

Prospects for an Electronic Money Payment System in Japan*

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Despite of amazing progress in information technology that has taken place in recent years, the electronic money failed to live to the expectations and has made little headway into payments systems. The gap between expectations and reality is especially pronounced in Japan. The reason behind the failure of electronic money in Japan is twofold. First, typical use of electronic money is in general rather limited as long as conventional money is required as a unit of account and a store of value for the former operation. Second, Japanese financial institutions chose very limited standard for their electronic money systems that could not compete with near monopolistic position the credit card companies enjoy in cashless payment markets. On the contrary, for example Germany successfully adopted wide standard that fully utilises advantages of electronic money as medium of payment.

1. Introduction

Technological progress has been a catalyst for great changes in human society ever since the Stone Age. From hunter-gatherer tribes, through feudal agrarian societies, to the urbanisation of the industrial age, to the information technology era the invention of the wheel, the construction of

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high seas going ships, the steam engine, the electricity, and computing devices each dramatically changed the route along which the human society evolves. Yet the increase in computational power has influenced the mankind in the most spectacular way. It has profoundly changed our means of communication, trade, payment etc.

But in spite of indeed amazing progress, the expectations associated with the information technology were, at least in some areas, actually greater than the development we have been witnessing currently. For instance, electronic money has made little headway in the payments market. Currently, most of electronic (i.e. internet) transactions are settled using credit and debit plastic cards instead of electronic money, as it could have been expected otherwise. The cards have been designed for face-to-face real world transactions and they are by no means ideal for electronic transactions world. Let alone the fraud and moral hazard problems, they involve a lot of costly paperwork and, for that reason, they are not suitable for small transactions and person-to-person transfers. In Japan, where authorities placed a lot of political emphasis on the development of information technology as a way for achieving economic recovery (often dubbed as the “IT revolution”), the gap between the expected results and reality is especially striking.

Why then has electronic money failed to penetrate the payments market while electronic commerce and electronic banking seem to have been a success? In my opinion the nature of money as a network commodity helps to explain the puzzle. Looking for answers, the paper reviews briefly the concept of money and its evolution from a commodity stage to the current form. Then the main features of conventional money are compared to those

of electronic money and the prospect for adopting general electronic money payment standard are discussed. After having reviewed the current situation in Japan's payment system the concluding section provides some recommendations necessary for successful implementation of electronic money payments here.

2. What Money Does

The presence of money around us is so obvious that we usually do not think what money is. The idea that a certain good may be given up for another more useful one sounds by no means strange to anyone. But the fact that a possessor of a good may be willing to exchange its utility for small seemingly useless metal discs has been always attracting attention of social thinkers who tried to define the nature of money. The answer what money is can help in providing insights what will be the future of money too.

What money is? The simplest answer is the one given by Hicks that “money is what money does”. In economic terms it means that money acts as a medium of exchange, a unit of account, and a store of value. The emergence of money can be traced down to the phenomenon that rational individuals economise on transaction costs of exchanging goods. Carl Menger (2002) quotes experience of European traveller in mid-19th century Africa and his encounters with barter world where no money existed. “[To proceed with the Tanganyika cruise] I discovered a good one [boat], however (...) agent wished to be paid in ivory, of which I had none; but I found that Mohammed ibn Salib had ivory, and wanted cloth. Still, as I had no cloth,

this did not assist me greatly until I heard that Mohammed ibn Gharib had cloth and wanted wire. This I fortunately possessed. So I gave Mohammed ibn Gharib the requisite amount of wire, upon which he handed over cloth to Mohammed ibn Salib, who in his turn gave (...) agent the wished-for ivory. Then he allowed me to have the boat.”⁽¹⁾

If one bears in mind that success has been achieved with a great trouble and loss of time, and undoubtedly also with economic sacrifices then it must be clear that if there had been no money, one must have invented it. Analogously, the evolution of money from commodity money to metal money, to documents representing money, and to electronic impulses stored on plastic cards can be attributed to currency competition that manifests itself in economising on transaction costs.

The same holds for other functions of money. As soon as the money use as means of exchange broadens among a people, money becomes an asset that every economic agent requires. And, as money mediates commodity and capital transactions, there follows the necessity of measuring the value of goods to be exchanged for before any transaction takes place. Money works then as a common denominator of value (or as a unit of account).

