

PAYMENT SYSTEMS REPORT

2004



June 2005



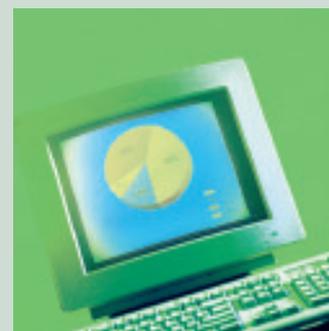
Summary of key statistics in 2004

Population: 63.35 million

Gross Domestic Product (current price): THB 6,576.02 billion

Technological Infrastructure:

- Number of fixed - line telephone subscribers per 100 inhabitants: 11
- Number of mobile telephone subscribers per 100 inhabitants: 43
- Number of Internet users per 100 inhabitants: 11



Payment statistics:

- Number of Thai commercial banks: 12 with 3,925 branches
- Number of foreign commercial bank branches: 18 branches
- Number of specialized financial institutions (bank only): 6 with 1,388 branches
- Number of post office branches: 1,146 branches
- Number of Automated Teller Machines (ATM): 10,602 machines
- Number of credit cards: 8,648,100 cards
- Number of ATM cards: 25,653,079 cards
- Currency in circulation per capita as of 31 December 2004: THB 9,450
- Number of cheque usage per capita: 1.5 items per year
- Monthly average value of credit card payments by Thai citizen: THB 8,460 per credit card
- Monthly average value of ATM cash withdrawals: THB 5,660 per ATM card

Message from Chairman of Payment Systems Committee (PSC)

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It is undeniable that Thailand, over the last year, has endured much hardship caused by several unfavorable situations starting from global threat of terrorism, Southern unrest, and Tsunami tidal wave in December.

Such adversity has reminded us the importance of having reliable payment systems that can provide uninterrupted services to ensure stability of financial system, which could be susceptible to unexpected incidents.

In order to attain globally accepted standards, Payment Systems Committee (PSC) will place more focus on strengthening its capacity to oversee payment systems in Thailand.

Continuous Work on Efficiency and Security Enhancement has been upheld by PSC as one of its ultimate goals for conducting policies related to payment systems development. PSC has acknowledged vital role of payment systems as a medium for economic and financial activities. An efficient and secured payment system does not only minimize cost bourn on public and private sectors, but also bolsters confidence among trading partners that their money will be safely and promptly transfered. Furthermore, reliable payment systems are also needed as a facilitating infrastructure of cross-border commercial activities and investments. Once they are put in places, greater business opportunities and improving national competitiveness are foreseen as outcome.

Actions to Elevate Efficiency

PSC has instructed its policy stance to promote extensive public usage of electronic payment services and together, to reduce number of paper-based payment products to the appropriate level. We have to admit that current widespread usage of cash and cheque is a consequence of undercharged fees of such services, whereas the cost, in fact, is much higher. Such a distorted pricing approach has impeded competition from other types of payment products despite their greater efficiency. It is also a cause of social injustice when certain customers are charged at subsidized rate in expense of others who have to bear additional cost

PSC has set out the principles to conduct a study on **Cost and Fees of Commercial Bank's Payment Services** in order to explore cost and fee structure of each type of payment services. The study also advised on directions for fees setting that reflect actual cost and for promoting usage of electronic payment services. Subcommittee on National Payments Co-operation (SNPC), in collaboration with Thailand Development Research Institute (TDRI), has played an important role in this noteworthy study, which should lead to a substantially improved efficiency of commercial banks' fee structure.

With regard to the task of upgrading a technological benchmark, PSC has launched **standardized barcode for domestic payments** in order to accommodate growing number of transactions. So far, the new barcode has received a warm welcome and great cooperation from business sectors, in particular, from basic infrastructure operators as well as various payment service providers. The application of the **standardized barcode** will be effective on 1 February 2005.

On the subject of Inter-bank Transaction Management and Exchange (ITMX) establishment, once finished, most systems and means of payments will be connected to support electronic commerce transactions as well as to expand electronic payment service network to sufficiently cover demand of customers. At present, ITMX development has made a significant progress. The company in charge is being set up with commercial banks participating as company's shareholders. It is targeted that ITMX is to commence its partial service in second quarter next year before full launch of its operations to serve customers shortly.

As for the updated development of **ASEANPay**, which is a collaborated attempt of four central banks of ASEAN countries; namely Singapore, Malaysia, Indonesia and Thailand, to create infrastructure for cross-border retail payments among ASEAN members, ASEANPay Steering Committee held its first meeting in Chiang Mai at midyear 2004. It has agreed on a roadmap for further implementation as well as need to hire a consulting firm to draft a detailed working plan. For forthcoming period, four central banks plans to issue its Memorandum of Understanding on their financial and human resources contribution to support ASEANPay project.

Message from Chairman of Payment Systems Committee (PSC)

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In addition, Bank of Thailand (BOT) has also taken part in the government's project to develop **Government Fiscal Management Information System (GFMS)**, under which all payments recorded as government revenues and expenditures will be electronically channeled via BAHTNET and SMART. The project should buttress government's goal in acquiring more efficient funds transfer activities of public sector.

Since 1 November 2004, BOT has instigated the operation of new cash management center whereby commercial banks are now responsible for cash sorting and cash storing activities, the tasks of which were previously handled by BOT. Such a major change not only reflect another closer step to global practices, but also a signal every relevant party; notably commercial banks, wholesale or retail suppliers and general public that it is time to be accountable for real cost burden generated by payment services they have opted for. Ultimately, this should lead to an improvement in working procedures as well as a more appropriate direction of cash usage behavior.

Progress on Security Reinforcement

BOT has initiated **Central Settlement System**, with BOT acting as center to facilitate settlement of transactions from public and private sectors conducted under Multilateral Funds Transfer (MFT) scheme. Services such as credit cards and securities trading will be directly settled via BAHTNET system in order to minimize settlement risk. With the service available since 28 June 2004, it is also worth noting that such progress is in compliance with international standards as well as BIS Core Principles.

Fostering the Oversight Capacity for Greater Efficiency and Security of Payment Systems

Payment services nowadays have existed in several forms and methods, especially those conducted through electronic equipments such as mobile phones, smart cards and internet. Also, increasingly, non-financial institutions have been expanding their roles as payment service providers. In response to that, BOT has announced one of its strategic plans to push for overseeing over new payment products as well as non-financial institutions

that provide payment services by introducing appropriate laws. In this regard, BOT has worked closely with Electronic Transactions Committee to draw up a Royal Decree under Electronic Transactions Act, B.E 2544 (2001) for supervising and supporting electronic transactions as well as for fostering public confidence in aspects of efficiency and security of services.

On the final note, it goes without saying that all achievements during the past year have undeniably stemmed from constructive cooperation among those related parties, from both public and private sectors. I, as the Chairman of PSC, on behalf of the Committee, would like to express our deepest gratitude to all, especially to SNPC, whose role has been prominent in driving Thailand's payment system to reach internationally accepted standard.



M.R. Pridiyathorn Devakula

Chairman, Payment Systems Committee

11 May 2005

Payment Systems Committee (PSC)

08



Chairman

M.R. Pridiyathorn Devakula
Governor

Duties of Payment Systems Committee

(as stipulated under order 369/2544 on establishment of Payment Systems Committee on 27 August 2001)

1. To formulate national payment policy directions and establish suitable and transparent technological standards.
2. To promote efficient payment systems, and support the use of new payment methods or services in the country, and cross-border linkages.
3. To oversee and determine risk reduction measures in payment systems, and consider the appropriateness of adopting standards set by international organizations.
4. To coordinate private sector development in a consistent manner to reduce basic infrastructure costs, and to regulate payment services they provide.
5. To publish an annual report to summarize the work of the Committee that is transparent and of good standard.

Members

1. **Ms. Aroonsri Tivakul**
Assistant Governor, Information Technology Group
2. **Sub.Lt. Yodchai Choosri**
Assistant Governor, Operations Group
3. **Mr. Kirik Vanikkul**
Assistant Governor, Financial Institutions Policy Group
4. **Ms. Nitaya Pibulratanaagit**
Assistant Governor, Financial markets Operations Group
5. **Ms. Udomsup Techakampuch**
Assistant Governor, Supervision Group
6. **Mr. Tanin Mukdaprakorn**
Senior Director, Deposits and Debt Instruments Department
7. **Dr. Chim Tantiyaswasdikul**
Senior Director, Information Technology Department
8. **Mr. Serm Singh Sinhaseni**
Senior Director, legal Department
9. **Dr. Thaweesak Koanantakool**
Director, National Electronics and Computer Technology Center
10. **Mr. Manoo Ordeedolchost**
Honorary President, Association of Thai Computer Industry
11. **Dr. Somchai Richupan**
President, Siam Development Institute
12. **Mrs. Saowanee Suwannacheep**
Commissioner, Electronic Commerce, Electronic Transactions Commission

Member and Secretary

13. **Mr. Sayan Pariwat**
Senior Director, Payment Systems Department

As of December, 2004



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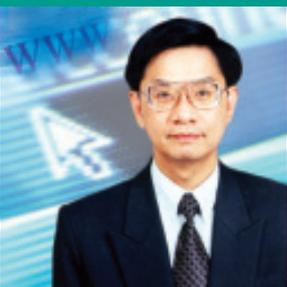
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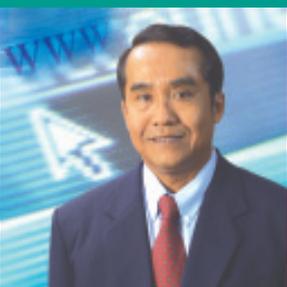
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Payments Policy in 2004

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Payment Systems Committee (PSC) aims to instigate payment policy direction in response to advanced payment technology as well as growing prosperity of business sector on domestic and international grounds.

Major Policies Approved by Payment Systems Committee in 2004

▶ Guideline for setting payment service fees by commercial banks

Supported by PSC, the guideline establishment for payment service fees of commercial banks should bring about several advantages as suggested in Bank of Thailand's study, with consultancy from Thailand Development Research Institute (TDRI), on the issue of "Cost and Fees of Commercial Bank's Payment Services". The mentioned advantages include wider usage of electronic payment services, a reduction in the use of traditional paper-based payment means and efficiency improvement of payment systems in general.

▶ Codes of conduct for Information Technology Outsourcing

PSC agreed to revise codes of conduct on IT outsourcing activities in order to explore risk impacts on national security as well as on development of human resource in IT sector. The permission for IT outsourcing services and an appropriate size of customer database that can be processed outside country would be carefully re-evaluated before an appropriate guideline to cope with current situation can be delivered.

▶ Notification of Standard Payment Barcode

PSC approved the notification of the Standard Payment Barcode, which would be a common standard among public and private agencies. The new barcode standard should reduce expenses on payment services and, meanwhile, provide greater convenience for related parties. It will be put into effect on 1 February 2005 onwards.

▶ Progress on ITMX

PSC approved requirements for Interbank Transaction Management and Exchange (ITMX) as a directive for system operator. BOT will act as a regulator in order to ensure that ITMX operation complies with official policies.

▶ Development on provincial cheque collection system

PSC agreed on a guideline for implementing inter-provincial cheque collection system by shortening collection cycle to be comparable to that of inter-provincial cheque collection system in Bangkok. Details of the guideline are to be discussed between BOT and Working Group on Improving Efficiency of Cheque Clearing Systems

▶ Directions for legislations on electronic payments

PSC approved the framework of a royal decree on Electronic Payment Services Supervision under Electronic Transactions Act, B.E. 2544, in order to regulate electronic payment services of financial and non-financial institutions. Service providers that fall under supervision of the law include those who act as an intermediary agent or provide payment services on behalf of other agencies with electronic means. Furthermore, the effectiveness of the law will also cover network operators, whose networks are available for payment services of more than one agency. Another business type abided by the law is stored-value business, of which the services are provided to more than one agency. Currently, the framework of the decree on Electronic Payment Services Supervision is being drafted by Subcommittee on Supervising Private Sector Electronic Business Services and Public Sector Electronic Transactions.

Message from Chairman

of Subcommittee on National Payments Co-operation (SNPC)

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Subcommittee on National Payments Co-operation (SNPC) was founded by PSC in 2002 with the objectives to participate in national payment policy formulation and to set up criteria for providing payment services as well as technical guidelines on promoting efficiency and codes of practice, which should lead to a reduction in duplicate investments; while fair competition among relevant parties is to be preserved.

Members of SNPC include representatives from commercial banks and Thailand Post Company Limited, the main payment service providers to retail customers, private companies and several public agencies. Over the past year, SNPC set up working groups, whose main duties comprised studying, formulating implementation guidelines and tackling problems occurring in several important projects as follows:

1. Proposing a framework and criteria for the electronic money system development with Smart Card usage.
2. Standardizing barcode system for domestic payment activities, which will be launched in February 2005
3. Upgrading efficiency of inter-bank retail funds transfer (SMART) and participating in nationwide conferences on efficiency improvement of cheque clearing systems.
4. Participating in a study conducting and instructing preparatory measures for Cheque Truncation Project
5. Forming an organization for accommodating national payment systems in the form of a private company known as National ITMX. The company will be the central agency responsible for laying out the infrastructure and providing payment services under ITMX system.
6. Conducting a study and participating in conferences with neighboring countries; Singapore, Malaysia and Indonesia, in order to draw up a guideline for infrastructure development for retail funds transfer among ASEAN members under ASEANPay project, which requires International Payment Gateway as a linkage to neighboring countries.

It is worth noting that an operation by SNPC has been in line with Payment Roadmap 2004, which is regarded as a framework for developing national payment systems. The main objectives include improving efficiency and promptness of services, building secured, trustworthy and transparent payment systems required by international standards and guaranteeing fair competition among service providers as well as fair service prices on customers. Such payment systems will not only cover all prevalent payment methods but they will also provide necessary infrastructures for growing electronic commerce activities in Thailand.

To date, Subcommittee has been indebted to PSC and BOT for their efforts to draw up a framework to deliver constructive recommendations, and to decide on several important matters. Such a great collaboration should drive payment systems in Thailand to become modern, competent and in line with BIS Core principles, to increase competitive edge of the country in international arena and to cope well with rapid changes in international financial and investment environment in future.



Mr. Teera Aphaiwongse

Chairman, Subcommittee

on National Payments Co-operation

16 May 2005

Subcommittee on National Payments Co-operation (SNPC)

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Chairman

Mr. Teera Aphaiwongse
Senior Executive Vice President
Bangkok Bank Public Company Ltd.



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2.

Members

1. **Mr. Charamporn Jotikasthira**
Executive Vice President
Siam Commercial Bank Public Company Ltd.



3.

2. **Ms. Supatra Hiranras**
Senior Vice President
Support Functions Department
Krung Thai Bank Public Company Ltd.

3. **Mr. Chet Raktakanishta**
First Executive Vice President
Bank of Ayudhya Public Company Ltd.



4.

4. **Ms. Vllawan Vanadurongvan**
Executive Vice President
Bank of Asia Public Company Ltd.



5.

Members

5. **Mr. Suwan Rattakul**

*Vice President, System Development
Thailand Post Company Ltd.*

6. **Ms. Vira-anong E. Chiranakhorn**

*Global Transaction Services Head, Thailand
Citibank, N.A.*

7. **Mr. Sayan Parlwat**

*Senior Director
Payment Systems Group
Bank of Thailand*



6.

Member and Secretary

8. **Mr. Pramoth Chalamphorn**

*First Senior Vice President
Kasikornbank Public Company Ltd.
As of December 2004*



7.

Duties of Subcommittee on National Payments Co-operation

(as stipulated under Payment Systems Committee order 1/2545 on establishment of Subcommittee on National Payments Co-operation on 25 December 2002)



8.

1. To consider code of conducts in providing payment services and to set technical standards for payments infrastructure in order for common utilization that is efficient, secure and promote fair competition.
2. To consider policy approaches in areas as follows:
 - 2.1 Promote the common use of payment systems for efficiency and for reducing duplicate investments.
 - 2.2 Support and initiate modern payment instruments, payment technology, and payment services.
 - 2.3 Promote linkages in both domestic and international payment systems.
 - 2.4 Implement data collection and payment-related research for the benefit of organizations in both public and private sectors.
3. To consider structure and guidelines in establishing a co-operative organization among payment service providers in order to efficiently undertake the duties and responsibilities from subcommittee as noted in the two points previously mentioned.



