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Bank of Japan Review

Innovation in Retail Payment Services in Major Economies

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Payment and Settlement Systems Department

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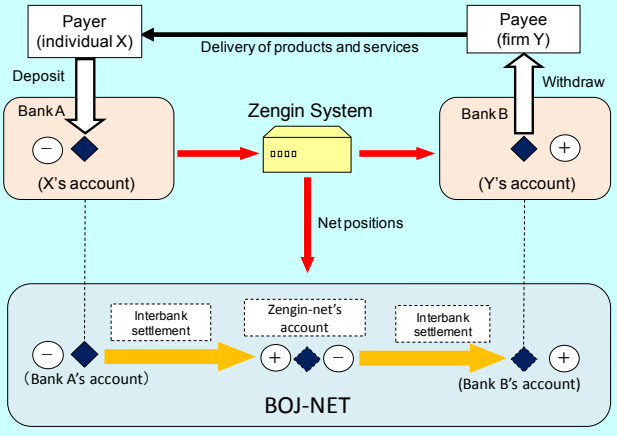
Major economies have embarked on various innovative means for enhancing retail payment services. These include such measures as real-time settlement of bank transfers and linking remittance information with payment information for financial electronic data interchange (EDI). In Japan, meanwhile, the government released the revised Japan Revitalization Strategy in June 2014, which includes enhancement of the payment and settlement system to make financial markets more efficient. When introducing such measures, it is important to take stock of recent developments in major economies, and to improve real-time bank transfers and achieve financial EDI while considering the situation in Japan. The Bank of Japan will help financial institutions and other stakeholders steer such initiatives to enhance retail payment services, and will collaborate with the Japanese government.

Introduction

People receive and deliver products and services every day, engaging in economic activities which involve making and receiving payments. In these activities, bank transfers are often used as one of major payment methods. Regarding bank transfer arrangements in Japan, interbank settlement takes place through the Bank of Japan Financial Network System (BOJ-NET) in which net positions are calculated by another system, called the Zengin Data Telecommunication System (Zengin System, Chart 1). In 2013, the Zengin System handled a daily average volume of 6 million transactions, while the daily clearing value averaged 11.7 trillion yen. Thus, almost 2.5 percent of Japan's annual GDP is settled by the Zengin System.

[Chart 1] Bank Transfer Arrangements in Japan



In providing payment means, banks play the important role of providing payment services. Recently, new developments have emerged in major economies which have embarked on enhancing these services. In Japan, the government's revised Japan Revitalization Strategy released in June 2014 includes enhancement of the payment and settlement system, with the aim of making financial markets more efficient. The strategy includes whether to improve real-time bank transfers that would enable a beneficiary's account to be credited in real time and whether to allow the remittance information, including the details of business transactions, to be incorporated in a payment instruction to achieve financial EDI.

When improving real-time bank transfers and achieving financial EDI in Japan, it is important to take stock of recent developments in major economies where similar initiatives are already under way. Accordingly, this article focuses on the following issues. Regarding real-time bank transfers, we focus on progress in the United Kingdom, Sweden, and Singapore. With respect to the adoption of financial EDI, we highlight the Single Euro Payments Area (SEPA) which became fully operational on August 1, 2014. Briefly, the trends in these countries can be summarized as follows. In the short run, they are

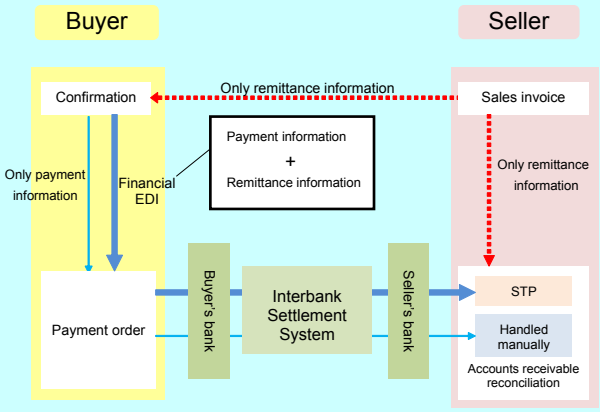
likely to improve the quality of payment services and promote their standardization. In the medium to long run, they are likely to consolidate the financial infrastructure which allows all stages of business transactions -- from purchase order to funds settlement -- to be performed electronically, thus reducing costs, particularly for end users. Furthermore, by utilizing a wide range of customer information, banks will be able to provide more comprehensive financial services, generating new business opportunities for them as well as their customers. Finally, we discuss the implications of our findings for Japan.

