PAYMENT SYSTEMS IN JAPAN

Japanese Bankers Association
May 2012

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This booklet intends to illustrate a comprehensive overview of settlement and payment facilities/ mechanism in Japan with a specific focus on those operated by the Japanese Bankers Association (JBA).

Since this booklet is broad in scope and covers mainly overview, it should be referred to in combination with other materials, which may delve into more detail concerning individual payment systems and other facilities. A select list of these materials is presented on the last page of this booklet.

On April 1, 2011, the Tokyo Bankers Association (TBA) was transited to “the general incorporated association” and the new JBA is formed by changing name of TBA after handing over and amassing all JBA’s business to TBA.

JBA is an industry body that represents189 banks (including 47 foreign banks), 3 bank holding companies and 59 local bankers associations in Japan (as of the end of December 2011).

Edited by:
Operations Administration Department
Japanese Bankers Association
1-3-1 Marunouchi, Chiyoda-ku
Tokyo 100-8216 Japan
Tel: +81-3-5252-3750
URL: http://www.zenginkyo.or.jp/

“Zenginkyo” is an abbreviated Japanese name of JBA - Zenkoku Ginko Kyokai.

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Beginnings

Money

It is said that monetary transactions using arrowheads, rice, cloth and the like as the medium of exchange were conducted since the prehistoric *Jomon* Period (between 8000 and 300 BC) in Japan. The first minting of coins (*Wado Kaichin* coin (silver and copper), Figure 1) by the central government for the use of nationwide circulation occurred in 708. Minting by the central government was temporarily suspended between the late 10th and 16th centuries and during this period money imported from China, privately made coins and such were used. However, the minting of coins resumed under the control of the central government in 1601 with the establishment of the powerful *Tokugawa Shogunate* (*Keicho Koban* coin, Figure 1).

The present currency unit, "yen," has been in use since 1871 when the monetary units were integrated to survive chaos in monetary system during that transition period of Japan's modernization.

Banks (Financial Intermediaries)

The modern banking business of Japan is said to have originated with money exchangers in the feudalistic *Tokugawa Shogunate* (1603~1867). The money exchangers received proceeds from the sale of rice and such from merchants on deposit, lent funds to other merchants and local governments and intermediated the payment of bills between merchants. In addition, they established correspondent relationships with merchants in distant places and undertook the remittance.

With the modernization of Japan during the *Meiji* Restoration, 153 modern banks, the origin of present banks, were established in various regions between 1873~1879. The Bank of Japan, the central bank, was established in 1882. Those became the base of present banking industry.

Remittance (Remote Payments)

The oldest record of using the method of exchange remittance in Japan is found in the bond of *Kaemai* (exchange of rice) transaction issued in 1048 (*Heian* Period). This method grew mainly as a means to send tax from local regions to the central government. In the 14th century (*Muromachi* Period), exchanges began to be frequently used for reverse transactions between annual tributes in the capital paid from local regions and purchasing costs paid by merchants that visited local markets. To eliminate the delivery of public funds from Osaka to Tokyo, the government started an exchange system in 1691, which was conducted using correspondent relationships between exchangers in both cities.

As for preparation of the modern exchange system, the first clearing house for bills/checks was established in Osaka in 1879 and the basic framework for the present interbank payment, in which the net balance of the bill-clearing amount at the exchange being paid via a current account exchange of the Bank of Japan, was established in 1891.

As banks were founded throughout the country, the respective banks formed a nationwide exchange network by concluding correspondent contracts among themselves. To streamline the clerical work for this, in 1943 in the middle of World War II, the system was set up so that netting calculation of interbank transactions would be centrally conducted and the central payment system of net balances would be conducted via current account exchange of the Bank of Japan. Later in 1958, the central calculation institute was transferred from the Bank of Japan to regional bankers associations and it was fully computerized in 1973 with the inauguration of the Zengin System.

Please see the Bank of Japan's Website for details on the history of money.
http://www.imes.boj.or.jp/cm/english_htmls/index.htm

Figure 1

Wado-Kaichin coin (from 708)

Keicho Koban coin (from 1601)

Photo: Currency Museum of the Bank of Japan

1 Characteristics of Payment Systems in Japan

Some characteristic points of Japan's payment system are as follows.

Japan's payment system has been constructed around the Japanese citizens' strong preference for using cash as a means of payment (Figure 2).

1) Developed electronic payment means

Partly because of the lack of a check writing tradition among consumers, credit transfers and direct debit transfers have been used from early in the 1970s. Credit transfers are widely used, for example, to pay wages, pensions, dividends and tax refunds. Direct debiting is also a dominant instrument for regular payments by individuals such as the paying of rent, utilities, telephone bills, credit card charges, taxes, insurance premiums, mortgages, automobile loans or other installment payment plans.

2) High penetration of ATMs

Japanese banks have aggressively installed ATMs since the mid-1970s. Currently Japan has a relatively high number of ATMs on a unit basis in the world (Figure 3).

3) Expanding supply channels

Other than ATMs located in bank branches, banking services are available through ATMs outside of banks such as at retailers that are open 24 hours, through networked personal computers, via mobile phones, etc.

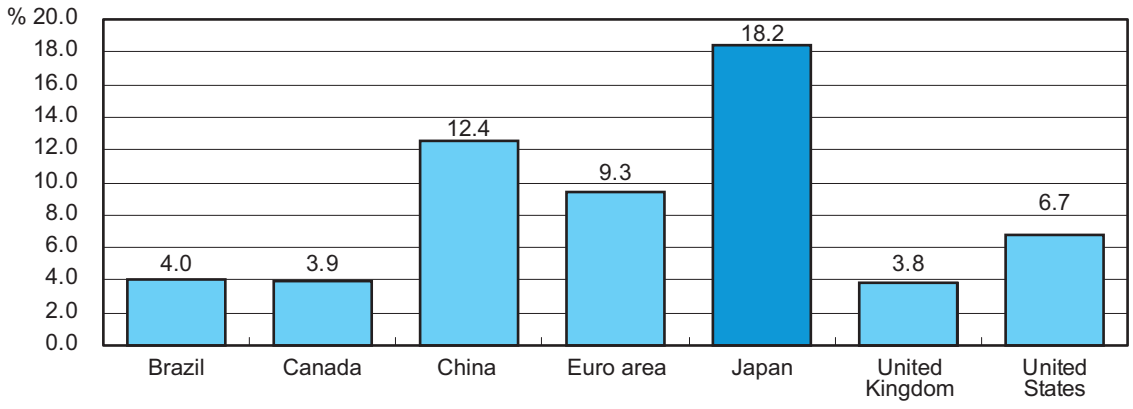
Development of industry-wide network systems

Banks broadly underwent a three-stage development of their computer networks from the middle of the 1960s to the middle of the 1990s (from 1st generation online systems to 3rd generation online systems) in order to supply these electronic services (Figure 4). It is currently the so-called "post 3rd generation systems." The post 3rd generation systems have been driven by technical evolution, whereas the former generations were promoted by the change of systems such as the financial deregulation. The network systems of each bank, such as ATMs, fund transfer and firm banking, are interconnected through a shared industry network for each financial industry sector (Appendix 2). These industry networks, which are non-profit in their nature, are also connected to each other.

Overview of payment systems in Japan

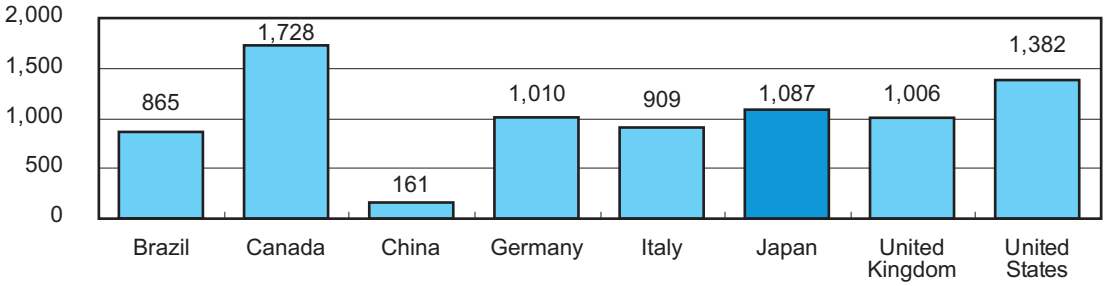
Figure 5 illustrates the overview of payment systems in Japan. Markets such as money market and trade channels such as transfers or remittances are allocated in the left side of the Figure, and the central bank's system (BOJ-NET Funds Transfer System) as the final settlement is allocated in the right side of the Figure. Several steps from an initiation of trades to the final settlement are processed and several private clearing systems such as the Zengin System are allocated in the middle of the Figure. Transaction volumes and values in 2011 of main clearing and settlement systems are indicated in the Figure. Please refer to each section of this booklet for more details of individual payment systems.

Figure 2: Notes and Coin in Circulation as Percentage of GDP (2009)



Source: BIS, Statistics on payment and settlement systems in the CPSS countries (2009)

Figure 3: Number of ATMs per Million Inhabitants (2009)

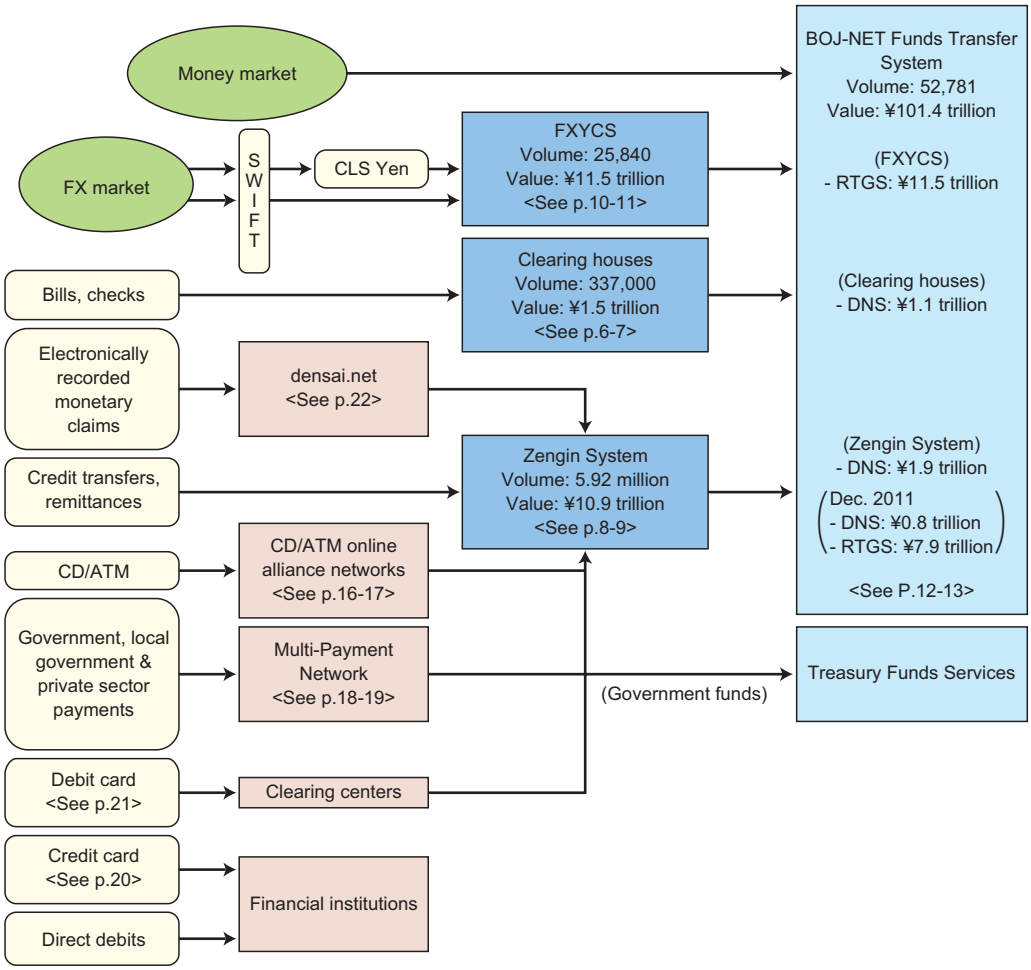


Source: BIS, Statistics on payment and settlement systems in the CPSS countries (2009)

Figure 4: Online Systems in Japan

1st generation online systems	1965-75	Online account processing systems, inter-branch network
2nd generation online systems	1975-85	Online interbank networking. Integrate customer database
3rd generation online systems	1985-95	Strengthening of international, treasury and securities system, information system, network between banks and customers
Post 3rd generation online systems	1995-present	Downsizing of CPU such as personal computer, creation of new customer channels such as Internet banking and mobile banking, outsourcing of systems, enhancement of securities (to protect personal information and for personal identification)

Figure 5: Overview of Payment Systems in Japan
(daily average, during 2011)



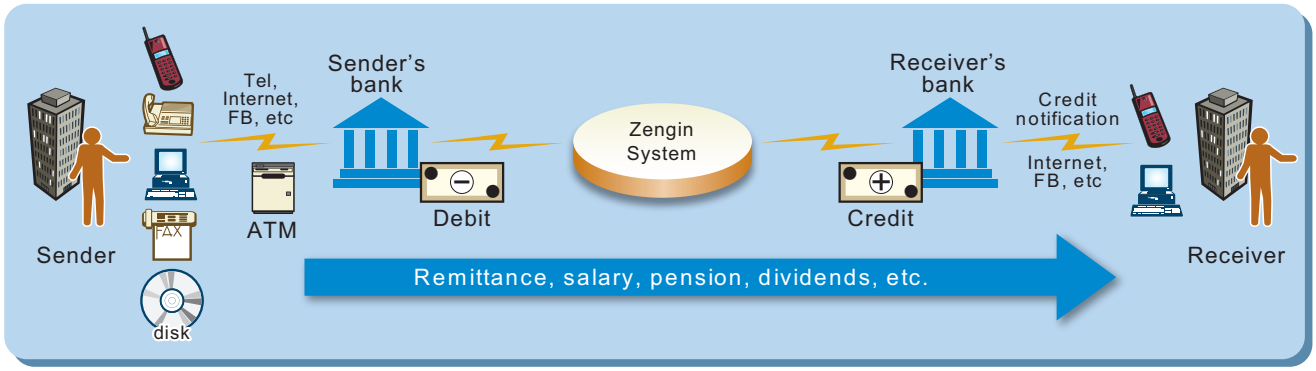
Source: JBA, Settlement Statistics (2011), BOJ, Payment and Settlement Statistics (Dec. 2011)

2 Flow of Major Retail Payment Transactions

Remittance (customer transfers)

A sender customer instructs a bank to send money to a bank account of a receiver customer. For the bank-customer interface, such as instruction of remittance or notice of deposit, firm banking services for corporate customers are available (Page 14). Internet and mobile phone channels are also available for individual customers (Page 15). Instructions are exchanged between banks through the Zengin System (Page 8).