Work Accomplished in 2004

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Subcommittee on National Payments Co-operation (SNPC) was established by PSC on 25 December 2002 to perform the tasks assigned by PSC and to ensure a productive cooperation between public and private sectors and concerted working progress on payment systems in Thailand.

In 2003, PSC agreed with the initiative by SNPC to establish seven working groups to perform several functions. Followings are progress of the working groups in 2004.

1. Working Group on Electronic Money

The working group aimed to explore information on electronic money, particularly stored value card or e-purse as a potential substitution for cash usage.

Progress in 2004 : The objectives were largely accomplished and presented in the study report titled "Electronic Money on Smart Card". Its detail consists of :

- A glossary for electronic money to promote mutual understanding among different parties
- A classification of types of electronic money and members of each type
- Risks and other consequences relating to electronic money as well as oversight framework.



2. Working Group on Barcode Standard

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The objective of the working group was to establish a common barcode standard for bill payments in Thailand, which should reduce unnecessary expenses and facilitate operations of all related parties.

Progress In 2004 : The working group set the barcode standard consisting of 62 bars on the bottom of payment bills; thus, enabling bill payments issuers in public and private sectors as well as other service providers to operate on similar basis. BOT announced the new standard to public on 21 September 2004 and it will become effective on 1 February 2005.

3. Working Group on SMART

The working group attempted to improve efficiency of SMART, an electronic retail payments system among financial institutions as well as between financial institutions and public sector to facilitate both retails debit and credit funds transfer.

Progress in 2004 :

- Preparing readiness to transfer SMART to ITMX to provide credit and debit transfer services.
- Collaborating with BOT in reviewing fee structure and maximum value per transaction.

Work Accomplished in 2004

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4. Working Group on ITMX

The objective of the working group was to establish ITMX system as a central infrastructure and a standard of payment systems in Thailand. It will be created in the form of Payment Gateway connecting to different systems; hence, inter-bank payment transactions can be straight through processed. This should help accommodate growing electronic commerce transactions. Ultimately, the newly established system should lead to a reduction in duplicate investments on payment systems development.

Progress in 2004 :

- Formulating detailed plan for setting up National ITMX Company Limited, covering issues of its investment model, capital, shareholders, board of directors, and management team (expected to be established by early 2005).
- Drawing up a model for ITMX operations and its Clearing and Settlement system
- Issuing Request for Proposal (RFP) for selecting system developer (selection process is expected to be implemented in early 2005).
- Identifying services to be launched in preliminary stage such as Credit transfer, Debit transfer, Online Retail Funds Transfer (ORFT) through Tellers of commercial banks, and working with Thailand Post Company Limited to provide money transfer services for those who do not hold accounts with commercial banks.



5. Working Group on Cheque Truncation

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The working group aimed to explore an appropriate design for cheque truncation and to analyze its operational costs and risks.

Progress In 2004 :

The working group launched a pilot-project on In-clearing Cheque Truncation within clearing area of Rachburi province. The main branch was requested to verify validity of cheques and to approve payment settlements on behalf of home branch in the area. In doing so, several shortcomings were detected and the working group is underway to identify the solutions before any further implementation can proceed.



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1

Important Developments of Domestic Payment Systems

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1.1 Payment Policy

Payment policy of Payment Systems Committee (PSC) was designed on the basis of **efficiency and security enhancement**. Sound payment systems are vital to the stability of Thai economy given its significance on the economic and financial activities.

- **Efficiency enhancement policy**

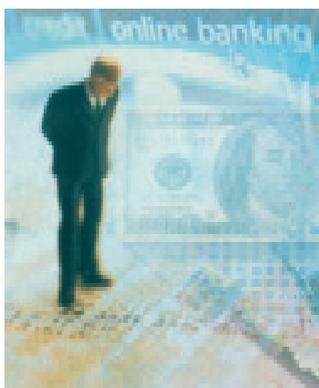
PSC set out clear-cut policy objectives to propel the growth of electronic payment usage, along with its effort to reduce the usage of paper-based payment means to an appropriate level.

Given such policy objectives, PCS believed that the initial cost and fee restructuring in payment services of commercial banks should be introduced so that real cost of providing services can be better reflected and will encourage wider usage of electronic payment services. Currently, the popularity of cash and cheque usage derived from their low service fees, which did not reflect the actual cost. In effect, other types of services have become unattractive in comparison to cash and cheque, despite the greater efficiency. Moreover, the distorted fees are a cause of social injustice as cheque and cash users enjoy the low service fees at the expense of others, who have to bear additional cost. As a result, this led to PSC's initiative to conduct a study, in coordination with Subcommittee on National Payments Co-operation (SNPC) and Thailand Development Research Institute (TDRI), on "Cost and Fees of Commercial Bank's Payment Services" in order to provide an appropriate guideline for payment cost and fee adjustment by commercial banks in future.

- **Security enhancement policy**

Central Settlement System Project was initiated with BOT being the central agency for multilateral funds transfers settlements of all types of transactions from public and private sectors. Multilateral funds transfers will be processed directly through BAHTNET system to minimize settlement risks. The procedure is regarded as being in line with internationally accepted standards and BIS Core Principles.

Moreover, security enhancement in debt instruments market was undertaken with the co-effort from Thai Securities Depository Company Limited (TSD) in order to support government and corporate bond trading through BAHTNET system. The entire process is expected to complete by the end of 2005.



- **Oversight**

At present, payment services exist in various forms, especially when several are provided through electronic instruments, for example mobile phones, smart cards and etc. That, along with the increasing role of non-financial institutions service providers, has led to BOT's strategic plan to promote law enactment to oversee new payment services including non-financial institutions service providers. BOT and Electronic Transactions Committee enacted a Royal Decree under the Electronic Transactions Act B.E. 2544 (2001), which granted BOT an authority to oversee electronic payments with an aim to promote electronic payment transactions as well as to increase public confidence in security and effectiveness of the systems and their services.

1 Important Developments of Domestic Payment Systems

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- **Technological advancement and private participation**

Technological advancement has become the main factor in determining direction and payment systems policy developments. Meanwhile, growing private participation should help shape the policy to be more appropriate and practical for implementation. A constructive role of SNPC can be seen as a good example in this regard.

1.2 Infrastructure

1.2.1 ITMX (Interbank Transaction Management and Exchange)

BOT and National Electronic and Computer Technology Center (NECTEC) jointly established Committee on Payment Infrastructure and Standards, which consists of experts and representatives from related agencies from public and private sectors.

The objective of committee is to establish ITMX system to create payment infrastructure in the form of payment gateway in order to improve convenience and timeliness of inter-bank transactions. The system would also serve as a linkage for existing systems and for those to be set up in future. Furthermore, the system allows data to be a Straight Through Processing (STP) process. It can also accommodate electronic commerce transactions, which should minimize duplicate investments of the participants in payment systems.

In 2004, Committee on Payment Infrastructure and Standards laid out directives, conditions and technical standards as a framework for ITMX system establishment. In this regards, SNPC appointed a working group to handle the following issues:

1. Concluding on an investment model by proposing the idea of establishing a

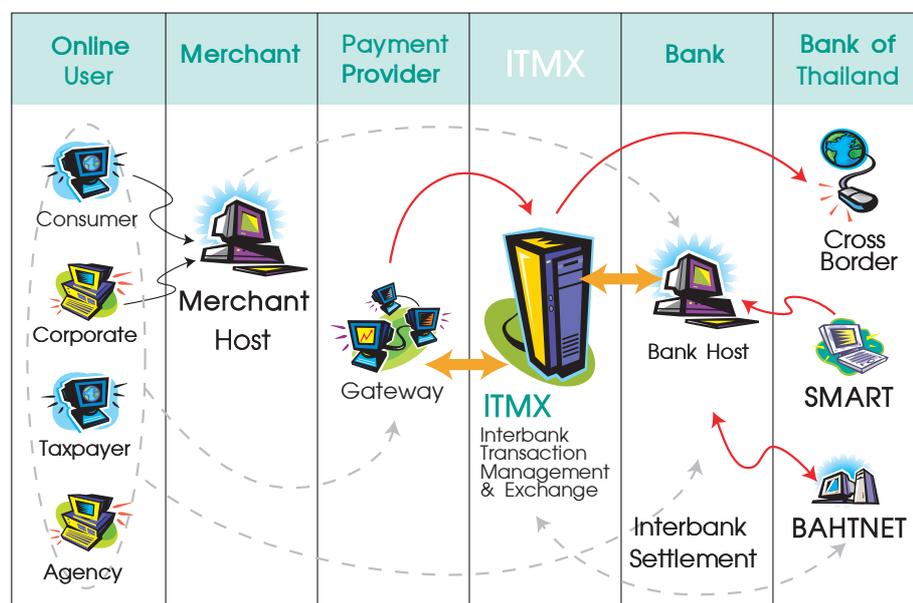


company owned by commercial banks. The model was already approved by PSC. ITMX will perform as a switching center and manage funds transfers as well as payments across banks.

2. Studying and evaluating an appropriate business model, work process of related parties, Process & Settlement, IT system and the security control. It is for the purpose of outlining system requirements and request for proposal (RFP) for selecting the system developer.
3. Considering settlement model along with risk control measures in settlement procedure.

SNPC and Thai Banker Association were in the process of setting up a company to manage ITMX system. The shares of the company will be held by commercial banks. The company will undergo the process of selecting ITMX system developer. ITMX is expected to launch its partial operation by second quarter of 2005. BOT will take charge of overseeing the system development and operation in order to maintain transparency and fairness as well as to ensure that its work process is in line with the initial targets.

FIGURE 1 : ITMX CONCEPTUAL MODEL



1 Important Developments of Domestic Payment Systems

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1.2.2 ASEANPay

ASEANPay project aims to develop a linkage for retail cross-border funds transfer among ASEAN members in order to support growing intra-regional trade and investment; hence, enhancing competitiveness of ASEAN economic performance in global arena. The project was pioneered by the four ASEAN central banks; namely Thailand, Singapore, Malaysia and Indonesia. To date, two committees have been appointed. The steering committee is responsible for overall management of the project and policy implementation. The technical committee, previously known as the working committee, conducts a detailed feasibility study, of which outcomes are reported to the steering committee. The timeframe for the project implementation is projected between 2004 and 2006. During the first year, the four central banks participated in several meetings and decided to proceed in the following areas:

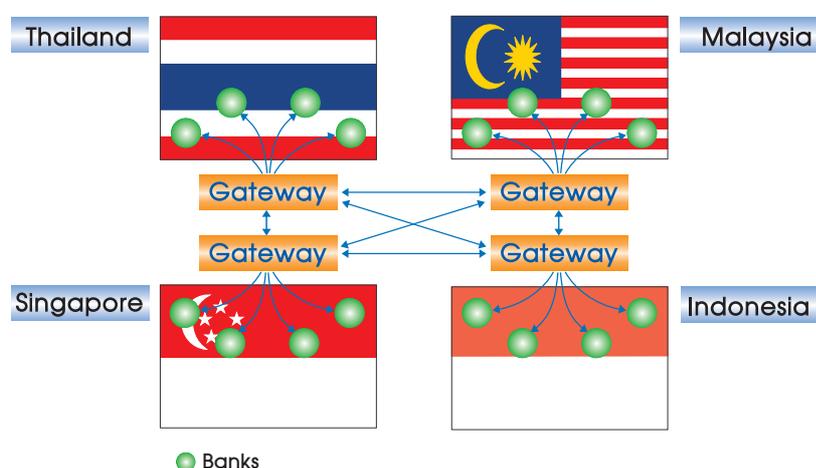
1. Instructing the objectives of the project by emphasizing on building a new intra-ASEAN payment system with greater efficiency, compared to the system currently in use.
2. Considering a proper approach in implementing the project with a focus on policy suitability, business viability and an appropriate model for the system.
3. Formulating a roadmap for the project, consisting of four operational phases within four-year timeframe (2004-2007).
4. Establishing project organization, comprising a steering committee and a project team. The former is responsible for project oversight and policies formulation, whereas the latter is in charge of developing and operating the system as well as instructing Term of Reference (TOR) for each working group. Members of the project team include:
 - a) Project Management Office
 - b) Technical Committee
 - c) Change Management Team

In the forthcoming period, data collection would be carried out for analyzing, setting a format and guidelines, and identifying overall benefits from the project.



A consultant would be recruited to work with the respective central banks in conducting a survey on customers and service providers, including both financial institutions and non-financial institutions.

FIGURE 2: LINKAGE STRUCTURE OF ASEANPay



1.2.3 BAHTNET

In 2004, BOT has expanded the scope of BAHTNET services to include Central Settlement System (CSS).¹ Thai Securities Depository Company Limited (TSD) was the first customer outside BOT that demanded for multilateral funds transfers settlement through CSS to serve equity trading transactions since 10 September 2004. Furthermore, the system was also developed to facilitate the government transactions in Government Fiscal Management Information System (GFMS) project, which were the government payments to its beneficiary and other government agencies through BAHTNET system. The service has been launched since 2 December 2004.

BOT also made further adjustment to BAHTNET and developed sub-scheme system; namely the BAHTNET Easy Connect, to respond to customer needs efficiently as well as to allow customers to send information into the system more easily.

¹ BOT has developed the CSS as the central system for multilateral settlements of transactions undertaken by domestic financial institutions with a payment being made via a current account of the financial institution deposited at BOT through BAHTNET. The project has started since 1 January 2003 and was ready for service from 28 June 2004 onward.

1 Important Developments of Domestic Payment Systems

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The areas that have been completed in 2004 are information sending in the form of file transfers to accommodate large transaction volumes, an improvement on information tracking system, and function upgrade of system management program in order to integrate with Intraday Liquidity Facilities (ILF) and Banknote Ordering System (BOS)²

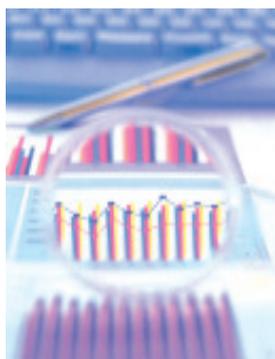
In addition to upgrading the system and providing the extra services, in 2004, BOT also accomplished in creating a linkage between BAHTNET and TSD operational system in order to assist a large payment volumes of private debt and equity classified as a big lot³, of which settlements are made in the form of RTGS-DVP (Real Time Gross Settlement Delivery versus Payment). The method has an advantage of reducing risks in delivery and payment process. It is also a channel for increasing Delivery versus Payment (DVP) transactions in BAHTNET. Furthermore, it is regarded as the infrastructure for RTGS payments of all types of financial instruments that are in TSD custodian since it helps reduce settlement risks. It is expected that this system linkage can be in operation within the second quarter of 2005.

1.2.4 Improving Efficiency of Cheque Clearing System

BOT planned to improve efficiency of interbank cheque clearing systems across the country by applying cheque image technology to clearing and settlement process. The method is also known as cheque truncation, whereby transportation of physical cheque will be halted at the sending bank. Currently, various factors contribute to further development of the full implementation of cheque truncation. For example, a majority of commercial banks have started applying cheque and signature images for inward cheques. Other developments comprised an announcement of Electronic Transaction Act B.E. 2544 (2001) and a declaration of

² Banknote Ordering System (BOS) refers to the system implemented by BOT for receiving and sending information of banknote ordering between BOT and its customers.

³ Big Lot indicates purchase-sale order of equity of more than 1 million shares or in excess of THB 3 million.



standard on cheque as a preparation for operating cheque truncation since 1 January 2003.

BOT is in the process of clarifying a detailed plan for developing cheque truncation system. At the initial stage, it will focus on preparing legal matters, improving security standards of cheque and its image and also other urgent issues. The development and operation of cheque truncation are expected to start from 2007 onwards; however, BOT will need to seek a further cooperation with related parties on various details.