Concept of enhancing payment services

In this article, among the various measures to enhance payment services, we focus on two aspects. First is real-time 24/7 bank transfers, which provide payment services to bank customers 24 hours a day, 7 days a week, including evenings, weekends, and holidays, and so they are called "24/7 services." In such financial services, a beneficiary's bank account can be credited in real time; it normally takes a few seconds, or a few minutes at most, from payment initiation to availability of funds. The Faster Payments Service (FPS) of the United Kingdom is a pioneer in providing 24/7 services, which they started discussing in 2003 and launched in 2008. In 2012, Sweden launched the Payments in Real Time (PRT) and in March 2014, Singapore initiated the Fast and Secure Transfers (FAST). Australia is also expected to launch 24/7 services based on a platform called the New Payments Platform (NPP) in the second half of 2016.

The second measure in enhancing payment services is the utilization of remittance information in domestic bank transfers. Businesses have already been electronically exchanging remittance information such as purchase and sales orders by leveraging the development of internet technologies. A framework that links such remittance information with payment information (e.g., information related to a beneficiary's bank account and the payment date) and exchanges these data electronically is called financial EDI (Chart 2). In other words, the arrangement aims to process all stages of a transaction, from purchase order to funds settlement, electronically, thus achieving straight through processing (STP). By implementing financial EDI, firms are likely to automate accounts receivable reconciliation from existing processes that are handled manually. In Europe, the financial infrastructure has been developed to achieve financial EDI.

[Chart 2] Use of Financial EDI



Developments in major economies

Importance of enhancing payment services

Major economies have embarked on various initiatives to enhance retail payment services. The question is: what are the benefits of these enhancements to individuals and firms as end users and banks as service providers?

First, from the perspective of households and businesses, 24/7 services will improve the efficiency of managing funds. The services enable beneficiaries to use funds in real time, and enable senders to use the available funds up to the last minute. As for financial EDI, there are two aspects. In the short run, firms need to invest to develop systems to handle standardized formats for exchanging trading data electronically. However, in the long run, they can enjoy benefits such as lower operating costs by linking remittance information with payment information. For example, firms will be able to automate the reconciliation of manual processing of accounts receivable. In sum, it is important for businesses, as users of payment services, to balance the short-term costs of developing systems with the medium- to long-term benefits arising from improved efficiency of existing operations. Accordingly, the European Payments Council (EPC) is supporting and actively promoting the SEPA. Specifically, the EPC has published case studies highlighting the lessons learnt from stakeholders that have completed the migration to the SEPA and has stated that many managers report that the benefits from the SEPA migration far exceeded the investment cost.[1]

Second, from the perspective of banks, although implementing 24/7 services and financial EDI requires additional investment in systems, the experience of some countries shows that it is difficult to pass the cost of providing these services on to their customers. Nevertheless, there are still benefits for banks in providing payment services as their core business, promoting the use of financial infrastructure, and meeting the potential needs of their customers. For example, banks may be able to provide advisory services, based on their customers' cash flow data, support corporate financing based on remittance and payment information, and propose financial services to their clients who may be contemplating expanding overseas. In the long run, these initiatives are expected to boost the profitability of banks.

24/7 service

Keeping in mind the importance of enhancing payment services as described above, this section focuses on the main features of 24/7 services, based on the experience of the United Kingdom, Singapore, and Sweden (Chart 3).[2]

First, 24/7 services are often provided by the private sector funded by banks, or bankers associations, and thus the major banks in respective economies act as a driving force to spread the services. In the United Kingdom, 10 major banks, accounting for about 95% of the domestic payment volume, are direct participants in the FPS.[3] Other financial institutions -- approximately 300 institutions, including small and medium-sized financial institutions, and payment service providers -- are indirect participants, relying on the direct participants to settle funds through the FPS.[4] While some indirect participants provide 24/7 services, others do not seem to provide such services and various conditions are set, such as a cut-off time for same-day settlement and the availability of services only on weekdays.[5] In sum, while the quality of 24/7 services depends on respective participants' business strategies, the FPS is flexible enough to accommodate the diverse needs of financial institutions so that almost all of them can participate in the FPS network. Turning to Singapore, 14 major banks, which process most of the transactions of the existing payment system, currently participate in the FAST and provide 24/7 services, whereas approximately 110 other financial institutions have not joined the system.