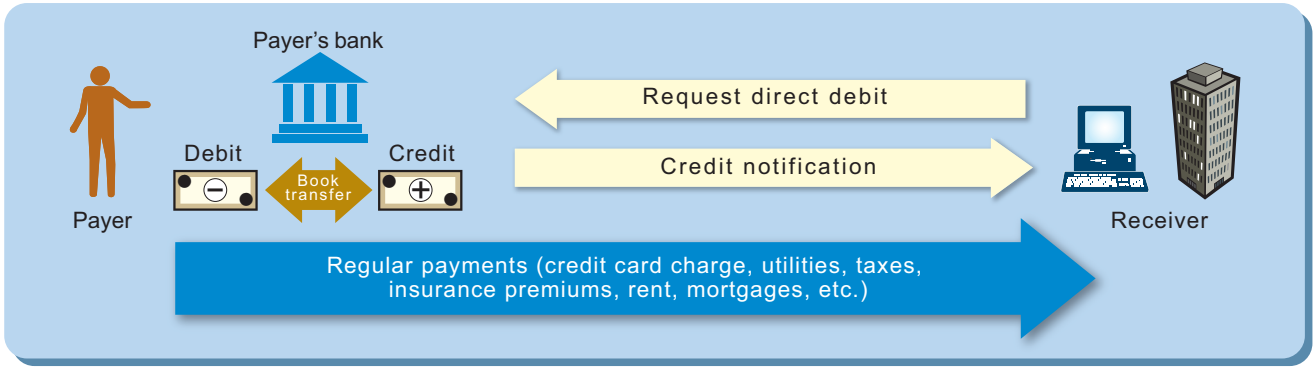
Figure 6: Remittance



Direct debit

A receiver company instructs its bank to directly debit an assigned amount from its payer's account. It is used by corporate customers for collecting regular payments (amounts vary) from their individual customers. Firm banking services (Page 14) are used to convey instructions from the receiver company to its banks. Recently, "Pay-easy services" provided by the Multi-Payment Network are also available (Page 18).

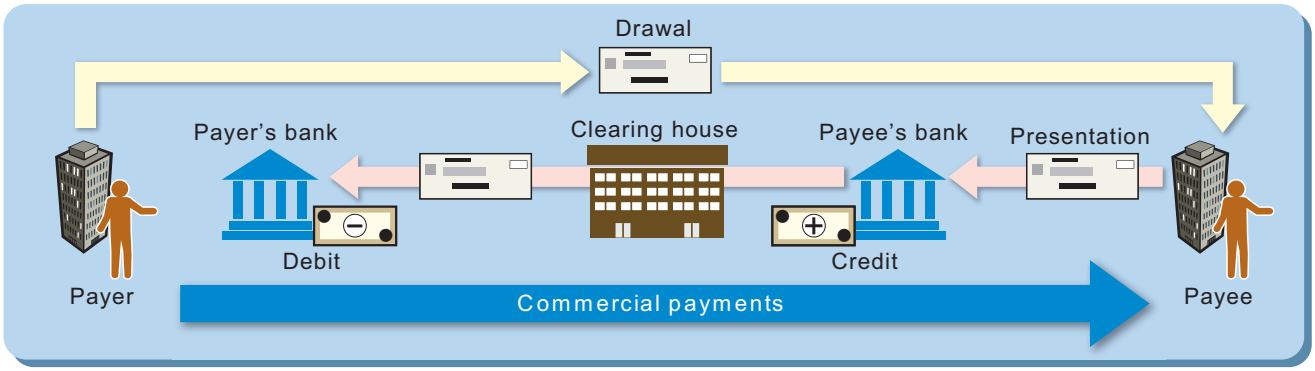
Figure 7: Direct Debit



Payment by bill/check

A payer draws checks or bills for payments. Receiver presents the received note to its bank for collection. The receiver bank collects the funds of shown amount from the payer's bank, and then deposits it to the receiver's account (Page 6).

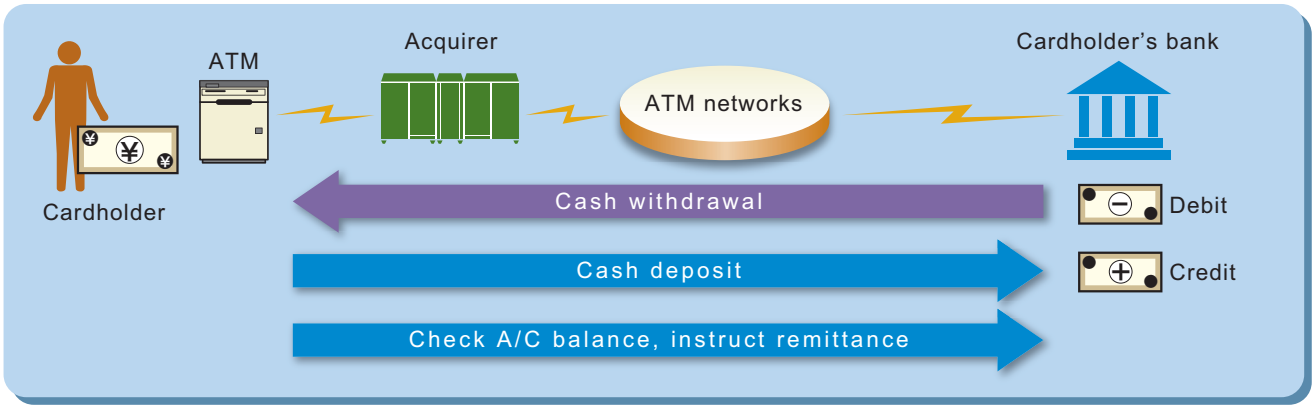
Figure 8: Payment by Bill/Check



Cash transactions through nationwide ATM network

A cardholder can withdraw/deposit cash, instruct remittance, check account balance and such through ATM machines. ATM systems of banks are interconnected by a nationwide network (Page 16).

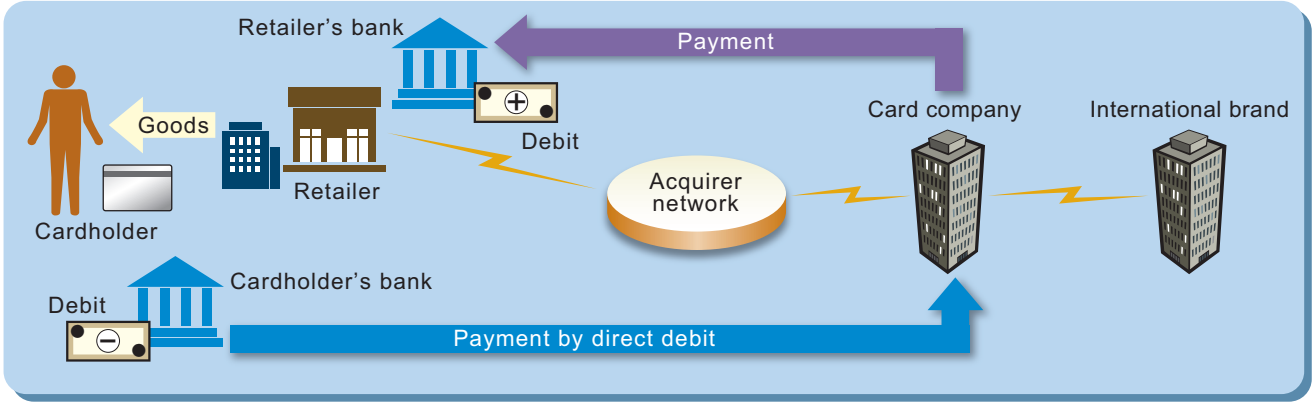
Figure 9: Cash Transactions through ATMs



Credit card transactions

A cardholder can make payments by credit card to retailers and such. The amount is collected by the credit card company through direct debit from the cardholder's bank account. Retailers and acquirers/card issuers are connected by an online network for acquiring (Page 20).

Figure 10: Credit Card Transactions



3 Bill and Check Clearing

Payment by bills and checks

In Japan, paper bills and checks are mainly used for corporate payments. Although these are important payment means, the number of transactions has been declining (Figure 11).

In addition to checks (documents in which the drawer instructs the drawer's bank to pay the amount shown to the bearer of the check instantly), bills (promissory note - documents in which the drawer promises to pay the amount shown to the designated receiver on or after the future date specified on it) are widely used for commercial transactions between business enterprises.

Also, bills of exchange (documents in which the drawer instructs the payer to pay amounts shown to the designated third party receiver) are used in Japan.

Forcefulness of bills and checks, and items needed to be shown on their surface are defined in the Law on Bills (1932) and Law on Cheques (1933). The formats (physical shape and coding of information) of bills and checks were standardized by JBA in 1965 (Figures 12, 13). The regulations require the MICR printing (conforming to ISO 1004 - E13B) on the surface to indicate the clearing house number, payer financial institution and branch number, account number and transaction ID.

Exchange of bills and checks

The recipients of bills or checks bring them to their banks to deposit them. Bills and checks are collected at clearing houses, and then exchanged and settled between banks in the region.

Fund settlement arising out of clearing between participating financial institutions is made on the same day by offsetting credit and debit amounts at clearing houses and settling the difference using transfers between current accounts held with the BOJ or other designated settlement banks.

With regard to collecting bills and checks outside the clearing house area, they are sent by mail to their respective payment regions, and information regarding whether a bill or check has been honored or dishonored is transmitted through the Zengin System.

Clearing houses

The first clearing house in Japan opened in 1879 in the city of Osaka. As of the end of December 2011, there are 119 clearing houses designated by the Minister of Justice as well as 105 private clearing houses throughout Japan.

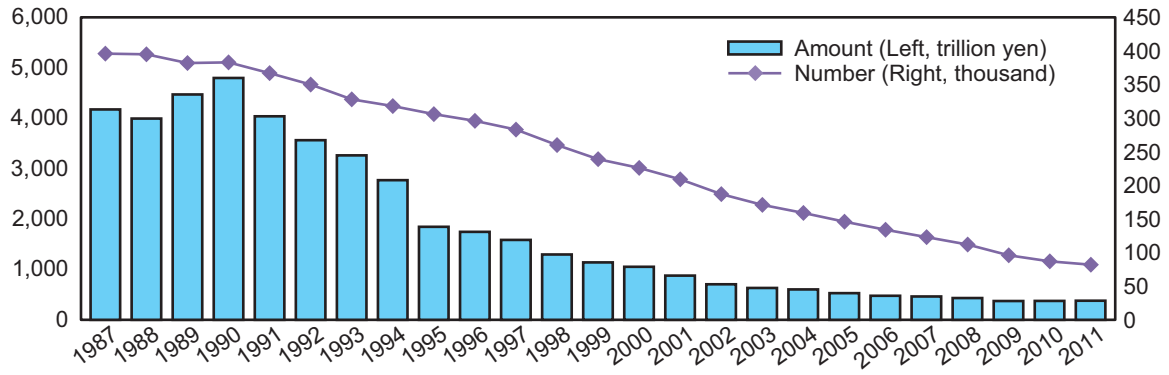
82 million bills and checks (379 trillion yen in value) were exchanged in Japan in 2011, and 74% (280 trillion yen) of them are handled by the Tokyo Clearing House (TCH) (Figures 14).

The TCH is the largest of Japan's clearing houses, with 323 financial institutions participating as of the end of December 2011. Clearing members number 105 and 218 institutions clear indirectly through clearing members.

Bank transaction suspension rule

The Japanese clearing system is characterized by a mandatory bank transaction suspension rule, under which banks must suspend transactions for a certain duration with obligatory payers whose bills or checks are dishonored. The bank transaction suspension rule was already in existence as early as 1887 with the aim of maintaining orderly credit conditions of bills and checks. Under the present system, all financial institutions participating in a particular clearing house shall halt their current account and lending transactions for two years with a person whose bills or checks have been dishonored twice during a six-month period.

Figure 11: Volume of Bills / Checks in Circulation



Source: JBA, Settlement Statistics (2011)

Figure 12: Checks

A payer entrusts to its bank (depository office) to pay the amount shown upon presentation of the check by the bearer.

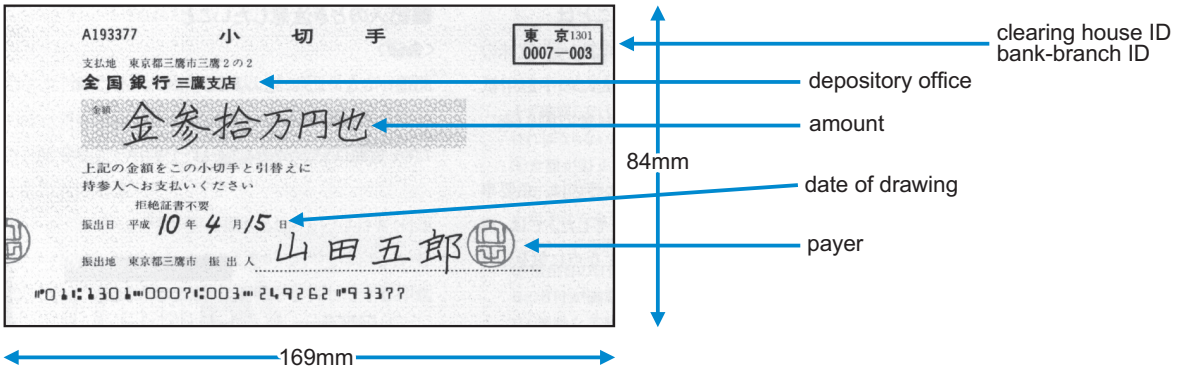


Figure 13: Bills (promissory notes)

A payer promises the payee or the person who has endorsed the bill to pay the amount on the date shown.

