10,000-yen notes by subtracting the transaction demand from the 10,000-yen notes in circulation.

[9] In the second approach, we calculate the ratio of banknotes in circulation to nominal GDP from 1995 onward, which coincides with the estimation period for the first approach; and regard all values above the threshold of 8 percent (which is the long-term average from fiscal 1955 to 1994) as non-transaction demand.

[10] As of April 4, 2025, there are four funds transfer service providers designated by the Minister of Health, Labour and Welfare that are permitted to provide digital salary payments.

[11] See Japan Payment Service Association, "Dai nijyū rokkai hakkō jigyō jittai chōsa tōkei (Reiwa 5 nendo ban)" [The 26th Statistical Survey regarding Businesses that Issue Prepaid Payment Instruments (For Fiscal Year 2023)] and Japan Fair Trade Commission, "QR-kōdo nado wo mochiita kyasshuresu-kessai ni kansuru jittai chōsa hōkokusho" [Report on Cashless Payments Using QR Codes, etc.] for information on how money is added to prepaid payment instruments and accounts used to make QR code payments. For example, according to the Japan Fair Trade Commission, 14.9 percent of consumers chose cash to add money to accounts used to make code-based payments (an aggregated response to the question regarding the chosen method for adding money to an account used to make the most frequently used code-based payment; multiple answers were allowed).

[12] See Payment and Settlement Systems Department, Bank of Japan, "BIS kessai tōkei kara mita nihon no riteiru/ōguchi shikin kessai sisutemu no tokuchō" [Characteristics of Japan's Retail/Large-funds Settlement System as Observed from the BIS Red Book Payments Statistics], Payment and Settlement Systems Report Annex Series, February 2017.

[13] See Ministry of Finance, "Wagakuni no tsūka to kessai wo meguru genjyō" [Current State of Currency and Settlements in Japan], explanatory material provided by the secretariat for the Expert Panel on CBDC, April 2023.

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