In 2004, BOT undertook several efficiency improvements on cheque clearing systems as follows:

1. Presenting study conducted by project advisors from Consultings Center of the National Institute of Development Administration (NIDA) to related parties in order to inform them the study's main findings of an appropriate approach for upgrading efficiency of cheque clearing and settlement systems in Thailand. These were the outcomes of examining impacts of changing information technology, business requirements, and returns on investment compared to overall benefits to financial institutions and general public. A seminar was held on 22 December 2004 to assess opinion and readiness of concerned parties.
2. Improving Bill for Collection 3 Days system, which facilitates inter-provincial cheque collections system in Bangkok to serve member banks and customers more efficiently. Moreover, it is planned to expedite inter-district cheque collection process nationwide to the similar level of B/C in Bangkok. The plan is expected to put into action in 2005 -2006.
3. Discussing legal aspects and guidelines for cheque image processing and interbank data collection for developing cheque truncation with the cheque image technology.

1 Important Developments of Domestic Payment Systems

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1.3 Payment Systems Oversight

1.3.1 Compliance assessment of Payment Services Provided by BOT to BIS Core Principles

In 2004, BOT conducted a self-assessment of BAHTNET, ECS and SMART with 10 BIS Core Principles for Systematically Important Payment Systems (SIPS) (details are in Box1). The objective was to ensure efficiency of payment systems and maintain public confidence in safety of payment instruments . This method was adopted by International Monetary Fund (IMF) and World Bank in the assessment of national payment systems under Financial Sector Assessment Program (FSAP) and Report on Observance of Standards and Codes (ROSCs). All in all, the initial outcomes and recommendations from the assessments can be summarized as follows;

- **BAHTNET**

ROSCs⁴ working group on payment systems module is chaired by BOT advisor (Ms. Saowanee Suwannacheep) and consists of participants from private and public sectors. The working group considered that BAHTNET, a high-value payment system, was only identified as SIPS. The preliminary assessment indicated that BAHTNET was equipped with sufficient measures for risk management, reliable security methods as BAHTNET was rated “Observed” in 5 principles and “Broadly Observed” in 4 principles. There was only one remaining principle that BAHTNET was not applicable.

⁴ ROSCs : Reports on the Observance of Standards and Codes. They are the assessment of each country’s operation in accordance with the international standard. The 12 assessment modules: 1. Data Dissemination 2. Fiscal Transparency 3. Monetary and Financial Policy 4. Banking Supervision 5. Insurance 6. Securities Market 7. Payment Systems 8. Anti-Money Laundering 9. Corporate Governance 10. Accounting, 11. Auditing and 12. Insolvency



According to the working group's recommendations, BAHTNET still needs further developments on certain aspects to achieve a higher level of compliance with BIS Core Principles for SIPS in the following issues;

1. **Legal Basis:** New legal basis is required to ensure that a complete payment transaction will be final and irrevocable by bankruptcy laws (Core Principle 1).

TABLE 1: Self-assessment of Thailand Payment Systems

Core Principles	Level of Compliance		
	BAHTNET	ESC	SMART
1. Legal Foundation	BO	PO	PO
2. Understanding of Financial Risks	BO	BO	BO
3. Management of Financial Risks	O	PO	PO
4. Prompt Final Settlement	BO	NO	BO
5. Settlement in Multilateral Netting Systems	NA	NO	NO
6. Settlement Assets	O	O	O
7. Security and Operational Reliability	BO	BO	BO
8. Efficiency	O	O	O
9. Access Criteria	O	O	O
10. Good Governance	O	PO	PO

Remark: O = Observed BO = Broadly Observed
PO = Partly Observed NO = Not Observed
NA = Not Applicable

2. **Rules, Regulations and Procedures:** Rules, regulations and procedures need to be revised to better comply with BIS Core Principles for SIPS, for example, an improvement on codes of practice in case of mistakes in funds transfers, appropriate penalties on members that failed to keep up with the system operation schedules and other rules and regulations, and also publicly disclose a fair and open access (Core Principle 2, 4 and 9).

3. **Contingency Plan:** A financial contingency plan should be constructed. A contingency arrangement should be regularly revised and practiced at member and network provider levels, whereas Information Technology infrastructure should be audited by external experts. Furthermore, each member should be required to arrange its business continuity plan (Core Principle 7).

1 Important Developments of Domestic Payment Systems

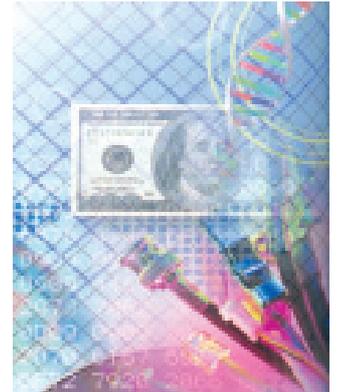
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ECS and SMART

Due to BOT assesment, ECS and SMART have not been identified as SIPS and less compliance degree compared to BAHTNET. Under BAHTNET, each payment transaction goes through a real-time gross settlement, whereas under ECS and SMART, a settlement will be taken place on a multilateral netting basis, which was not equipped with sufficient measures to mitigate risks caused by a member failure to cover debit position. For this reason, ECS and SMART were regarded as having inadequate compliance with certain aspects of BIS Core Principles for SIPS. Further improvement on two systems, therefore, will emphasize on reducing systemic risks. This issue can be elaborated as follows:

1. **Legal Basis:** Relevant laws on Multilateral Netting Settlement are necessary to be recognized (Core Principle 1).
2. **Risk Management:** Rules, regulations and procedures should be improved to include additional risk management measures as a replacement of unwinding of transactions such as an establishment of a collateral pool. Another alternative is an introduction of a loss-sharing arrangement, either in form of Survivor Pay or Defaulter Pay. Otherwise, a hybrid system, which requires more frequent settlement, can be another option. As a result, it will boost members awareness of risks, limit possibilities of systemic risks caused by a default by the largest deficit settlement obligation (Core Principle 5) and ensure that settlements will be completed at the end of the day (Core Principle 4).

Notably, BOT is now working on capacity enhancement of BAHTNET in areas mentioned above. In parallel, BOT is also conducting a detailed study on suitable risks reduction measures for SMART and ECS. It is expected to be completed by 2005.



Box 1:**BIS Core Principles for Systemically Important Payment Systems**

1. The system should have a well founded legal basis under all relevant jurisdictions.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.
8. The system should provide a means of making payments which is practical for its users and efficient for the economy.
9. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.
10. The system's governance arrangements should be effective, accountable and transparent.

1 Important Developments of Domestic Payment Systems

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1.3.2 Work Progress by Subcommittee on Supervising Private Sector Electronic Business Services and Public Sector Electronic Transactions

Subcommittee on Supervising Private Sector Electronic Business Services and Public Sector Electronic Transactions is one of the six subcommittees established under Electronic Transactions Committee⁵. Its main task is to identify types of payment services of private sector and payment transactions of public sector that should be regulated. In addition, Subcommittee is also responsible for proposing supervisory measures and guidelines on risks assessment before and after supervision with an aim to strengthen confidence in electronic commerce activities in Thailand.

On 19 July 2004, Electronic Transactions Committee gave an approval to recommendations by Subcommittee on an enactment of a Royal Decree under the Article 32 of Electronic Transactions Act B.E. 2544. The objective was to supervise electronic payment services and to assign BOT as the main responsible agency with its authority also being granted by the Royal Decree.

Given recommendation on an enactment of a Royal Decree, certain aspects including a sequence of regulations and desirable supervisory methods have been taken into considerations, whereby public opinions and views from related parties are welcomed as the law is expected to have impacts on existing operators. In 2004, a study was conducted by sub-working group, who also constructed a supervisory framework as well as revised procedures on sequencing the regulations by considering impacts on three aspects as follows:

⁵ Subcommittees established under Electronic Transactions Committee consist of 1. Subcommittee on Policy and Planning 2. Subcommittee on Legislation 3. Subcommittee on Financial and Commercial Stability 4. Subcommittee on Promotion and Support of the Application of Information and Communications Technology for Private Sector Electronic Business Services and Public Sector Electronic Transactions 5. Subcommittee on Supervising Private Sector Electronic Business Services and Public Sector Electronic Transactions 6. Subcommittee on Thailand PKI Forum Project



- (a) Impacts on financial and/or commercial stability
- (b) Impacts on creditability and public approval of electronic database system and;
- (c) Impacts on general public

From the aforementioned study, sub-working group concluded that the supervisory framework should consist of following issues:

- 1) Electronic payment services under the supervision must proceed in accordance with the Royal Decree, which requires notification, registration, a license application, for each specific case before commencing business. For those services already available, if also required to comply with the law, as an exempt period of 180 days will be granted for necessary adjustment. Other electronic payment services that are already governed by other laws will be excluded from the supervision of the Royal Decree.
- 2) In case of a license issuance, additional conditions may be requested by the officials, depending on certain circumstances.
- 3) The overseas branches or representatives of Thai service providers must also abide by the law and its related notifications.
- 4) In case of foreign service providers (with overseas license), who wish to expand their services into Thailand via their local branches and representatives, the law requires operations of their local branches and representatives to be abided by the law and its related notifications.
- 5) In case of a failure by any service provider to comply with the law and the related notifications, regulator can issue an order to such a service provider to make a correction within a specified period. The law also authorizes the regulator to impose appropriate punishments.

For further progress, Subcommittee is working with Subcommittee on Legislation to set out details and criteria on supervision by the Royal Decree in according to Article 32 of Electronic Transactions Act B.E. 2544, which includes issues of rules of conducting business, qualifications of a license applicant, registration and notification procedures and appropriate punishments in case of a breach of law.

1 Important Developments of Domestic Payment Systems

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1.4 New Products of Payment Services

1.4.1 Electronic Money/ Electronic Cash

Similar to Electronic Purse, Electronic Money, or Electronic Cash, applies stored value to plastic cards or other media i.e. electronic media. Users are required to pay money in advance (pre-paid) into stored value cards or other electronic media prior to multi-purpose purchases of goods and services from merchants that have an arrangement with electronic money issuers.

Electronic Money is common in many European and Asian countries, for example, France, Germany, Finland, Belgium, Hong Kong and Singapore. Such an electronic payment product is suitable for small-value transactions ranging from daily expenses on mass transits, on-line payments, and other kinds of consumer spending at various merchants such as restaurants and bookstores.

Over the past year, number of electronic money operators in Thailand grew significantly. One of major electronic money service providers is PaySbay Company Limited. The company has introduced stored value service into computer system so that its customers are able to purchase goods and services via internet. Elsewhere, Advance Info Service Public Company Limited (AIS), a mobile phone operator, whose service can also be classified as electronic money, provides a stored value service through accounts of its mobile phone users where money is deposited. This service is called m-PAY or m-CASH. Customers can pay, by deducting money from their mobile phone accounts, for goods and services of any merchants or e-commerce stores that have an arrangement with Advance info Service Public Company Limited (AIS).



On 10 February 2004, BOT established policy guidelines to govern electronic money services of commercial banks in order to maintain public safety, accuracy, customer confidence and overall social benefits. The policy guidelines by BOT require that commercial banks intending to provide electronic money services must ask for approval from BOT. Moreover, the code of conducts by BOT instructs commercial banks to set up well-equipped risk management systems for pre-paid money. Lastly, policy guidelines also clarify scope of responsibility for all related parties including electronic money issuers, participating merchants and customers in order to maintain confidence in payment services.

On 4 October 2004, Ministry of Finance declared that a conduct of electronic money services needed an official approval in accordance with Article five of Announcement of the National Executive Council No. 58 in order to guarantee public security and confidence in payment systems. The service providers were required to have minimum amount of THB 200 million for registered capital and were obligated to comply with rules and regulations established by BOT.

On 8 December 2004, BOT issued a framework and requirements for conducting electronic money services by non-financial institutions to bolster security, accuracy and creditability of services. The move by BOT is to ensure that customers' benefits are well-protected. The issues under BOT supervision include appropriate management of pre-paid money, fee rates instruction, examination and security control of electronic card usage, cash refund procedures, customer relations, certain measures to handle customer complaints, and accounting and reporting procedures.

1 Important Developments of Domestic Payment Systems

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1.4.2 Mobile Payment

Mobile payment service for goods and services, utilities, and internet fees experienced a substantial growth during last two years. Currently, mobile payment service providers are not only limited to commercial banks.

Initially, this particular service was launched by commercial banks to customers equipped with new versions of mobile phones that could handle WAP technology. With mobile payment, payers' accounts will be debited and transferred to receivers' accounts. Towards the end of 2003, commercial banks and developers of Mobile Payment Club (MPC)⁶ decided to upgrade mobile payment service by allowing direct-debit payments via Short Message Service (SMS) with application valid to every mobile phone model. In effect, this initiative led to growing numbers of customers as well as participating merchants of the system.

On 1 December 2004, Advance Info Service Public Company Limited (AIS) commenced its mobile payment service, known as m-PAY⁷, which provided its customers with three payment options;

- 1) **m-CASH** is an Electronic Purse type of service. Customers can put money into m-CASH system via ATMs of commercial banks that are members of service system⁸. At first, money that can be put in is limited to no more than THB 1500 with purpose of small-amount spending on goods and services.

⁶ Wireless Routing Center (Thailand) Company Limited has changed its name to Payzy (Thailand) Company Limited who acts as system developer for Mobile Payment Club (MPC). It has launched its services since October 2003. See further details at <http://www.mobilepaymentclub.net>

⁷ See further details at Advance Info Service Public Company Limited (AIS) <http://www.ais.co.th>

⁸ Currently, four commercial banks that are members of service system include Bangkok Bank, KBank, Siam Commercial Bank, and Bank of Asia



- 2) **Direct Debit** is a payment service for purchases of goods and services worth THB 200 at minimum, whereby purchasing amount will be automatically deducted from customer's deposit account. A letter of approval from customer of this service is required.
- 3) **Credit Card** is a payment service for purchases of goods and services worth THB 200 at minimum, whereby purchasing amount will be automatically deducted from customer's credit card account. A letter of approval from customer of this service is also required.

Goods and services payment of more than 200 stores (both traditional shops and e-commerce) such as restaurants, book stores, dental clinic, car care, internet hour, movie and concert tickets, can nowadays be made via mobile phones. Participation of new comer mobile payment service providers will rapidly expand mobile payment and tend to gain increasing acceptance from higher competition. However, to preserve transparency and fairness to customers, mobile payment service providers are obliged to follow rules and supervision by BOT.

2 Important Developments of International Payment Systems

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2.1 European Payments Council (EPC)

EPC, which consists representatives from central banks and commercial banks in European Union, formed Cash Working Group with an objective to put forward advices on efficiency enhancement of cash handling as well as to construct a long-term plan that would curb the excessive use of cash in the EU. Although cash remains the most popular means of payment in Europe, at the same time, its cost of servicing is the highest when compared to electronic means of payment. Thus, cash usage turns out to have a negative impact on the economy and besides it opens up the possibility of illegal business activities such as money laundering.

From estimation by EPC, cash usage tops around 360 billion transactions per year (compared with non-cash payment that only accounted for 60 billion transactions per year), while its handling cost of cash usage is not less than EUR 50 billion per year which is equivalent to THB 2.6 trillion or EUR 15 cents per transaction. Such cost was borne by commercial banks, retail sectors and central banks at proportionately 65 percent, 25 percent and 10 percent, respectively.

While commercial banks have to shoulder the highest cost in amount of approximately EUR 32 billion or THB1.6 trillion per year, there has not yet been any effective cash management scheme in place. In other words, banks were unable to transfer the actual management cost arising from cash usage onto their customers. Thus, commercial banks keep making losses from providing cash services. Such a problem also triggered cross-subsidization among commercial banks payment services; thus,



efficient payment services could not compete with cash service due to their higher prices, which has negative impacts on the overall economic efficiency.

Consequently, EPC made following recommendation to commercial banks:

- Working together to construct outline of a strategy of cash usage and plastic card payment that covers issue of cash usage reduction as well as cost cutback of cash management process
- Collaborating to set guidelines to inform their customers; both at corporate and individual levels, so that they will recognize all payment alternatives available to them
- Collectively establishing a Working Committee to monitor degree of compliance of commercial banks to instructions set out by EPC, the result of which will be submitted to EPC.
- Collaborating to set Best Practices guideline to reduce cost of providing cash services by commercial banks.

