



Payment 2004

A Road Map for Thai Payment Systems

Bank of Thailand
January 2002

Executive Summary

Thai payment systems have undergone over two decades of development and are now at a crossroads, responding to rapid market and technological changes, coupled with demands for high speed and security in making electronic commerce payments. Payment 2004 has been a co-operative effort on part of the central bank and the market to review the current payment infrastructure and to chart a road map to lay down strong future foundations for the country's payment systems.

Many countries around the world have carried out a major review of their payment systems to make preparations for the changing future of financial services. In Thailand, this became imminent after the financial crisis of 1997 where there was an urgent need to develop a safe and efficient payment infrastructure for the financial system. The Bank of Thailand developed both small-value and large-value electronic payment systems from the mid-1990s. This included the ECS, Media Clearing, and BAHTNET. By 2001, BAHTNET 2 was developed to support the delivery-versus-payment of government securities, while existing systems were continuously enhanced to improve their efficiencies. Although the transitions period during the century date change went by smoothly, many future challenges lie ahead.

Payment 2004 scans the changing global and local payment environments, identifies the key challenges, and proposes the necessary development directions. These challenges fall into five major areas.

The first agenda focuses on the need to establish an industry payment body to create a channel for co-operation among banks and non-bank payment participants in the market. The establishment of the Thailand Payments Association is proposed which will include committees overlooking regulation, standards and security, card payments, global payments, and strategy and electronic commerce.

The second agenda focuses on the need to collect national payment data to support decision making by market participants and policy making for the central bank.

The third agenda focuses on the need to introduce a new Payment Systems Act to reduce risks and promote efficiency in the payments system, contributing towards the safeguarding of financial stability.

The fourth agenda focuses on the need to develop an electronic payment infrastructure based on interoperable payment standards. This particularly concerns the use of common data formats and the development of complete straight through processing for payments.

The fifth and final agenda focuses on the need to study and consider making cross-border connections for both large-value and small-value payments.

Three lead institutions have been proposed to push forward these five agendas. They include the Thai Bankers' Association (TBA), the National Electronics and Computer Technology Center (NECTEC) and the Bank of Thailand.

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As always, final responsibility, including errors or omissions, resides with the project team.

1. Introduction

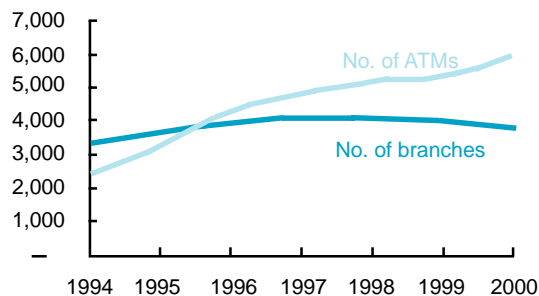
Payment systems in Thailand have undergone over two decades of development

Payment systems in Thailand have undergone over two decades of development. While the establishment of the National Banking Bureau served as an early clearinghouse for commercial banks back in the late 1930s, major innovations and developmental efforts started from the 1980s.

The 1980s was marked with the introduction of four major innovations by commercial banks. This included the automated teller machine (ATM) in 1983, credit cards and automated funds transfer systems in 1984, and electronic funds transfer at the point of sale (EFTPOS) in 1985. Two large ATM networks, Siamnet and Banknet, were later merged into an ATM Pool. As of 2000, there were over 20 million ATM cardholders having access to nearly 6,000 machines nationwide, while there were 1.7 million credit cardholders.

Figure 1 illustrates the growth of ATMs versus bank branches. The graph shows ATMs outgrowing bank branch growth. This is partly explained by cost reduction as compared to building bank branches and the trend towards providing new financial service delivery channels. In the case of ATMs, this has included making payment transactions related to cash withdrawals, deposits, bill payments, mobile phone recharge card payments, and cross-bank account transfers through the machines, as compared to completing the same transaction through a bank teller at a bank branch.

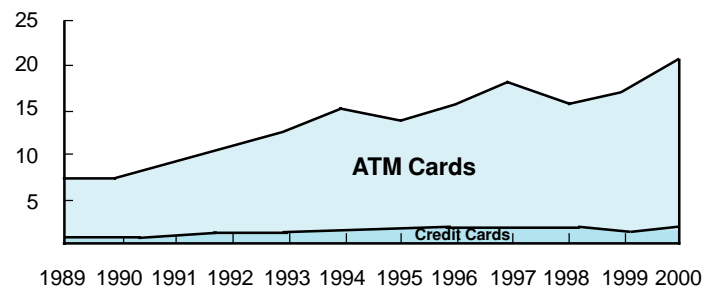
Figure 1: Growth of ATMs Versus Bank Branches, 1994-2000



Source: Bank of Thailand

Figure 2 illustrates the growth of ATM cards versus credit cards. One important implication for the growth of electronic commerce is the number of credit card holders who use it as a payment method for purchasing goods and services on the Internet. Alternatively, some payment service providers have also considered using other payment methods, for example, ‘virtual cards’ that use a personal identification number for payments.

Figure 2: Growth of ATM Cards Versus Credit Cards, 1989-2000 (millions)



Source: Bank of Thailand

The 1990s was marked with the modernization of the national payments system by the central bank.

The 1990s was marked with the modernization of the national payments system by the central bank. The Bank of Thailand developed three major payment systems including a large value payment system called BAHTNET, a small value payment system called Media Clearing, and an Electronic Cheque Clearing System (ECS). These systems formed the backbone of the national financial infrastructure as they facilitated the transfer of funds across financial institutions. In other words, they provided inter-bank settlement. As of 2000, the average daily value of payments that passed through these systems have been staggering, ranging from THB 250 billion in BAHTNET, THB 104 billion in ECS, and THB 400 million in Media Clearing. Media Clearing processed over 4 million transactions, particularly payments for payroll and goods and services. Comparatively, over 70 million cheques were written, indicating it as the dominant means of payment.

By 2000, the market continued with new innovations such as Internet banking, mobile banking, and the establishment of the country's first Certification Authority, which served to support secure payments in electronic commerce. Moreover, new payment channels continued to be offered, for example, through postal offices and convenience shops.

Internet banking services approved by the Bank of Thailand numbered 9 as of September 2001. This comprised of 6 Thai commercial banks (Krung Thai Bank, Bank of Ayudhya, Thai Farmers Bank, Thai Military Bank, Siam Commercial Bank, Bank of Asia) and 3 foreign commercial banks (Citibank, Deutsche Bank, Dai-Ichi Kangyo Bank). Services offered through this channel include, for example, statement inquiries, local and global funds transfer, bill payments, and import/export transactions.

According to Jardine Fleming's report on *E-banking in Asia*, spending on electronic banking and the Internet by some commercial banks ranged from THB 100 to THB 300 million between fiscal years 1999-2000.

Despite such developments, there have been relatively low penetration rates for both cellular mobile and the Internet as compared to Hong Kong, Taiwan, Singapore, South Korea and Malaysia. In 1999 Internet users numbered over 700 million, a penetration rate of 1.2 per cent of the population, while there was 2.37 million cellular mobile subscribers, a penetration rate of 3.8 per cent. By 2001, the number of Internet users grew to approximately 2.3 million. The report suggests that cellular mobile would be a key delivery channel for commercial banks when they offer online products to customers.

Thus, in comparative context, major developments in the 1980s were initiated by commercial banks, while the 1990s saw increased central bank involvement in investing in key infrastructures that would further support financial sector development. Nevertheless, a changing payments market where banks and non-banks have both become payment channels has characterized payments in the twenty first century.

Payment user needs

In response to changing market needs and new technological trends, a stock take study of payment user needs was carried out in mid-2001. The Thammasat University Research and Consulting Institution (TU-RAC) study surveyed 518 respondents, including 152 organizations and 366 individuals in the capital and in three major provinces. Organizations represented government agencies, financial institutions and businesses.

The TU-RAC study pointed to four major findings.

The market indicated a need for close co-operation between the central bank and commercial banks in the payment system.

First, the market indicated a need for close co-operation between the central bank and commercial banks in the payment system. This was very clear for policy making and new service developments for central bank payment services. In the area of clearing and settlement, commercial banks have also shown interest to become more involved, particularly in the clearing and settlement of checks.

The market indicated a need for standardization.

Second, the market indicated a need for standardization. This was particularly the case for the new services such as electronic bill payments, Internet banking and mobile payments. Among the major reasons cited include the high systems development costs involved and steep learning curves required in switching standards.

The market indicated a need for creating awareness for new payment services.

Third, the market indicated a need for creating awareness for new payment services. This was particularly the case for government agencies and businesses seeking information on retail payments services in Media Clearing. In addition, the user needs pointed to the need for more information provided by commercial banks on telephone banking, mobile banking and internet banking.

The market indicated a need for electronic payments, but also preferred using bank counter services.

And fourth, the market indicated a need for electronic payments, but also preferred using bank counter services. Many organizations indicated their preferred payment channel for the future as being the use of direct debit, bank counter services and Internet banking, respectively. Comparatively, individuals indicated their choices as ATM, Internet banking and bank counter services, respectively. Thus, although both group of users have shown interest in new services such as in Internet banking, use of bank counter services remained a popular payment channel.

Cheques remained the most prevalent means of payment compared with other electronic payment methods.

Large firms were more likely to use electronic payments than small-sized firms.

Daily transaction statements and an Electronic Funds Transfer Law were cited as key reasons for increasing use of electronic payments.

The TU-RAC study supports an earlier study on payment income, cost and usage in Thailand, carried out between the Bank of Thailand and the Thailand Development Research Institute (BOT-TDRI) during 1999-2000. The BOT-TDRI study surveyed 180 businesses on their usage of different types of payment methods and made three major findings.

First, cheques remained the most prevalent means of payment compared with other electronic payment methods. The use of cheques provides a number of advantages. They are accepted as legal evidence, for which the payee can use against the payer in court in cases involving dishonoured cheques. Cheques are also frequently used as a form of promissory note (post-dated cheques), facilitating trade credit between business parties. Finally, cheques are relatively cheap, as compared with other non-cash payment means.