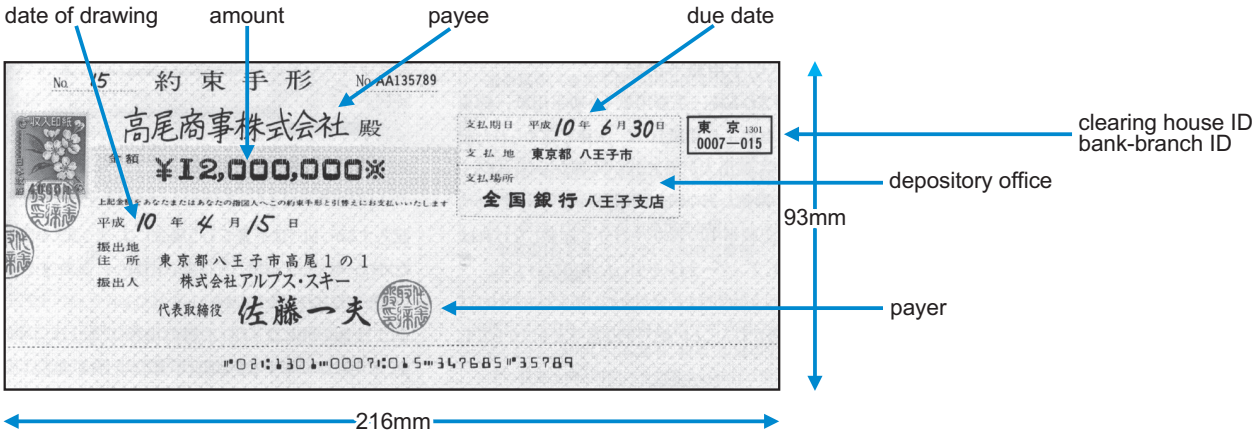


Figure 14: Share of Clearing Houses (during 2011)

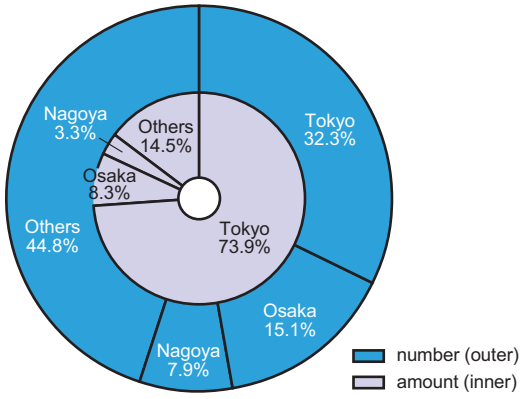
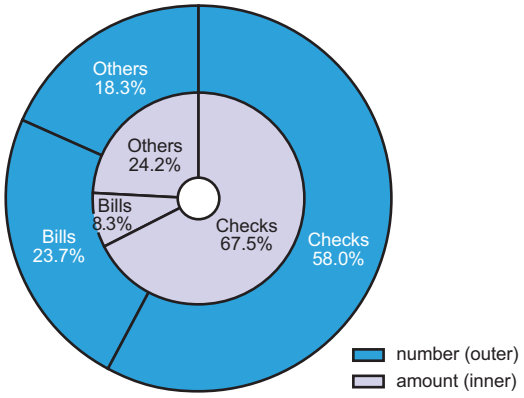


Figure 15: Share of Items Exchanged at the Tokyo Clearing House (during March 2011)



Source for figure 14 & 15: JBA, Settlement Statistics (2011)

4 Domestic Fund Transfer System and Zengin System

Domestic funds transfer service

In Japan, direct wire transfers are utilized as the preferred means of payment. The uses include paying wages, pensions, dividends and tax refunds.

As for corporate transactions, requests for remittances can be made via firm banking service (Page 14); whereas, individuals can initiate remittances at counter of bank, from ATMs, networked PC terminals or mobile phones.

Zengin-Net and Domestic Fund Transfer System

Zengin-Net (Japanese Banks' Payment Clearing Network) succeeded the operations of the Organization for Management of Domestic Fund Transfers (established in 1973) from TBA, and commenced its operations as of October 2010 as the first fund clearing agency in Japan, which received a license for the fund clearing business in September 2010, based on the "Payment Services Act" (enforced in April 2010: Page 24).

Most domestic fund transfers are done by the delivery of fund transfer notices between banks. The financial sector has established the "Domestic Fund Transfer System" to oversee interbank procedures and the computer network system, "Zengin System," to handle these interbank transactions. Both are managed by Zengin-Net.

The Domestic Fund Transfer System and the Zengin System were both started in April 1973 and membership includes most deposit-taking financial institutions. As of the end of December 2011, the participants total 1,371 institutions (32,474 branches). Medium and small-sized institutions such as shinkin banks, credit cooperatives, labor banks and agricultural cooperatives have established their own networks which are in turn linked with the Zengin System.

Currently, the Zengin System uses two means to exchange interbank transaction data - (a) individual wire remittances, and (b) batch file transfers of mass payments (used mainly for post-dated regular payments).

A total of 1.45 billion transactions were handled by the Zengin System in 2011 for a total of 2,691 trillion yen (Figure 16).

At the Zengin System, separate computer centers have been set up in Tokyo and Osaka since 1987 to ensure security and reliability of the system.

Transaction flow

Fund transfers in the Zengin System are processed by the following different transaction flows for large-value payments and for small-value payments. Settlement of small-value payments less than 100 million yen take place on the designated-time net settlement (DNS) basis, and settlement of large-value payments equal to or more than 100 million yen (except for wage payments) take place on a real-time gross settlement (RTGS) basis (the Next-Generation RTGS: RTGS with liquidity-saving features) of the BOJ since November 2011 (Figure 18).

1) DNS scheme

A remittance transaction between a sender and a receiver is carried out by sending a transfer message from a sender bank to a receiver bank then booking the amount into the receiver's account.

With regard to the settlement between banks, first, each credit/debt relationship resulted from the individual remittance transaction between the sender bank and the receiver bank is instantly replaced by that between the sender and Zengin-Net as the central counterparty (CCP), and the receiver and Zengin-Net. The daily balances for each participating financial institution are totaled at 3:30 p.m. each day and then reported to the BOJ. The BOJ settles these balances at 4:15 p.m. by effecting transfers between the current accounts that financial institutions and Zengin-Net hold with the BOJ.

2) Next-Generation RTGS

With the Sixth generation Zengin System starting operations in November 2011, a large-value payment which is automatically extracted by the System is first queued in the System and the transfer request is routed to the BOJ-NET Funds Transfer System (BOJ-NET FTS) for settlement on an RTGS basis (Figure 24). After settlement is completed in the BOJ-NET FTS and the Zengin System receives the transfer completion notice for the settlement from the BOJ-NET FTS, the queuing payment instruction is delivered to the receiving bank and the completion notice is delivered to the sending bank. With this function, both the reduction of the interbank settlement risk and the efficient utilization of the settlement funds became possible, hence the compliance to the international principle of settlement risk reduction is enhanced.

Figure 16: Major Items Exchanged through Zengin System (during 2011)

Item	Number (thousand)	Amount (billion yen)
Credit Transfers (Telegraphic transfers, Batch file transfers)	1,384,566	2,554,042
Wage payments	(259,015)	(50,875)
Total	1,451,362	2,691,894
(per day)	(5,923)	(10,987)

Source: Zengin-Net

Settlement risk mitigation measures in DNS scheme

Since there is a sizable intraday settlement risk among participants in the DNS scheme used for small-value payments, the Zengin System applies the following risk mitigation measures.

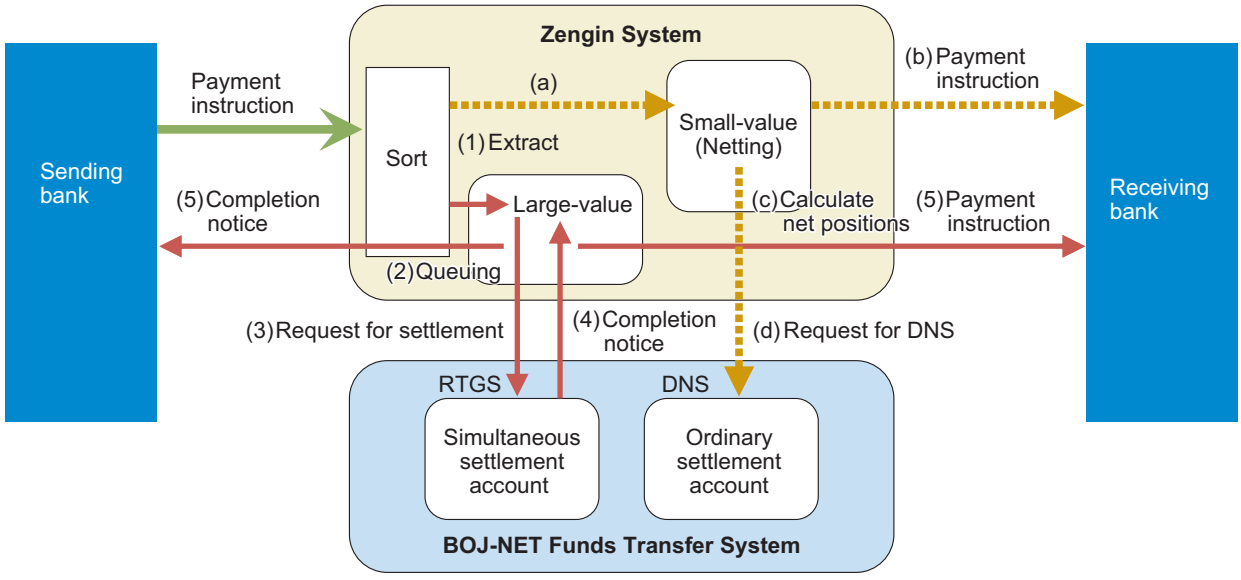
1) The credits and debts of participants which have arose from fund transactions are recalculated into a credit and debt relationship between each participant and Zengin-Net (as CCP). After having done so, funds are cleared by conducting account transfers between the current accounts of Zengin-Net and of each participant which have been opened at the BOJ. This secures legal effectiveness of the multilateral netting.
2) In order to manage the exposure of settlement risk until balances are settled, each participant is required to deposit collateral or guarantees of equivalent value to the sender net debit cap with Zengin-Net.
3) In case a participant defaults, Zengin-Net completes settlement within the day by using funds provided by the pre-assigned liquidity provider banks. Zengin-Net will repay the liquidity provider banks from funds collected through the disposal of the collateral, etc. afterwards. The scheme is optimized to cover the case where two of the biggest participants fail on the same day ("*Lamfalussy* plus" complied).

For detailed information about the Domestic Fund Transfer System and the Zengin System, please refer to "ZENGIN SYSTEM" published by Zengin-Net.

Figure 17: History of Domestic Fund Transfer System

August 1943	Implementation of a concentrated settlement of domestic fund transfers at the BOJ
June 1958	Revision of the fund transfer settlement system. Establishment of 27 fund transfer offices at regional bankers associations
April 1973	Establishment of present Domestic Fund Transfer System (88 banks, 7,400 branches participated). Operation of the Zengin System started
February 1979	Second generation Zengin System started (mutual banks, shinkin banks, foreign banks in Japan, credit cooperatives, labor banks and agricultural cooperatives participated)
November 1987	Third generation Zengin System started (dual centers system, Oct. 88: MT data transmission, Jul. 90: introduce of Senders Debit Cap, Mar. 93: change into the same-day settlement)
November 1995	Fourth generation Zengin System started (change to the self-supporting packet network from the leased line, advance communication start time at 8:30, securities trusts banks and Internet banks participated)
January 2001	New Domestic Fund Transfer System started (scheme with TBA as the central counterparty)
November 2003	Fifth generation Zengin System started (change to frame relay network of the circuit, the encryption implementation to the data, the establishment of the management information system)
January 2009	Japan Post Bank joined
November 2011	Sixth generation Zengin System started (implementing RTGS method for large-value payments, introducing XML formats, adding a new file transfer function)

Figure 18: Transaction Flow at the Zengin System
(RTGS for large-value payments / DNS for small-value payments)



Note: Solid lines (→) are for large-value payments, and dotted lines (⇢) for small-value payments.

5 Foreign Exchange Yen Clearing System (FXYCS)

The clearing of foreign exchange transactions normally takes place in an interbank system in the financial centers of nations whose currencies are employed as clearing currencies. For Japanese Yen, the Foreign Exchange Yen Clearing System (FXYCS), which was set up by the JBA, handles the clearing of foreign exchange transactions, with operations entrusted to the BOJ.

FXYCS

The clearing of yen transactions related to foreign exchange, including dealings in foreign exchange markets, transfers to yen accounts of correspondents and yen-denominated fund transfers, formerly took place in the following manner, i.e. the bank that received a fund transfer request from an overseas bank drew up a Bank of Japan check and delivered it along with the payment instructions to the receiving bank, the receiving bank then took the check to the BOJ to obtain its funds.

The internationalization of the Japanese economy has increased the use of the yen as a clearing currency in international transactions. FXYCS was introduced by TBA (at present JBA) in October 1980 to facilitate the ease and safety of such clearings. Initially, paper-based payment instructions from participating banks were exchanged at TBA, the credit and debit amounts offset, and the net balance settled, by transferring funds between BOJ current accounts held by the participating banks. Beginning in March 1989, TBA (at present JBA) consigned the operations of foreign exchange yen clearing to the BOJ (Figure 19).

As of the end of December 2011, a total of 208 banks, including 57 foreign banks (direct participants: 28 institutions, indirect participants: 179 institutions and CLS Bank), were participating in FXYCS. Transactions totaled 6.33 million with an aggregate value of 2,821 trillion yen in 2011, or an average of 25,840 transactions per day at a value of 11.5 trillion yen.

Foreign exchange yen transactions

The following shows how payments are processed through FXYCS (Figure 20):

1) The payer X in a foreign country instructs the payer's bank A to make a yen payment to the payee Y in Japan.
2) The payer's bank A debits an equivalent amount of a remittance from the payer X's account and also requests a fund transfer to credit into the payee Y's account in the account with bank C (the receiving bank in FXYCS), mainly using SWIFT (Page 23), to its correspondent bank B (the sending bank in FXYCS) in Japan.
3) The sending bank B debits the amount of remittance specified in the payment instruction from the correspondent account and also sends a payment instruction to FXYCS (BOJ-NET FTS).
4) Upon receiving the instruction, the amount specified in the electronic payment instruction is debited from bank B's current account and credited to bank C's current account at the BOJ through RTGS processing and it is also delivered to bank C.
5) The receiving bank C credits the account of the payee Y and also informs the payee Y of the notice of credit.

Risk mitigation measures

In FXYCS, in addition to rationalization of its processing, it made an effort toward the settlement risk reduction (Figure 19).

Under the recognition of the necessity of settlement risk reduction measures, various measures were taken in December 1998 to enhance the risk management for the designated-time net settlement (DNS) (establishment of legal enforceability of the netting scheme by having TBA act as a central counterparty, reducing exposure by establishing Bilateral Net Credit Limits and Sender Net Debit Cap, Collateral scheme and Liquidity-provision arrangements against default incidence, etc.) in order to comply with BIS's *Lamfalussy* Standards. In addition, RTGS mode, in which each payment instruction is settled immediately in conjunction with BOJ's current account transfers between direct participant banks, was introduced.

Moreover, from February 2002, the risk management scheme was strengthened and in March 2004 it covered the case where two of the biggest participants failed on the same day ("*Lamfalussy* plus" complied).

Furthermore, in October 2008, to realize "intraday real-time final settlement" recommended by the BIS's "Core Principles," it cooperated with the BOJ to shift all FXYCS transactions to RTGS when liquidity-saving features were introduced into the BOJ-NET FTS (Figure 24, 25 on Page 12, 13).