Finally, money allows for transfer of wealth in time and space. This requires that a good intended for such a transfer must be durable, valuable, and capable of being dispatched in space. Those properties are not necessarily found in all goods that may serve as media of exchange or units of account (animals, shells, slaves etc.). Only a good that meets all the requirements at once can be described as money.

(1) V.L. Cameron, *Across Africa*, 1877, I, pp. 246 f (quoted after Menger, 2002)

3. A Short History of Money

As shown in the preceding section, the definition of money is purely functional and disregards its form. And money, since its invention almost three thousand years ago, has appeared in numerous forms. In its most primitive forms, money materialised as salt, rice, shells, decorative beads etc. only later gradually assuming forms that better fitted the needs of medium of exchange. Eventually, “precious” metals assumed the role of money because of relative easiness and low cost of storage, durability, and stable rate of exchange into other goods (as our apprehension of precious metals’ value less depends on individual tastes than in case of other consumer goods). Of all precious metals, gold became the most desired symbol of wealth. Once precious metals started performing as medium of exchange, unit of account, and store of value their money status became self-reinforcing. That means that the more people used money as money, the more they tended to accept it as money. It was then that the value of money began deriving not from its intrinsic value but from the confidence of those who use it as money that it will be always accepted as a form of payment.

After having assumed its metallic guise, soon money began to depart from its material form. The process began with its role as a store of value. Individuals hoarding metallic money over time needed appropriate place of storage for it. Some of the individuals were better suited to do the storage job than others and were willing to do it for a small profit. In such a way the profession of a banker (goldsmith) has been invented. The banker accepted metal and issued the depositor a note confirming the deposit.

Once individuals found out that it was actually much easier to use those notes rather than metals themselves, once again the mechanism of confidence came to work and the notes replaced metal as money. At this point money has started the evolution from its material form towards a claim based on the confidence in the issuer.

As individuals used more and more of banker's notes, the deposited metal lay quietly in deposit and the banker eventually discovered that only a small part of a deposited metal was actually ever claimed back. It is only a small step from here to loaning the idle part of metal or issuing additional notes. From that moment on, the reserves of metal the banker maintained were not supposed to be equal to the total amount of notes issued but only to be sufficient to meet the expected demand for depositors' claims. That means that as the total amount of notes issued is allowed to exceed the reserves of metal some of the notes represent claims to something that does not exist at all! But again it was not the metal intrinsic value but the public confidence that decided about the value of money, and it was the confidence in the banker that decided about the value and functionality of his depository notes. In the same process as metallic money replaced other goods as means of payment, here paper money replaced metallic money. Finally, as governments took matters in their hands and severed the link between paper money and their precious metal reserves, money became fiat money; paper notes issued by central authorities that represent a claim to nothing at all. Yet even in such a form the money has been playing effectively (let aside cases of exceptionally high inflation or currency substitution) the role of medium of exchange, a unit of account, and a store of value.

Understanding the forces underlying the process of money dematerialisation helps to explain why, at the end of 20th century it was possible that money could assume yet another form; electronic zeros and ones stored on plastic cards or sometimes even without any tangible form moving somewhere in a cyberspace. The individuals and firms using money agreed to place their trust into those electronic impulses exactly as their ancestors did it for metals and paper. The dematerialised money reached another dimension going beyond physics.

4. Modern Money as a Medium of Payment

Great expectations were associated with the emergence of electronic money. On one occasion Bill Gates said, somehow arrogantly, that banks of bricks and mortar were like dinosaurs heading for their extinction in the new era of electronic transactions. They were supposed to be replaced by electronic banks settling transactions in electronic cash. But while development of electronic trading is proceeding relatively smoothly, electronic money is yet to penetrate payment systems as expected. Instead, almost all internet transactions are settled by credit and debit card payments. They require a lot of paper work, they are costly to operate, they are prone to fraud (i.e. data skimming as they are operated by reading devices directly at the sales point) etc. For that reasons the credit and debit cards are rarely used for small transactions and person-to-person transfers. Yet despite of this and despite of various attempts to introduce purely electronic money into markets there seems to be no end to their domination as payment media in the area of cashless transactions. Before turning to the re-

alities of Japanese economy, we will review some characteristics of conventional and electronic payment media in this section.

The main characteristics of conventional payment media have been summarised in Table 1 and the properties of electronic payment media have been shown in Table 2.