Second, large firms were more likely to use electronic payments than small-sized firms. The reasons for not using electronic payment services include the following.

- (1) Lack of computer facilities, particularly for BAHTNET
- (2) Lack of good internal controls
- (3) Requirements of receivers
- (4) Lack of trust on receivers
- (5) Payer's unwillingness to pay early
- (6) Inability to cancel payments in cases of error

And third, survey results pointed to the desirable conditions required promoting use of electronic payment methods. Daily transaction statements and an Electronic Funds Transfer Law were cited as key reasons for increasing use of electronic payments. Other important reasons included the need for a criminal law to protect electronic funds transfers, weekly transaction statements provided by commercial banks, and cheaper computer equipment.

'Payment package' – old versus new

As seen from above, cheques, together with cash, are the dominant means of payment in Thailand. Nevertheless, in order to spot further strengths, weaknesses and opportunities in current payment systems, it helps to outline the complete 'payment package'. Figure 3 illustrates the common payment environments. Figure 4 illustrates the common payment methods.

Figure 3: Common Payment Environments

To From	Consumer	Business	Financial Service Provider	Government
Consumer	Gifts Reimbursements Loans	Purchases Bill payments	Securities purchase Insurance premium Investment purchase Loan repayment	Taxes License fees
Business	Salaries Expenses Dividends	Purchases Bill payments	Pension payments Insurance premiums Investment services Loan repayment	Taxes License fees
Financial Service Provider	Dividends Redemptions Insurance claims Interest	Purchases Bill payments	Securities transfers Purchase of services	Taxes
Government	Entitlements Tax refunds Salaries	Vendor payments Tax refunds	Tax refunds Purchase of services	National to local and inter-departmental transfers

Source: Adapted from Financial Services Panel (2000)

Figure 4: Common Payment Methods

To From	Consumer	Business	Financial Service Provider	Government
Consumer	Cash Cheque Postal money order Credit transfer Electronic purse (possibly)	Cash Cheque Credit/debit card Direct debit Postal money order Electronic purse	Cheque Direct debit Direct credit Standing order Postal money order	Cheque Credit transfer Postal money order
Business	Cheque Credit transfer	Cheque Direct debit Credit transfer Purchase card	Cheque Direct debit Credit transfer	Cheque Credit transfer
Financial Service Provider	Cheque Credit transfer	Cheque Credit transfer	Cheque Credit transfer	Cheque Credit transfer
Government	Cheque	Cheque Direct debit Credit transfer	Cheque Direct debit Credit transfer	Cheque Credit transfer

Source: Adapted from Financial Services Panel (2000)

Figures 3 and 4 illustrate 16 types of existing payment relationships between four major groups of payment participants. While some payment relationships use electronic methods such as credit transfers, direct debits and electronic purses, others still rely on the use of paper-based instruments such as cash and cheques. It is interesting to note that postal money orders are also a common payment method, particularly for consumer-related business models.

The TU-RAC report sought to assess the current payment practices in the above 'payment package' through factor analysis. Some key findings are as follows.

Government agencies and businesses, need better information on direct credit transfer services provided by Media Clearing.

Consumers need better information on commercial bank telephone banking, mobile banking and Internet banking services.

Credit card, funds transfer, and cash are common payment methods for e-commerce, but e-commerce remains marginal.

For organizations, direct debit, bank counter and Internet banking are the preferred future payment channels.

For consumers, ATMs, Internet banking and bank counter are the preferred future payment channels.

Accuracy, security and speed of service are the most important factors in choosing payment channels.

For organizations, receipts are required as legal evidence.

Current developments have sought to improve current gaps in the payment package above. For example, governments have attempted to develop electronic channels in collecting taxes from consumers and businesses. The Thai Revenue Department, for instance, has developed a value-added tax (VAT) collection system on the Internet.

Other interesting developments have been focused on consumer-to-consumer payment relationships. For example, this has included electronic purse schemes. Also, person-to-person payment schemes have also been developed like PayPal, aimed at the market for small-value person-to-person payments, and Earthport, which provide cross-border payments in sterling, dollars, deutsche marks and French francs. In the latter scheme, transaction fees may be low as

THB 12 (GBP 0.20) regardless of the size of the transaction.

In sum, technological changes have opened up new financial service delivery channels that may provide consumers flexible and new economical choices for both retail and wholesale payments at the local and international levels.

A global perspective

A survey carried out by the Bank of England's Centre for Central Banking Studies suggest that a majority of central banks preferred an evolutionary rather than a revolutionary approach in payment systems reform and development, and many also included commercial bank involvement.

The Cruickshank Report highlighted competitive problems in the payments market, leading to the UK government giving the Office of Fair Trading new powers to promote effective competition in payment systems in order to benefit personal and business customers.

The report on the Future of Financial Services Infrastructure further point to four visionary design features of an ideal payment system in 2010.

Many countries around the world have realized the changes facing payments system, and as a result, have carried out stock stake studies on the current strengths, weaknesses and gaps. For example, a survey carried out by the Bank of England's Centre for Central Banking Studies suggest that a majority of central banks preferred an evolutionary rather than a revolutionary approach in payment systems reform and development, and many also included commercial bank involvement. Elsewhere, other countries have carried out similar studies. Among these countries includes the United Kingdom, the United States and Hong Kong, China.

The United Kingdom published a major review on *Competition in UK Banking*, also known as the Cruickshank Report, in 2000. The report reviewed current money transmission services and found serious competition problems and inefficiencies in the market for the provision of payment services. The Cruickshank Report highlighted competitive problems in the payments market, leading to the UK government giving the Office of Fair Trading new powers to promote effective competition in payment systems in order to benefit personal and business customers. Other organizations were also given clear mandates. The Bank of England continued to have responsibility on the oversight of payment systems ensuring financial stability. The Financial Services Authority continues its role in prudential supervision of financial institutions and consumer protection. The Financial Ombudsman Service overlooked consumers' complaints.

The report on the *Future of Financial Services Infrastructure* further points to four visionary design features of an ideal payment system in 2010. This includes universality, simplicity/economy of design, reasonable cost and good money. Universality suggests that payment systems should encompass all possible payment relationships among consumers, businesses, financial service providers and government. Moreover, universality covers domestic, regional and global payments, low and high value payments, and real-time payments. Simplicity/economy of design suggests that payments should have built-in basic features for widely used purposes, while special features should be used for specialized markets, particularly when they have large overhead costs.

The Rivlin Report formed the foundation for the Payment Systems Development Committee, set-up in 1999, to advise the Board of Governors of the Federal Reserve System on medium and long-term public policy issues on retail payment systems.

The Hong Kong Report sets out a clear strategic vision of “Hong Kong as a Virtual Economy and a Virtual International Financial Centre of Excellence”.

Reasonable cost suggests that cost/price characteristics should be attractive to all markets. Finally, good money refers to the protection of payer failure. This particularly concerns protection against settlement risks for all payment systems, and in particular, for large-value payments.

The United States published a report on the *Federal Reserve in the Payments Mechanism*, also known as the Rivlin Report in 1998. This report focused on current retail payment services provided by the central bank and explored alternative scenarios if existing roles were changed. A major part of the stock stake study was to hold discussion forums nationwide to examine the impact of various scenarios, including liquidation, privatization, continuity and access, promoting efficiency, and leading to electronic payments. The Rivlin Report formed the foundation for the Payment Systems Development Committee, set-up in 1999, to advise the Board of Governors of the Federal Reserve System on medium and long-term public policy issues on retail payment systems.

Moreover, the Committee serves as a forum for the analysis of technological and market trends, provide a mechanism for consulting with private payment system providers and users, and advise the Board on any action.

Hong Kong, China published a report on *Financial Technology Infrastructure for Hong Kong* in 1997. The report reviewed national information infrastructure initiatives and the impact of new technology on the financial architecture. The Hong Kong Report sets out a clear strategic vision of “Hong Kong as a Virtual Economy and a Virtual International Financial Centre of Excellence”.

Some of the initiatives proposed include delivery versus payment, payment versus payment, transfer versus payment, straight through processing, and FinNet, an “Intranet linking financial institutions and regulators together to enable a secure platform for data submission, and eventually straight-through processing.”

Payment 2004: A framework for Thailand

Secure electronic payments have been determined as one key development direction for supporting electronic commerce, which is one of the major flagships behind Thailand's information technology plan, also known as IT 2010. On a much broader level, this would support the IT policy framework of moving towards the knowledge-based economy, which in turn, rests on the promotion of innovation, the building of human capital, and the strengthening of information infrastructure and industry.

Payment 2004, which seeks to lay the foundations for a safe and efficient payment systems for the twenty first century, supports the broader national IT policy framework

Payment 2004, which seeks to lay the foundations for a safe and efficient payment systems for the twenty first century, supports the broader national IT policy framework. The formulation of this framework is based on several sources of information, including workshops, focus group sessions, international experiences, and a major research study on payment strategic directions carried out by TU-RAC. Key findings from these sources of information are noted throughout this paper.

A very important part of formulating the report has been the constructive comments received from the study's Advisory Group. The Advisory Group, comprising of representatives from the public and private sectors, have provided valuable information and suggestions during the whole duration of the project. Payment 2004 determines developmental trends and future directions and is organized as follows.

Chapter 2 presents the public policy objectives of the central bank in the payment system and identifies the major systems based on the BIS Core Principles.

Chapter 3 discusses the five major agendas identified under Payment 2004. This includes the establishment of a payment industry body, the collection of national payment data, the introduction of payment legislation, the development of common payment standards, and the connection to cross-border payment systems. Each agenda, where appropriate, discusses the key drivers, international experiences, objectives, recommendations and the proposed lead institution that will help push forward the agenda.

Chapter 4 concludes the paper by outlining a three-year plan to guide development directions, including a summary of recommendations and the institutions that are proposed to lead each agenda in Payment 2004.