2 Important Developments of International Payment Systems

4 2

2.2 Canada

Canadian Payment Association (CPA) has been following footsteps of the U.S. by introducing Cheque Truncation System in order to boost efficiency of cheque settlement through cheque imaging technology or formally known as "Truncation and Electronic Cheque Presentment". The service is expected to be launched nationwide by the end of 2006.

Currently, Canada has six Regional Settlement Points nationwide, whereas average volume of cheque is 5 million items per day. Each day cheque will be dispensed from cheque receiving banks to regional settlement points where they are registered as members for sorting and then passed on to regional settlement points that cheque issuing banks are the member of. Therefore, each day, cheque will be transported to many places given size of the country.

Research by Canadian Bankers Association (CBA) founded that 85 percent of retail payments through banking network were made via electronic means. Customers, as a consequent, expect commercial banks to put more emphasis on inventing new electronic payment services.





2.3 The United Kingdom

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Association for Payments Settlement Services (APACS), payment system association of the United Kingdom, reported that at the end of 2004, more than 75 percent of plastic card users (i.e. credit, debit and ATM cardholders) or 32 million people have switched to use of Chip and PIN cards. To date, banks have issued more than 77 million Chip and PIN cards, while 80 percent of retail stores have already introduced system that accepts Chip and PIN cards. APACS expected that all plastic cards would be migrated to incorporate Chip and PIN technology by the end of 2005 and all POS terminals and ATM machines will also be adjusted to accept Chip and PIN cards.

Chip and PIN program is joint collaboration of financial institutions that are card issuers, retail stores that accept credit card payments, government agencies, and customers, all of which are seeking to raise level of security standard of plastic card usage given alarming increase in crimes related to card fraud. Chip and PIN program is carried out by implanting Chip onto plastic cards as a replacement for original magnetic strip and using PIN (Personal Identification Number), which is a personal 4-digit code similar to that used for ATM transactions in Thailand.

Effect of introduction of Chip and PIN is expected to yield significant growth in plastic cards. Currently, there are many countries in Europe that plan to adopt Chip and Pin system.

2 Important Developments of International Payment Systems

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Nevertheless, Chip and Pin measures have not alleviated problem of card fraud when payments are made via telephone, fax, and internet due to the fact that physical identification of this type of plastic cards is unnecessary. The case is also known as Card-not-Present Fraud. In 2004, the amount of losses stemmed from Card-not-Present Fraud has climbed to GBP150.8 million, a rise of 24 percent (year-on-year), which is the most costly among all card fraud.

2.4 South Korea

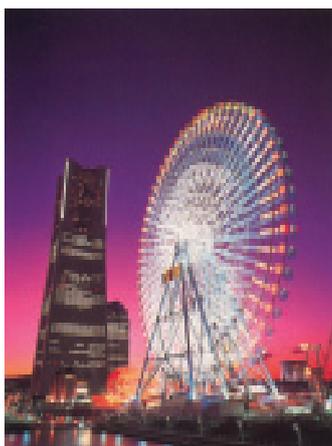
South Korea introduced an electronic payment called K-Cash (Korea Cash), which came about through a co-operation between Korea Financial Telecommunications & Clearings Institute (KFTC) (similar to Payment System Association), Korean commercial banks, and one of credit card issuers; Samsung Card Co.

K-Cash is a plastic card that uses IC Card technology. It can be used for several occasions such as payments for bus fares, purchases of goods and services from merchants or internet, and it can also be used as an ID card. In future, its service coverage is expected to link up with other industrial sectors.

Every Korean domestic bank is entitled to issue K-Cash cards with credit limit of KRW 500,000 per card or an equivalent of THB 19,400. K-Cash cards can be topped up from card holders' deposit accounts at ATM machines or commercial banks' websites on a 24-hour basis)

In 2003, K-Cash cards in use reached 278,326 units with 5.3 million transactions. Its value of payment was KRW 3.8 billion, or approximately THB 150.6 million, with 181 stores that accepted this kind of payment.





2.5 Japan

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Currently, there are two types of electronic cards; namely Edy (Euro, Dollar, Yen) and Suica (Super Urban Intelligent Card), in Japan.

Edy is plastic Chip Card for purchasing goods and services from merchants and internet. Commercial banks and credit card issuers are eligible to issue Edy by instructing a credit limit of Yen 50,000 or approximately THB 18,585. Users can credit their accounts at instructed merchant's credit points. In 2003, 3.3 million cards were in circulation with 3,200 stores accepting this type of payment.

Suica, on the other hand, is plastic Contactless Chip Card (Card verification machine can read card information by simply placing the card above machine without contact). With Suica cards, various kinds of payments can be made; including train fares payments, purchases of goods and services at train stations with East Japan Railway Company as card issuer. In 2003, Suica cards in use reached 7 million units with credit limit of Yen 20,000, or an equivalent of THB 7,433. Suica cards users can credit their accounts by depositing cash at Ticket Vending Machines.

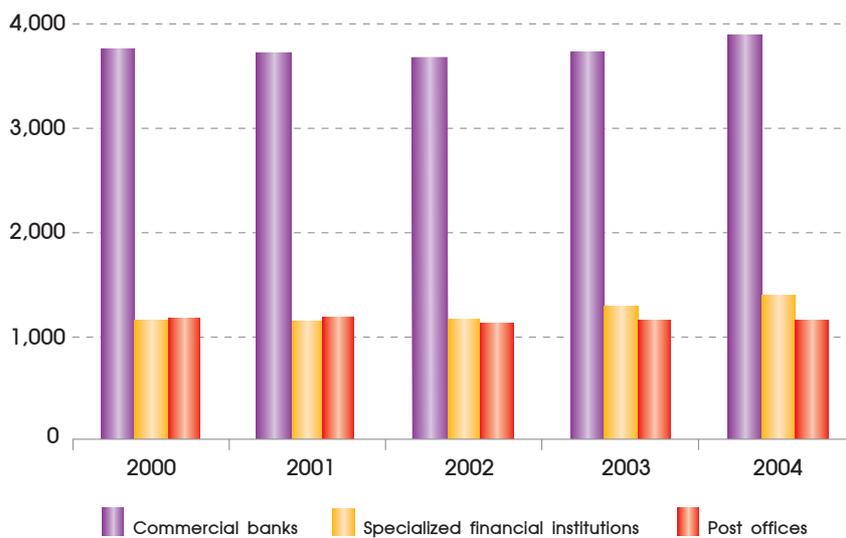
Despite aforementioned progress, cash and cheque usages in Japan remain highly popular among general public and also in business community.

3 Payment System Statistics

4 6 3.1 Developments of Payment Infrastructure

3.1.1 Branches of Commercial Banks, Specialized Financial Institutions and Post Offices

FIGURE 3 : NUMBER OF BRANCHES OF COMMERCIAL BANKS, SPECIALIZED FINANCIAL INSTITUTIONS AND POST OFFICES



Source : Bank of Thailand

From Figure 3, number of commercial banks branches and specialized financial institutions surged in 2004. However, similar pattern could not be applied to case of post offices as there was no significant change in number of their branches in 2004.

- **Commercial banks:** The total number of commercial bank branches expanded from 3,748 branches in 2003 to 3,943 in 2004, representing a growth of 5 percent.
- **Specialized financial institutions:** In 2004, there were in total 1,388 branches of specialized financial institutions, compared to 1,268 the previous year, signaling a growth of 9 percent.

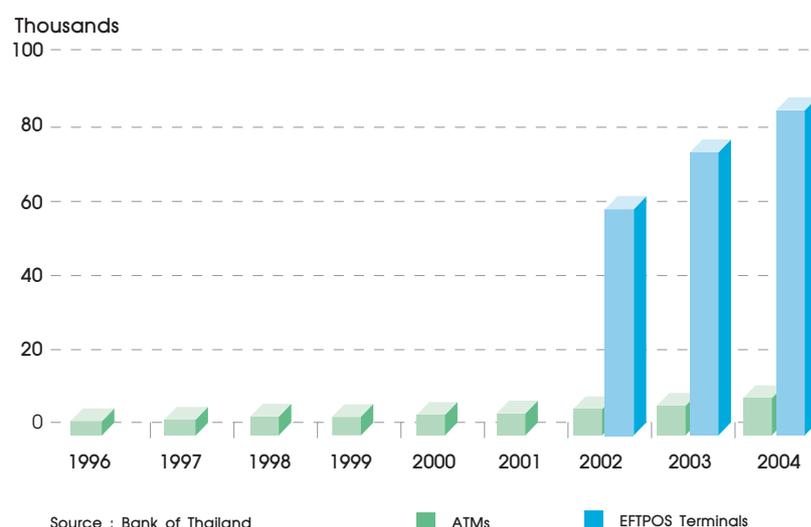
In addition to the growing number of branches, both commercial banks and specialized financial institutions have been active on updating the style of their branches by reducing their sizes and relying more on electronic-based means, which include an increase in ATMs, automatic updating of deposit report machines and automatic deposit machines. Moreover, some banks now are focusing on building their in-store branches in several public areas such as shopping malls, universities, hotels and other tourism spots.

Such a trend did not only benefit commercial banks by minimizing operational costs, but also makes their services more accessible to customers. In turn, it should result in higher revenue of commercial banks as well as greater capacity to compete with non-bank payment service providers, such as counter-services of 7-Eleven and Pay at Post of Thailand Post Company Limited, which already have an advantage of having numerous branches.

- **Thailand Post Company Limited:** Due to its policy to reduce number of unnecessary branches and to modernize image and efficiency of existing branches, total number of its branches fell from 1,148 in 2003 to 1,146 in 2004.

3.1.2 ATMs and EFTPOS Terminals

FIGURE 4 : NUMBER OF ATMs AND EFTPOS TERMINALS



3 Payment System Statistics

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The number of ATMs and EFTPOS continued to grow in 2004 as a result of efforts by commercial banks, large-sized banks in particular, to enhance their competitiveness.

- **ATMs:** The number of commercial bank ATM machines increased by 16 percent to 10,602 in 2004, arose from 9,118 in 2003 as commercial banks acknowledged that ATMs could be a well-fit substitute for some operations of bank branches, which appeared to have higher costs but less flexibility to gain an access to public community. Nowadays, ATM machines have been developed to be capable of providing more diversified services including interbank funds transfers such as ORFT, Bill payment services and payments of electronic commerce, all of which constitute a major revenue source of commercial banks.

Nevertheless, it should be noted that 85 percent of total transactions via ATMs are still for purpose of cash withdrawals; thus, reflecting the need to educate customers in ATMs' capacity to process other payment services.

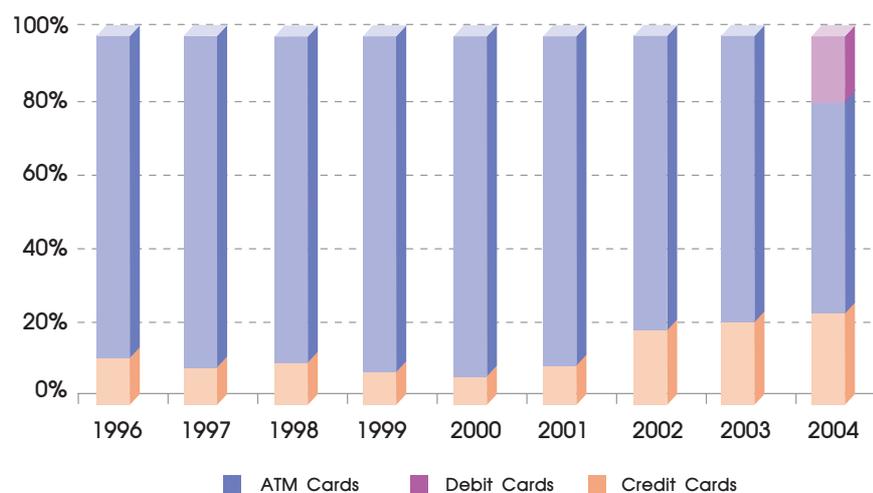
- **EFTPOS Terminals:** In 2004, the number of EFTPOS terminals totaled 84,000, a surge of 11 percent from 76,000 terminals in 2003. Such a steady growth suggests usage of credit and debit cards by public has started to replace cash usage. The trend is regarded as a positive sign as it goes in line with BOT's policy objective to promote uses of credit and debit cards instead of cash.

One important factor leading to growing number of ATMS and EFTPOS terminals was a continuous decline in machine prices. However, as VISA and MasterCard have adjusted standard of all credit and debit cards issued under their brands to comply with EMV (Europay, MasterCard and VISA), acknowledged for its higher safety standard compared to current magnetic strip card, outcome is increasing cost borne by commercial banks to upgrade their existing machines to facilitate plastic cards that comply with EMV standard. Furthermore, it is likely

that new machine can only be purchased at higher cost. Consequently, a significant impact, to a certain extent, can be expected on the future growth of ATM and EFTPOS machines.

3.1.3 ATM, Debit and Credit Cards

FIGURE 5 : NUMBER OF ATM, DEBIT AND CREDIT CARDS in proportion



Source : Bank of Thailand

3 Payment System Statistics

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Table 2: Types of Transactions via ATM and Debit Cards Sorted by Volume and Value

	Volume		Value	
	Transactions (Millions)	Percentage (%)	Value (Billion Baht)	Percentage (%)
ATM Cards				
- Cash withdrawal	445.3	85.11	1,739.0	81.94
- Fund transfer	30.0	5.73	275.0	12.96
- Goods and service payment	5.2	0.99	39.2	1.85
- Cash deposit	5.6	1.07	68.8	3.24
- Others	37.1	7.09	0.3	0.01
Total	523.2	100.00	2,122.3	100.00
Debit Cards				
- Cash withdrawal	156.5	69.65	787.2	55.56
- Fund transfer	23.3	10.37	565.9	39.94
- Goods and service payment	7.2	3.20	22.1	1.56
- Cash deposit	3.4	1.51	41.7	2.94
- Others	34.3	15.26	0.01	0.00
Total	224.7	100.00	1,417.0	100.00

ATM, debit and credit cards are payment media that have a significant role in reducing cash usage. Recently, plastic cards, especially credit cards, have gained a widespread acceptance from public. However, it is likely that more debit cards will be issued to replace ATM cards in future. The trend suggests that commercial banks are trying to convince their customers to opt for debit cards instead of ATM cards as the former can be used not only for cash withdrawal but also, similar to the latter, for payments of goods and services.

- **ATM cards:** Number of ATM cards totaled 25.6 million in 2004, a decline from 29.6 million in 2003. The weakening figure was merely a result of statistical

adjustment in latest data. The 2004 figure excluded the number of debit cards, contrary to 2003 figure, into which the number of debit cards was still counted. Despite this fact, growth prospect of ATM cards looks likely to plummet as commercial banks are attempting to promote the use of debit cards among their customers.

- **Debit Cards:** Separate data collection on volume of debit cards did not start until 2004, which showed total number of debit cards of 8.4 million. Currently, debit card issuance in Thailand is joint operation between commercial banks and VISA under name of VISA Electron. Promotion of debit card usage has been common in various countries to replace cash usage. However, as depicted in Table 2, public approval on debit card usage remains significantly low. Debit cards are most frequently used for cash withdrawals from ATMs, thus restrict payments via debit cards in 2004 to only THB 22.1 billion, or 19 percent of total payments via credit cards. (payments via credit cards in 2004 amounted to THB 115.8 billion)

As for ATM cards, they remain primary means of cash withdrawal from ATMs. Amount of cash withdrawal from ATM machines by ATM cards stood at 85 percent of total transactions via ATMs, an equivalent to THB1,738 billion or 26 percent of GDP.

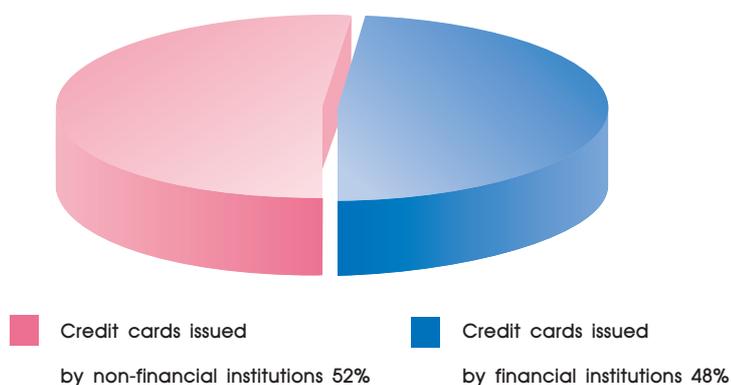
Therefore, it can be argued that level of debit and credit card usage in Thailand is still not significant enough to replace cash usage as originally targeted.