CLS Bank

CLS Bank International (CLS Bank) is a special purpose institution based in New York, conducting the PVP (payment versus payment) settlement among multiple currencies (it started with seven settlement currencies including yen in 2002, and 17 currencies are available for settlement as of the end of 2011). The purpose of the CLS Bank is to eliminate settlement risk in foreign exchange transactions resulting from time differences in various major financial markets (*Herstatt* risk). As for the yen, the CLS Bank participates in FXYCS by making settlements through FXYCS's RTGS mode which is without liquidity-saving features (ordinary settlement) (Figure 21).

Figure 19: History of FXYCS

October 1980	FXYCS started (manual, paper base)
March 1989	FXYCS went online via the BOJ-NET
December 1992	Temporary Suspension was introduced against the BCCI incident
December 1994	Resolution was made so that market participants are enabled to use FXYCS for FX dealings among Japan-residing parties (available for the dealings after spot trades: shift from the bill and check clearing system, and expansion of FXYCS to nationwide: increasing of participants from regional financial institutions)
December 1998	New FXYCS started (TBA acts as the central counterparty)
May 2002	CLS Bank participated in FXYCS (The live operation started in Sep. 2002)
October 2008	Fully shifted to RTGS (the Next-Generation RTGS in the BOJ-NET FTS was started)

Figure 20: Foreign Exchange Transaction Flow and FXYCS (example)

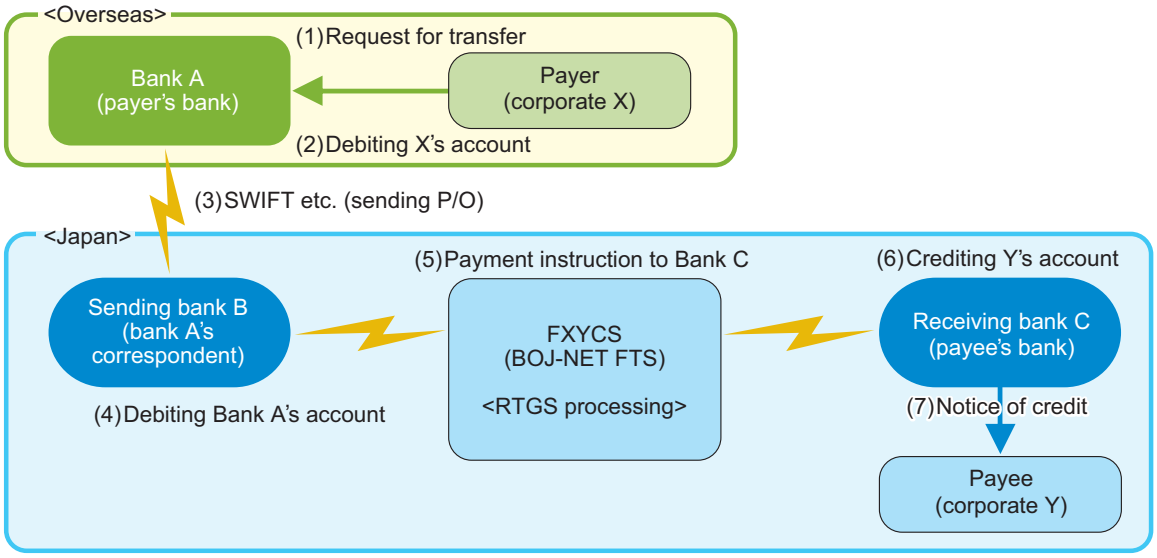
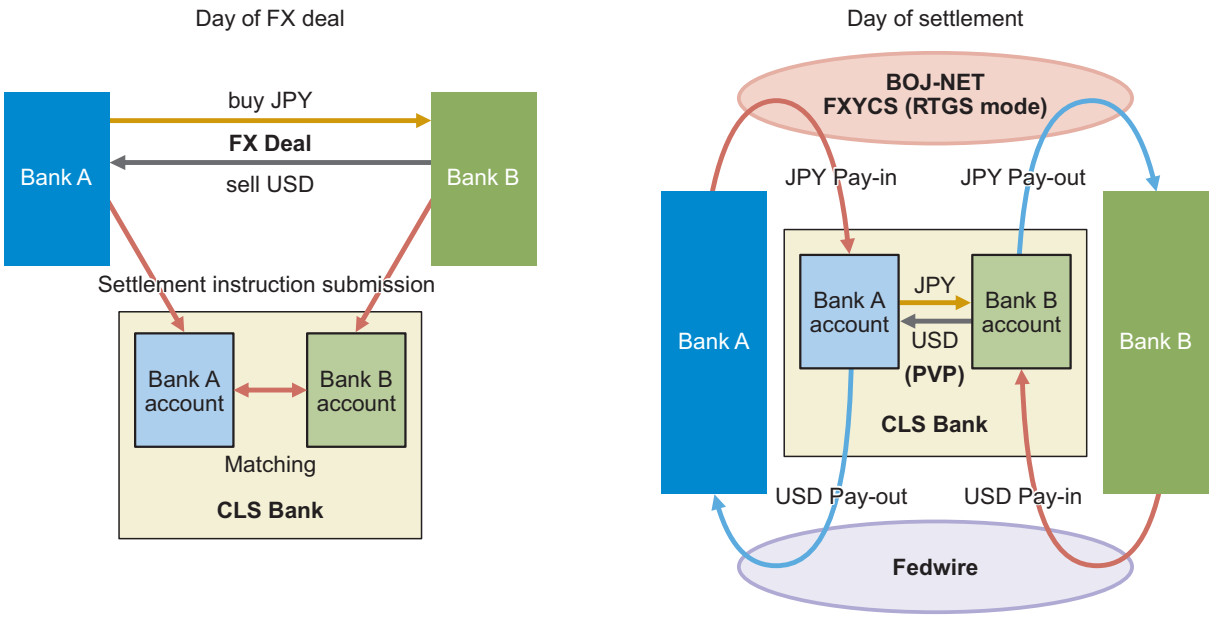


Figure 21: CLS Service and FXYCS



Note: For further details, please refer to the CLS Website; http://www.cls-group.com/

6 The Bank of Japan Financial Network System

As the central bank of Japan, the BOJ provides two safe and convenient settlement instruments; the Bank of Japan notes which are circulated for use by the general public, and the current account of the BOJ which financial institutions use. It also provides a system for fund settlement using the current account of the BOJ. The BOJ has established and operated the Bank of Japan Financial Network System (BOJ-NET) since October 1988 in order to promote the efficiency of banking operations as well as stability of the industry's payment system (Figure 22).

Network system

The BOJ-NET is the online system for processing the settlement of funds of current accounts at the BOJ, and Japanese government bonds (JGBs) between financial institutions. This booklet covers only the former online system, i.e. the BOJ-NET Funds Transfer System (BOJ-NET FTS).
The BOJ-NET FTS settles funds transactions such as (a) fund settlement between financial institutions (including fund settlement deriving from securities transactions), (b) transferring of funds between the current accounts at the BOJ's head office and branches, which are held by the same financial institution, (c) final fund settlement of the bills and checks clearing systems and the Domestic Fund Transfer System, (d) fund settlement between the BOJ and financial institutions.
As of the end of December 2011, 473 financial institutions (banks, securities firms, *tanshi-kaisha*, etc.) are participating in the BOJ-NET FTS as online participants. Average volume of transactions for the BOJ-NET FTS in 2011 was 52,781 transactions or 101 trillion yen per day (Figure 23).

Risk mitigation measures

At the beginning of 2001, the BOJ-NET FTS abolished designated-time net settlement (DNS) mode and made RTGS the only mode for settlement. The changeover to RTGS has helped to reduce systemic risk by eliminating the interrelation of large value payments in the net settlements and reducing the amount outstanding of transactions remaining unsettled during settlement day.
In the past, in the large-value payment system, it was processed based on a DNS from the viewpoint of fund efficiency. However, with increased needs for further reduction in settlement risk in payment and settlement systems both inside and outside of the country, the BOJ proposed the reform measure of the BOJ-NET FTS, the so-called Next-Generation RTGS project. The project is aimed at bringing new levels of safety and efficiency to large-value payments in Japan. The project consists of two pillars: (a) introducing liquidity-saving features into the BOJ-NET FTS (Figure 24), and (b) shifting large-value payments in two private-sector DNS systems, i.e., FXYCS and the Zengin System, to the BOJ-NET FTS for settlement on RTGS basis. The project was introduced in two phases; Phase 1 was the introduction of liquidity-saving features into the BOJ-NET FTS and the shifting of FXYCS payments to RTGS taking place in October 2008, and Phase 2 was the shift of large-value Zengin System payments equal to or more than 100 million yen to RTGS taking place in November 2011.

Effect of Next-Generation RTGS

With the liquidity-savings RTGS, there is an effect which saves the funds needed for the settlement. Also, with the features of queuing, it restrains the phenomenon of "gridlock" to delay the progress of the settlement.
Moreover, the systemic risk was largely reduced by fully shifting of FXYCS payments and the Zengin System large-value payments to RTGS (Figure 25: with Phase 1; exposure reduction of 16 trillion yen per day and with Phase 2; exposure reduction of 7.9 trillion yen per day).

New BOJ-NET

The BOJ is in the process of developing a new system for the BOJ-NET which will replace the current system which has been in use since 1988. The new BOJ-NET will be structured to ensure future enhancements as well as to reduce costs. The main features of the new BOJ-NET FTS include, (a) introduction of XML/ISO20022 messaging, and (b) making longer-hour operations possible by setting "core time" in which all the participants will have to participate, together with flexible time when the participation and usage of BOJ-NET will be optional. The new BOJ-NET is scheduled to start full operations during fiscal 2015.

Figure 22: History of BOJ-NET

October 1988	BOJ-NET Funds Transfer System started
March 1989	FXYCS payments started to be settled over the BOJ-NET FTS
May 1990	BOJ-NET JGB system started
April 1994	DVP was introduced to JGB settlements
April 1998	DVP was introduced to corporate bond settlements
January 2001	Restructured RTGS system for funds transfer and JGB started
October 2008	Phase 1 of the Next-Generation RTGS was started (introduction of liquidity-saving features into the BOJ-NET FTS, shifting FXYCS payments to RTGS)
November 2011	Phase 2 of the Next-Generation RTGS was started (shifting large-value Zengin System payments to RTGS)

Figure 23: Major Types of Transactions Processed in the BOJ-NET FTS
(daily average, during 2011)

Item	Amount (trillion yen)
BOJ-NET funds transfer (RTGS)	101.4
Settlement for bill and check clearing systems (DNS)	1.1
Settlement for the Zengin System (DNS)	1.9
DNS for small-value payments (during December 2011) RTGS for large-value payments (during December 2011)	(0.8) (7.9)
Settlement for FXYCS (RTGS)	11.5

Source: JBA, Settlement Statistics (2011)

Figure 24: RTGS Processing with Liquidity-Saving Features

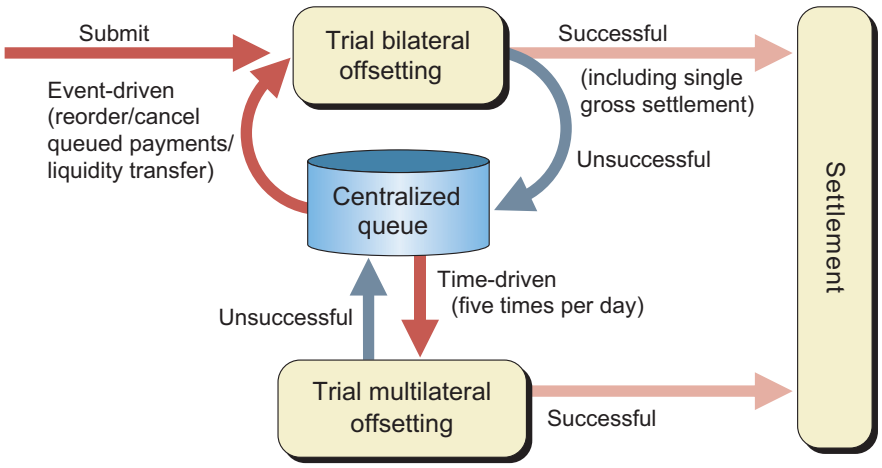
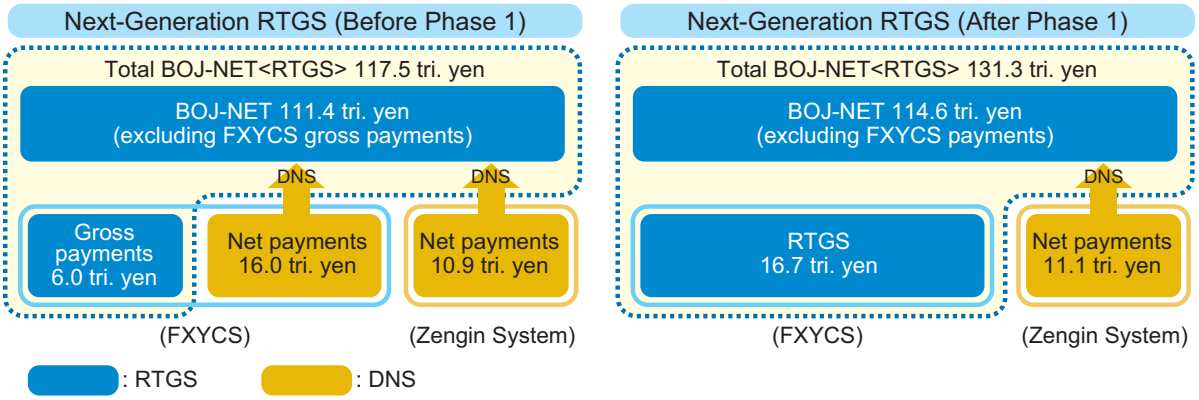
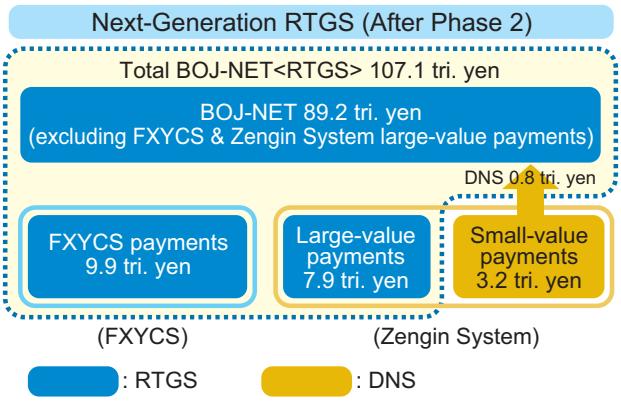


Figure 25: Effect of the Next-Generation RTGS



(Notes)
(1) Before Phase 1: Daily average processed from Jan. to Sep. 2008.
(2) After Phase 1: Daily average processed from Nov. to Dec. 2008.