2. Public Policy Objectives

The Bank of Thailand pursues the dual objectives of promoting efficiency and reducing risks in the payment system.

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Promoting efficiency

Payment systems are a major part of a country's economic and financial infrastructure. They contribute towards promoting economic activity and improving macroeconomic management in the following ways:

- release of funds from the clearing and settlement functions for more productive use,
- reduction of float levels,
- lowering of transactions costs, and
- control of monetary aggregates.

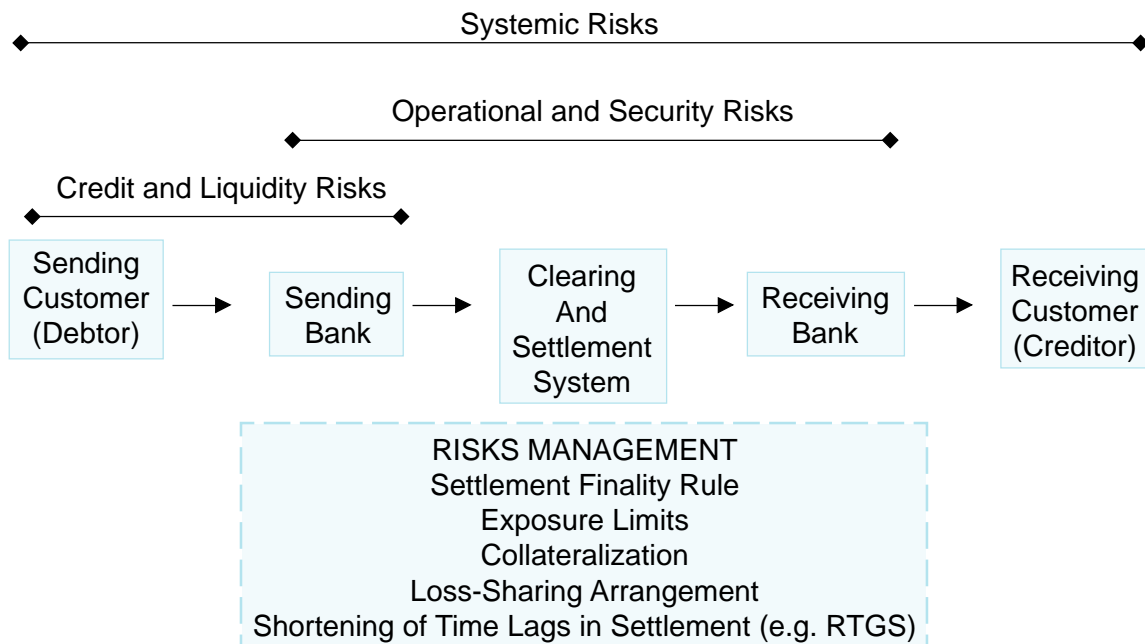
Efficiency in payment systems may be viewed as *operational efficiency* and *economic efficiency*. Operational efficiency focuses on the processing of payment transactions in a fast and reliable manner, facilitating the turnover of money in the economy. In technical terms, settlement represented by T, moves from, for example, a three-day settlement (T+3) to a real-time settlement (T+0).

Economic efficiency concerns the promotion of cost-saving means of payment. Generally, payment charges should reflect the costs involved in producing the product or service. Thus, as electronic payment systems have the advantages of scale economies, reducing the transaction cost as volume increases, they are more economical than the use of cheques.

Reducing risks

While an efficient payment system facilitates the flow of funds, potential risks may also arise when payment failures occur, ranging from liquidity shortages to credit problems among participants. Moreover, such risks may develop into systemic risks that are transmitted from one member to another in the system, disrupting the smooth functioning of the payment system and the stability of the financial system. Figure 5 illustrates the range of risks, along with the alternative risk management approaches, in the payment system.

Figure 5: Risks and Risks Management in the Payment System



The characterization of risk may be grouped as *financial risks* and *non-financial risks*. Financial risks include the following. Liquidity risk is the probability that a payment will not be settled on time because the debtor has insufficient liquid funds. Credit risk is the probability that a payment will not be fully settled because the debtor is insolvent. Systemic risk is the probability that liquidity or solvency problems of one or more individuals or organizations in the payment system would lead to liquidity or solvency problems on a large scale to threaten payment systems in the economy at large.

Non-financial risks include legal, operational and security risks. For example, in legal risks, the presence of a 'zero hour rule', which is the possible unwinding of payments, and the absence of a settlement finality rule, may lead to systemic risks when the net positions of participant banks are re-calculated without including a failed participant. Operational and security risks may range from human errors, unreliable telecommunication systems and weak internal controls.

In addition to their macro objective of price stability, central banks have a micro objective of maintaining financial stability, particularly in the core areas of the payment system and the commercial banks that operate it. In financial stability, central banks have an important responsibility in minimising systemic risks in payment systems, as the public has entrusted them with this duty.

In view of the risks above, particularly on financial risks, increased importance has been given to risk management. This includes settlement finality rules, exposure limits, collateralization, loss-sharing arrangements and the shortening of time lags in settlement.

Settlement finality ensures that settlement can occur even in the event involving the failure of a payment participant, which may stem from liquidity or solvency problems. Exposure limits involve the setting of *debit caps* and *credit limits* for payment participants, which may be determined as absolute amounts or multiples of capital. Collateralization, usually in the form of highly liquid government securities, is used to facilitate settlement. In case of a defaulting participant has insufficient collateral that was earlier pledged, a loss-sharing arrangement distributes the remaining losses in relation to exposures to the defaulting participant. Finally, the shortening of time lags in settlement is another way to reduce risks. This may involve the move from deferred net settlement systems to real-time gross settlement systems.

In Thailand, average daily values of payments in BAHTNET have reached as high as THB 250 billion, accounting for 5 percent of gross domestic product.

Central banks in Australia, Norway and Canada, for example, have designation powers to determine a payment system as systemically important.

The BIS Core Principles: The Thai perspective

The Bank for International Settlements has published a global framework for systemically important payment systems, which is determined by the value and nature of a particular payment. Basically, payments that have high individual or aggregate values, and that are used for the settlement of financial market transactions, such as foreign exchange and securities, and the settlement of other payment systems, are considered systemically important. Above all, such systems have the ability to transmit shocks to both domestic and international financial systems.

Many countries have recognized the need to put the BIS Core Principles into law and into practice in order to reduce risks in the payment systems (See Chapter 3). Central banks in Australia, Norway and Canada, for example, have designation powers to determine a payment system as systemically important.

This BIS Core Principles emphasizes the need for central banks to disclose their public policy objectives in the payment system, their role and major policies, the compliance of central bank systems, the oversight of non-central bank systems and the cooperation with other authorities. Figure 6 illustrates the ten BIS core principles for systemically important payment systems.

Figure 6: BIS Core Principles for Systemically Important Payment Systems

Public Policy Objectives: Safety and Efficiency in Systemically Important Payment Systems

Core Principles for systemically important payment systems

- I. The system should have a well-founded legal basis under all relevant jurisdictions.
- II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.
- III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.
- IV. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.
- V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.
- VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.
- VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.
- VIII. The system should provide a means of making payments, which is practical for its users and efficient for the economy.
- IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.
- X. The system's governance arrangements should be effective, accountable and transparent.

*Systems should seek to exceed the minima included in these two Core Principles.

Responsibilities of the central bank in applying the Core Principles

- A. The central bank should define clearly its payment system objectives and should disclose publicly its role and major policies with respect to systemically important payment systems.
- B. The central bank should ensure that the systems it operates comply with the Core Principles.
- C. The central bank should oversee compliance with the Core Principles by systems it does not operate and it should have the ability to carry out this oversight.
- D. The central bank, in promoting payment system safety and efficiency through the Core Principles, should cooperate with other central banks and with any other relevant domestic or foreign authorities.

Figure 7 further illustrates the major payment systems in Thailand, measured by average daily volumes and values of transactions in 2000.

Figure 7: Major Thai Payment Systems

Payment System	Volume	Value (THB Billions)
BAHTNET	2,602	250.5
ECS	228,359	104.2
Provincial Cheque Clearing	74,116	6.0
Media Clearing	16,628	0.4
ATM Pool	1,553,000	5.2
Credit Card	Na	0.6 ^{1/}

Source: Bank of Thailand

Notes: Na - Not available; ^{1/} Figures are for January-June 2000

In Thailand, average daily values of payments in BAHTNET have reached as high as THB 250 billion, accounting for 5 percent of gross domestic product.

By aggregate values, it is interesting to note that BAHTNET and ECS are clearly systemically important payment systems, accounting for 5 percent and 2 percent of gross domestic product respectively. Furthermore, maximum individual values for BAHTNET and ECS during the same year can be high as THB 24 billion and THB 5 billion respectively.

Comparatively, other payment systems have lower average daily values, owing partly to their focus for small value payments, and in some systems, predetermined limits for payment transfers. Such is the case of credit limits for credit cards and a pre-determined limit of THB 500,000 per transaction in Media Clearing.

It is also interesting to note that an increasingly popular payment method is the use of postal payment orders as earlier mentioned. Payments of postal financial services, particularly services provided by the Communications Authority of Thailand, have an average daily value of THB 110 million, accounting for over 25 percent of Media Clearing.

Although the major Thai payment systems comply with many areas of the BIS Core Principles, there is room for further improvements

Although the major Thai payment systems comply with many areas of the BIS Core Principles, there is room for further improvements. Most importantly, an explicit legislation on payment systems may empower the central bank to designate a specific system as posing potential systemic risks, thereby putting it under strict surveillance to safeguard financial stability.

Although current arrangements include a risk protection scheme in the form of a collateral-backed real-time gross settlement system in BAHTNET, this is on a partial basis. As earlier mentioned, remaining losses may have to be distributed through a loss-sharing arrangement.

Furthermore, risk protection schemes may be required for ECS, provincial cheque clearing, and Media Clearing, which currently rely on the central bank's lender of last resort facility, which is provided through the Financial Institutions Development Fund. Nevertheless, this policy would need to be kept under review, considering current plans to establish a Deposit Insurance Agency in the country.