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• **Credit Cards:** In 2004, total number of credit cards reached 8.6 million, a growth of 28 percent, from 6.7 million in 2003. Of all credit cards, they could be separated into 4.12 million cards issued by commercial banks, and 4.52 million cards issued by non-bank institutions⁹. Of all credit cards issued by commercial banks, 92 percent was affinity cards, which were jointly issued by banks and other entities (joint card), i.e. Visa and Master cards, whereas the remaining 8 percent is credit cards issued solely by commercial banks.

FIGURE 6 : RATIO OF CREDIT CARDS ISSUED BY FINANCIAL AND NON-FINANCIAL INSTITUTIONS

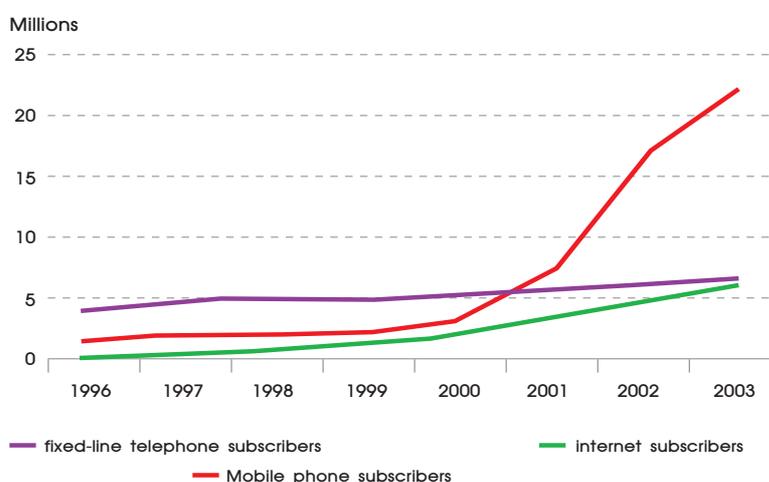


Source : Bank of Thailand

⁹ These non-bank institutions comprise General Card Services, Cetelem (Thailand), Diners Club (Thailand), Tesco Card Services, American Express (Thailand), Aeon Thana Sinsap (Thailand), AIG Card (Thailand)

3.1.4 Subscribers of Fixed-line Telephone, Mobile Phone and Internet

FIGURE 7 : NUMBER OF SUBSCRIBERS OF FIXED-LINE TELEPHONE, MOBILE PHONE AND INTERNET



Source : Bank of Thailand

Another alternative for customers to make a payment is Electronic Banking. Customers can pay via Telephone Banking Service through a fixed-line telephone system or via internet banking services through internet network. Another choice that has become more popular among consumers is Mobile Payment, such as m-PAY service of Advance Info Service Public Company Limited (AIS) which can be accessed through a mobile phone.

Fixed-line Telephone: Currently, fixed-line telephone services are provided by three operators, consisting of TOT Public Company Limited, Telecom Asia Public Company Limited And TT&T Public Company Limited. In 2004, fixed-line telephone services expanded slightly by 2 percent, with number of subscribers of 6.79 million, which represented 10 percent of total population. Of these 6.79 million subscribers, 3.68 million subscribed with TOT Public Company Limited, 1.88 million with Telecom Asia Public Company Limited, and the remaining 1.23 million with TT&T Public Company Limited.

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Main factor leading to small growth rate of fixed-line telephone was that users had been shifting to mobile phone services, which appeared to be more convenient. The trend was more evident as its air-time fee gets lower. However, fixed-line telephone still benefited from its advantage of being the most efficient, but the lowest cost means for internet connection.

Mobile Phone Service: There are six mobile phone operators in Thailand at present, which are Advance Info Service Public Company Limited, Telecom Asia, TOT Public Company Limited, Digital Phone Company Limited, True Corporation Public Company Limited and CAT Telecom Public Company Limited. In 2004, popularity of mobile telephone services grew continuously with total number of subscribers reaching 27.37 million; or 43 percent of total population, representing a growth rate of as high as 22 percent. Interestingly, most of mobile phone users, 22.38 million in 2004 compared to 18.03 million in 2003, were subscribers of prepaid system. On a lesser note, the number of subscribers to postpaid system increased slightly from 4.35 million in 2003 to 4.99 million in 2004.

Internet Service: There were 18 internet service providers who were granted concessions from CAT Telecom Public Company Limited. In 2004, internet service expanded moderately. Survey of Internet users by National Electronics and Computer Technology Center revealed that number of internet users in Thailand reached 6.97 million, or 11 percent of total population, a comparable figure to that of fixed-line telephone. Nevertheless, a higher growth rate of internet services was impeded by their high prices and the fact that internet connection requires other costly hardware such as computer and modem.

3.2 Cash Usage

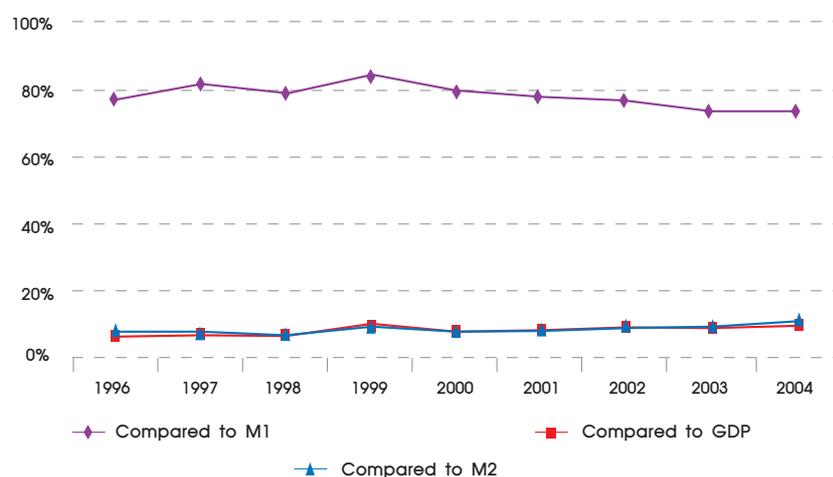
In accordance with economic expansion, currency in circulation per capita in 2004 increased from THB 8,587 in 2003 to THB 9,450, whereas GDP per capita augmented from THB 94,616 in 2003 to THB 103,805 as shown in Table 3.

Table 3: Currency in Circulation per capita and Gross Domestic Product per capita (GDP per capita)

	1999	2000	2001	2002	2003	2004
Currency in Circulation per capita (Baht)	7,559	6,493	7,004	7,807	8,587	9,450
GDP per capita at current price (Baht)	75,204	79,465	82,238	85,981	94,616	103,805

Source: Bank of Thailand

FIGURE 8 : CASH TO GDP, M1 AND M2



Source : Bank of Thailand

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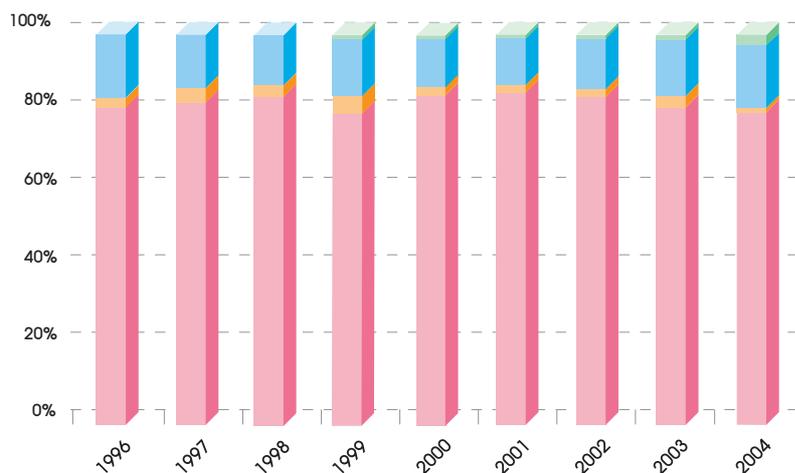
From Figure 8, ratio of currency in circulation to Gross Domestic Product (GDP) remained unchanged at 9.1 percent since 2002. When considering composition of currency holdings, as depicted in Figure 9, it is found that currency in circulation held by public increased slightly.¹⁰ It was interesting to see that currency in circulation held by government significantly declined compared to 2003 figure. Meanwhile, currency in circulation held by commercial banks by and large doubled from 2002 figure. This major shift in composition of currency holdings was resulted from new policy issued on cash management by BOT. Roles of provincial treasuries as representatives of BOT to provide cash deposit and withdrawal services to commercial banks in areas nearby were aborted and replaced by assigning each commercial bank to be responsible for its own cash management. This, therefore, resulted in a larger amount of cash held by commercial banks. On the other hand, it also led to a substantial reduction in cash held by provincial treasuries, which were government agencies.

Furthermore, proportion of cash usage, measured by ratio of currency in circulation to M1¹¹ as an indication of cash usage compared to the use of other payment means through commercial bank demand deposit accounts, shrank from 84 percent in 1999 to 73 percent in 2004. The trend denoted a continuous rise in use of other payment means through commercial bank demand deposit accounts.

¹⁰ Currency in circulation held by the public refers to currency held by business and household sectors

¹¹ M1 can be classified as currency in circulation held by public, demand deposit of businesses as well as deposit of household sector at the commercial banks.

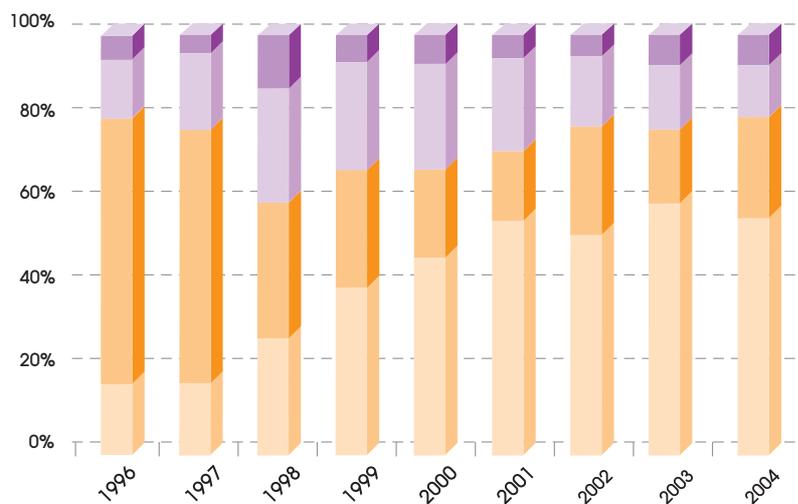
FIGURE 9 : COMPOSITION OF CURRENCY HOLDINGS



Source : Bank of Thailand

- Held by other financial institutions
- Held by commercial banks
- Held by government
- Held by business and household

FIGURE 10 : COMPOSITION OF DEMAND DEPOSITS HOLDINGS



Source : Bank of Thailand

- Held by other financial institutions
- Held by commercial banks
- Held by government
- Held by business and household

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Table 4: Cash to GDP and M1 for selected countries, 2004

Country	Ratio of Cash-to-GDP	Ratio of Cash-to-M1
South Korea	2.40	5.80
Indonesia	5.29	42.24
The Philippines	5.46	46.67
Taiwan	6.18	9.28
Malaysia	6.66	25.57
Singapore	8.07	33.15
Thailand	9.21	74.23
Hong Kong	10.48	30.93
Japan	14.6	nav.

Source: www.adb.org (Asian Development Bank's website)

As shown in Table 4, ratio of cash usage to GDP of Thailand was at 9.21 percent, which was considered high among selected nine Asian countries. Other countries with a high ratio of cash usage to GDP included Japan, Hong Kong and Singapore with rates of 14.6, 10.48 and 8.07 percent, respectively. Compared to year 2001, cash usage of these four countries revealed an upward trend. It should be noted that South Korea had the lowest ratio of cash usage to GDP, at 2.40 percent, among these nine Asian countries.

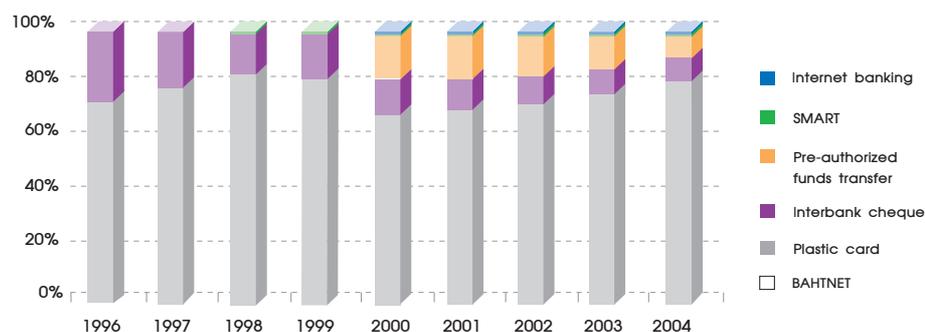
When cash usage was compared to usage of other payment means, by looking at ratio of cash to M1, cash usage in Thailand was ranked the highest among nine Asian countries with the rate of 74.23 percent. However, the ratio shifted downward from the year 2001, implying a change towards usage of other payment means.

Today, technological infrastructure of Thailand is being developed with an aim to provide users with greater access to electronic services. At the same time, commercial banks are actively promoting electronic payment services such as internet banking, mobile phone banking and money transfer payments via ATMs. This is to help minimize operational cost of bank branches, which should lead to a reduction in cash usage and promotions of other payment means.

3.3 Non-Cash Payment Means

Non-cash payment means consists of high-value funds transfer system (BAHTNET-Bank of Thailand Automated High-value Transfer Network) and retail payment systems. The latter include Interbank Cheque Clearing System, Low-value funds transfer system (SMART-System for Managing Retail Funds Transfer), pre-authorized direct credit/direct debit, plastic cards, such as ATM card, debit and credit cards and internet banking.

FIGURE 11 : PERCENTAGE OF TRANSACTION VOLUME OF VARIOUS PAYMENT INSTRUMENTS



Source : Bank of Thailand

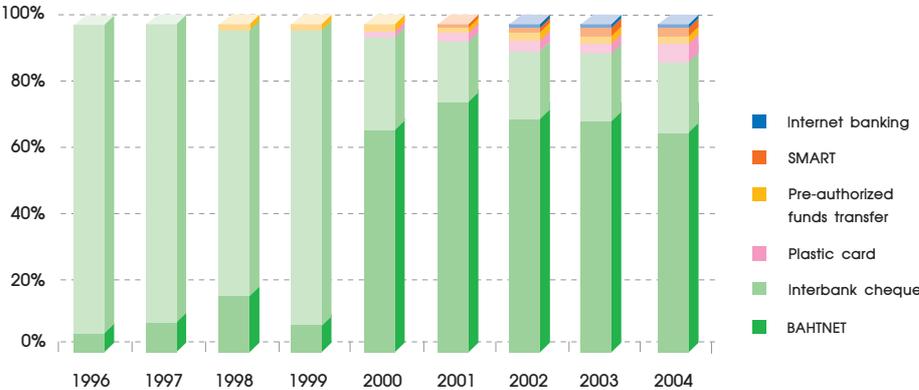
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Growth can be seen both in terms of volume and value of transactions by all payment means. In terms of transaction volume (figure 11), plastic card was the most popular among users as its usage continued to surge and replace other types of payment means; consequently, proportion of plastic card usage grew from 75 percent in 2003 to 80 percent in 2004. Meanwhile, transaction volume of interbank cheque usage and pre-authorized funds transfers, despite larger number of items, is shrinking in proportion to total transaction volume of all payment instruments.

In terms of total transaction value (Figure 12), funds transfer via BAHTNET held the largest share, despite a deceleration from 73 percent in 2003 to 68 percent in 2004. Other payment means with smaller size of transaction value such as interbank cheques, plastic cards and pre-authorized funds transfers saw their shares in 2004 rising to 23, 4, and 4 percent, from 20, 3, and 3 percent in 2003, respectively.