Compared to cash, cheques, credit cards, and debit cards lack common acceptability and legal enforcement (a payee cannot refuse accepting payment in cash because it is a legal tender, while he can refuse accepting payment by cheque, credit or debit card). Also, while cash payment is a final step of settlement, cheques and cards require additional settlement between financial institutions. Cash payer remains anonymous while performing his transaction. On the contrary, cheques and cards reveal the payer's identity. Cash use does not result in intermediation costs while cheques and cards do. Cash payments can be verified only with the help of receipt while cheques and debit card payments are verifiable (credit card payments are not immediately verifiable). Credit and debit cards cannot be used for payments between individuals while cash and cheques can. The same applies to off-line transactions (but in some cases credit cards can be used off-line). Credit cards do not allow for positive inventories accumulation. All conventional payments media are prone to theft and forgery. Possible countermeasures include policing and frequent changes in anti-forgery features for cash, strict banking regulation for cheques, and swift card cancellation in case of both credit and debit cards.

Electronic money has been intended for economising on transaction costs that the conventional payment media cannot do. Quick settlement and low operational costs are expected to be appealing to the users while

Table 1
Conventional payment media

	Cash	Bank cheque	Credit card	Debit card
Common acceptability	Yes	No	No	No
Legal tender	Yes	No	No	No
Payment finality	Yes	No	No	No
Anonymity	Yes	No	No	No
Intermediation costs	No	Yes	Yes	Yes
Instant settlement	Yes	No	No	Yes
Verifiability	Partial	Yes	No	Yes
Peer to peer	Yes	Yes	No	No
Offline transactions	Yes	Yes	Possible	No
Inventory	Yes	Yes	No	Yes
Risk factors	Loss, theft, forgery	Fraud, bankruptcy	Fraud, theft, data interception, forgery	Fraud, theft, data interception, forgery
Defensive solutions	Policing, anti-forgery safety features	Banking regulations	Swift detection and card cancellation	Swift detection and card cancellation

Table 2
Electronic payment media

	Prepaid card	Smartcard	Pseudo-cash	Electronic cheque
Common acceptability	No	No	No	No
Legal tender	No	No	No	No
Payment finality	Yes	No	Yes	No
Anonymity	Yes	Partial	Optional	No
Intermediation costs	No	No	Yes	Yes
Instant settlement	Yes	Yes	Yes	Possible
Verifiability	No	No	Optional	Yes
Peer to peer	No	Yes	Yes	No
Offline transactions	Yes	Yes	No	No
Inventory	Yes	Yes	Yes	No
Risk factors	Minimal (low value)	Forgery	Fraud, double spending	Fraud
Defensive solutions		Security hardware, updates, policing	Security software, format updates	Security software, format updates

electronic money issuing banks can receive an interest-free loan from customers holding their card balances (analogously to the conventional cash the issued electronic money balances pay zero interest).

Prepaid cards are designed for specific purposes (such as often used in Japan's transportation payments or public telephone system) and operate in closed systems. For that reason their risk factor is minimal. But for the same reason multipurpose use and common acceptability are impossible to achieve. Therefore their use is very limited and certainly they will not become the money of the future.

On the other hand smart cards such as Mondex or German GeldKarte have a big advantage of multipurpose payment system and can be used for payments between individuals just like ordinary cash. At the same time smart cards do not involve costly paperwork and allow for quick settlement of payment. Although adapting the smart cards for the use on the internet involves some security issues, they can be addressed by updating security hardware and policing.

Purely electronic cash is actually "pseudo-cash" because it involves intermediary even in transactions between individuals unlike in the real world of conventional notes and coins. For instance under the Digicash's Ecash system the users buy digital "coins" (an account must be opened in a specified "mortar-and-brick" bank for this purpose) that are downloaded into their computers. Later their electronic cash can be used for purchases on the internet with the option of anonymity.⁽²⁾ Each electronic "coin" has a serial number assigned in order to avoid double spending.

(2) Spencer (2001)

Electronic cheques have all advantages and drawbacks of their paper counterpart, but as all the operations involved are paperless they are much cheaper than conventional cheques are. Electronic certificates and signatures can enhance their security, but the electronic cheques are unlikely to become a major payment medium for the same reasons the paper cheques did not replace cash; they lack finality, common acceptability, legal enforcement as payment tender and anonymity of ordinary cash.