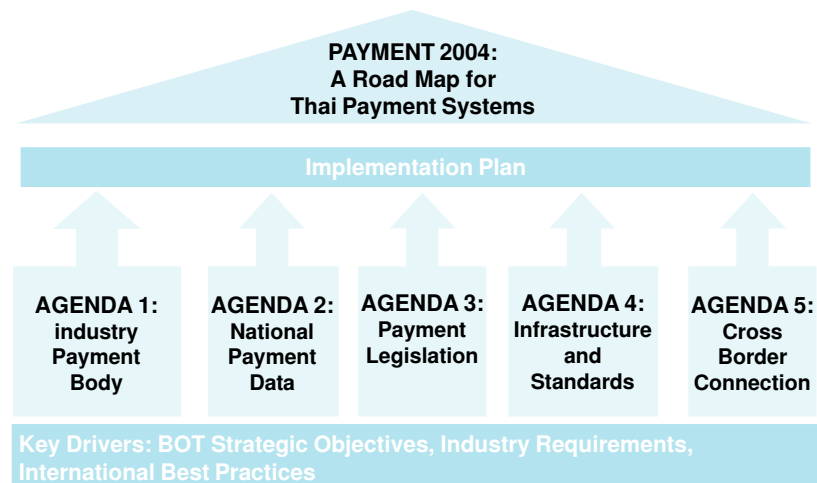
Potential risks may also occur in non central bank payment services, particularly in the ATM Pool and Credit Card network. Two reasons help explain this. First, the settlement bank for both payment systems are based on accounts opened at a commercial bank. While ATM Pool participants settle through Bangkok Bank, credit card participants settle through Thai Farmers Bank (for Visa card) or Chase Manhattan Bank (for Master Card). Second, present risk protection schemes also use the central bank's lender of last resort facility. In both cases, this is not supported by BIS Core Principle Six, which states that 'Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.'

In recent developments, the Bank of Thailand's Payment Systems Committee has realized the above potential risks and the importance of an explicit legislation on payment systems, resulting in a further study on a Draft Payment Systems Act. This is discussed in Agenda 3 on Payment Legislation.

3. Key Agendas

Payment 2004 focuses on five key agendas as illustrated in Figure 8.

Figure 8: Payment 2004 – Key Agendas



The key driver behind agenda one is the need for co-operation and co-ordination in the payments market.

Agenda 1: Industry Payment Body

The key driver behind agenda one is the need for co-operation and co-ordination in the payments market. This need is more urgent considering possible improvements in the current communication channels, which has been through various working groups, committees and clubs. While working groups and committees have been formed by the central bank during the development of major payment systems such as BAHTNET, clubs have also been formed through the Thai Bankers' Association and have included common interest groups on credit cards, information technology and SWIFT. Nevertheless, some forums, such as the Payment System Club, have been disbanded, while others meet on a case-by-case basis.

Another rationale is the need to create a common forum for key stakeholders, such the central bank, financial institutions, non-financial institutions and consumers, to discuss the development directions of the payment system.

The Bank of Thailand has addressed such changes in the payment markets by adapting the structure of its Payment Systems Committee to include three external members who would advise on policy-making in payment systems. Nevertheless, similar developments would need to be encouraged at the industry-level.

A need for bank co-operation

Research results from the TU-RAC study suggest the following. First, a majority of commercial banks support the role of the central bank in regulating and monitoring, together with clearing and settlement, for the payment services it provides.

Second, a majority of commercial banks have shown interest in getting involved with policy making for the central bank's payment services.

And third, a majority of commercial banks have shown interest in taking part in new service development.

In sum, these findings suggest a relatively strong demand from commercial banks to become more involved in the policymaking and service development aspects of the central bank's payment services. In terms of regulation, clearing and settlement, results suggest that such roles should be retained within the central bank.

International experiences

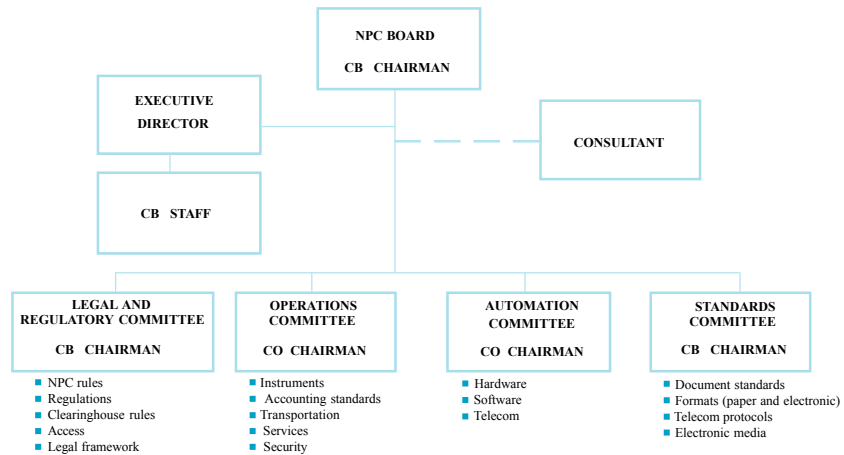
Industry payment bodies may take various forms, including councils, committees, consortiums and associations. Here, we review and compare three optional models that have been used in many countries.

Model 1 – National Payments Council

In a World Bank policy paper on *The Modernization of Payment Systems in Emerging Economies*, the concept of a National Payments Council (NPC) was introduced as “an organizational structure set up to coalesce domestic and external actors, functions and interests in the payment systems.” The NPC serves two primary purposes including (1) to act as a forum for the central bank and commercial banks and (2) to serve as a channel for transferring and absorbing technical assistance. Figure 9 illustrates a sample structure of the NPC.

The NPC serves two primary purposes including (1) to act as a forum for the central bank and commercial banks and (2) to serve as a channel for transferring and absorbing technical assistance

Figure 9: National Payments Council – Sample Structure



Source: Listfield and Montes-Negret (1998)

Note: CB = Central Bank, CO = Commercial Bank

The NPC model has been mainly adopted in countries that are characterized as transitional or developing economies (See Appendices, Table A1). For example, this includes Malawi, Uganda, Namibia, Peru, Russia, Poland, Latvia and Jordan.

The NPC model has the following advantages. First, it creates a talking shop for the central bank and commercial banks to discuss and agree on how to establish and oversee the functioning of the national payment system and how to coordinate central bank and commercial banks' policies in the payment system. And second, it creates an organizational structure whereby various committees overlook a specific area of the payment system, particularly legal and regulatory issues, operations, automation and standards. Each committee, in turn, is chaired by either the central bank or commercial bank.

However, the NPC has two disadvantages. First, it is suited for transitional economies seeking technical assistance. And second, it does not create a channel for non-bank payment participants.

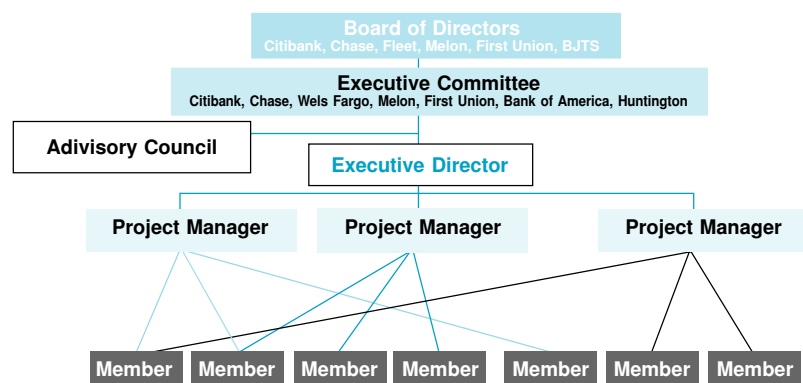
Model 2: Payments Consortium

The concept of the payment consortium is based on the US-based Financial Services Technology Consortium (FSTC). The FSTC is a not-for-profit organization whose objective is to enhance the competitiveness of the country's financial services industry. Members include banks, financial services providers, research laboratories, universities, technology companies, and government agencies

“The FSTC sponsors project-oriented collaborative research and development on technical projects affecting the entire financial services industry. Particular emphasis is placed on enabling online financial services, payment systems and services, and leveraging new technologies that help banks cement customer relationships, boost operational efficiency, reduce risk and costs, and expand their market reach.” (See www.fstc.org)

The FSTC’s organizational structure consists of a Board of Directors and an Executive Committee, mainly represented by major financial institutions. In addition, the Advisory Council, represented by technology companies, universities, and government agencies, provided the technical know-know in collaborative projects with financial institutions. Figure 10 illustrates the organizational structure of FSTC.

Figure 10: Payments Consortium – Sample Structure



Source: www.fstc.org

Past FSTC projects have included Financial Agent Secure Transaction (FAST), the Bank Internet Payment System (BIPS), Paper Automated Check Exchange and Settlement (PACES), and eCheck. In addition, new projects have included FAST B2B Financial Services, Authentication at Account Opening, and Electronic Document Archival Framework.

The advantage of the payments consortium model is that it provides a collaborative approach among financial institutions, technology firms, universities and government agencies in developing payment systems.

However, the payments consortium model is project-specific and focuses on pre-competitive projects. In other words, the model is suited for the development of new innovations and does not directly address issues in current payment systems.

Comparatively, payment associations share the principles of central bank and commercial bank co-operation like the NPC. Also, they have started to create forums for non-banks.

Model 3 – Payments Association

Comparatively, payment associations share the principles of central bank and commercial bank co-operation like the NPC. Also, they have started to create a forum for non-banks. A payment association mainly works in the benefit of the banking sector, ranging from the collection of payment data for members (See Agenda 2) to the development of common payment standards and systems (See. Agenda 4).

The payments association model has been used mainly in developed economies where there has been a mature and modernized banking system. For example, this has included Australia, Norway, the United Kingdom and Canada (See Appendices, Table A2).