Second, in terms of accessibility of 24/7 services, banks tend to set an upper limit on the value of funds transferred at one time, specializing in small-value payments. The FPS sets the limit at 100,000 pounds (about 18 million yen) for each transaction, and the FAST sets the limit at 10,000 Singapore dollars (about 900,000 yen). In Sweden, the limit varies among participating banks, ranging between 10,000 and 100,000 Swedish krona (about 150,000 to 1.5 million yen) for each transaction. Regarding service fees, most countries appear to provide services for free for individuals, but charge some fees for business customers.[6] As for the channels through which 24/7 services can be accessed, various options are provided, such as mobile banking, internet banking, telephone banking, ATMs, and branches. Among these channels, services using the customer's mobile phone number are spreading in the United Kingdom and Sweden to improve service quality (see BOX for mobile banking in the United Kingdom).

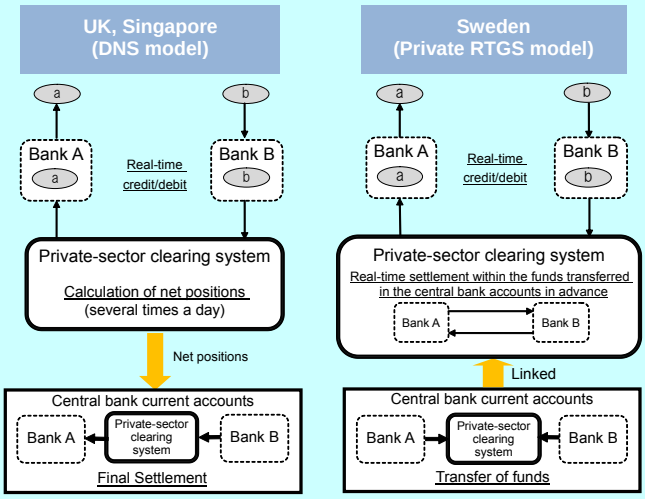
Third, regarding the settlement method, the interbank funds clearing system provided by the private sector and the real-time settlement via current accounts at the central bank have been effectively combined to provide 24/7 services (Chart 4). In the United Kingdom and Singapore, funds are credited to a payee in real time using the clearing system provided by the private sector. Interbank settlements are conducted several times a day on weekdays by using net positions calculated for each settlement cycle, and bank transfers are settled through the current accounts at the central bank (deferred net settlement <DNS> model). In the United Kingdom, the cut off times for settlement are currently 7:00 am, 12:45 pm, and 3:30 pm, and bank transfers are settled through the current accounts held at the Bank of England, with a view to balancing efficiency and safety. In Sweden, settlements are processed in real time and on a gross basis, as long as participants have transferred necessary funds to be settled in the central bank accounts in advance (private RTGS model).

[Chart 3] 24/7 Services in Major Economies

	United Kingdom (FPS)	Singapore (FAST)	Sweden (PRT)	Japan (Zengin System)
Launch of Service	2008	2014	2012	—
Hours of Operation	24/7	24/7	24/7	Weekdays 8:30-15:30

Note: The PRT of Sweden is used only for P2P mobile payment.
Sources: Documents disclosed by respective countries.

[Chart 4] Settlement Method of 24/7 Services in Major Economies

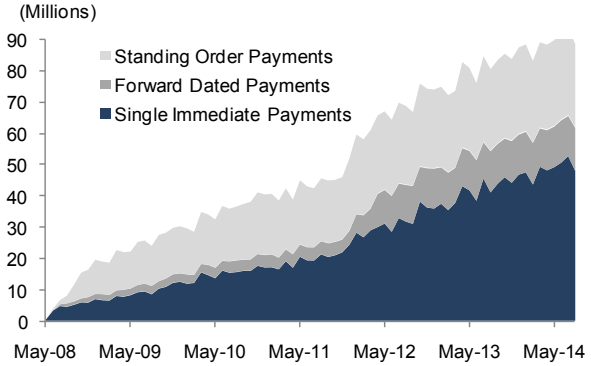


Sources: Documents disclosed by respective countries.