5. Future of Electronic Money

Describing what will likely happen in (even near) future, based on information available now, always contains an element of speculation. Many predictions about the future of electronic money have proven to be of the mark (just to mention Bill Gates' comments about conventional banking).

On the one hand, the development of the internet transactions (let it be purchase of consumer goods or file swapping operations) will certainly reveal the limits of conventional payment media as traditional credit and debit cards. Rapid development of small-scale repeat transactions is likely to call for new instruments. And it is not only the internet that is likely to undermine the dominant position of conventional payment media. Technological progress is often forcing revisions of earlier predictions. For instance recent developments in cellular phone technology (i.e. third generation telephony) allowed for electronic payment to reach "off road" areas where, due to the limitations of personal computer, the use of electronic pseudo-cash was not possible until now. This represents unexplored yet opportunities for the use of electronic money.

On the other hand there are also serious obstacles to the development of electronic money. First, any forecasting about the future of electronic money must take into account the fact that money in order to become money must be generally accepted medium of exchange, unit of account, and store of value. That means the more persons use it in that way the more likely it is to become money. It is not an easy hurdle to clear. Once the critical mass of customers chooses a particular product, its presence becomes self-reinforcing (as in case of metallic money), but until then promoting a new product involves a lot of sunk costs and years perhaps before first profits turn in. Spencer (2001) cites an example of Bank of America sending millions of unsolicited credit cards, incurring costs of fraud and network building, all in order to reach a critical mass of customers for BankameriCard, the first credit card.

But once the system is established the company that blazed the trail enjoys windfall profits and near monopoly position. No surprise that after having worked for it very hard the company is going to defend its advantageous position. This means not only fighting fiercely against competitors but also quite often preventing technological progress from happening (as it would undermine the monopolist's privileged position). One of the most notorious examples of such behaviour is Microsoft that dominates market for personal computer operating systems and is often accused of unfair practices that result in slowing down improvement of existing technology (at least as long as it is not introduced by the company itself). Similarly, there have been allegations that Visa and MasterCard deliberately stifled technological progress in payment systems in order to preserve their dominant position in the credit card market. This, combined with potentially

high costs of switching providers creates a problem of natural monopoly that must be addressed by appropriate regulation.

Second, the emergence of electronic money is not likely to eliminate “mortar-and-brick” money as most of systems require backing up from ordinary money. The role of conventional money may be gradually limited but it will not be eliminated as long as electronic money does not reach the status of legal tender. As long as central banks take a cautious stance towards electronic money the situation is not likely to change. And central banks do have reasons to be concerned about the development of the electronic money. The issue of electronic money is likely to reduce a central bank’s control of money supply, as it undermines the government monopoly on the issue of money. It has also fiscal implications as it reduces the central bank’s income from seigniorage (the income from issuing domestic money that in some countries may reach up to several percent of GDP).

Third, in the era of concerns about the privacy protection, serious questions are likely to be raised about the anonymity of transactions in electronic money. In order to prevent fraud, it will take long time before, if ever, the electronic money transactions can reach the anonymity level of conventional cash transactions. As some individuals (especially in informal zones of economy) may prefer to remain anonymous, it may to some extent slow down the progress of adopting the electronic money. Another argument is that, although much cheaper than paperwork in conventional cash transactions, notational transactions in electronic money still induce some costs and, for that reason, it might be harder for the electronic money to replace conventional cash in small transactions (where the costs of notational operations weigh more than in large amount transactions).

Fourth, the spread of the internet transactions is one of the main driving forces behind the development of electronic money. And as the internet is intended to be a borderless network, the electronic money for the internet transactions are also supposed to thrive in a borderless environment. And as such it is supposed to reach a high degree of compatibility around the world. The problem of compatibility has two dimensions. First concerns the interoperability of the world payment networks (i.e. protocols, hardware, software). So far no single technological standard has emerged out of numerous electronic payment systems (for instance Digicash, Mondex, Proton etc). Then, if customer and merchant happen to belong to two different electronic payment systems the transaction may not be possible to materialise. The second problem is related to the foreign exchange. Naturally, borderless transactions involve numerous currencies and the exchange rates fluctuations are subject to economic policy objectives of central banks and are not related to electronic payment realities. However there are strong arguments in favour of adopting a single unit of account for electronic transactions. For transactions that tend to concentrate in regional markets it could be the unit of account of the dominating payment system, let it be the US dollar, the euro, or the Japanese yen. But for transactions that reach beyond the local market boundaries (and there is no reason to expect that the share of such transactions would be negligible – after all much of the internet appeal lies in its defiance of time and space) floating exchange rates between regional units of account may constitute a certain problem.⁽³⁾ Need-