FIGURE 12 : PERCENTAGE OF TRANSACTION VALUE OF VARIOUS PAYMENT INSTRUMENTS



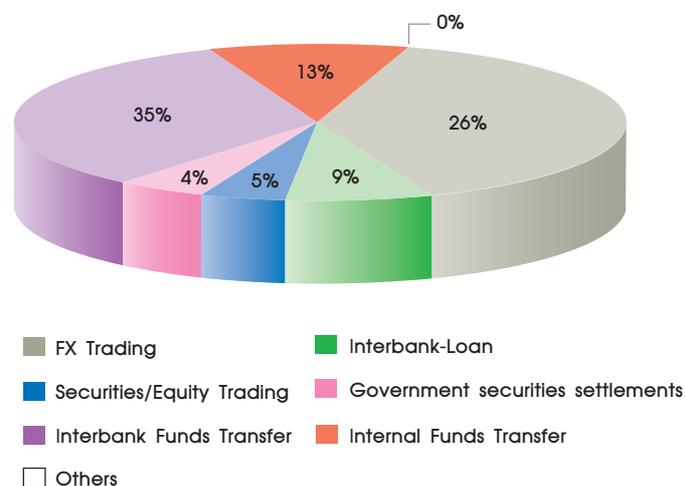
Source : Bank of Thailand

3.3.1 High-value funds transfer system (BAHTNET)

Daily average funds transfer via BAHTNET were THB 300,000 million in 2004 with an average volume of 5,000 transactions per day. Of total funds transfer via BAHTNET, seven business categories were identified; namely, interbank funds transfer, FX tradings, interbank loans, internal funds transfer, securities/equity tradings, government securities settlements and others.

In 2004, the highest value transaction via BAHTNET was interbank funds transfer, which accounted for 35 percent of total BAHTNET transactions. It was followed by transactions

FIGURE 13 : TRANSACTION VALUE OF FUNDS TRANSFER VIA BAHTNET BY BUSINESS TYPE



Source : Bank of Thailand

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from FX tradings with the rate at 26 percent, internal funds transfer at 13 percent and interbank loans, securities/equity trading, government securities settlement and others at 9, 5, 4 and 0 percent, consecutively (Figure 13).

Value of funds and securities transfers via BAHTNET in 2004 decreased from THB 78.1 trillion in 2003 to THB 73.5 trillion in 2004, despite its volume growth from 964 transactions in 2003 to 1,209 transactions in 2004. This could be explained by

FIGURE 14 : VOLUME OF FUNDS AND SECURITIES TRANSFERS VIA BAHTNET BY BUSINESS TYPE

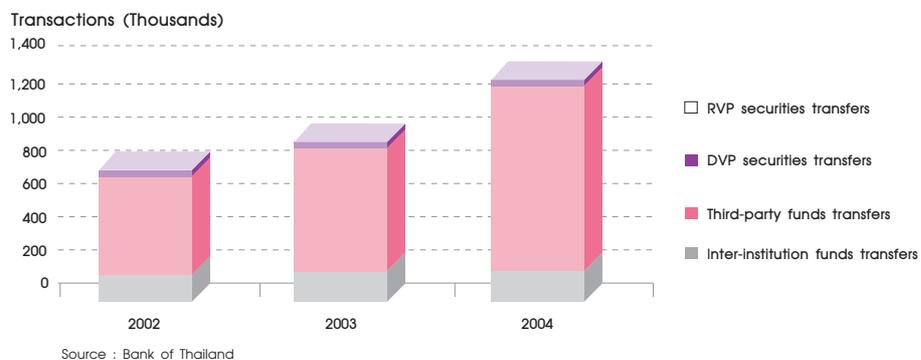
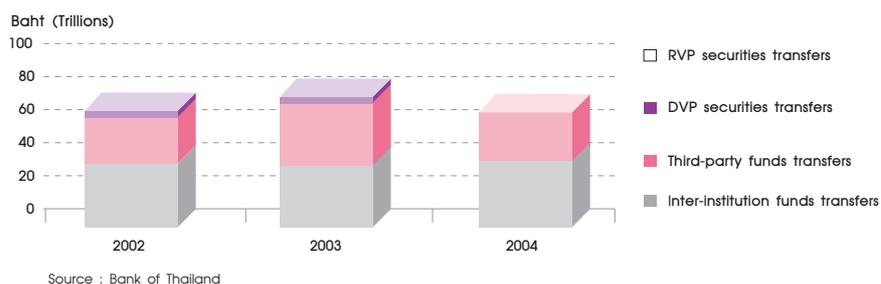


FIGURE 15 : VALUE OF FUNDS AND SECURITIES TRANSFERS VIA BAHTNET BY BUSINESS TYPE



the volume increase of third-party funds transfer, from 748 transactions in 2003 to 1,003 transactions in 2004. However, in terms of value, third-party funds transfer in 2004 fell from THB 38.6 trillion to THB 28.7 trillion. The changing volume and value of third-party funds transfer was resulted from 50 percent increase of volume of non-resident funds transfer, while its value declined by 45 percent.

It should be noted that growth of non-resident funds transfers with value less than THB 500,000 per transaction constituted the largest part of overall growth of non-resident funds transfers in 2004 as its amount doubled from 2003. Meanwhile, non-resident funds transfer with higher value decelerated; thus, leading to a decline in overall transaction value of funds transfer via BAHTNET.

3.3.2 Interbank Cheque Clearing

Interbank cheque clearing systems comprise interbank cheque clearing system for Bangkok and its vicinity (Electronic Cheque Clearing System: ECS), provincial cheque clearing system and inter-provincial cheque collection system (Bill for Collection: B/C).

In 2004, daily average volume of cheque usage was 354,763 items, whereas its average value was THB 101 billion per day. Cheque usage per capita was unchanged from 2003 at 1.5 items per year. The average value of each cheque transaction equaled to THB 287,251.

Volume of interbank cheque transactions in 2004 increased from 84.6 million items in 2003 to 86.9 million items, in line with a steady growth of the economy.

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However, it should be noted that the volume of interbank cheque transactions grew at a slower pace from 7 percent in 2003 to 3 percent in 2004 (Figure 16).

FIGURE 16 : VOLUME OF INTERBANK CHEQUE

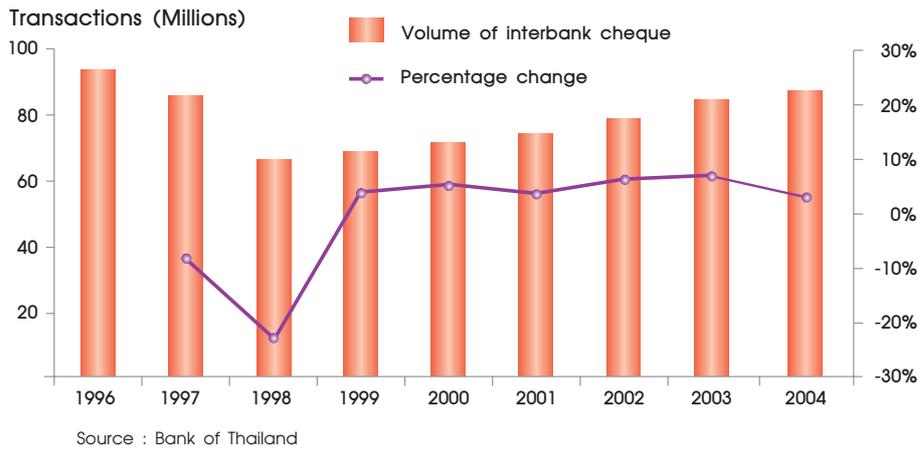
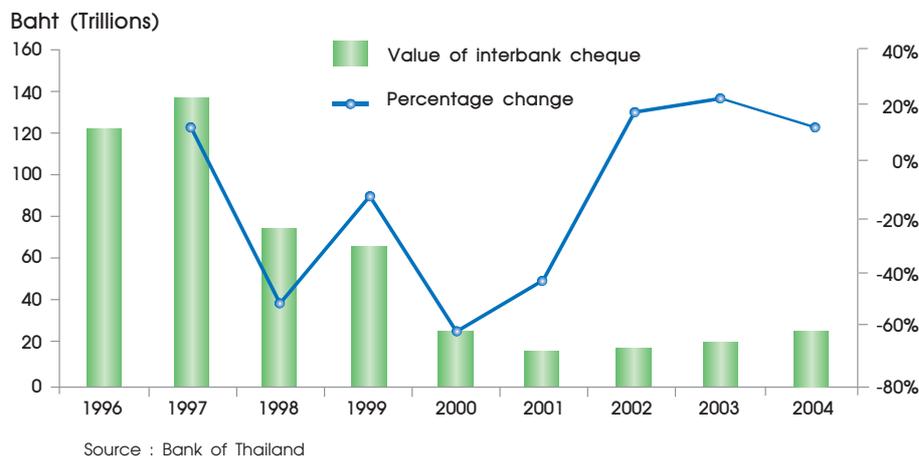


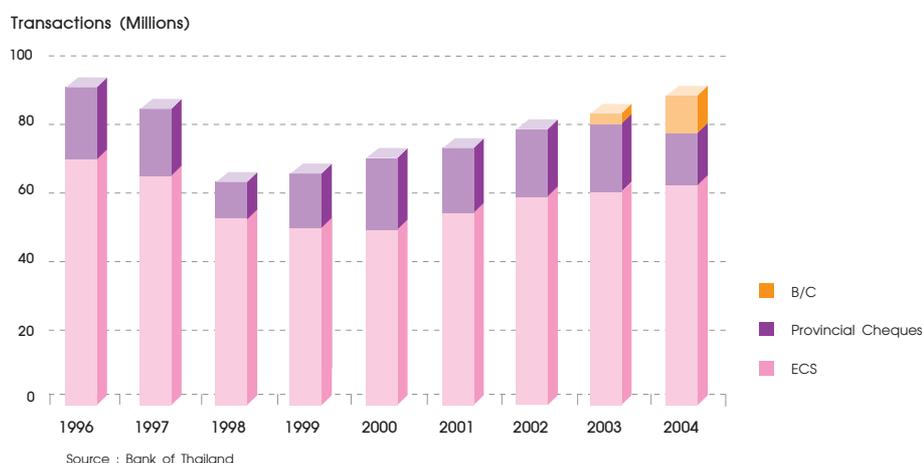
FIGURE 17 : VALUE OF INTERBANK CHEQUE



In 2004, value of interbank cheque increased, so as the volume, but at a slower pace of 14 percent compared to the rate of 17 percent a year earlier. However, detailed data shows wide ranges of growth rate among three interbank cheque clearing systems. Inter-provincial cheque collection system (B/C) registered a 149 percent growth rate, whereas cheque clearing system in Bangkok and its vicinity and provincial cheque clearing system increased at 14 and 6 percent, respectively (Figure 17).

As the processed time of inter-provincial cheque collection in Bangkok and its vicinity (B/C) were cut from six to three working days since November 2003, the outcome was that the volume expanded 2.5 times in 2004, from 2.7 million items in 2003 to 6.6 million items in 2004. Cheque clearing volume via provincial cheque clearing system dropped by 17 percent from 19.9 million items in 2003 to 16.5 million items in 2004. Volume of cheque clearing through cheque clearing system in Bangkok and its vicinity climbed slightly by 3 percent (Figure 18).

FIGURE 18 : VOLUME OF INTERBANK CHEQUE TRANSACTIONS BY TYPE



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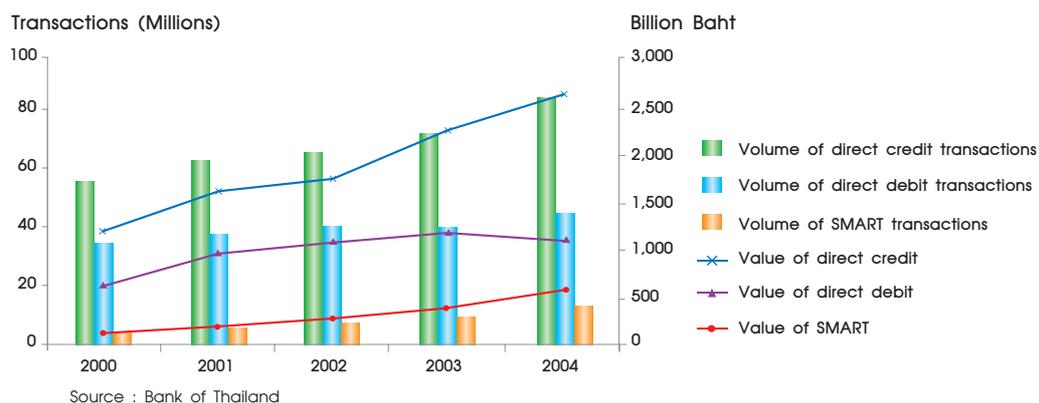
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The proportion of cheque cleared via ECS in 2004 remained unchanged both in terms of volume and value from the year earlier at 73 and 91 percent, respectively, followed by proportion of provincial cheques, of which volume and value equaled to 23 and 8 percent respectively. For Bill for Collection, despite its growth of 150 percent both in terms of volume and value, its proportion to total cheques cleared via three systems was still modest at 3 percent for its volume and 1 percent for its value.

3.3.3 Pre-authorized Direct Debit/Direct Credit

Pre-authorized payment systems serve purpose of retail funds transfers that are small in value, periodic, large in volume and have an advanced agreement. The pre-authorized payment services are available at intra-bank as well as interbank levels. Services provided at intra-bank level include direct credit transactions (salary, wages, dividends, tax returns, etc.), direct debit transactions (utility payments, insurances, credit card payments, etc.). Services at the interbank level are provided

FIGURE 19 : VOLUME AND VALUE OF PRE-AUTHORIZED FUNDS TRANSFER TRANSACTIONS



via so-called SMART system (previously known as Media Clearing system) operated by BOT and currently provides direct credit services only.

In 2004, total value of pre-authorized funds transfers was THB 4.3 trillion or 143 million transactions. Approximately 92 percent of all transactions were conducted at the intra-bank level where the largest proportion was direct credit transactions with the volume and value equal to 60 percent.

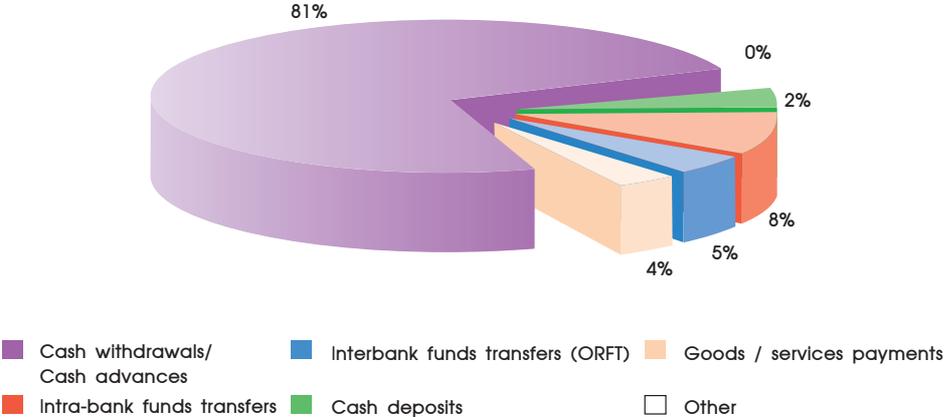
At interbank level, pre-authorized funds transfer via SMART continued to have a high expansion rate. In 2004, the number of funds transfers through the system reached 11.8 million transactions or THB 553 billion. Its volume and value growth rates were at 25 and 43 percent, respectively. Funds transfers for salary, wages, and pensions made up the largest share of transaction volume, whereas payments for goods and services were recorded in terms of the highest transaction value.

3.3.4 Plastic Cards¹²

Credit cards as one of the payment means are likely to maintain its high level of popularity in future, in particular, the so-called smart card. Equipped with a special chip, a smart card does not only have a higher capacity for data processing and collecting but it also guarantees a higher security level compared to quality of magnetic cards that are mainly used today. Furthermore, it is expected that commercial banks and retail businesses will promote more smart card payments to their customers as several functions can be served only by one smart card; making it renown for multi-application quality.