Fourth, regarding risk management, the United Kingdom and Singapore, which use the DNS model, adopt various measures to address risks arising from an increase of unsettled funds. These measures include a short position limit and a liquidity provision scheme to cover losses in case of the default of a participating bank with the largest short position limit. In addition, a rule is often set to allocate the losses which arise from the default of a participating bank among the participants within the range of collateral submitted beforehand.

Lastly, regarding the usage of 24/7 services, the number of users is increasing steadily thanks to the convenience of the services. In the United Kingdom, the FPS is expanding continuously, reaching 87 million transactions worth 72 billion pounds (about 13 trillion yen) in August 2014 (Chart 5). The motivation behind these services, however, differs markedly from country to country. In the United Kingdom, the government was initially the driving force to improve banking services, while in Sweden, the banking sector took the lead in introducing 24/7 services due to fierce competition with non-banking institutions. In any case, the efforts of all stakeholders, who sought better banking to meet the needs of customers, made such services possible.

[Chart 5] Volume of Clearings in the Faster Payments



Source: Faster Payments.

Financial EDI

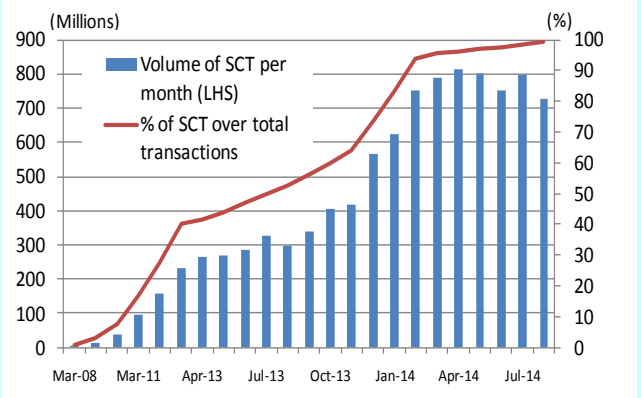
As for the implementation of financial EDI, it is necessary to set up a framework to harmonize the interests of the financial sector and the business sector. This section first explains recent developments in Europe under the Single Euro Payments Area (SEPA), an innovative initiative to take advantage of financial EDI. It then touches on the progress in the United States (Chart 6).[7]

[Chart 6] Number of Characters Allowed in a Payment Message Format

Country	Name of System	Type of Message Format	Number of Characters
United States	ACH	Original	80 characters (with iteration)
Europe	All bank transfers in SEPA zone	ISO20022 (XML)	140 characters
United Kingdom	FPS	ISO8583 (fixed field)	140 characters
Japan	Zengin System	Zengin format or ISO20022 (XML)	Zengin format: 20 characters or XML: 140 characters (with iteration)

Sources: Documents disclosed by respective countries.

[Chart 7] Migration of SEPA Credit Transfers (SCT)



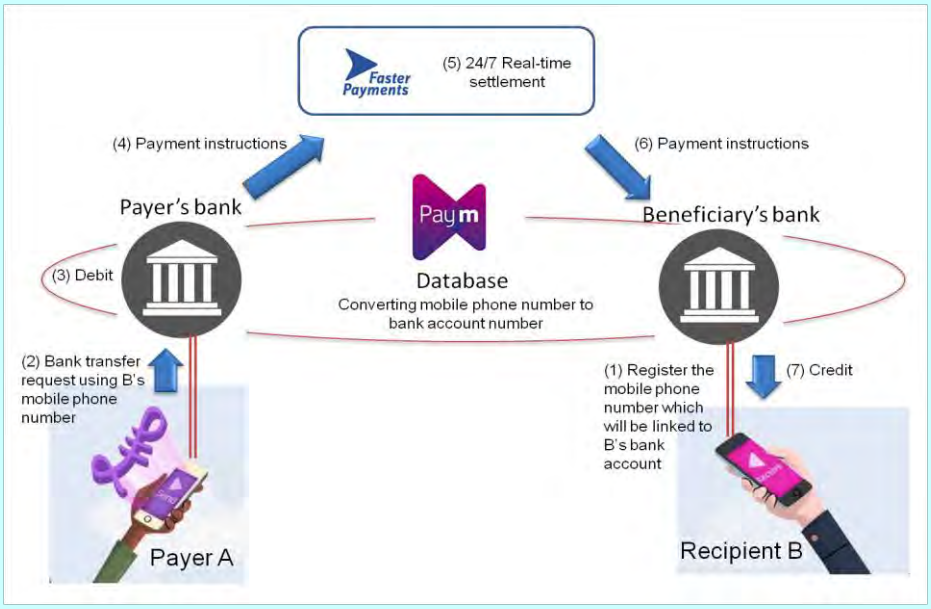
Source: European Central Bank.