(Notes)
After Phase 2: Daily average processed during Dec. 2011.

7 Firm Banking

Japanese banks have been offering online data exchange to their retail customers since the 1980s. Of these, data exchange with corporate customers had been called Firm Banking (FB). Corporate customers can access their banks from telephones, facsimiles, FB terminals and PCs via public telephone lines or Internet to check account balances and/or transaction records, and to initiate remittances and/or direct debits.
Also, as the special delivery channel which facilitates the efficiency of the FB business, the call center was established. Recently, with the expansion of utilizing Internet banking or mobile banking, some banks have set up special branches for Internet business (virtual branch). Furthermore, from October 2000, specialized banks which do not have real channels such as branches and which specialize in provision of financial business mainly over the Internet started operation (as of the end of December 2011: six banks).

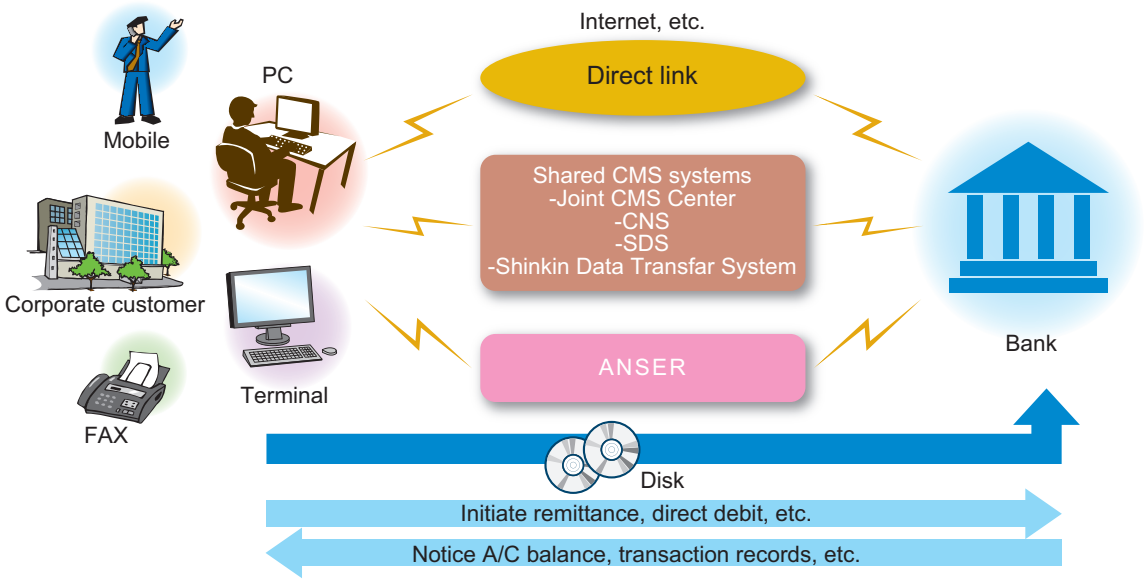
The following are major FB services;

Inquiry and notification service	This service is used to notify customers, upon request, of their account balances, details of credit transfers and of their credit and debit transactions.
Fund transfer service	Customers can order banks to make remittances using the FB service. This service includes immediate fund transfers as well as post-dated transfers. Corporate customers also can ask banks to direct debit and collect their tenant fees, installment credits and such using the FB service. Results of such direct debit transactions are also notified via the FB service in return.
Fund management service	This service supports the fund management of corporates including reconciliation of accounts receivable, and fund collection through regional financial value-added networks.
Foreign exchange, forward contract	This service includes the following; Remittance, Incoming remittance, Foreign deposit, Deal for import & export (L/C issuing, Amendment, Import shipping document arrival information, Export L/C arrival information, Export bill purchase information etc.), Spot operations and Forward contracts.
Global CMS	Some major banks have recently developed and begun offering Global Cash Management Services (CMS) to their international customer base. Though details vary according to each bank, most Global CMSs include: (a) customers' access to overseas bank accounts from PC terminals in Japan, (b) customers' access to bank accounts in Japan from foreign offices, and (c) netting the transaction amounts of customers' cross-border intra-firm trades.

Network between banks and corporate customers

With regard to FB services, banks and corporate customers are networked via (a) direct connections, (b) shared CMS centers, and (c) the ANSER network (Figure 26). Most corporate customers in Japan have their customer accounts with more than one bank. Shared CMS centers are being established as a means to offer connection between customers' FB terminals and multi-banks in a session. The shared CMS center network which was established for each category of financial institutions offers; (a) multi-bank reporting which enables customers to check their bank accounts at more than one bank simultaneously, and (b) batch file transfers from customers for mass payments or direct debits to multiple banks at one time.

Figure 26: Firm Banking Network between Banks and Corporate Customers



8 Network Access to Banking Service by Individual Customers

In Japan, network access to banking service from households such as checking account balance, instructing book transfer or remittances has been tried since around 1979. Home appliance terminals such as computer game machines and multifunction phones were used as terminals for this purpose. Despite this, corporations/private businesses remained the primary users and home banking found it difficult to penetrate households. However, after the spread of mobile phones, PC terminals and Internet services among households in the late 1990s, the electronic exchange of data between banks and individual customers (home banking) has rapidly increased.

Telephone banking

Japanese banks have been offering telephone banking services to individual customers. These can substitute for bank staff visiting customers to collect money. Consequently, the productivity of banks has been improved along with the accessibility of customers to banking services. Telephone banking has been positioned as a strategic tool of banks and many banks are competing in this area. To add, financial transactions by the telephone were done by unmanned correspondence via the ANSER network, but in recent telephone banking, they are done either by unmanned correspondence through automated voice or by manned correspondence (the counseling service or the promotion of products, etc.) using TSRs (Telephone Service Representative) according to the business content.

Internet banking

Many banks offer Web interface-based Internet banking service to their customers. Services include account balance inquiries, and requests for transaction records, remittances and book transfer between the customer's accounts, deposit transactions, loan transactions, payment collecting services for tax and public charges (Pay-easy: Page 18), etc.
According to a survey by the Center for Financial Industry Information Systems (FISC), as of the end of March 2011, 372 of 416 (89.4) responding banks offer Internet banking services to over 51 million customer accounts. Since 2000, specialized banks which have no branch locations but only Web interface for daily services started operation.

Mobile banking (text-based interfacing of mobile phones)

Many mobile phones in Japan began utilizing simple Web text interfaces in 1999. One of the prime contents provided for this service is "mobile banking." Customers can check balances or transaction records of their accounts, request remittances by inputting text commands from their mobile phones or can automatically connect to bank call centers using their mobile phones. The aforementioned FISC survey shows that 354 of 416 (85.1%) answered banks offer mobile banking services on a total of about 50 million customer accounts. Moreover, several banks started value-added services to cope with innovation in technology such as smartphones.

Figure 27: Mobile Banking via Smartphones

9 ATM Transactions with Cash Cards

The cash card service is a service in which customers use a plastic card (cash card) that identifies their accounts and deposit or withdraw cash from their own accounts using a cash dispenser (CD), automated teller machine (ATM) or such of the bank.
Financial institutions have proactively installed CDs and ATMs since 1969, as they sought to shorten the waiting time for bank service at branches and to also streamline and conserve on clerical work-related labor. As of the end of March 2011, deposit-taking financial institutions have 154,960 CD and ATM units installed and 484 million cash cards have been issued (the population of Japan is 127.7 million).

Cash cards

Japanese cash cards often have multiple magnetic stripes to combine ordinary account, loan account, credit account and so on. Depending on the transaction, the card is inserted into the machine with a different side facing up.
Since 1999, many banks are actively moving to add the "J-Debit" system (a debit transaction scheme (Page 21)) to cash cards that have already been issued.
In addition, the integrated circuit (IC) cash cards that contain higher security features than the magnetic stripes are also issued. JBA established "the JBA's IC cash card standard specifications" with the purpose of ensuring interoperability among financial institutions. These standard specifications are based on the EMV specification which are the *de facto* standard of the IC card for financial institutions. Moreover, the specifications regarding biometrics authentication (illustrating the concept and transaction process between the card and the ATM) is also contained in the standard specifications. Some financial institutions issue IC cards with additional information to be used for biometrics authentication in IC chips, thus enhancing security. At present, there are two ways of reading biometrics authentication information, either from the vein pattern of the palm or the vein pattern of the finger.
Until May 2012, the standard specifications temporarily allow ATMs, not the host computer of the card issuing bank, to confirm the credibility of the card. After May 2012, however, online authentication by the host computer of the card issuing bank is planned to be implemented.

ATM service

1) Functions

The common functions of Japanese ATM units are cash withdrawal, cash deposit (paper money and coin), balance inquiry, passbook updating, instructing book transfers or remittances. In addition, banks are also competing over services with some banks enabling ATM units to be used to change passwords, open time deposits and mutual funds, close time deposits and mutual funds or other services (Figure 28).

2) Channels

With regard to the placement of ATMs, there were restrictions for their installation, because CD and ATM terminals had been deemed by the government of Japan to be a form of bank branches. However, this regulation was abolished in 1997 and banks now are actively installing ATM units outside of branches. Of particular note is the installation of ATM units outside of bank branches. As of the end of 2011, there are around 39,000 units installed at convenience stores by the top four ATM operators. In addition, the cash cards of some banks can be used in the ATM units of non-bank institutions. As such, the channels in which the cards can be used are broadened.

Flow of cash transactions

When a transaction is conducted at an ATM unit, it is recorded and reflected in the customer's account at the bank which issued the card. This occurs in real time even when the ATM unit of another financial institution allied with the issuing institution is used. In this case the recording and confirmation is done via the interbank network.
The respective network systems of cash cards relay cash card usage information of customers and disbursement information of banks online. In addition, the system also totals the interbank credits and debits that occur in line with card use.
The interbank credits and debits that accumulate during the day are totaled and netted during the night, and interbank fund settlement is conducted on the following business day using the Zengin System.

ATM network system

Interbank alliances concerning cash card transactions in Japan have been built through joint networks of each industry since 1990. Furthermore, the "MICS" network that links each joint network was established and cross industry alliances were commenced from February 1990. Later, the MICS network and some joint networks were moved to the integrated ATM Switching Service which started operation in January 2004. The Switching Service provides services to financial institutions other than participants of MICS, thus realizing a broader CD and ATM network scheme (Figure 29).
By using the CD and ATM network via MICS, customers that hold cash cards issued by deposit-taking financial institutions may withdraw cash and conduct other services at 111,392 CD and ATM units nationwide (as of September 2011). The transactions through CD and ATM were 290 million in volume or 13.7 trillion yen in 2011 (Figure 30).
JBA serves as the secretariat for organizations such as MICS and an organization of participating financial institutions of the Switching Service.

Figure 28: General Functions of ATM

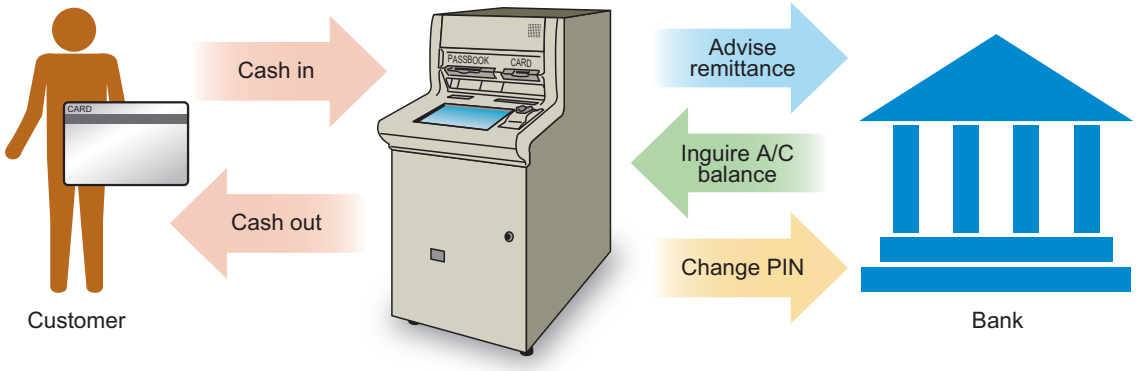


Figure 29: History of Cash Card Service

December 1969	Banks began to install off-line CD terminals
August 1971	Banks began to install on-line CD terminals
November 1975	NCS started its service (shared CD terminal/network service) (~April 1996)
March 1980	SICS started its service (interbank CD network for 6 city banks)
April 1980	TOCS started its service (interbank CD network for other 7 city banks)
October 1980	SCS started its service (interbank CD network for second regional banks)
October 1980	ACS started its service (interbank CD network for regional banks)
November 1980	Shinkin-net cash service started its service (interbank CD network for Shinkin Banks)
April 1983	SOCS started its service (interbank CD network for trust banks)
January 1984	BANCS started its service (integration of SICS and TOCS)
March 1984	Agricultural Cooperative Savings Network Service started its service (interbank CD network for agricultural cooperatives)
March 1984	ROCS started its service (interbank CD network for labor banks)
April 1987	SANCS started its service (interbank CD network for credit cooperatives)
February 1990	MICS started its service (gateway of above interbank networks)
November 1994	LONGS started its service (interbank CD network for long-term credit banks and Shoko Chukin Bank)
January 2004	Integrated ATM Switching Service started its service

Figure 30: CD/ATM Online Alliance

Members of CD/ATM Online Alliance (Note) (Name of the CD/ATM Online Alliance is indicated in parenthesis)	Live year	Member	Number of CD/ATM	Transactions in 2011	
		As of Dec. 2011	As of Sept. 2011	Volume (thousand)	Value (100 million yen)
CB (BANCS)	Jan. 1984	6	25,641	47,585	20,329
RB (ACS)	Oct. 1980	64	35,204	28,158	12,828
TB (SOCS)	Apr. 1983	4	550	15	19
Previous long-term credit banks, etc (LONGS)	Nov.1994	3	435	1	1
RBII (SCS)	Oct. 1980	42	13,013	3,230	1,337
SB (SNCS)	Nov.1980	272	19,884	22,423	15,923
CC (SANCS)	Apr. 1987	139	2,249	83	72
LB (ROCS)	Apr. 1984	14	1,953	587	370
National Agricultural Cooperative Savings Network Services	Mar. 1984	789	12,463	1,339	1,011
MICS	Feb. 1990	–	–	187,542	85,110
	IN TOTAL	1,333	111,392	290,966	137,004

Note: CB: City banks, RB: Regional banks, TB: Trust banks, RB II: Regional banks II, SB: Shinkin banks, CC: Credit cooperatives, LB: Labor Bank, MICS: Multi Intigrated Cash Service
Also refer to Appendix 2 "ATM network"
Source: JBA

10 Multi-Payment Network

The “Pay-easy,” an electronic settlement services provided by Multi-Payment Network (MPN) that are managed by the Japan Multi-Payment Network Management Organization (JAMMO) and the Japan Multi-Payment Network Promotion Association (JAMPA), made it possible to pay various charges or bills; government and local government funds, public utility bills, premiums and Internet shopping, etc.; “at any time, from any place, securely and easily” via PCs, mobile tools or ATMs (Figure 31).