¹² Refer to ATM cards and credit cards

FIGURE 20 : PROPORTION OF ATM TRANSACTIONS BY TYPE



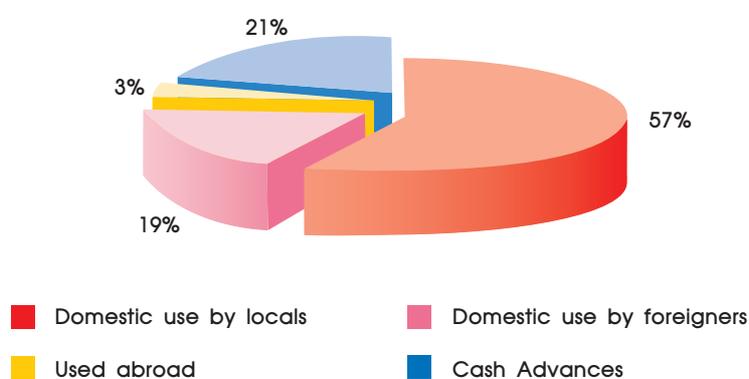
Source : Bank of Thailand

ATM cards remained the most widely used plastic cards. In 2004, there were 523 ATM card transactions with total value of THB 2.1 trillion. The largest proportion of total transaction originated from cash withdrawals, but at a lesser extent, as it declined from 96 percent in 2003 to 85 percent in 2004. It was a result of a rising portion of intra-bank funds transfers, which reached 8 percent in 2004. Interbank funds transfers (Online Retail Funds Transfers: ORFT) equaled to 5 percent and goods and services payments via ATM cards accounted for 4 percent of total number of transactions.

Interbank funds transfers or ORFT was another type of payment services that became more widely used in 2004. The service volume elevated by 35 percent from 14.1 million transactions in 2003 to 19 million transactions in 2004.

For credit card transactions in 2004, their composition was comparable to that of previous year; that is to say, 76 percent with value of THB 391.6 million was for domestic use. Of all total domestic credit card transactions, 57 percent was local usage and 19 percent was foreign usage. Overseas credit card transactions in 2004 accounted for 3 percent or THB 23.1 billion. Of particular interest was large value of credit card cash advance at THB121.1 billion or 21 percent of total transactions, rising at almost double the rate of the previous year.

FIGURE 21 : PROPORTION OF CREDIT CARD TRANSACTIONS BY TYPE



Source : Bank of Thailand

Table 5: Value of credit card transactions by type in 2004

Type of credit card	volume (mil. cards)	Domestic use (bil. Baht)			Overseas use (bil. Baht)	Cash advance (bil. Baht)	Total value (bil. Baht)
		Use by locals	Use by foreigners	TOTAL			
Commercial banks	4.12	180.57	79.37	259.94	12.17	90.75	362.88
Non-bank institutions	4.52	126.92	4.78	131.70	10.95	30.42	173.08
Total	8.64	307.50	84.15	391.65	23.12	121.18	535.96

Source: Bank of Thailand

3.3.5 Internet Banking

The number of internet banking users jumped from 398,965 in 2003 to 2,514,395 in 2004 as the service has been upgraded to be more convenient by commercial banks to meet customer's demand. The popularity of internet banking service is clearly reflected in substantial rise of its transaction value by 106 percent from THB 638 billion in 2003 to THB 1,312 billion in 2004.

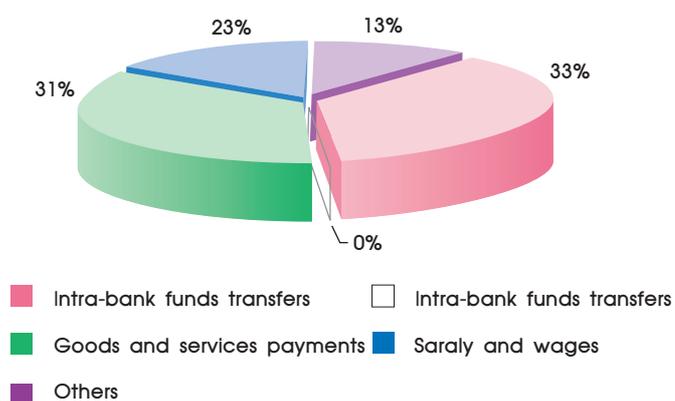
In terms of both volume and value of internet banking transactions, intra-bank funds transfers held the largest proportion, followed by goods and services payments, and payments for salary and wages.

By scrutinizing composition of total transaction value, it emerged that intra-bank funds transfers accounted for 64 percent, followed by 33 percent of goods and services payments. The remaining included salary and wages payments at 2.7 percent, transactions of other items at 0.2 percent and interbank funds transfers at the notably low rate of 0.02 percent.

Meanwhile, in terms of composition of all transaction volume, intra-bank funds transfers and goods and services payments held portions of 33 and 31 percent, respectively, followed by 23 percent of salary and wages payments, 13 percent of

transactions of other items. Interbank funds transfers accounted only for 0.01 percent (figure 22).

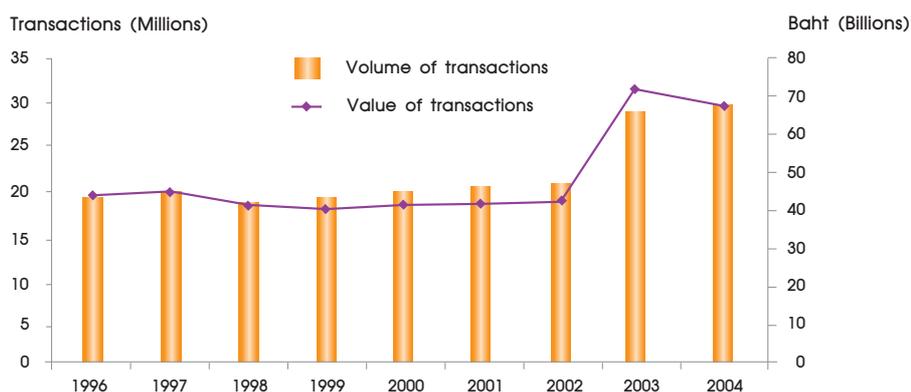
FIGURE 22 : VOLUME OF INTERNET BANKING TRANSFERS



Source : Bank of Thailand

3.3.6 Postal Payments

FIGURE 23 : VOLUME AND VALUE OF POSTAL PAYMENT TRANSACTIONS



Source : Thailand Post Co., Ltd.

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Postal payment services proved to be widely accepted by users in 2004. Its volume underwent an encouraging expansion from 28.11 million transactions in 2003, and reached 29.15 million transactions with transaction value of THB 65.8 billion. Pay at Post was postal payment service that experienced the highest growth rate at 23 percent. Its payment services provided to customers in 2004 reached 12.7 million transactions, compared to 10.3 million transactions in 2003. More than 90 types of goods and services can now be handled by Pay at Post.

The prominent growth rate of Pay at Post indicated customer demand for an easy access to payment services nationwide. At present, the number of service providers who offer the similar form of payment is still expanding. Competitors to Pay at Post include Pay Point and Counter Service.

Unlike trend of Pay at Post, volume of other postal payments, including domestic and international money orders, postal cheques, and domestic postal orders experienced 4 percent contraction due to an increasing role of other payment means, notably ATM funds transfer services both at intra-bank and interbank levels (ORFT), which brought more convenience to customers.

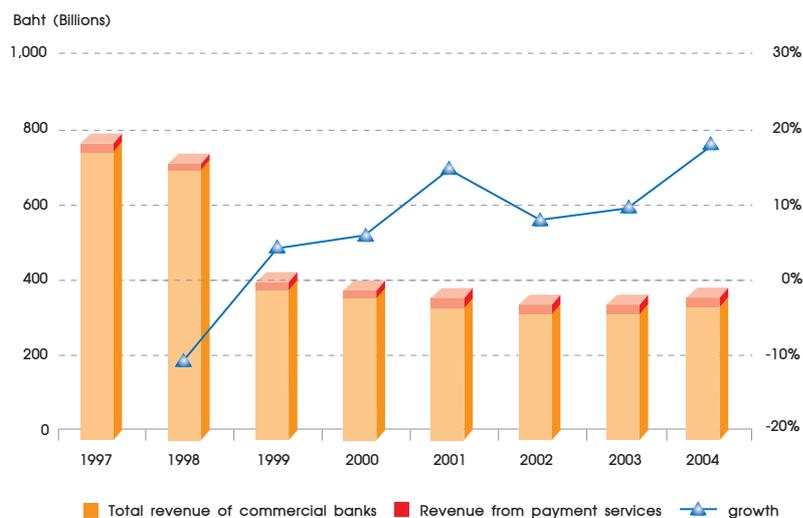
3.4 Revenue from Payment Services

As a proportion to total incomes of commercial banks, role of revenue from payment services has been more significant. In case of Thailand, similar to international experiences, commercial banks' revenues have been increasingly derived from non-interest income or fee-based and services incomes, largely related to payment services, whereas incomes from interest and dividend are likely to decline.

Income from payment services has maintained a stable growth for several years. In 1998, commercial bank income from payment services amounted to THB 15.6

billion. The figure reached THB 29.8 billion in 2004; thus, driving its share equal to 9 percent of total income in 2004, which was a significant jump from its 2 percent in 1998. In terms of expansion rate, income from payment services has surged substantially from 9 percent in 2002 to 11 and 19 percent in 2003 and 2004, respectively. In 2004 alone, income from payment services totaled THB 29.7 billion compared to total income of commercial banks of THB 346 billion (figure 24).

FIGURE 24 : REVENUE FROM PAYMENT SERVICES



Source : Bank of Thailand

Despite such an outstanding growth rate, income from payment services is still lower than cost of providing services. The result from the study in October 2004 conducted by Thailand Development Research Institute (TDRI) on topic of "Cost and Fees of Commercial banks' Payment Services" suggested that cost of payment

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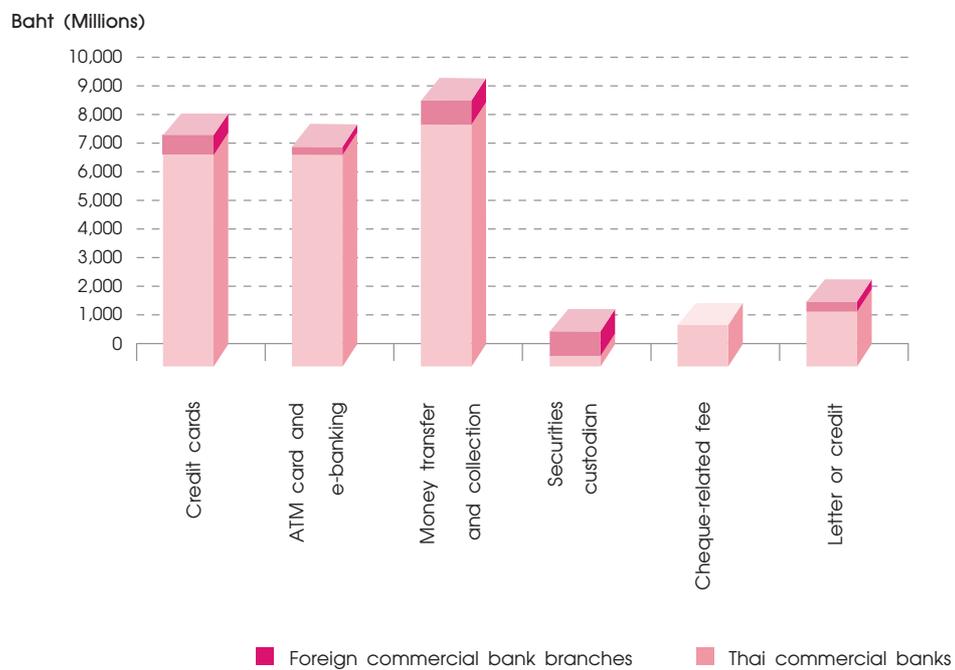
services provided by commercial banks¹³ in 2004, excluding cost incurred from securities custodian services and letter of credit issuance to customers, was equal to THB 28.6 billion, whereas the income from such services only amounted to THB 26.1 billion.

In 2004, Thai commercial banks alone received 91 percent of total income from payment services. Income from money transfer and collection services grew 40 percent and became the largest source of income from payment services, exceeding income from credit card services, which was marked as a major income source over the past few years. This could be explained by shifted focus towards money transfers and collection services by commercial banks.

Nevertheless, most of total income from payment services of Thai commercial banks, approximately 86 percent still hinged upon the service of money transfers and collections, whereas income from ATM card, internet banking and credit card services equaled to 31, 28 and 27 percent of total income respectively. For foreign commercial bank branches, major sources of payment service income came from securities custodian, money transfers and collections and credit cards, which accounted for 31, 29 and 23 percent, respectively (figure 25).

¹³ *Cost of payment services by commercial banks can be derived from the estimates of cost of services which consisted of direct cost such as employees' salary and computer cost; and indirect cost such as marketing cost, product development cost, management cost and infrastructure cost*

FIGURE 25 : REVENUE FROM PAYMENT SERVICES BY TYPE 2004



Source : Bank of Thailand

4 Lists of Abbreviations

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APACS	Association for Payments Settlement Services
ATM	Automated Teller Machine
BAHTNET	Bank of Thailand Automated High-value Transfer NETWORK (a high-value funds transfer payment system)
BIS	Bank for International Settlements
B/C	Bill for Collection (cheque collection across clearing houses in different zones)
BOT	Bank of Thailand
BOS	Banknote Ordering System
CBA	Canadian Bankers Association
CPA	Canadian Payment Association
CPSS	Committee on Payment and Settlement Systems
CSS	Central Settlement System
DVP	Delivery versus Payment
ECB	European Central Bank
ECS	Electronic Cheque Clearing System (an interbank cheque clearing system for Bangkok and its vicinity)
EFTPOS	Electronic Funds Transfer at the Point of Sale
E-money	Electronic money
EMV	Europay, MasterCard and VISA

EPC	European Payments Council
FSAP	Financial Sector Assessment Program
GDP	Gross Domestic Product at current prices
GFMIS	Government Fiscal Management Information System
ILF	Intraday Liquidity Facilities
IMF	International Monetary Funds
ITMX	Interbank Transaction Management and Exchange
KFTC	Korea Financial Telecommunications & Clearings Institute
MFT	Multilateral Funds Transfer
ORFT	Online Retail Funds Transfer
PSC	Payment Systems Committee
ROSCs	Reports on the Observance of Standards and Codes
RTGS	Real Time Gross Settlement
SIPS	Systemically Important Payment Systems
SMART	System for Managing Automated Retail Funds Transfer (a retail payment system)
SNPC	Subcommittee on National Payments Co-operation
STP	Straight Through Processing
SWIPS	System-Wide Important Systems
TSD	Thailand Securities Depository Co., Ltd.