The SEPA is a project to harmonize the way in which retail payments in euros are made and processed. The goal is to make euro payments as

[BOX] Mobile Banking in the United Kingdom

In the United Kingdom, the Payments Council has been working on a new payment service using mobile phone numbers instead of bank account numbers.[10] Since April 2014, a new service called "Paym" has started with the participation of 9 major banks. In order to use this service, a customer registers a mobile phone number linked to their bank account in advance, and the information linking the account with the mobile phone number is shared among the participating banks in the Paym. The payer can request a bank transfer via the FPS simply by entering the beneficiary's phone number and the value of the payment into the mobile payment application offered by the banks.

How the Paym Works



Sources: Paym Mobile Payments (http://www.paym.co.uk/) and Faster Payments (http://www.fasterpayments.org.uk/).

efficient and safe as possible, enabling cashless payments to be made to anyone anywhere in Europe. In order to achieve this goal, the SEPA developed a set of payment instruments under the common standards of ISO20022 XML, and progress has already been made. With the deadline for migrating to the SEPA instruments set on August 1, the SEPA credit transfers -- transactions processed in the SEPA format -- reached as high as 99.4 percent in August 2014 (Chart 7). While the SEPA requires its scheme participants (i.e., financial institutions) to comply with its standards, it appears some small to medium-sized enterprises are not yet fully compliant with the ISO20022 XML format. Against such background, banks and service providers have been providing their customers with services which convert the remittance information from the old format to the ISO20022 XML format. Such services will enable the SEPA to spread to the real economy of respective countries.[8]

In sum, the SEPA is a grand project which has been worked on by stakeholders for more than 10 years, with the aim of maximizing the benefits stemming from the single currency. While it took some time for the private sector to voluntarily standardize data formats that were compliant with the SEPA, the regulation -- often referred to as the SEPA end-date regulation -- was subsequently introduced to accelerate the implementation of the SEPA payment schemes and standards. That said, the SEPA enables customers to centralize their accounts and liquidity, and to enjoy the benefits of highly value-added services in credit transfers, direct debits, and cards. It also provides important infrastructure that makes financial EDI possible. In fact, the European Payments Council has published a number of case studies highlighting the lessons learnt from stakeholders that have migrated to the SEPA payment schemes and standards. One example is Villeroy & Boch, a global ceramics manufacturing company, which says that the benefits from the SEPA migration exceeded the investment cost associated with complying with the SEPA in just the first year.[9]

Going forward, European countries are looking into further measures to maximize the benefits of the single currency payments area. These include such measures as taking advantage of internet and internet-based technologies to store remittance information in the cloud.

Apart from measures taking place in Europe, there has been progress in other countries too. In the United States, the automated clearing house (ACH)[11] uses its own format, which is different from the international common platform but allows remittance information to be attached to an invoice. So far, however, this format has mainly been used in commercial transactions between large enterprises, due to a lack of agreement among stakeholders on sharing the cost of developing a system for financial EDI. In fact, a recent survey showed that more than half of respondents were unwilling to invest in accounting systems or treasury workstation upgrades to support the ability to send or receive wire payments with extended remittance information.[12] Against such background, the Federal Reserve (Fed) released a document titled "Payment System Improvement -- Public Consultation Paper," in which it clarified its strategic direction in payments, identifying improved speed, efficiency, and safety of the U.S. payment system from end to end as an objective.[13] It also identified as a desired outcome a ubiquitous system for near-real-time payments, that is, a ubiquitous electronic solution for making retail payments in which funds would be debited from the payer and made available in near real time to the payee. A summary of industry feedback on how to improve the U.S. payment system showed that approximately three quarters of respondents agreed with the desired outcomes specified in the consultation paper.