(3) It seems to be worth mentioning that similar reservations were raised 30 years ago when floating exchange rate system first emerged. The concerns proved to be quite of mark as corporations learned how to hedge against exchange rate volatility. Foreign exchange risk hedging remains however costly

less to say, the stability of exchange rate between particular electronic money and the regional unit of account (and it depends very much on discretion of central banks that are not likely to participate in establishing electronic money framework) also remains a matter of concern for the participants.

To summarise, although technological progress is likely to reinforce the tendency towards the use of electronic money, there are serious systemic, technological, and economic policy related obstacles that may slow the universal adoption of electronic money as a medium of payment.

6. Payment Media in Japan

Cash and cheques

Bank deposits are the most widely used means of payment in Japan, but small every day payments are settled mostly in cash. Compared to other countries cash is used extensively in Japan. The ratio of cash to nominal GDP (14.4% at the of 2001) is the highest among the industrial nations. There are a few reasons for the high cash preference among Japanese public. First, cash has been traditionally playing a significant role in the life habits of ordinary Japanese. For instance cash gifts in clean (i.e. unused) notes that are traditionally presented at predetermined occasions increase the role cash plays in the society. Second, as Japan has a relatively low crime rate, carrying cash does not pose any serious risk. Third, due to well-developed nationwide network of ATMs⁽⁴⁾, cash is easily and cheaply acces-

for individuals and, needless to say, individual transactions account for a great deal of internet transactions.

(4) The country has almost twice as many ATM per 1 million inhabitants as the US or Germany. And since 1999 most of financial institutions have

sible. Banks, competing with nationwide postal savings network usually do not charge fees for cash withdrawals from their own ATM while the charge for withdrawals via other bank's ATM carries a small fee unrelated to the amount of cash withdrawn. Fourth, as anti-counterfeiting measures seem to have been effective and inflation rate has been very low (in fact negative for some time) the Japanese public continues to have a lot of confidence in nation's cash. Finally, although not often voiced, there is also an argument that the miserable condition of the country's banking industry resulted in distrust towards financial institutions and made individuals to flee into cash away from banking deposits.⁽⁵⁾

Needless to say, the dominant position of cash in settlement of every day transactions does not make it easy for other forms of payment to develop. Cheques, used by government agencies and firms are not common payment medium among individuals. Even though their use is in steady decline since the end of the 1980s.⁽⁶⁾ Individual consumers often arrange their payments through direct debts or credit transfers (a tri-party agreement between the payer, the payee, and their bank) but their every day transactions are dominated by cash payments.

Credit cards

The first credit cards were introduced in Japan in 1960 but they really

linked their ATMs with the Post Office ATM system that covers the entire country with its almost 26,000 ATM network.

(5) The relation of cash to banking deposits increased by nearly one-third during the 1990s (Krawczyk, 2004)

(6) The use of those instruments decreased by 80% between 1991 and 2001. Bank for International Settlements (2003)

took off as a major payment medium only during the 1990s. The number of cards became twice as much during that period as did the value of transactions settled by using credit card payment. There were 232 million credit cards at the end of March 2001 (almost two per one person) and the value of payments made by credit cards amounted to 23 trillion yen (almost 200 billion US dollars).⁽⁷⁾ The transactions are cleared on line by connecting the card magnetic data reading terminal to the central Credit and Finance Information System and to the credit card company computer. After checking for lost and stolen cards and credit limit the payment is being processed. Although still limited compared to other countries, the use of credit cards increased together with recent growth in business to consumer electronic commerce.