In Australia, the Australian Payments Clearing Association (APCA) governs four major payment systems and undertakes wide-ranging responsibilities such as preserving the integrity of the systems and increasing understanding to the wider community. Although banks dominate share members, non-banks who have interests in payment services are represented through the advisory council and associate members.

In Norway, the Banks' Central Clearing House (BBS) plays a major role in providing payment services to members. This includes cards, giros and interbank settlement services. BBS membership, however, is comprised of commercial banks and savings banks only.

In the United Kingdom, the Association of Payment Clearing Services (APACS) was established, following the recommendations of the *Child Report* published in 1984. APACS serves as an umbrella body that manages three major payment systems. Additionally, the association carries out work on the forecasts of payment trends, market research, compilation and maintenance of a large base of statistics, and the formulation of industry payment standards. While APAC membership is largely from clearing banks, the governance structure has been changed to allow non-banks such as the Post Office. Moreover, other non-bank players may be represented in various interest groups, such as the Cards Group, under a predetermined set of criteria.

In Canada, an Act of Parliament created the Canadian Payments Association (CPA), a non-profit organization, in 1980. The CPA was given two mandates: (1) to develop and operate the national clearing and settlement system; and (2) to plan the evolution of

the national payments system. In addition to operating the system, the CPA develops and implements the rules and procedures, which govern clearing and settlement of payments. These rules and procedures ensure that the system is safe and sound and that payments are exchanged efficiently.

CPA members are deposit-taking institutions of which 40 percent are banks. The other 60 percent include trust companies, credit unions, caisses populaires and provincial savings offices. About one third are provincially incorporated and regulated. All members belong to statutory deposit insurance plans or, if they are credit union centrals, are regulated under special federal legislation.

CPA has 143 members as of 1999. This includes the Bank of Canada (1), banks (59), centrals (6), trust companies and loan companies (39), and other financial institutions (18).

The CPA Board is comprised of representatives from the central bank (1), commercial banks (5), non-bank users (6) and independent members (3). Also, an Advisory Council advises the Board on policy issues.

The payments association model has the advantage of the NPC plus the channel for non-bank participation. This has become a very important factor considering the changing payment market and consumer demands.

The disadvantage, however, is in obtaining support from banks to allow non-bank participation.

Comparatively, Payment 2004 supports the third model on establishing a payments association to create co-operation among banks and non-banks in the payments market. Moreover, it suits the relatively matured banking system where payment innovations have started as early as the 1980s.

Objectives

The agenda on industry payment body has the following objective:

- To serve as a channel for co-operation among the central bank, commercial banks and other major payment participants

Recommendations

Establish the Thailand Payments Association (TPA) in consultation with the market.

Sample Charter

A sample charter, covering the membership criteria, governance structure, and committees, along with the sample organizational structure of TPA, are described below.

Membership criteria

Full Membership – The Bank of Thailand and large commercial banks. Full members must originate or receive more than a prescribed percentage (to be determined by the TPA) of the payments volume or value in the previous year, limiting the number of full time members to between 7 and 10.

Associate Membership - All other financial institutions and non-bank participants who have an interest in the payments system

Governance

A Board of Directors will govern the TPA. Permanent directors will represent the central bank and large commercial banks. Associate Members will elect the remaining directors. Each board member has one vote.

The central bank has veto power over the TPA's decisions on rules and regulations, the safety and soundness of the payment system, and competitive equality.

Associate members will elect directors each year for rotating two-year terms. Directors must be governors or deputy governors from the central bank and presidents, chairmen, vice chairmen or senior policy makers from commercial banks.

The Board will appoint a full-time Executive Director, who in turn, would appoint the TPA Secretariat.

Committees

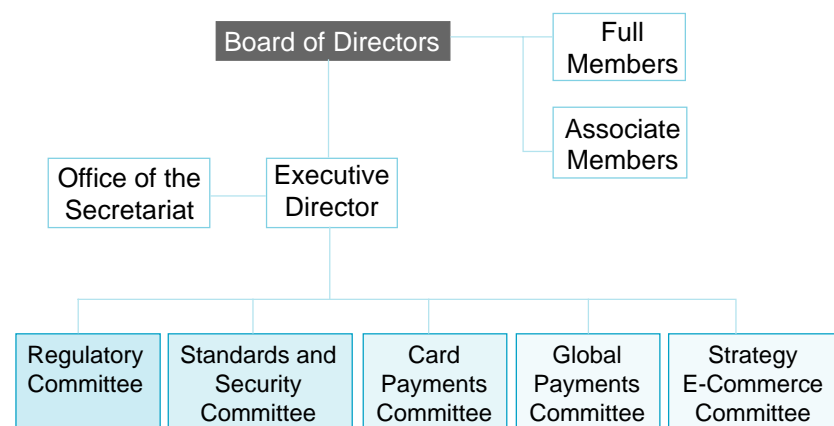
The TPA will maintain five permanent committees: (1) regulatory committee, (2) standards and security committee, (3) cards committee, (4) global payments committee, and (5) strategy and e-commerce committee.

Each full time member will appoint one representative to each committee. Associate members, as a group, will appoint no less than one and no more than three representatives to each committee.

Committee members must be senior, full-time employees with direct responsibilities for the committees' functions within their organizations.

The Bank of Thailand will chair the Regulatory and Standards and Security Committees. Full members will chair the Cards, Global Payments and Strategy and E-Commerce Committees. Chairs will represent commercial banks and will serve terms of not less than one year or more than three years. Committees may create subcommittees to discuss technical matters. Figure 11 illustrates a sample structure for the TPA.

Figure 11: Payments Association – Sample Structure



The Regulatory Committee would overlook areas on NPC rules and governance, payment regulations, access and the legal framework.

The Standards and Security Committee would overlook areas such as message standards and formats that may cover central bank payment services, electronic banking, mobile banking and electronic bill presentment and payment. In addition, the committee would also determine national and international bank account number standards.

The Card Payments Committee would overlook areas such as ATM, credit cards, debit cards, chip cards, PIN at point-of-sale and card fraud cases. Since a Credit Card Club currently exist in the TBA, it may be upgraded into this committee. In addition, various sub-committees may be formed to look into specific areas as mentioned.

The Global Payments Committee would overlook and assess emerging cross-border payment channels, including large-value and small-value payment systems. This may cover regional and international arrangements. The International Banking Club and the FOREX Club that currently exist in the TBA, together with the SWIFT Club, may be upgraded into this committee.

The Strategy and E-Commerce Committee would overlook areas such as new technological innovations and electronic initiatives, for example on electronic government and e-ASEAN. Since a Banking Information Technology Club currently exists in the TBA, it may be upgraded into this committee.

Lead institution

The Thai Bankers' Association is proposed as the core institution to lead the market in establishing the Thailand Payments Association.

Other related institutions which will play an important role in facilitating the project include the following:

- Bank of Thailand
- Foreign Banks' Association
- Private companies

The key driver behind agenda two is the market's need for payment data to support decision-making and policy-making.

In the United Kingdom, the Association for Payment Clearing Services (APACS) has collected payment data as early as the mid-1980s.

Agenda 2: National Payment Data

The key driver behind agenda two is the market's need for payment data to support decision-making and policy-making. More complete and up-to-date data would contribute towards increased understanding of the payment market and the promotion of the most efficient means of payment.

Current payment data ranges from central bank payment services to data on ATMs and credit cards. But more interestingly, data on new payment methods and channels have still not been collected in a systematic manner.

International experiences

Three countries – the United Kingdom, Australia, and Norway – provide useful insights into the carrying out of payment data collection (See Appendices, Table A3).

In the United Kingdom, the Association for Payment Clearing Services (APACS) has collected payment data as early as the mid-1980s. APACS, serving as the UK industry payment body, forecasts payment trends, conducts market research, compiles and maintains a large database of statistics, and formulates industry standards for payments. It produces exclusive publications for its members, such as the *Payment Markets Report*, as well as publishes its work and key statistics to the public in the form of an *Annual Review* and a *Payments Market Briefing*.

Australia takes a similar approach to the United Kingdom. The Australian Payments Clearing Association (APCA), the industry payment body, serves as a central point for collecting payment data ranging from ATMs to EFTPOS. Nevertheless, the Reserve Bank of Australia also maintains a body of payment data such as RTGS statistics and points of access in Australian payments system in its *Statistical Bulletin*.

In Norway, payment data is mainly compiled by the Norges Bank in co-operation with key market players who provide payment data. The Banks' Central Clearing House (BBS), a payment-processing center that serves as the industry's payment body, provides many important transaction volume and values to the central bank. BBS, its members, and other payment participants, in turn, benefit from the *Report on Payment Systems* published by the Norges Bank annually and is full of statistical data and analysis of market trends.

In sum, payment data collection can be carried out by the industry payment body, the central bank, or through the co-operation of both bodies.

In sum, payment data collection can be carried out by the industry payment body, the central bank, or through the co-operation of both bodies. Due to the absence of an industry payment body in Thailand, the central bank approach, as illustrated in the case of Norway, is one practical alternative.

Objectives

The agenda on national payment data includes five objectives:

- To assess the current payment market in Thailand
- To assist in reporting payment data to industry and international organizations
- To support central bank policy making in payment systems
- To develop an electronic database of payment statistics
- To forecast payment trends in the future

Recommendation

Conduct an annual survey of national payment data led by the central bank in close co-operation with industry.

Lead institution

The Bank of Thailand is proposed as the core institution to lead the market in collecting, analyzing and disseminating payment data.

Other related institutions which will play an important role in facilitating the project include the following:

- Thai Bankers' Association
- Foreign Banks' Association
- Processing Center Co., Ltd.
- Private companies

The key driver behind agenda three is the need for an explicit legislation on payment systems to safeguard financial stability.

Agenda 3: Payment Legislation

The key driver behind agenda three is the need for an explicit legislation on payment systems to safeguard financial stability. In particular, this focuses on the need to put in place a clear risk protection system in payment systems to prevent participants from potential credit, liquidity, operational, and most importantly, systemic risks.