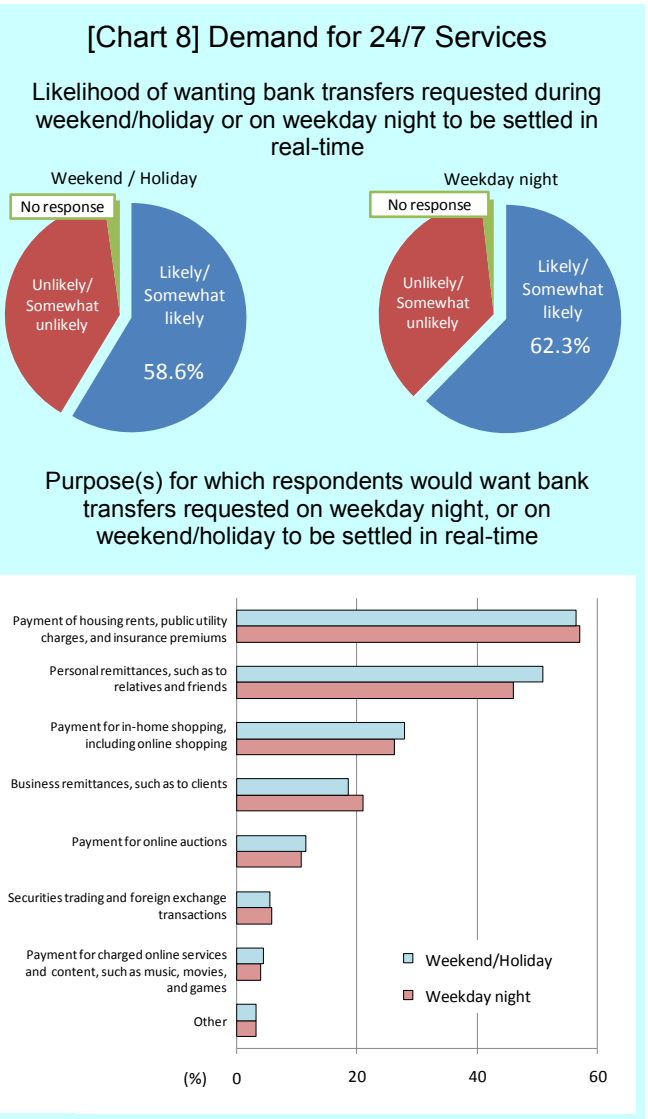
Thus, there has been progress in some countries, particularly in Europe, to build financial infrastructure for exchanging electronic information, both payment information and remittance information, while seeking cooperation with businesses. Looking ahead, firms in Europe, particularly the large ones, are expected to enjoy the benefits of the SEPA, such as reduced bank charges and synchronized liquidity management. This may pose a challenge for Japanese firms. To maintain their competitiveness against their peers overseas, they will need to find ways to reduce costs associated with payment transactions.

Conclusion

In Japan, 24/7 services have not been introduced. To be sure, bank transfers during daylight hours on weekdays are made available to the payee almost instantaneously. By contrast, transactions on holidays or in the evenings are honored, but the payee must wait until the following working day for the money to become available.

In terms of financial EDI, the Zengin System moved its platform to the 6th generation in November 2011, and one of the new features was to allow the ISO20022 XML format as an option for transfer messages.[14] Nevertheless, because the adoption of this format is not obligatory and requires coordination among various stakeholders, neither banks nor their customers have taken advantage of the new format.

[Chart 8] Demand for 24/7 Services



Source: Bank of Japan, "Results of the 56th Opinion Survey on the General Public's Views and Behavior (December 2013 Survey)."