Debit cards

Debit cards were first introduced in Japan in 1984, when banks began providing the service known as “Bank POS”. However slow and complicated use of the cards prevented the service from becoming widely used. Technological progress enabled financial institutions to reintroduce the debit card payments known as “J-Debit” in January 1999. Amid the government sponsored “IT (information technology) revolution” campaign, the “J-Debit” was quickly hailed as the payment system of the future and was expected to replace soon credit cards as small transaction personal payment medium. The expectations were high as from the beginning the system was joined by major banks (Fuji, Dai-ichi Kangyo, Sanwa and others), ma-

(7) Bank for International Settlements (2003)

major department store (Seibu), oil companies (Cosmo), discount stores (Big Camera), convenience (Lawson) stores that operate round the clock, and most of all by the Post Office with its vast financial network. The customers were promised the convenience of cashless payment, businesses the reduction of the payment lag and lower costs of handling payments as compared with credit cards, and financial institutions were expecting the increase in number of customers and commissions charged.

The “J-Debit” uses the same terminals as credit card payments and the Credit and Finance Information System for data transmission. Payer’s bank account is charged immediately after receiving the transaction data. Inter-bank settlements are cleared through inter-bank payment system two days after transaction took place. The merchant’s account is credited from the third day on.⁽⁸⁾

Despite of high expectations the “J-Debit” transactions still amount no more than a fraction of credit card payments in Japan. Although the preference for cash transactions was expected to work in favour of debit card development, the Japanese public seems to have found a new taste for credit payments. There are also other reasons but loyalty campaigns by credit card companies and high initial entry costs for merchants who have to equip themselves with new terminals etc. are preventing wider use of debit cards.

Electronic payment media

Similarly to the “J-Debit”, various card-based and network-based

(8) Shintani (1999)

electronic money pilot projects have been conducted as a part of the “IT revolution”. All of them were confined to specific geographical areas (Kyoto, Yokohama, Kobe) and all ended without even catching-up with the population of those areas.

Prepaid cards have been the only electronic money payment form that really has been widely used in Japan. Since the 1980s they have been widely accepted for paying for public telephone (however recently in decline due to widespread use of cellular phones), railways, buses, and until 2004 for public toll roads. As number of users increased, also the networks of companies using one card have been developed (originally each company had its own prepaid card system). Most of cards are simple magnetic cards but some more sophisticated instruments (including contact-less smart cards) have been introduced too. Some of cards offer new services such as possibility to reload or possibility of deferring payment as credit cards do. Prepaid cards are not subject to banking supervision but since 1989 the card issuers have to deposit with the legal affairs bureau of the Ministry of Justice funds equivalent to half of the unused value of issued cards. This regulation is meant to protect the interests of cardholders.

7. Electronic Money Has Failed in Japan but not in Germany

As explained above, the evolution of money originates from economising on transaction costs. Therefore, in order to succeed, a new form of money must offer customers and businesses either significantly lower transaction costs, or substantial increase in convenience, or both. Meanwhile, the Japanese electronic money experiments have been confined to narrow ar-

eas or firms. This automatically precludes achieving a critical mass of users necessary for creating a self-feeding system. Another weakness of the Japanese experiments with electronic money to date is the fact that they have been based on stored value accounts. Under such system a customer cannot utilise his cash balances as long as they are not stored on a specified account. This system, currently continued in Electronic Toll Collection system for public expressways as well as in recently announced by the Nippon Telegraph and Telephone (major telephone service providing company) system that utilises data transmission abilities of mobile phones, is rather inconvenient, as it requires “reloading” customer’s account with fresh cash each time the balances approach zero. And, since in most cases there exist upper limits for balances stored on the customers account, frequent use requires also frequent “reloading” and big purchases were usually ruled out. No need of saying, none of the Japanese systems could have been used with various bank accounts. In this sense the stored value format adopted in Kyoto, Yokohama, and Kobe resembles multipurpose prepaid cards with limited geographical proximity (prepaid cards do not require however time consuming applications, costly terminals etc). On the contrary, the Germany’s GeldKarte allows its holder to use any account of any bank participating in the system as long as it has sufficient balances (access type of electronic money).

There is also one more often neglected more general problem that certainly has great influence of technological innovation in the Japanese financial industry. Most of the country’s financial institutions have been still suffering from the outbreak of the banking crisis. The Japanese banks, unable to raise their profit margins from their main lending activi-

ties (i.e. lending to corporate customers) and suffering from the fall-out from the non-performing loan crisis are not able to invest seriously in the technological progress. For that reason they have no choice but to charge their customers with the costs of introducing new technologies. Therefore, as it often happens in Japanese consumer-business relations, it is customers and small retailers that are charged with not only banks' commissions but also with costs of purchasing terminals, connecting lines etc. It stands in sharp contrast to the Bank of America that was sending millions of unsolicited credit cards in order to reach a critical mass of customers...