This agenda is well supported by the BIS Core Principles, which gives importance to a well-founded legal basis. Moreover, the *Corrigan Report*, which focused on opportunities for improved effectiveness of the Bank of Thailand, has also recommended the central bank to introduce legislation, which gives it “explicit authority to oversee the payments system and facilitate its further development.”

International experiences

Many countries have started to introduce payment legislation to ensure the reduction of potential risks, particularly in inter-bank settlement and clearing and settlement systems (See Appendices, Table A4).

The United States is one of the earliest countries to introduce legislation to govern payment services.

The United States is one of the earliest countries to introduce legislation to govern payment services. This has included the Electronic Funds Transfer Act and Regulation E of 1978, which defined the rights, liabilities and responsibilities for participants in retail payments. The Uniform Commercial Code Article 4 was enacted to cover large-value payments, while the Federal Reserve Act Regulation J was introduced specifically for Fedwire, which is the central bank’s large-value payment system. Also, the Federal Deposit Insurance Corporation Improvement Act was introduced to ensure settlement finality.

Canada introduced the Payment Clearing and Settlement Act in 1996 giving the Bank of Canada powers to designate a clearing and settlement system that poses systemic risks.

Canada introduced the *Payment Clearing and Settlement Act* in 1996 giving the Bank of Canada powers to designate a clearing and settlement system that poses systemic risks. A designated system would be subject to guidelines determined by the Bank of Canada, which cover agreements, directives, audits and inspections, the cost of regulation, and settlement rules. A large part of the legislation has been based on the adaptation of the *Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries*, which is also known as the Lamfalussy Report. Interestingly, the Governor and the Minister of Finance, have designation powers if specific systems demonstrate potential systemic risks.

Australia introduced the Payment Systems (Regulation) Act in 1998 giving the Reserve Bank of Australia wide ranging powers in the payment system.

Norway introduced the Act relating to Payment Systems in 1999 giving the Norges Bank the power to authorize and supervise inter-bank settlement systems.

The United Kingdom, following a major review of competition in payment systems, plans to introduce a Payment Services Bill.

Australia introduced the *Payment Systems (Regulation) Act* in 1998 giving the Reserve Bank of Australia wide ranging powers in the payment system. This includes, like the Bank of Canada, the power to designate a system as having potential risks to the stability and integrity of the payment system. Moreover, the legislation gives powers in data collection, standard making, and arbitration in case of disputes to the Reserve Bank of Australia. It also gives the Reserve Bank of Australia authorization powers for stored-valued card schemes.

Norway introduced the Act relating to Payment Systems in 1999 giving the Norges Bank the power to authorize and supervise inter-bank settlement systems. This legislation was based on the EEA Directive on Settlement Finality in Payment and Securities Settlement Systems. Like Canada and Australia, the Norges Bank has the power to designate systems that pose systemic risks.

The United Kingdom, following a major review of competition in payment systems, plans to introduce a Payment Services Bill. The legislation would give new powers to the Office of Fair Trading in addressing competitive issues in the payments system.

Developments in payments legislation at the international level have included the UNCITRAL Model Law on International Credit Transfers and related laws introduced or being drafted by the European Union, including the EU Directive on Settlement Finality in Payment and Securities Settlement Systems and the Draft Directive on Electronic Money.

Other countries that have considered introducing explicit payments legislation, according to the financial system and stability assessment reports prepared by the International Monetary Fund, include the Czech Republic (Payment Systems Act), the Republic of Poland (Act on Settlement Finality in and Oversight of Payment Systems), and the Republic of Slovenia (Draft Law on Payment Services).

Draft Principles

The Payment Systems Act may have four main objectives. First, the law should aim to reduce risks in the payment system by ensuring settlement finality and eliminating existing ‘zero hour’ rules, which permit the unwinding of payments. Second, the law should aim to promote efficiency by encouraging use of cost-saving means of payments. Also, the central bank may have

data collection powers, particularly on costs, and standard-making powers for compliance. Third, the law should protect consumers, particularly concerning the rights, liabilities and responsibilities of participants. And fourth, the law should aim to promote competition by ensuring fair access to systems, authorization of systemically important payment systems (SIPS), and arbitration in case of disputes.

The purpose of the Draft Payment Systems Act would be to reduce potential risks and increase efficiency in the payment system to safeguard financial stability. Some key principles to consider include the following.

Principle 1: Settlement Finality

Principle 2: Designating payment systems

Principle 3: Authorization

Principle 4: Supervision

Principle 5: Reporting

Principle 6: Standards compliance

Principle 7: Audit and inspection

Principle 8: Access

Principle 9: Arbitration

Principle 10: Rights, liabilities and responsibilities for participants

Also noteworthy is that most of the principles are applied in the context of the six points laid out in the *Lamfalussy Report* of 1990 and the ten BIS Core Principles for Systemically Important Payment Systems of 2001. This is due to the potential risks they pose to the payment system and financial stability. Equally important is the need to balance the regulation of critically important payment systems, while not over-regulating other systems to foster competition and innovation in the market.

Existing legislations in Thailand relating to payment systems have remained outdated and implicit

Existing legislations in Thailand relating to payment systems have remained outdated and implicit, including the Bank of Thailand Act of 1942, the Currency Act of 1958, the Commercial Banking Act of 1962, and the Civil and Commercial Code. Moreover, the Bank of Thailand sets rules, regulations, guidelines and notifications that relate to the provision of payment services.

For example, the Bank of Thailand Act of 1942 exclusively states that the central bank is an operator of the inter-bank clearing system, overlooking its oversight role.

Although many laws are under development, they are very technology-specific and do not directly address the reduction of potential risks in the payment system

Recent legal developments include planned amendments to the Bank of Thailand Act empowering the BOT to regulate and support the set-up of clearing and settlement systems across financial institutions and/or payment systems. In addition, the Draft Financial Institutions Act, currently under parliamentary review, empowers the BOT to propose a royal decree to regulate businesses that pertain to deposit taking from the public, credit extension, or other financial businesses.

The Electronic Transactions Act, giving the legal recognition of electronic data messages, was enacted on December 4, 2001 and enforced on April 3, 2002. In addition, the National Electronics and Computer Technology Center is currently working on four related legislations. The Draft Universal Access Act and Draft Data Protection Act are awaiting parliamentary review, while the planned Computer Related Crime Act and Electronic Funds Transfer Act are undergoing the drafting process.

Although many laws are under development, they are technology-specific and do not directly address the reduction of potential risks in the payment system.

Objectives

The agenda on payment legislation has the following objective:

- To develop draft principles for the Payment Systems Act to reduce potential risks and increase efficiency in the payment system to safeguard financial stability.

Recommendations

Introduce an explicit Payment Systems Act to reduce risks and promote efficiency in the payments system, contributing towards the safeguarding of financial stability.

Lead institution

The Bank of Thailand is proposed as the core institution to lead the market in revising the regulatory framework for payment systems.

Other related institutions which will play an important role in facilitating the project include the following:

- Ministry of Justice
- Thai Bankers' Association
- Foreign Banks' Association

The key driver behind agenda four is the need to develop a common payment platform based on interoperable standards to reduce duplicative payment infrastructure investments and to support the growth of e-commerce

Agenda 4: Payment Infrastructure

The key driver behind agenda four is the need to develop a common payment platform based on interoperable standards to reduce duplicative payment infrastructure investments and to support the growth of e-commerce. In order to develop a common infrastructure, two key factors would need to be discussed and agreed upon by the market.

First, a common payment platform would be based on the use of interoperable standards. Some examples include ebXML (electronic business extensible markup language), OFX (open financial exchange) and IFX (Interactive Financial Exchange) (See Appendices, Table A5). While the first focuses on general business applications, the second standard is used in the context of financial and banking businesses, and is aimed at the retail level. IFX, formed by a group of business and technology professionals, has been a more recent development and focuses on specific areas of payments such as electronic bill presentation and payment, business banking, credit applications processing, insurance, and aggregation. Although based on XML, they have branched into sub-standards.

Second, a common payment platform would aim for a complete straight through processing (STP) of payments in the long-term. This complete STP payment circle would need to address the needs of four parties – payer, payer's bank, beneficiary, and beneficiary's bank - and take the following features into consideration:

- Standardized global account number
- Common electronic layouts (XML-based)
- Standardized payment reference number
- Standardized order reference number
- Common due date convention
- Bank audit-trail code
- Settlement code
- Common appearance for other payment data
- Security features

Thus, there is the need to harmonize payment standards, including the message type, the payment instruction, the bank account number. For cross-border payments, such standards would also need to be developed (See Agenda 5).

A need for common standards

Research results from the TU-RAC study suggest the following. First, the market raised concerns on high systems development costs for a lack of standards and steep learning curves for consumers in switching standards.

Second, a majority of commercial banks supported the need to develop common standards for electronic bill presentment and payment, Internet banking, and mobile banking.

Objectives

The agenda on payment infrastructure has the following objectives:

- To develop a common payment platform based on interoperable standards
- To develop a complete straight-through-processing system for payments

Recommendation

Develop a common payment platform based on interoperable standards

Lead institution

The National Electronics and Computer Technology Center is proposed as the core institution to lead the market in developing a common payment platform.

Other related institutions which will play an important role in facilitating the project include the following:

- Bank of Thailand
- Thai Banker's Association
- Foreign Banks' Association
- Processing Center Co. Ltd.
- Private companies

The key drivers behind agenda five are the needs to develop cross-border payment systems to facilitate foreign trade, to support the growth of cross-border payments, to lower payment charges, and to reduce foreign exchange settlement risks

Agenda 5: Cross-Border Connections

The key drivers behind agenda five are the needs to develop cross-border payment systems to facilitate foreign trade, to support the growth of cross-border payments, to lower payment charges, and to reduce foreign exchange settlement risks.