History of MPN

Discussion over MPN was started from the view point of utilizing the infrastructures of financial institutions such as the ATM, Internet banking or mobile banking, to provide settlement services to facilitate ease of use for customers and efficiency in operations of involved institutions.

In May 2000, JAMPA whose current main duty is the promotion of the spread of Pay-easy services was established. In March 2001, with MPN selected as the settlement infrastructure for e-government, JAMMO was established. JAMMO was formed by 141 financial institutions (137 banks, 4 financial bodies) as a body to structure and manage MPN.

With coordinated work between JAMPA and JAMMO, the Pay-easy began collecting services for private collecting agencies from October 2001, then for government and local government funds from January 2004 (Figure 32).

The total transactions of the Pay-easy collecting services are steadily growing and increasing every year, and during 2011, the volume was 44 million, and the value was 7.2 trillion yen (Figure 34).

Since June 2010, JBA was entrusted to manage and serve as the secretariat for JAMMO.

Pay-easy services

The services of MPN consist of the collecting service (there are four methods, i.e. the online method, the information link method, the direct method and the direct debit data transmission method) and the account transfer acceptance service as seen in Figure 33. As for fund settlement of transactions in the Pay-easy collecting services, transactions of government funds are processed through the BOJ’s current account, and transactions of the private-sector and local government through the Zengin System.

Figure 31:Structure of Pay-easy

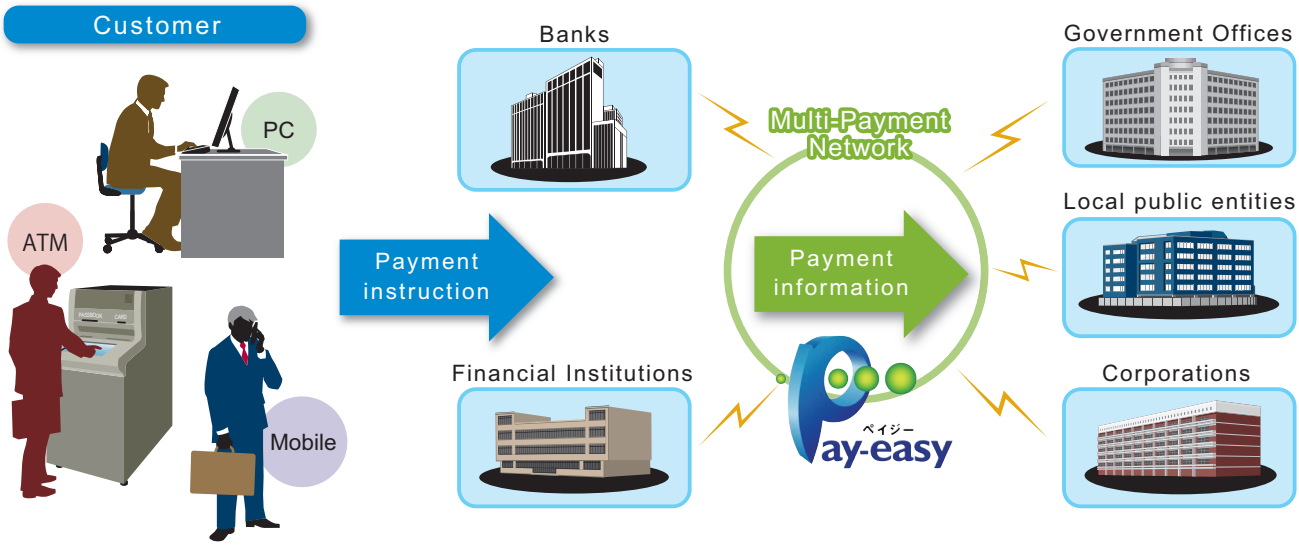


Figure 32: History of Multi-Payment Network

December 1999	Creation of study committee of Bill Payment Network, study on new collecting services started
May 2000	Establishment of JAMPA
March 2001	Establishment of JAMMO
October 2001	Pay-easy collecting services for private-sector transactions started operations
January 2004	Pay-easy collecting services for the government funds and the local government funds started operations
October 2008	The direct method for the government funds started
March 2010	The direct method for the local government funds was authorized to be introduced

Figure 33: Outline of Services Offered by Multi-Payment Network

Name of Service	Contents
Collecting services	The services process the following: 1) to pay fees and the price of various instruments such as government and local government funds, public utility charges, premiums and Internet shopping through PCs, mobile devices or ATMs, etc., which the financial institution provides for, and 2) to notify the collecting agency immediately about payment information regarding bill payments. The services include the following four methods: 1) the on-line method: to input bill information from the financial institution channel and process payment by using the inquiry result of the bill payment and to make notification of payment. 2) the information link method: to transfer bill payment information from the Website, etc. of the collecting agency (the biller) to the financial institution and process payment including the notification of payment by using the transferred information. 3) the direct method: to process debit automatically from the account at the financial institution which the user registered beforehand including the notification of payment by using bill payment information which was transferred from the government office's Website, etc. to the financial institution and to make the notification of payment. 4) the direct debit data transmission method: to make bill payment information on the batch and transmit it to the collecting agency (the biller).
The account transfer acceptance services	The services include the following: 1) to acknowledge the acceptance of the new registration of the account transfer from a job-oriented terminal of the collecting agency or the financial institution channel (PCs, mobile devices or ATMs) without documentation. 2) to notify their registration information electronically between the collecting agency and the financial institution.

Figure 34: Volume and Value of MPN Transactions (during 2011)

	Volume (thousand)	Value (100 million yen)
Government Funds	8,326	52,009
Local Government Funds	9,318	12,019
Various charges or bills	26,739	8,126
Total	44,384	72,155

Source: JAMMO

11 Credit Cards

It is said that the idea of the credit card started when one businessperson in the U.S. realized he forgot his wallet after eating at a restaurant and designed a system to eat out without having cash in your pocket. The very first credit card company was established in 1950. In Japan, ten years later, the first Japan-originated credit card company was established jointly with banks, etc. and a U.S. credit card company. Credit cards are now one of the important payment instruments in Japan.

The first issuance of a credit card in Japan was in 1960. According to statistics by the Japan Consumer Credit Association, total issuance of credit cards (as of the end of March 2011) was 322 million, including those issued by banks or bank affiliated credit card companies (134 million), retailers (103 million), installment credit companies (42.5 million), home appliance / automobile manufacturers 12.9 million), medium-small retailer associations (2.9 million), and other companies (25 million).

In Japan, checks are seldom used for payment via credit cards, but monthly bank account transfers from bank accounts are commonly used. The payment methods vary from one-time, split, and revolving to bonus-time payment.

Flow of credit card transactions

In Japan, the transaction flow of credit cards is as follows (Figure 35);

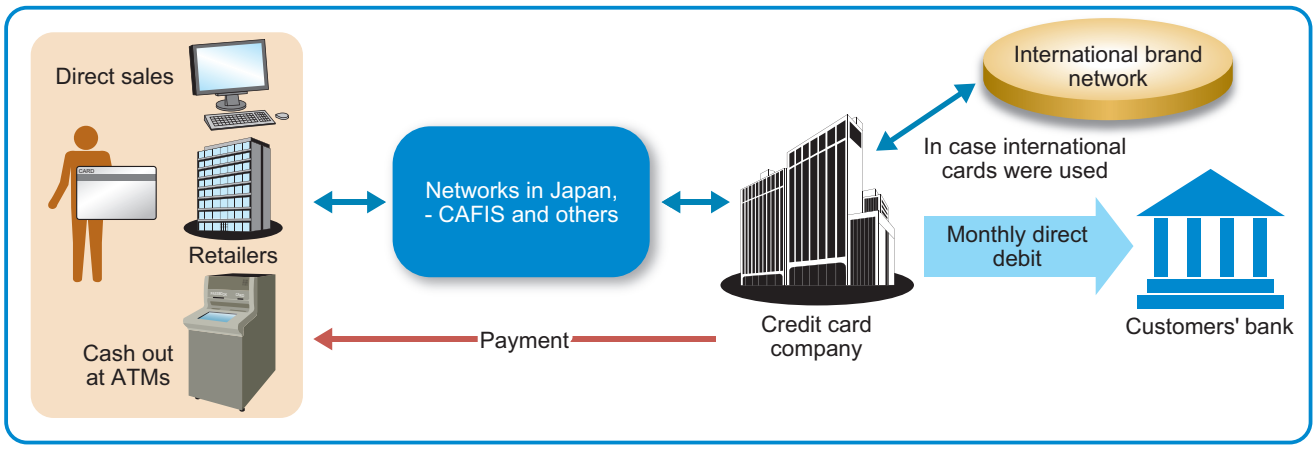
1) A cardholder presents a credit card when he/she buys goods or services from retailers.
2) The retailer receives authorization for the sale and transmits sales data via credit authorization terminals (CATs) or point-of-sales (POS) terminals.
3) The credit card company (the acquirer) pays the retailer based on the sales data.
4) The credit card company aggregates the accepted transactions, then sends a statement, usually every month, beforehand to the cardholder to notify direct debit date and amounts.
5) The credit card company sends direct debit data to the cardholder's bank.
6) The bank executes the direct debit.

Infrastructure for the credit card system

In 1984, installation of networked CATs began, and an online-acquiring network system between retailer and credit card company (CAFIS) began operation. Since then, CAFIS and 11 other information processing companies acting as network providers have been connecting retailers and credit card companies.

The Japan Credit Card Association (JCCA) has been playing an important role in promoting this industry infrastructure. JCCA's activities include standardization of terminal and network interfaces, and promotion of IC card.

Figure 35: Flow of Credit Card Transactions



12 Debit Cards

Debit card service is a settlement service to pay the purchasing amount at once via cash cards of financial institutions.

In Japan, several debit card systems were set up nationwide after 1999, following several pilots conducted since 1984, and an EFT-POS based service called "J-Debit," which is driven by a cross-industry association, is the most well-known service among them.

In June 1998, the then Ministry of Posts and Telecommunications, private financial industry and retail industry jointly organized the Japan Debit Card Promotion Association (JDCPA). This led to the start of the J-Debit service in January 1999.

As of December 2011, 1,198 financial institutions have joined the scheme, and the service is available at more than 330 thousands retail points. During 2011, the total volume of transactions was 13 million and total value of transactions was 651.3 billion yen.

J-Debit scheme

Cardholders use cash cards, which they have already received from banks, for debit card services (Figure 36).

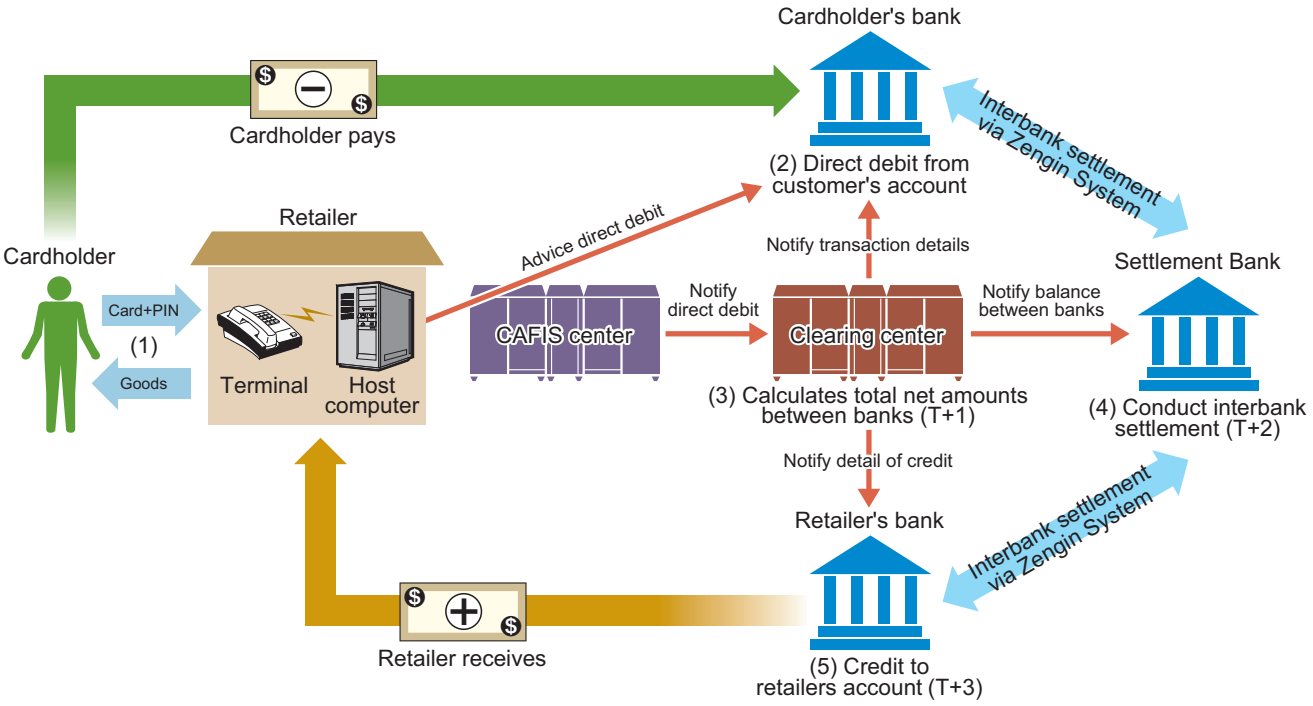
1) When the cardholder makes a purchase, the cash card is inserted into a card terminal, the price is entered, and the cardholder enters a PIN using the ten-key keypad.
2) The cardholder's bank immediately debits the amount from the cardholder's account.
3) The clearing center calculates charges and the total net amount between banks based on transaction logs sent from the CAFIS Center (the operating center) on the day following the retail transactions.
4) The settlement bank clears the net position between banks via the Zengin System on the second day after the retail transaction.
5) The retailer's bank credits the amount after deducted charges to the retailer's account on the third day.

The debit card scheme is easily accessible to customers because it uses a cash card they already have. Customers also have the benefit of avoiding the risk of losing cash or having cash stolen. Retailers on the other hand receive the benefit of mitigating cash handling costs and ensuring the collecting of credit sales.

Network infrastructure for J-Debit

The network infrastructure for J-Debit is built around the CAFIS Center and the clearing center. These are used to check account balances in real time, execute retail transactions, debit from cardholders' account, remit funds to retailer accounts and so on. Transaction data including card data and PIN sent through the network that links retailers, clearing centers and financial institutions is protected by rigorous encryption. The JDCPA has documented security guidelines concerning operational issues and audits.