Against this background, the Japanese government released the revised Japan Revitalization Strategy in June 2014. The strategy includes enhancement of the payment and settlement system such as the improvement of real-time bank transfers and the extensive use of financial EDI by enhancing

cooperation between industries and financial institutions. In addition, according to the 56th Opinion Survey on the General Public's Views and Behavior conducted by the Bank of Japan (December 2013 Survey), about 60 percent of respondents are either "likely" or "somewhat likely" to prefer bank transfers to be settled immediately (Chart 8). This suggests that there is potential demand for 24/7 services in Japan as well. At present, the Japanese Bankers Association and the Japanese Banks' Payment Clearing Network, which is responsible for managing the Zengin System, are studying whether Japan can introduce 24/7 services and implement financial EDI, and are expected to release the results of their study by the end of this year.[15]

In light of such developments at home, it is important to take stock of recent developments in major economies and proceed with both the improvement of real-time bank transfers and the achievement of financial EDI while taking the situation in Japan into consideration. The Bank of Japan will help financial institutions and other stakeholders steer such initiatives to enhance retail payment services and will collaborate with the Japanese government.

[1] See the EPC Newsletter on the EPC website for details. It includes interviews with the SEPA stakeholders describing the benefits of the SEPA.

[2] Mexico and Switzerland also provide high-quality payment services, but are not included in this article as the payment services in these countries are limited to the daytime on weekdays.

[3] A New UK Payments Regime -- A Finextra Research Survey, sponsored by VocaLink, September 2014.

[4] In general, there are three types of participants for the FPS: (i) "member" who participates directly in the FPS, handles both the sending and receiving of payment instructions, and the processing of funds settlement, by themselves; (ii) "direct agency" who handles only the sending and receiving of payment instructions by themselves, and rely on members for funds settlement; and (iii) "indirect agency" who relies on members for both the sending and receiving of payment instructions and the funds settlement. Both members and direct agencies are obliged to provide 24/7 services.

[5] In the United Kingdom, some domestic banks and building societies participate in the FPS as indirect agencies, but the contents of the services they provide, such as cut-off time for payment instructions or the timing of crediting funds, differ significantly. Relatively large building societies provide services in which funds are credited in a range of "within two hours" to "by the end of the next working day" regardless of the day when payment instructions were sent.

[6] In the United Kingdom, services are provided for free for individuals. In Singapore and Sweden, these are also provided for free for individuals for certain periods of time.

[7] Note that the SEPA not only focuses on financial EDI, but also standardization and unification of overall payment schemes including credit transfers, direct debits, and cards.

[8] Some banks and service providers in Europe have been providing services in which their customers can submit payment files in the old format and they will convert those files to the SEPA format. Other banks provide the list of external service providers which offer a range of different SEPA conversion services.

[9] EPC Newsletter, Issue 14 - April 2012.

[10] The Payments Council was established in 2007 with three core objectives: (i) to have a strategic vision for payments and lead the future development of cooperative payment services, (ii) to ensure open, accountable, and transparent payment systems, and (iii) to ensure the operational efficiency, effectiveness, and integrity of payment services.

[11] ACH, introduced in the 1970s, is a computer-based clearing and settlement facility which processes the exchange of electronic transactions between depository institutions and their customers as well as between those institutions.

[12] 2013 AFP Electronic Payments Survey, November 2013.

[13] Payment System Improvement -- Public Consultation Paper, Federal Reserve Financial Services, September 2013.

[14] Developments in Japan in the area of financial EDI can be found in the following documents (in Japanese): "Study Group Report on the Enhancement of Corporate Payment Services," Japanese Bankers Association, April 2012; and "Financial Institutions' Efforts to Enhance Corporate Payment Services," Bank of Japan Review Series, 11-J-9, August 2011. In July 2013, the Bank of Japan's Center for Advanced Financial Technology held a workshop, in which participants discussed how to use remittance information to enhance commercial and industrial financing activity. The minutes of the workshop are available on the Bank of Japan's website. Currently, the study group which examines linking remittance information with payment information is conducting a joint experiment.

[15] On October 16, 2014, the Japanese Bankers Association and the Japanese Banks' Payment Clearing Network released an interim report (in Japanese) which examined whether to extend the operating hours of the Zengin System and how to make use of financial EDI. Regarding the extension of operating hours, the report listed two options: (i) extending the operating hours of the current system with all member institutions; and (ii) extending those hours including Saturdays, Sundays, and holidays by building a new system. It would consider either of these options or the combination of the two. As for the implementation of financial EDI, it will continue to study a feasible scheme and a timescale for its implementation while considering the results of the study group's joint experiment (see footnote 14) and additional studies.

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