International trade has been an important activity in Thailand. In 2000 exports were valued at around USD 69 billion, while imports stood at approximately USD 62 billion. Since the mid-1990s, electronic data interchange for international trade has helped facilitate the exchange of trade documents in electronic form. Nevertheless, use of electronic payment methods in international trade has remained marginal.

Growth of cross-border transaction volumes is projected to increase sharply from 2.1 billion to 5.2 billion between 1998-2000, according to the Boston Consulting Group's (BCG) *Global Payments 2000/1* report. However, cross border revenue is expected to decrease from USD 28 billion to 23 USD billion, while per transaction price drops from USD 13.69 to USD 4.46 between the same years.

One factor for an expected loss of cross-border payment revenues is the use of alternative payment channels that are more cost-effective. Such schemes have included the Worldwide Automated Transaction Clearing House (WATCH), a cross-border payment channel for retail payments aimed at processing non-time critical, relatively low-value, and multi-currency payments (See Appendices, Table A6).

The BCG report also notes the expected growth in payment transactions in the Asian region. For example, intra-Asian cross-border retail payments are expected to increase from USD 32 billion to USD 92 billion between 1998-2008.

Another need for cross-border connections is the reduction of foreign exchange settlement risks. Settlement risk is "a bank's actual exposure – the amount at risk – when settling a foreign exchange trade equals the full amount of the currency purchased and lasts from the time a payment instruction for the currency sold can no longer be cancelled unilaterally until the currency purchased is received with finality". In other words, settlement risk is when one party delivers the currency being sold but does not receive the currency being bought.

The Hong Kong dollar clearing system and Continuous Link Settlement (CLS) are examples of cross-border payment systems that have been developed to reduce foreign exchange settlement risks (See Appendices, Table A6). Both systems focus on large-value payment transactions.

The European perspective

Europe provides a case in point for cross-border payment system developments. While the TARGET (Trans-European Automated Real-time Gross settlement Express Transfer) system focuses on large-value funds transfers, STEP 1 supports small-value funds transfers. Additionally, European central banks have an operational involvement in the former system, mainly due to their concern on systemic risks, as compared to the latter system, which has been an initiative led by the Euro Banking Association.

Although the European market is unique, due to the use of a single currency, many lessons can be learned from its structural development, which was highlighted in the European Central Bank's 1999 report *Improving Cross-Border Retail Payment Services – The Eurosystem's View*, and a follow-up progress report published the following year

Inefficiencies in cross-border retail payment systems, characterized by high charges and slow processing, originate both at the inter-bank and intra-banks levels and stem from the following four reasons.

(1) Low volumes: cross-border retail payments have low volumes by comparison with domestic business.

(2) Use of correspondent banking: predominant use of correspondent arrangements involving many intermediaries instead of using a single payment infrastructure by comparison with domestic arrangements

(3) Long execution times: Longer execution times for cross-border payments than domestic transfers

(4) Lack of standardization: unlike domestic arrangements, there is the lack of standardization and automation at the inter-bank and intra-bank levels.

One possible solution for creating cross-border retail payment systems is the consolidation of the inter-bank infrastructure through standards harmonization. There is the need to harmonize payment standards for cross-border payment systems (See Agenda 4). In Europe, as earlier mentioned, this has taken the form of setting up STP standards, which include a common message type (MT103+), the international bank account number (IBAN), the bank identifier code (BIC) and the international payment instruction (IPI).

Other objectives to consider in creating a cross-border retail payment systems are as follows:

- (1) Prioritization between credit or debit payment transfers
- (2) Price of payment transfers should decrease substantially
- (3) Settlement time should be comparable for domestic and cross-border payments
- (4) No “double-charging” (such as in required fees from both payment originator and beneficiary)
- (5) Access to cross-border retail payment systems should be open (such as in discouraging correspondent, traditional or reciprocal banking relationships)

Additionally, there is the need to follow-up on emerging cross-border payment models. Recent developments have included proposed regional payment arrangements in ASEAN such as the pure clearinghouse (PCH), which aim to connect the clearinghouse of member countries to facilitate foreign trade payments. Similarly, other developments would need to be followed-up closely.

Objectives

The agenda on cross-border connections has the following objectives:

- To develop a large-value cross-border payment system
- To develop a small-value cross-border payment system

Recommendations

- Study and consider connecting BAHTNET 2 to a large-value cross-border payment system to reduce foreign exchange settlement risks
- Study and consider connecting Media Clearing to a small-value cross-border payment system to support the growth of transactions

Lead institution

The Bank of Thailand is proposed as the core institution to lead the market in cross-border payment systems.

Other related institutions which will play an important role in facilitating the project include the following:

- Thai Bankers' Association
- Foreign Banks' Association
- Ministry of Foreign Affairs
- Ministry of Commerce

4. Payment 2004: A Three-Year Road Map

Figure 12 illustrates the three-year plan for Payment 2004. The lead institutions that would help push forward the five agendas identified in Payment 2004 include the following:

- National Electronics and Computer Technology Center
- Thai Banker's Association
- Bank of Thailand

Figure 12: Payment 2004 – A Three-Year Road Map

Key Agendas	2002	2003	2004
Agenda 1: Industry Payment Body	TBA		
Agenda 2: National Payment Data	BOT		
Agenda 3: Payment Legislation	BOT		
Agenda 4: Payment Infrastructure	NECTEC		
Agenda 5: Cross-Border Connections	BOT		

Agendas 1-3 have been identified as priority projects that would be carried out in 2002, mainly due to the urgent needs in creating a formal forum for payment system participants, the need to collect payment data for planning and policy-making, and the need for an explicit legislation on payment systems.

Other institutions that would play important supporting roles include major commercial banks, government agencies and private companies.

Agendas 1-3 have been identified as priority projects that would be carried out in 2002, mainly due to the urgent needs in creating a formal forum for payment system participants, the need to collect payment data for planning and policy-making, and the need for an explicit legislation on payment systems. The Thai Bankers' Association would lead agenda 1. The Bank of Thailand would lead agendas 2 and 3.

Agendas 4 and 5 would require a longer time frame to realize due to several factors. First, the development of a payment infrastructure would require the agreement of common standards by the market and a pilot test of the system to assess its acceptance before a full rollout can be made. Second, cross-border connections would require further development in existing national payment systems before they can be linked with international systems. The National Electronics and Computer Technology Center will lead agenda 4. The Bank of Thailand will lead agenda 5.

Draft implementation plans

The draft implementation plans are as follows.

Key Agendas	2002	2003	2004
Agenda 1: Industry Payment Body - Finalize membership criteria - Set-up Board of Directors - Develop shareholder structure - Form committees - Plan administration	TBA →		
Agenda 2: National Payment Data - Develop common data needs - Design survey questionnaire - Conduct survey - Publish data	BOT →		

Key Agendas	2002	2003	2004
Agenda 3: Payment Legislation - Draft principles - Draft legislation	BOT →		
Agenda 4: Infrastructure + Standards - Develop concept paper - Requirements definition - Business definition - Develop prototype system - Business roll-out	NECTEC →		

Key Agendas	2002	2003	2004
Agenda 5: Cross-Border Connections - Conduct comparative studies of large value payment systems - Conduct comparative studies of small value payment system	BOT →		

Note: Each Working Group will further discuss details of the draft implementation plan. Details will cover project scope, time frame, investments and resources required.

Summary of recommendations

Recommendation 1: Establish the Thailand Payments Association in consultation with the market.

Recommendation 2: Conduct an annual survey of national payment data led by the central bank in close co-operation with industry.

Recommendation 3: Introduce an explicit Payment Systems Act to reduce risks and promote efficiency in the payments system, contributing towards the safeguarding of financial stability.

Recommendation 4: Develop a common payment platform based on interoperable standards

Recommendation 5: (1) Study and consider connecting BAHTNET 2 to a large-value cross-border payment system to reduce foreign exchange settlement risks and (2) Study and consider connecting Media Clearing to a small-value cross-border payment system to support the growth of transactions

Appendices

Table A1: Comparison of National Payment Councils in selected countries

Country	Details of National Payment Council
Malawi	NPC established to encourage the use of non-cash payment instruments. Commercial banks are represented in the NPC.
Uganda	National Payments System Council probably formed as existing systems are reviewed under a collaborative approach.
Namibia	Payment System Strategic Planning Committee formed in November 1997 involving both central bank and commercial banks.
Peru	National Payment Council has been formed.
Russia	<p>1. International Steering Committee (ISC) formed in 1993. The objectives of the ISC included (1) providing guidance on the reform programs, (2) building consensus among central bank and commercial bank officials on payment system policies and design, (3) coordinating the technical assistance and training support of the international members of the ISC.</p> <p>2. ISC headed by a senior official of the Central Bank of Russia (CBR). Members include CBR officials, commercial bank representatives, and private sector payment service providers</p> <p>3. International members include representatives from the (1) IMF, (2) U.S. Federal Reserve, (3) Bank of France, (4) Bundesbank, (5) Bank of England, (6) the E.U., (7) the EBRD, (8), the Financial Services Volunteer Corps, (9), the OECD, and (10) the World Bank.</p> <p>4. Eight working groups when started (3 as of 1996). Each group led by a counterpart agency among the international members.</p>
Poland	<p>1. On 1 July 1998 the NBP Management Board established the Payment System Council to act as its advisory body. The Council consists of the First Deputy President of the NBP (chairman), the presidents of four commercial banks and representatives of the Polish Bankers Association (ZBP), the Ministry of Finance, the KIR SA, the National Depository for Securities (KDPW), PolCa, the Polish Post Office and Telbank.</p> <p>2. The tasks of the Payment System Council include the analysis and evaluation of the Polish payment system, and formulating proposals on the system's adjustment to the requirements of the European Union.</p>
Latvia	The National Payment Consultative Council, including the central bank, 11 commercial banks and international experts as of 1999, provides a talking shop between the parties.
Jordan	National Payment Council formed and includes commercial bank involvement.

Sources: Fry et al., (1999); Johnson et al., (1998); and selected central bank home pages listed on the web site of the Bank for International Settlements (www.bis.org).