Figure 36: Flow of J-Debit Transactions



13 Electronically Recorded Monetary Claims System and densai.net

The Electronically Recorded Monetary Claims System was founded in December 2008 with the main target to facilitate funding by businesses such as the medium and small-sized businesses. This system makes it possible to bring the rationalization of the paperwork of billing, reduce the stamp tax cost, and avoid the risk of its safekeeping and conveyance, etc. Furthermore, the system is expected to greatly contribute to the efficiency of funding by unifying payment instruments or utilization of accounts receivable. The future possibility and opportunity of the electronically recorded monetary claims is expected to be huge considering the following figures; the balance of the bills receivable owned by corporations in 2009 is about 23 trillion yen, and accounts receivable is approximately 183 trillion yen.

Electronically recorded monetary claims and its recording institution

Electronically recorded monetary claims are new monetary claims for which the accrual and assignment of monetary claims are effected through electronic recording to an electronic monetary claim recording institution. The electronic monetary claim recording institution is a kind of registry office of electrically recorded monetary claims and discloses information regarding the monetary claim upon the request of users.

System infrastructure

JBA established "densai.net Co., Ltd. (commonly known as "densai.net")" in June 2010 to prepare for the inauguration of the infrastructure in 2012. The network aims at providing a new infrastructure to record and to circulate the above electronically recorded monetary claims nationwide, backed by JBA's previous achievement in planning and operating various settlement infrastructures.

The image of transaction flow

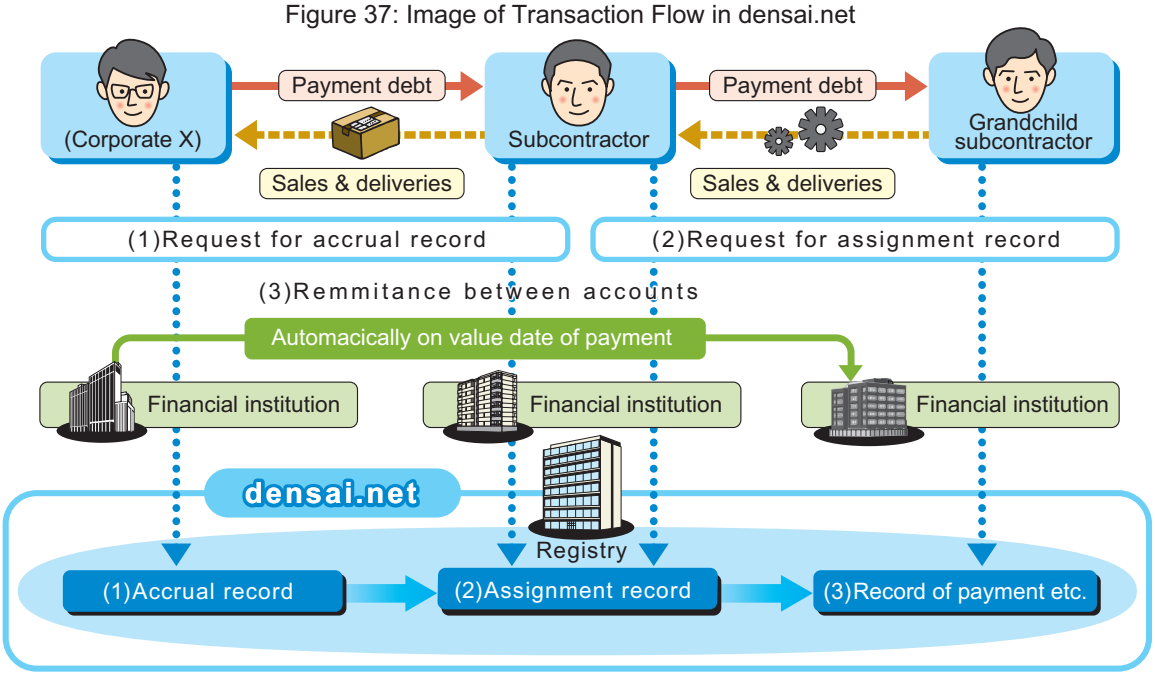
The image of the electronically recorded monetary claims (ERMC) transactions which use the densai.net can be seen in Figure 37.

1) The accrual of the ERMC: The ERMC can be accrued by electronically recording to the registry in the densai.net by making "an accrual record" through the correspondent bank.
2) The assignment of the ERMC: The ERMC can be assigned by electronically recording to the registry in the densai.net by making "an assignment record" through the correspondent bank. The ERMC can also be assigned by dividing it as the occasion demands.
3) The payment of the ERMC: On the value date of a payment, it withdraws funds automatically from the bank account of the payment corporation and payment is done to the bank account of the delivery corporation. The densai.net makes a "record of payment, etc." which means the completion of a payment.

Characteristics of densai.net settlement

The settlement of the ERMC in the densai.net is done by the remittance settlement among the bank accounts in principle through the interbank settlement or the Zengin System except the ERMC settlement between the same specified participating financial institutions. The burdensome procedure is unnecessary because the densai.net does "record of payment, etc." of the effect of the payment's completion. As to the insolvency rule, it will lay down a disposition by the transaction suspension rule of bill and check clearing in a similar system.

Figure 37: Image of Transaction Flow in densai.net



14 JBA's Role in Payment Businesses

JBA has been contributing to the enhancement of the convenience of bank customers as well as efficiency in banking industry through standardization activities and planning and operation of various shared infrastructures in the payment service arena.

Promotion of EDI

In Japan, from very early days, the real time exchange of the fund transfer information was done via online networks.
Moreover, it was examined to load and exchange the information about the original transaction on the data message/format about the fund transfer, and as a result of this examination, the industrial body and the financial industry cooperated in 1996 to set up "Payment Request EDI." In December of the same year, the Payment Request EDI was adopted by the Zengin System to provide the means for further implementation of EDI.
The sixth generation Zengin System which started operation from November 2011 caters to the XML format which is based on ISO20022 standards, thus expanding the EDI information (becoming an open-end-design in the 140 character unit from 20 characters).

Establishing the industry standard

Banks are vigorously automating their operations in order to accurately and smoothly process the growing volume of their business activities. The standardization of procedures and formats are essential for both customers and banks in automation since banks and customers are closely networked together. JBA has prepared standards related to (a) model contracts for banking services between banks and customers, (b) interbank operation procedures, (c) physical formats of bills, checks, bonds and other securities, and (d) data exchange protocols and data formats for online networks, FD/MT/MO/optical disk and IC Cash Cards (Figure 38).

Maintaining numbering systems

JBA has established and maintains numbering systems needed for data exchanges in banking service fields such as the identification of banks and branches (Financial Institution Identifier Code).

Operating shared industry systems

Aiming to contribute to bank automation and efficiency, JBA established and operates (including secretariat duties in trust, etc.) various industry network systems of which some are listed below.

1) Clearing house for exchanging paper bills and checks between banks (since 1887).
2) The Zengin System which exchanges data on retail fund transfer requests between financial institutions (from 1973 to 2010; Zengin-Net manages the system from 2010).
3) Foreign Exchange Yen Clearing System (FXYCS) which clears the yen legs of foreign exchange transactions (since 1980).
4) Secretariat of S.W.I.F.T User Group of Japan which is the user group of the infrastructure of the international financial telecommunications network.
5) Secretariat of online tie-up of CD/ATM network systems (nationwide cash service: such as BANCS and MICS) (since 1990).
6) Secretariat of Japan Multi-payment Network Management Organization which established and operates the MPN system providing Pay-easy services (since 2010).
7) Set up of densai.net Co., Ltd. (densai.net) (scheduled to be inaugurated in 2012).

(Note)
SWIFT is a member-owned cooperative established in 1973 under Belgium law with 239 banks from 15 countries, headquartered in La Hulpe, Belgium. Japan joined SWIFT in 1976. As of December 2011, 10,118 banking organizations, securities institutions and corporate customers from 210 countries participate in SWIFT. SWIFT is a network system to transmit messages relating to the international financial transactions among the user institutions using computer and telecommunication lines, and its mission is to automate and streamline the operational procedures of financial institutions. It is linked with settlement systems in various countries, thus it serves as an important player for the global financial infrastructure.

Figure 38: Standardization Initiated by JBA (examples)

Model contracts for banking services between banks and customers	Model terms for customer accounts, remittances, purchase/negotiation of bills, L/C transactions, etc.
Interbank operation procedures	Operation procedures for direct debits, domestic fund transfers, sovereign funds, custody operations, etc.
Physical formats of bills, checks and other securities	Checks, bills, bonds, etc.
Data exchange protocols and data formats	- MICR printing for checks and bills - Physical format of FD/MT/MO/optical disk for data exchange - On-line data transmission protocol between customers and banks - Coding of data records for exchange between customers and banks - IC cash card standard specifications (EMV - base)

15 Payment Services Act, Electronic Money

Outline of the Payment Services Act

"The Payment Services Act" was enforced on April 1, 2010. In order to correspond to the environmental change in the payment system, i.e. the recent development of information and telecommunication technology and diversification of user needs, etc., the main features of the Act are (a) including a server-based prepaid payment instrument to be subject to regulation, (b) establishing the fund transfer service provider which will allow non-bank business entities to conduct fund transfer services, and (c) introducing the fund clearing agency (required license for its business) as enhancing the system for interbank fund settlement.

Prepaid payment instruments

In the previous "Prepaid Payment Instrument Act"(abolished in 2010), the target for regulation was limited to the gift certificate and the IC-based prepaid instruments, etc. As the server-based prepaid payment instruments which are increasing in recent years were outside of the scope of previous regulations, user protection issues were raised. Therefore, in the Payment Services Act, server-based prepaid payment instruments are also covered; e.g., the notification required for in-house instruments, the registration for third party instruments, the refunding to users required in the case of discontinuation of business. The previous regulatory framework is maintained, i.e. providers should be obligated for reserving funds of an amount equal to or larger than half of the outstanding value.

Fund transfer services

In founding the "Fund transfer services" that allow non-bank business entities to perform fund transactions business (the value of a transaction is limited to less than one million yen) previously permitted only by banks, in order to meet the needs of the remittance service which is cheaper and more convenient with the popularization of the Internet, etc.

Examples of the fund transfer services are as follows (Figure 39);

1) Type 1: the service that the customer (payer) brings cash to a branch office of a fund transfer service provider and the receiver (payee) receives cash in another branch office of the same agent.
2) Type 2: the service to transfer funds between the payer's account and the payee's account which the funds transfer service provider opened.
3) Type 3: the service which pays for the person who brought a deed (money order) issued by the fund transfer service provider.

The Financial Services Agency and the Local Finance Bureaus can request fund transfer service providers to present a report or documents as well as inspect on-site to secure the appropriate and solid performing of the funds transfer services industry, and can dispose a business improvement order or the cancellation of the registration, etc., as occasion demands.

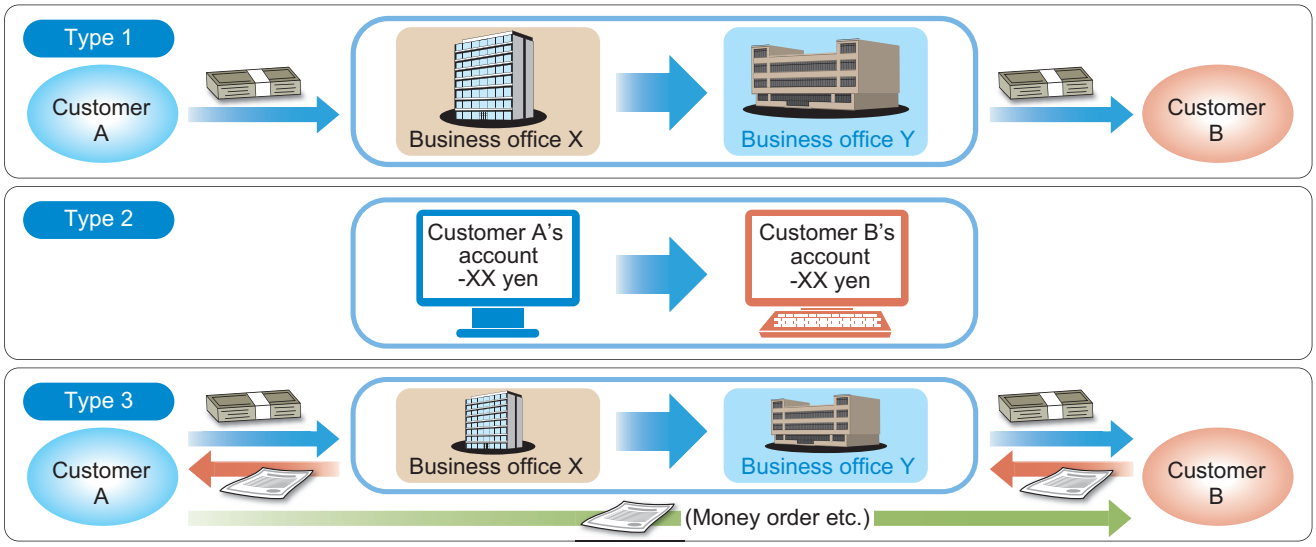
As of the end of December 2011, 20 companies are registered as fund transfer service providers.

Funds clearing

The Act stipulated a fund clearing agency which clears interbank fund transfer transactions by assumption of obligations, etc. under the license system in order to strengthen the interbank funds transfer. The Act also introduced the rule to ensure the fair and transparent governance system, and the measures to clarify the legal enforceability of the fund clearing.

Zengin-Net which operates the Zengin System received a license for the fund clearing business in September 2010 based on this system (Page 8).

Figure 39: Example of Fund Transfer Services



Electronic money

Although there are various types of electronic small-value payment instruments, "electronic money" is roughly divided into "prepaid" electronic payment instrument for multipurpose use, which requires to 'load' a certain value before using it, and "postpaid" electronic payment instrument which is linked to credit cards using contactless chip cards.

Prepaid electronic money can be further categorized into two types. One is an IC chip-based type, in which the value is recorded on the integrated circuit (IC) chip embedded in devices such as plastic cards or mobile phones. In this type, the loaded value is managed on a self-contained operating system and application software. The other is a server-based type. This type does not require any physical device, and typically the value is recorded and managed centrally on the computer server of an electronic money service provider.

Electronic money quickly became popular with the ease of handling of non-contact type IC cards, the spread of the recognition of the user-friendliness (expansion of member shops at locations from station areas of the transport companies to commercial zones, the tie-up with group companies to out-group company retailers, the spread of usage at convenience stores) increase in incentive to exchange for points and mileage.