Under such circumstances, there is no surprise that customers prefer being lured by various “loyalty” perks (closely resembling the airline “mileage” programmes) offered by credit card companies (and enjoying in principle the benefits of deferred payment) instead of being confined to the limited area of “sophisticated prepaid card”.

It might be interesting to compare the Japan's experience with the electronic money to the country where the new form of payment really succeeded. 62 millions GeldKartes circulated in Germany in 2003.⁽⁹⁾ That means that approximately nine in ten adults in Germany have been using their version of electronic money smart card. The system (mostly micro-chip equipped Euro Cheque cards) developed by the German commercial banks' association (the Zentraler Kreditausschuss) is today the largest installed electronic money base in the world. Apparently the association utilised some elements of the already existing at that time Euro Cheque framework. The Euro Cheque used to be very popular deferred payment

(9) *Die Bank*, November 20, 2003

mechanism in Germany and some other countries (mostly Northern European) until the second half of 1980s. Its payment procedure involved a plastic card necessary for payment authorisation (i.e. cheque holder identification). As the electronic systems were gradually developing, the plastic card was used for speeding up the payment process with the paper cheque gradually becoming only a confirmation tool. In a very clever move, the banks utilised the already existing Euro Cheque cards for the purpose of creating the smart card network. The new payment system proved to be very popular for at least two reasons. First, it involved an already familiar payment tool (the card that was formerly necessary for cheque payments) and its connection to all major banks in Germany.⁽¹⁰⁾ Second, as most of European banks charge a uniform account maintenance fee regardless of the amount transactions going through the account (unlike Japanese banks that charge each transaction separately), the increasing amount of payments going via the account means decreasing marginal costs for each transaction and creates incentives for doing even small payments via the card. Currently the GeldKarte has been gradually expanding to small retail businesses, railway tickets selling machines, vending machines etc. Successfully competing with credit cards it is becoming a very popular payment method, at least in major German cities and, it has probably already achieved a critical mass of customers sufficient for becoming self-reinforcing payment system.

(10) By creating “shadow account” for loading the card banks allow payments and transfers to be finalised no matter which bank the customer has his account with (other systems like for instance Mondex, can work with one bank only).

8. Concluding Remarks

To conclude this essay on the prospects of electronic money in Japan as the medium of payment let us summarise the major findings. First, the electronic money is unlikely to replace conventional money as unit of account and store of value medium. As long as its construction requires backing from conventional money (let it be creating “shadow accounts” or purchasing electronic money from provider and paying in units of conventional money) its role will be limited rather to the payment medium only.

Second, the evolution of money originates from economising on transaction costs. Therefore, in order to be able to compete against other forms of money, the electronic money must offer its users substantial efficiency gains in form of significant reduction of transaction costs and (or) significant increase of convenience. Otherwise it would be impossible to reach critical mass of users necessary for the money to reach a self-propelling stage of development.

Third, Japanese experiments with electronic money were based on stored value technology that is similar to prepaid cards. Being confined to specific geographical areas, they had very limited possibilities to compete with well established credit card systems that easily operate within world wide networks (Visa and MasterCard). In this sense, they offered customers no new quality of service while imposing at the same time a significant burden on participating retailers (costs of hardware, staff training etc). Not surprisingly, all the experiments ended quietly with no follow up.

Fourth, instead of insisting on stored value standard, it might be useful to employ an access type standard involving many banks (like in Ger-

many's GeldKarte). Also utilising an already existing familiar payment tool (e.g. technologically enhanced "J-Debit" card) may prove helpful in overcoming customers' initial reservations.

Fifth, as establishing the electronic money standard involves a danger of creating a monopoly, the authorities may have to intervene in regulation of the newly created market. Also, as the prolonged recession in Japanese economy has weakened the country's financial system, Japanese banks have just started recovering from the non-performing loans legacy of the 1980s bubble and are not willing (not able) to engage in another costly undertaking such as investing in the electronic money business. Creating a set of proper incentives for developing costly networks etc is also a job for central authorities. Otherwise, the costs would be passed to consumers and retail businesses and the chances would be very small for the introduction of the electronic money to succeed.

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