Table A2: Comparison of industry payment bodies in Australia, Norway and the United Kingdom

Country	Name of Association	Governance Structure	Membership Criteria	Scope of Work
Australia	APCA (Australian Payments Clearing Association)	<ol style="list-style-type: none"> Established in 1992 Governs four systems, each having their own membership and regulations. The four systems include <ol style="list-style-type: none"> APCS – Australian Paper Clearing System BECS – Bulk Electronic Clearing System CECS – Consumer Electronic Clearing System, and HVCS – High-Value Electronic Clearing System Board of Directors – 11 people Management Committee 	<ol style="list-style-type: none"> Share members appoint directors <ol style="list-style-type: none"> <i>Ordinary</i> share members – four big banks and central bank <i>Preference</i> share members – regional banks, other banks, building societies, credit unions Participating members – payment clearing members/vote MC Advisory council members – non payment clearing members/appointed by Board Associate members – other interested individuals/organizations 	<p>Role is to manage and develop the Australian payments clearing to:</p> <ol style="list-style-type: none"> Preserve system integrity Control settlement risk; Improve system efficiency Ensure principles of equity and competitive neutrality are applied in system participation; Facilitate the co-ordination of payments clearing arrangements Assist community understanding
Norway	BBS (Banks' Central Clearing House)	<ol style="list-style-type: none"> Established in 1972 Activities are built around three product areas <ol style="list-style-type: none"> Cards Giro interbank systems 	<ol style="list-style-type: none"> Members – commercial banks and savings banks only Largest shareholders – four big banks 11 Board representatives 	<ol style="list-style-type: none"> One of the leading providers of payment services to Norwegian banks
United Kingdom	APACS (Association for Payment Clearing Services)	<ol style="list-style-type: none"> Established in 1985 Manages the major UK payment clearing systems, including <ol style="list-style-type: none"> CHAPS BACS Cheque and Credit Clearing 	<ol style="list-style-type: none"> Members – any supervised institution in payments industry (banks, building societies, public authorities, govt.-owned companies). Membership open to clearing banks, Card Payments Group, Cash Services Group, City Markets Group Associate members – payment service providers through Members 	<ol style="list-style-type: none"> Forecasts payment trends Conducts market research Compiles and maintains a large base of statistics Formulates industry payment standards

Sources: Australian Payments Clearing Association, Bank's Central Clearing House, and Association of Payment Clearing Services.

Table A3: Comparison of payment data collection in Australia, Norway and the United Kingdom

Country	Data Collection Organization (s)	Samples of Data Collected	Forecast of Payment Trends	Publications on Payment Data
Australia	APCA (Australian Payments Clearing Association) RBA (Reserve Bank of Australia)	APCA 1. Cheques 2. Direct entry credits; Direct entry debits 3. ATM withdrawals; ATM terminals 4. EFTPOS terminals 5. Customer payment accounts 6. Debit cards; Credit and multi-function cards RBA 1. EFTPOS transactions 2. Credit card statistics; Debit card statistics 3. Card transactions acquired from merchants 4. RTGS statistics 5. Points of access to the Australian payments system	No	APCA 1. <i>APCA Annual Report</i> RBA 1. <i>Payment Systems Board Annual Report</i> 2. <i>Bulletin Statistical Tables</i>
Norway	Norges Bank (Central Bank of Norway) BBA (Banks' Central Clearing House)	1. Giro 2. Cheques and cards 3. Notes and coins 4. International payment services 5. Prices for domestic payment services 6. RTGS statistics	No	1. <i>Norges Bank's Report on Payment Systems</i>
United Kingdom	APACS (Association for Payment Clearing Services)	1. Plastic cards – credit and debit cards 2. Automated payments 3. Telephone/PC banking 4. Cheques 5. Cash - ATMs	Yes	1. <i>APACS Annual Review</i> 2. <i>Payment Markets Report</i> 3. <i>In Brief: Payments Market Briefing</i> 4. <i>Annual Yearbook of Payment Statistics</i>

Sources: Australian Payments Clearing Association, Reserve Bank of Australia, Bank's Central Clearing House, and Association of Payment Clearing Services.

Table A4: Comparison of payment systems legislation in Australia, Canada, Norway and the United States

Country	Name of Payment Legislation	Year	Central Bank Powers	Related Regulations
Australia	Payment Systems (Regulation) Act	1998	<ol style="list-style-type: none"> 1. Designation powers for systemically important payment systems 2. Data collection powers 3. Standard-making powers 4. Arbitration powers 	<ol style="list-style-type: none"> 1. Reserve Bank Act of 1959 2. Trade Practices Act of 1974 (Australian Competition and Consumer Commission has authorization powers for private sector payment systems) 3. Payment Systems and Netting Act of 1998 Cheques Act of 1986
Canada	Payment Clearing and Settlement Act	1996	<ol style="list-style-type: none"> 1. Designation powers for clearing and settlement systems 2. Designation based on daily individual transactions exceeding \$200,000 (THB 5.6 million), or aggregate transaction value exceeding \$500 million (THB 14 billion), or systems in which participants are owed funds in excess of 25 per cent of capital. 3. Eligibility criteria 4. Agreements 5. Directives 6. Audits and inspections 7. Cost of regulation 8. Settlement rules 	<ol style="list-style-type: none"> 1. Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries (The Lamfalussy Report)
Norway	Act Relating to Payment Systems	1999	<ol style="list-style-type: none"> 1. Authorization and supervision powers for inter-bank settlement systems 	<ol style="list-style-type: none"> 1. EEA Directive on Settlement Finality in Payment and Securities Settlement Systems
United States	Electronic Funds Transfer Act and Regulation E	1978	<p>Defines the rights, liabilities and responsibilities for participants in retail payments</p>	<ol style="list-style-type: none"> 1. Uniform Commercial Code 4A (for large-value payments) 2. Federal Reserve Act Regulation J (for Fedwire) 3. Federal Deposit Insurance Corporation Improvement Act (for settlement finality)

Sources: Reserve Bank of Australia, Bank of Canada, Norges Bank and U.S. Federal Reserve

Table A5: Summary of selected payment standards

Name of Standard	Standard-Setting Bodies	Key Characteristics
EbXML (Electronic Business Extensible Markup Language)	United Nations OASIS	ebXML has a vision to create a single global electronic marketplace where enterprises of any size and in any geographical location can meet and conduct business with each other through the exchange of XML based messages.
OFX (Open Financial Exchange)	Microsoft Corporation Intuit Checkfree	OFX is a broad-based framework for exchanging financial data and instructions between customers and their financial institutions. It allows institutions to connect directly to their customers without requiring an intermediary.
IFX (Interactive Financial Exchange)	Grouping of business and technology professionals	<p>IFX is a robust XML framework for electronic business-to-business financial data exchange, and is open for worldwide participation. The IFX forum has been founded to develop open and interoperable specifications, and is organized into five working groups with a Steering Committee to coordinate their initiatives: The working groups include (1) Electronic Bill Presentment & Payment, (2) Business Banking, (3) Credit Applications Processing, (4) Insurance, and (5) Aggregation</p> <p>Together the IFX Forum working groups provide ongoing enhancements to the specification, define global business requirements, and enable an open and interoperable foundation for: (1) Corporate and consumer banking communities, (2) service providers and (3) information technology companies</p>
IBAN (International Bank Account Number)	European Committee for Banking Standards	The IBAN concept was developed by ECBS and by the International Organization for Standardization (ISO) and is an internationally agreed standard ISO 13616: 1997. It was created as a viable and practical international bank identifier, used internationally to uniquely identify the account of a customer at a financial institution, to assist error-free cross-border payments, and to improve the potential for straight through processing ¹ (STP), with a minimum amount of change within domestic schemes. It was not specifically designed to facilitate the cross-border routing of messages within a network.

Sources: www.ebxml.org, www.ofx.org, www.ifxforum.org, www.ecbs.org

Table A6: Summary of selected cross-border payment systems

Cross-Border Payment System	Launch Date	Key Characteristics	Fees	Currencies Supported
CLS	Expected in early-2002	A payment-versus-payment system that provides the settlement of CLS eligible currencies.	Sample Third Party Member Fees - Transaction Fees – USD 1.5 – USD 3 per trade	AUD, CAD, CHF, GBP, EUR, JPY & USD
Hong Kong Dollar Clearing System	September 2000	A payment-versus-payment system implemented in Hong Kong for the settlement of HKD/USD trades.	Not available	HKD & USD
WATCH	Expected in mid-2002	A global automated clearing house to process non-time critical, relatively low-value, multi-currency batch payments	Membership – USD 150,000 Originators – USD 25,000 Transaction Fees – USD 10,000 (fixed per year)	AUD, CAD, CHF, DKK, EUR, GBP, JPY, NOK, SEK & USD

Source: www.globalach.org

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www.bbs.no	Banks' Central Clearing House
www.bis.org	Bank for International Settlements
www.bof.fi	Suomen Pankki (Bank of Finland)
www.bot.or.th	Bank of Thailand
www.cdnpay.ca	Canadian Payments Association
www.earthport.com	Earthport
www.ecb.int	European Central Bank
www.ecbs.org	European Committee for Banking Standards
www.foresight.gov.uk	United Kingdom's Financial Services Panel report on the Future of Financial Services Infrastructure
www.fstc.org	Financial Services Technology Consortium
www.globalach.org	Worldwide Automated Transaction Clearing House (WATCH)
www.hm-treasury.gov.uk	HM Treasury
www.ifxforum.org	Interactive Financial Exchange Forum
www.info.gov.hk/hkma	Hong Kong Monetary Authority
www.rba.gov.au	Reserve Bank of Australia
www.nectec.or.th	National Electronics and Computer Technology Center
www.norges-bank.no	Norges Bank (Central Bank of Norway)
www.ofx.org	Open Financial Exchange
www.paypal.com	Pay Pal
www.tba.or.th	Thai Bankers Association

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