The management body of small-value payment services is the electronic money business/entity and credit card business/entity, but financial institutions are also developing electronic money related services in order to develop customer services. These are as follows:

1) installment of the charge machine which charges for withdrawn cash at the ATM corner, etc. of the financial institution,
2) introduction of the credit charge which is charged by the credit card or mobile telephone when using the wallet features,
3) bank account charge from the deposit account,
4) built-in to the cash card which loads a credit feature integrated type cash card, etc. with electronic money.

Figure 40: Categorization of Electronic Money

	Prepaid Electronic Money		Postpaid Electronic Money
	IC chip-based	Server-based	
Service examples in Japan (as of Jan. 2012)	Business companies: 1 Traffic companies: 10 Retailers: 2 Others: 1	Exclusive business companies: 2 The below mentioned companies also provide services; - Credit card companies - Communication companies - Internet/Game providers	Credit card companies: 4 Traffic companies: 1 Mobile carrier companies: 1
Contents	The value is recorded on the IC chip embedded in devices such as plastic card and mobile phones, which requires loading a certain value before using it. The loaded value is managed on a self-contained operating system and application software.	The value is recorded and managed centrally on the computer server of an electronic money provider.	Postpaid electronic payment instrument which is issued as an exclusive card for small-value payment and linked to the credit card using contactless chip card.
Characteristics	Utilizing the contactless IC technologies. Anyone can own it and it is usable in stores/shops.	No medium such as a chip card. Utilized exclusively on the Internet.	Utilizing the contactless IC technologies (the usage was spread by loading on an IC mobile phone). The possession of the credit card is a premise (pre-screening is necessary).

Source: Prepared using Research Report by the BOJ, White Paper by the FISC, and other sources

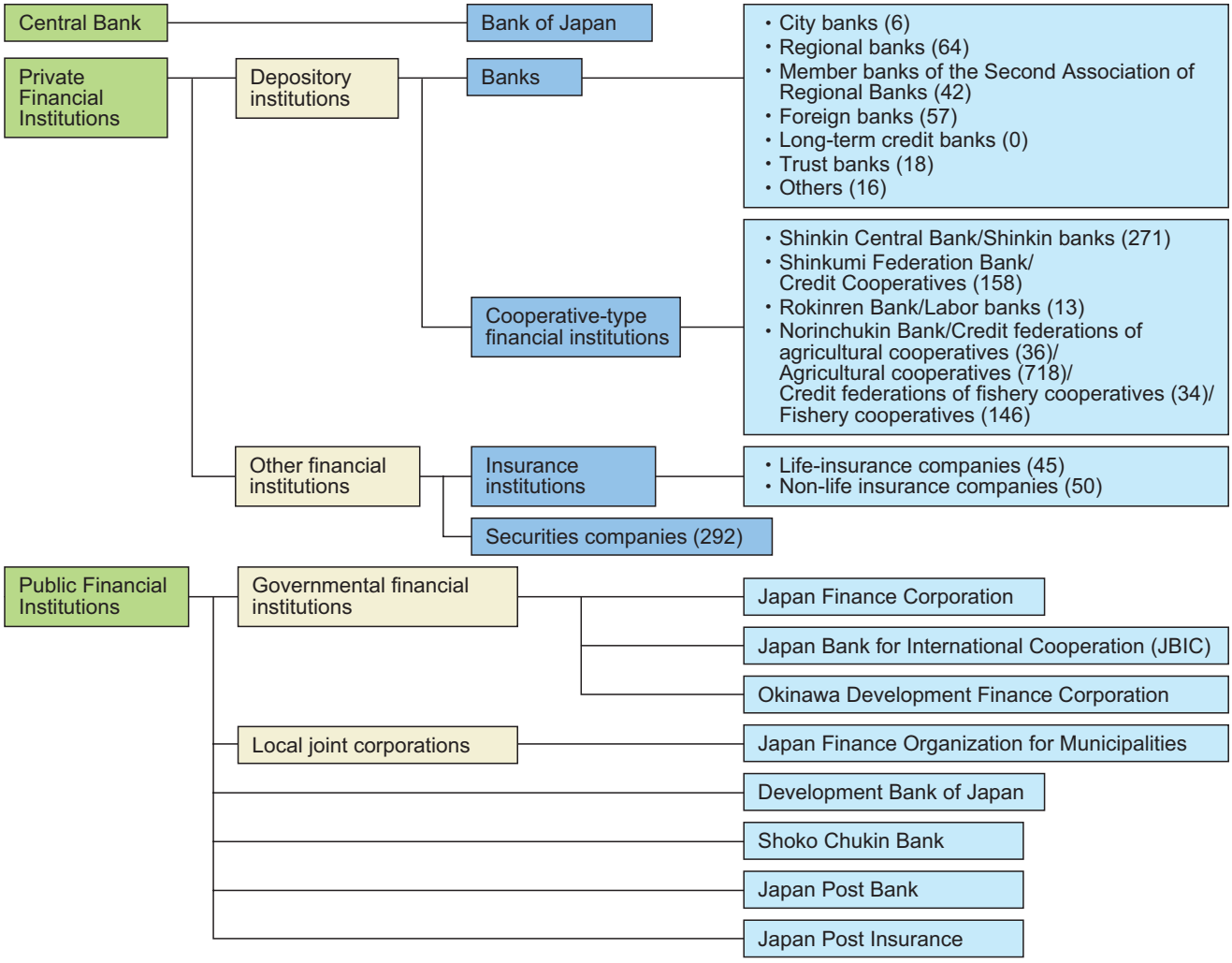
Appendix

Appendix 1: Japan's Financial Institutions - Institutional Framework

The following diagram presents a classification of the organization of Japanese financial institutions.
Japan, since 1948, has followed the U.S. system of separating securities activities from banking activities; therefore, "banks" in Japan refers to what are commonly called commercial banks. Banking businesses in Japan primarily consist of three businesses - deposit taking, lending and the transferring of funds. Investment banking has not fallen within its scope.
There are also institutions other than banks, which are licensed/allowed to accept deposits, and these are governed by laws specific to these enterprises. Further, their businesses mainly target small and medium-sized enterprises.
There are also government financial institutions including Japan Post and some government-owned banks established for funding specific sectors.
In recent years, new banks employing novel operating approaches have been chartered and are providing services to retail customers. These banks do not have physical branches, and employ Internet access or ATMs as their customer interface.

Please see detailed information about the framework of the Japanese banking industry in "Japanese Banks" and the "Banking System in Japan" published by JBA.

Financial Institutions in Japan (as of the end of December 2011)



Note: In October 2007, a law related to postal privatization was enforced and Japan Post Bank and Japan Post Insurance, subsidiaries of Japan Post Holdings, which is entirely funded by the government, commenced operations. Since both entities are 100% government-funded, they are categorized as 'Public Financial Institutions' here.

Appendix 2: Major Settlement Systems for Banking Industry in Japan (as of the end of December 2011)

Interbank settlement (see page 12)

Name	Business	Operator	Participants
BOJ-NET Funds Transfer System	Interbank large-value fund transfers etc.	Bank of Japan	473 institutions

Domestic fund transfers (see page 8)

Name	Business	Operator	Participants
Zengin System	Interbank online data exchange of domestic fund transfers	Zengin-Net	1,371 institutions
Zenshinkin System	Online data exchange of domestic fund transfers between shinkin banks	Shinkin Banks Information System Center (SSC)	272 shinkin banks, etc.
Data Transmission System for Credit Cooperatives	Online data exchange of domestic fund transfers between credit cooperatives	Shinkumi Federation Bank	157 credit cooperatives, etc.
Central Network System for Labor Banks	Online data exchange of domestic fund transfers between labor banks	Rokinren Bank	14 labor banks, etc.
Agricultural Cooperative Savings Network Service	Online data exchange of domestic fund transfers between agricultural cooperatives	Nochu Keito Center	789 agricultural cooperatives, etc.

Bill and check clearance (see page 6)

Name	Business	Operator	Participants
Tokyo Clearing House	Clearing of bills / checks between banks	JBA	323 banks

Foreign exchange yen clearing (see page 10)

Name	Business	Operator	Participants
Foreign Exchange Yen Clearing System (FXYCS)	Clearing of the yen leg of foreign exchange transactions	JBA	208 institutions

ATM network (see page 16)

Name	Business	Operator	Participants
Multi Integrated ATM Switching Service	Gateway of the following CD/ATM online alliance networks	–	–
(BANCS)	CD/ATM online alliance between city banks	BANCS	6 banks
(ACS)	CD/ATM online alliance between regional banks	ACS	64 banks
(SOCS)	CD/ATM online alliance between trust banks	SOCS	4 banks
(LONGS)	CD/ATM online alliance between Shinsei/Aozora/ Shoko Chukin Bank	LONGS	3 banks
(SCS)	CD/ATM online alliance between member banks of Second Association of Regional Banks	Second Association of Regional Banks	42 banks
Network System for Shinkin Banks(SNCS)	CD/ATM data exchange and settlement between shinkin banks	SNCS	272 shinkin banks
Network System for Credit Cooperatives(SANCS)	CD/ATM data exchange and settlement between credit cooperatives	SANCS	139 credit cooperatives
Network System for Labor Credit Associations(ROCS)	CD/ATM data exchange and settlement between labor banks	ROCS	14 labor banks
Agricultural Cooperative Net Services	CD/ATM data exchange and settlement between agricultural cooperatives / fishery cooperatives	Norinchukin Bank	789 institutions

Firm banking (see page 14)

Name	Business	Operator	Participants
Joint Cash Management Service (CMS) Center	Firm banking service between city banks and firms	Association of Financial Information Network	13banks
Network Service for Regional Banks (CNS)	Firm banking service between regional banks and firms	Chigin Network Service	64 banks
Data System for Second Regional Banks (SDS)	Firm banking service between member banks of the Second Association of Regional Banks and firms	Second Association of Regional Banks	42 banks
Shinkin Data Transfer System	Firm banking service between shinkin banks and firms	Shinkin Banks Information System Center	272 shinkin banks

Electronically Recorded Monetary Claims (see page 22)

Name	Business	Operator	Participants
densai.net	Recording and circulating electronic monetary claims	densai.net	–

Appendix 3: International Comparison of Major Payment Systems (during 2010)

Interbank Large-value Settlement Systems

Name	Number of participants (direct participants)	Transaction volume by number (million)	Transaction volume by amount (US$b)
BOJ-NET Funds Transfer System (Japan)	555(555)	12.41	291,496
FXYCS (Japan)	207(29)	6.35	32,859.0
HVPS (China)	99,022(1,724)	291.2	163,127
CHATS HK$ (Hong Kong)	141(141)	5.36	17,452.2
MEPS (Singapore)	135(64)	4.02	12,090.9
RITS (Australia)	71(62)	8.40	39,175.1
LVTS (Canada)	87(16)	6.04	36,560.6
Fedwire (US)	8,323(NA)	125.1	608,326
CHIPS (US)	50(NA)	90.90	365,096
TARGET2-BDF (France: previous TBF)	306(83)	8.22	124,456
TARGET2-BBk (Germany: previous RTGSPlus)	2,730(219)	43.80	342,119
SIC (Switzerland)	377(377)	394.7	49,702.1
CHAPS Sterling (UK)	NA(18)	32.15	87,561
EURO1/STEP 1(EU)	274(274)	59.37	82,300
TARGET(EU)	4,526(1,072)	87.39	838,540

Retail Payment Systems

Name	Number of participants (direct participants)	Transaction volume by number (million)	Transaction volume by amount (US$b)
Zengin System (Japan)	1,372(141)	1,380.4	28,266.8
Tokyo Clearing House (Japan)	323(105)	28.51	3,117.3
BEPS (China)	99,004 (1,723)	386.74	2,394.75
SGDCCS (Singapore)	64(34)	77.37	443.2
IBG (Singapore)	45(33)	91.83	180.83
CORE (France: previous SIT)	421(11)	12,816.6	6,773.4
RPS (Germany)	221(221)	2,662.9	3,042.8
BACS (UK)	62,616(16)	2,443.2	6,266.5
Check Clearing (UK)	NA(10)	70.0	1,264.3

Source: BIS, "Statistics on payment, clearing and settlement systems in the CPSS countries, Figures for 2010"

Appendix 4: Usage of CDs/ATMs

Number of ATMs per 1million inhabitants

	2005	2006	2007	2008	2009	2010
Australia	1,172	1,241	1,234	1,256	1,230	1,256
Belgium	1,293	1,395	1,454	1,445	1,415	1,409
Canada	1,635	1,641	1,691	1,741	1,728	1,749
France	762	757	820	834	854	870
Germany	647	654	943	969	1,010	1,058
Italy	698	748	817	922	909	855
Japan	1,067	1,082	1,083	1,090	1,087	NA
South Korea	1,724	1,788	1,934	2,020	2,083	2,257
United Kingdom	968	998	1,040	1,041	1,006	NA
United States	1,334	1,321	1,375	1,333	1,382	NA

Source: BIS, "Statistics on payment, clearing and settlement systems in the CPSS countries, Figures for 2010"

Publications by JBA

The Banking System in Japan
Payment Systems in Japan
Japanese Banks
Analysis of Financial Statements of All Banks (biannually, reference in English)

Other information source about payment systems in Japan

Payment and Settlement Report (the Bank of Japan)
Payment and Settlement Statistics (the Bank of Japan, monthly, text in Japanese)
Consumer Credit Statistics (Japan Credit Industry Association, annually, text in Japanese)
Financial Information Systems in Japan (the Center for Financial Industry Information System, annually, text in English)
ZENGIN SYSTEM - The Zengin Data Telecommunication System (Japanese Banks' Payment Clearing Network)

International comparison of payment systems

BIS (Bank for International Settlements) http://www.bis.org/
Statistics on payment and settlement systems in the CPSS countries - Figures for 2010 (January 2012)

Internet information

Japanese Bankers Association: http://www.zenginkyo.or.jp/en/outline/main_functions/index.html

Bank of Japan: http://www.boj.or.jp/en/paym/index.htm

Japanese Banks' Payment Clearing Network (Zengin-Net): http://www.zengin-net.jp/en/

Japan Multi-Payment Network Management Organization (JAMMO):http://www.jammo.org/ (text in Japanese)

Japan Multi-Payment Network Promotion Association (JAMPA): https://www.jampa.gr.jp/ (text in Japanese)

Japan Credit Card Association: http://www.jcca-office.gr.jp/ (text in Japanese)

Japan Debit Card Promotion Association (J-Debit): http://www.debitcard.gr.jp/ (text in Japanese)

densai.net Co., Ltd. (densai.net): http://www.densai.net/ (text in Japanese)

The Center for Financial Industry Information Systems (FISC): http://www.fisc.or.jp/english.htm

Japanese Bankers Association

1-3-1 Marunouchi, Chiyoda-ku
Tokyo 100-8216 Japan
Tel: +81-3-3216-3761
http://www.zenginkyo.or.jp