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TABLE 1 : BASIC STATISTICAL DATA

	1999	2000	2001	2002	2003	2004 ^P
Population (millions)	61.66	61.87	62.30	62.80	63.08	63.35
GDP current price (billion baht)	4,637.10	4,916.50	5,123.40	5,399.60	5,930.40	6,576.02
GDP per capita (baht)	75,204.35	79,465.01	82,237.56	85,980.89	94,013.95	103,804.58
Exchange rate vis-a-vis US\$ (at year-end)	37.84	40.16	44.48	43.28	41.50	39.20

Sources : Bank of Thailand, Department of Local Administration, National Economic & Social Development Board

^P Preliminary Data

TABLE 2 : TECHNOLOGICAL INFRASTRUCTURE

	1999	2000	2001	2002	2003	2004
Total fixed network telephone subscribers (millions)	5.20	5.67	6.11	6.56	6.61	6.79
Total mobile telephone subscribers (millions)	2.34	3.64	8.00	17.41	22.38	27.37
Postpaid	2.29	3.12	4.84	4.51	4.35	4.99
Prepaid	0.05	0.52	3.16	12.90	18.03	22.38
Total Internet users (millions)	1.50	2.30	3.50	4.80	6.03	6.97
Penetration rates						
Fixed network telephone (%)	8.43	9.16	9.81	10.45	10.48	10.72
Mobile telephone (%)	3.80	5.88	12.84	27.72	35.48	43.20
Internet (%)	2.43	3.72	5.62	7.64	9.56	11.00

Sources : CAT Telecom Public Company Limited, TOT Corporation Public Company Limited, National Electronics and Computer Technology Center

TABLE 3 : NARROW MONEY : M1¹ (AT YEAR-END, MILLION BAHT)

	1999	2000	2001	2002	2003	2004 ^P
Currency	587,396	475,120	512,471	583,094	661,785	742,269
Held by government	29,250	8,146	9,540	8,977	16,358	1,454
Held by commercial banks	85,740	60,133	62,047	78,087	98,478	126,989
Held by business and household sector	466,117	401,714	436,346	490,277	539,032	598,671
Held by other financial institutions	6,290	5,127	4,538	5,753	7,917	15,155
Demand deposits	223,300	221,273	226,179	293,549	328,620	380,948
Held by government	64,422	47,326	37,845	75,643	57,187	87,860
Held by commercial banks	56,245	55,097	49,792	50,442	51,582	47,948
Held by business and household sector	88,963	104,118	126,932	154,036	197,248	219,818
Held by other financial institutions	13,670	14,732	11,611	13,428	22,603	25,322
Money supply (M1)	555,080	555,832	563,278	644,313	736,281	818,489
Currency held by business and household sector as % of M1	84%	79%	77%	76%	73%	73%
Demand deposits held by business and household sector as % of M1	16%	21%	23%	24%	27%	27%

Source : Bank of Thailand

¹ Cash in circulation and demand deposits held by business and household sector

^P Preliminary data

TABLE 4 : SETTLEMENT MEDIA USED BY NON-BANKS (AT YEAE-END, BILLION BAHT)

	1999	2000	2001	2002	2003	2004 ^P
Banknotes and coins ¹	466	402	436	490	539	599
Demand deposits ²	89	104	127	154	197	220
Narrow money supply (M1) ³	555	506	563	644	736	818
Broad money supply (M2) ⁴	4,835	5,013	5,228	5,360	5,611	5,907

Source: Bank of Thailand

¹ Banknotes and coins held by business and household sector

² Demands deposits held by businesses and household sector

³ Sum of currency and demand deposits held by business and household sector

⁴ M1 plus business and household sector time and savings deposits in the commercial banking system

^P Preliminary data

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TABLE 5 : SETTLEMENT MEDIUMS USED BY BANKS (AT YEAR-END, BILLION BAHT)

	1999	2000	2001	2002	2003	2004
Balances held at central bank	50	52	46	48	46	46
Required reserves	282	292	308	315	331	347
Free reserves	477	889	1,065	1,117	1,123	822
Transferable deposits at other banks	33	33	36	37	4	4
Memorandum item :						
Institutions borrowing from central bank	48	26	17	19	20	63

Source : Bank of Thailand

TABLE 6 : INDICATORS OF THE USE OF VARIOUS CASHLESS PAYMENT INSTRUMENTS. VOLUME OF TRANSACTIONS (IN THOUSANDS)

	1999	2000	2001	2002	2003	2004
Paper-based :						
Cheque	68,609	72,059	74,497	79,116	84,566	86,917
Payment cards :						
ATM card	333,585	383,599	456,602	557,949	654,930	538,135
Dedit card	nav.	nav.	nav.	nav.	nav.	224,985
Credit card ¹	nav.	nav.	nav.	nav.	nav.	157,919
Automated :						
Direct credit ²	nav.	54,998	62,702	65,506	72,115	86,123
Direct debit ³	nav.	34,053	37,713	40,192	39,669	45,190
SMART	2,790	4,107	5,758	7,369	9,453	11,862
BAHTNET ⁴	255	644	748	803	964	1,209

Source : Bank of Thailand

¹ Data collected since 2004

² Intra-bank pre-authorized direct credit

³ Intra-bank pre-authorized direct debit

⁴ Since 2002, data includes interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

**TABLE 7 : INDICATORS OF THE USE OF VARIOUS CASHLESS
 PAYMENT INSTRUMENTS. VALUE OF TRANSACTIONS (BILLION BAHT)**

	1999	2000	2001	2002	2003	2004
Paper-based :						
Cheque	66,895	26,949	16,785	18,817	21,949	24,967
Payment cards :						
ATM card	938	1,287	1,827	2,210	2,876	2,175
Dedit card	nav.	nav.	nav.	nav.	nav.	1,417
Credit card ¹	151	178	234	286	420	536
Automated :						
Direct credit ²	nav.	1,201	1,624	1,756	2,271	2,611
Direct debit ³	nav.	618	965	1,080	1,186	1,150
SMART	82	121	183	274	385	553
BAHTNET ⁴	6,603	64,317	70,900	67,095	78,140	73,494

Source : Bank of Thailand

¹ Since 2003, data includes non-bank

² Intra-bank pre-authorized direct credit

³ Intra-bank pre-authorized direct debit

⁴ Since 2002, data includes interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer since 2002

TABLE 8 : NOTES AND COINS (AT YEAR-END, MILLION BAHT)

	1999	2000	2001	2002	2003	2004
Notes and coins	587,396	475,120	512,471	583,093	661,785	742,269
Notes :	568,345	454,359	490,242	559,169	636,508	714,650
500000 baht	-	113	118	118	119	118
1000 baht	322,147	253,439	298,453	367,403	441,411	510,434
500 baht	172,319	126,537	115,803	108,987	105,452	105,639
100 baht	50,462	50,561	51,638	57,446	62,013	69,042
60 baht	404	413	417	439	447	452
50 baht	7,040	6,926	6,896	6,529	7,013	8,132
20 baht	11,682	12,211	13,161	14,648	16,536	17,350
10 baht	4,052	3,920	3,517	3,360	3,278	3,244
5 baht	123	123	123	123	123	123
1 baht	107	107	107	107	107	107
50 satang	9	9	9	9	9	9
Coins :	19,051	20,761	22,229	23,924	25,277	27,619

Source: Bank of Thailand

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TABLE 9 : INSTITUTIONAL INFRASTRUCTURE

	1999	2000 ¹	2001	2002	2003	2004
Central Bank						
Number of Institutions	nav.	1	1	1	1	1
Number of Branches	nav.	4	4	4	4	3 ²
Number of Accounts ³	nav.	1,201	1,091	1,153	1,123	1,169
Value of Accounts (million baht) ³	nav.	519,001	492,347	315,627	208,496	335,662
Commercial banks						
Number of Institutions	nav.	13	13	13	13	12
Number of Branches	nav.	3,746	3,683	3,650	3,730	3,925
Number of Accounts	nav.	44,983,370	47,276,792	48,810,007	49,854,304	57,538,837
Value of Accounts (million baht)	nav.	4,626,006	4,789,139	4,897,713	5,114,021	5,384,984
Specialized Financial Institutions:						
Government Savings Bank						
Number of Institutions	nav.	1	1	1	1	1
Number of Branches	nav.	577	577	586	587	588
Number of Accounts	nav.	13,672,897	13,672,897	28,824,269	30,029,258	30,214,359
Value of Accounts (million baht)	nav.	312,409	312,409	522,619	554,242	580,131
Government Housing Bank						
Number of Institutions	nav.	1	1	1	1	1
Number of Branches	nav.	68	68	69	71	109
Number of Accounts	nav.	360,238	360,238	359,243	348,073	366,348
Value of Accounts (million baht)	nav.	213,843	213,843	192,969	239,371	331,299
Bank for Agriculture and Agricultural Cooperatives						
Number of Institutions	nav.	1	1	1	1	1
Number of Branches	nav.	504	504	515	532	595
Number of Accounts	nav.	10,000,000	10,000,000	10,588,203	11,014,933	12,131,460
Value of Accounts (million baht)	nav.	196,414	196,414	275,028	307,194	341,879
Export-Import Bank of Thailand						
Number of Institutions	nav.	1	1	1	1	1
Number of Branches	nav.	6	7	8	8	7
Number of Accounts	-	-	-	-	-	3,071
Value of Accounts (million baht)	-	-	-	-	-	3,928
Small and Medium Enterprise Development Bank of Thailand						
Number of Institutions	-	-	-	-	1	1
Number of Branches	-	-	-	-	64	80
Number of Accounts	-	-	-	-	nav.	nav.
Value of Accounts (million baht)	-	-	-	-	nav.	nav.

Islamic Bank of Thailand						
Number of Institutions	-	-	-	-	1	1
Number of Branches	-	-	-	-	6	9
Number of Accounts	-	-	-	-	9,574	25,553
Value of Accounts (million baht)	-	-	-	-	612	1,654
Branches of foreign banks						
Number of Institutions	nav.	21	18	18	18	18
Number of Branches	nav.	21	18	18	18	18
Number of Accounts	nav.	194,266	202,372	256,338	206,866	90,877
Value of Accounts (million baht)	nav.	257,552	289,578	275,133	312,518	361,147
Post Office						
Number of Institutions	nav.	1	1	1	1	1
Number of Branches	nav.	1,170	1,170	1,148	1,148	1,146
Number of Accounts	nav.	-	-	-	-	-
Value of Accounts (million baht)	nav.	-	-	-	-	-

Sources : Bank of Thailand and Communications Authority of Thailand

¹ Data collected since 2000

² Lampang office was merged with Chiang Mai office

³ Exclude regional offices

TABLE 10 : PAYMENT INSTRUCTIONS HANDLED BY SELECTED INTERBANK SETTLEMENT SYSTEMS. VOLUME OF TRANSACTIONS (IN THOUSANDS)

	1999	2000	2001	2002	2003	2004
Paper-based:	68,609	72,059	74,497	79,116	84,566	86,917
ECS	51,379	53,313	55,186	58,139	62,020	63,845
Provincial Cheques	17,230	18,746	19,311	20,595	19,858	16,467
B/C ¹	neg.	neg.	neg.	382	2,688	6,605
Automated:	3,045	5,278	9,704	14,161	24,527	32,142
BAHTNET ²	255	644	748	803	964	1,209
SMART (Media Clearing)	2,790	4,107	5,758	7,369	9,453	11,862
ATM-ORFT (On-line Retail Funds Transfer) ³	nav.	527	3,198	5,989	14,110	19,071

Sources : Bank of Thailand, Processing Center Co., Ltd.

¹ Inter-provincial cheques exchanged at the Electronic Clearing House

² Since 2002, data includes interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

³ Data collected since 2000

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TABLE 11 : PAYMENT INSTRUCTIONS HANDLED BY SELECTED INTERBANK SETTLEMENT SYSTEMS. VALUE OF TRANSACTIONS (BILLION BAHT)

	1999	2000	2001	2002	2003	2004
Paper-based:						
ECS	65,510	25,436	15,181	16,987	19,916	22,653
Provincial Cheques	1,386	1,513	1,604	1,814	1,923	2,037
B/C ¹	neg.	neg.	neg.	16	111	277
Automated:						
BAHTNET ²	6,603	64,317	70,900	67,095	78,140	73,494
SMART (Media Clearing)	82	121	183	274	385	553
ATM-ORFT (On-line Retail Funds Transfer) ³	nav.	3	15	38	87	114

Source : Bank of Thailand

¹ Inter-provincial cheques exchanged at the Electronic Clearing House

² Since 2002, data includes interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

³ Data collected since 2000

TABLE 12 : SECURITIES TRANSFER INSTRUCTIONS HANDLED BY SECURITIES SETTLEMENT SYSTEMS. VOLUME OF TRANSACTIONS (IN MILLIONS)

	1999	2000	2001	2002	2003	2004
Bond registry system :						
Equity securities	-	-	-	-	-	-
Government securities	neg.	neg.	neg.	neg.	neg.	neg.
Book-entry system :						
Equity securities	1.12	1.00	1.00	1.00	1.94	2.11
Government securities	neg.	neg.	neg.	neg.	neg.	0.05

Sources : Bank of Thailand and Thailand Securities Depository Co., Ltd.

TABLE 13 : SECURITIES TRANSFER INSTRUCTIONS HANDLED BY SECURITIES SETTLEMENT SYSTEMS. VALUE OF TRANSACTIONS (BILLION BAHT)

	1999	2000	2001	2002	2003	2004
Bond registry system :						
Equity securities	-	-	-	-	-	-
Government securities	800	988	612	69	9	8
Book-entry system:						
Equity securities	251	161	177	237	428	722
Government securities	70	345	1,016	2,091	3,053	4,558

Sources : Bank of Thailand and Thailand Securities Depository Co., Ltd.

TABLE 14 : NUMBER OF PARTICIPANTS IN SELECTED PAYMENT AND SETTLEMENT SYSTEMS

	1999	2000	2001	2002	2003	2004
BAHTNET	76	77	69	65	72	69
ECS	38	38	36	36	37	37
Provincial Cheque Clearing	17	17	17	17	17	17
B/C ¹	-	-	-	-	35	35
SMART	26	27	28	27	28	27
Bond registry system :						
Equity securities	-	-	-	-	-	-
Government securities	13,141	16,540	27,220	157,358	142,586	200,000
Book-entry system :						
Equity securities	59	58	56	57	57	50
Government securities	418	974	1,053	1,202	1,307	3,200

Sources: Bank of Thailand and Thailand Securities Depository Co., Ltd.

¹ Inter-provincial cheques exchanged at the Electronic Clearing House

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TABLE 15 : NUMBER OF ATMS

	1999	2000	2001	2002	2003	2004
Total	5,322	5,901	6,385	7,885	9,118	10,602
Bangkok	-	-	-	-	-	4,314
Central	-	-	-	-	-	3,381
Northeast	-	-	-	-	-	954
North	-	-	-	-	-	941
South	-	-	-	-	-	1,012

Source : Bank of Thailand

TABLE 16 : NUMBER OF EFTPOS TERMINALS

	1999	2000	2001	2002 ^P	2003 ^P	2004 ^P
Total	nav.	nav.	nav.	61,000	76,000	84,000

Source: Bank of Thailand

^P Preliminary data

TABLE 17 : NUMBER OF PAYMENT CARDS

	1999	2000	2001	2002	2003	2004
Total	19,095,005	22,447,422	26,350,803	32,453,521	36,401,196	42,726,202
Credit card ¹	1,629,301	1,765,640	2,567,961	5,633,363	6,734,901	8,648,100
ATM card	17,465,704	20,681,782	23,782,842	26,802,158	29,666,295	25,653,079 ^P
Debit card	nav.	nav.	nav.	nav.	nav.	8,425,023

Source : Bank of Thailand

¹ Since 2002, data include non-bank

^P Preliminary data

TABLE 18 : USE OF POSTAL PAYMENT INSTRUMENTS.

NUMBER OF TRANSACTIONS (IN MILLIONS)

	1999	2000	2001	2002	2003	2004
Postal payments total	19.29	19.73	19.89	20.27	28.11	29.15
Domestic money order total ¹	16.78	17.26	17.50	18.06	26.26	27.97
Domestic postal order	2.43	2.40	2.33	2.16	1.80	1.12
Postcheque	0.02	0.01	0.00	0.00	- ²	- ²
International money order	0.06	0.06	0.06	0.06	0.05	0.06
Incoming	0.06	0.06	0.06	0.05	0.05	0.06
Outgoing	0.00	0.00	0.00	0.00	0.00	0.00

source : Communications Authority of Thailand

¹ Includes domestic money order and Pay at Post

² Postcheque has been terminated since 2002

**TABLE 19 : USE OF POSTAL PAYMENT INSTRUMENTS.
 VALUE OF TRANSACTIONS (BILLION BAHT)**

	1999	2000	2001	2002	2003	2004
Postal payments total	40.56	41.51	41.76	42.35	72.37	65.81
Domestic money order total ¹	38.90	39.92	40.18	40.77	70.77	64.37
Domestic postal order	0.63	0.64	0.65	0.63	0.58	0.29
Postcheque	0.11	0.04	0.03	0.01	- ²	- ²
International money order	0.92	0.91	0.90	0.94	1.02	1.10
<i>Incoming</i>	<i>0.90</i>	<i>0.89</i>	<i>0.88</i>	<i>0.90</i>	<i>0.98</i>	<i>1.09</i>
<i>Outgoing</i>	<i>0.02</i>	<i>0.02</i>	<i>0.02</i>	<i>0.04</i>	<i>0.05</i>	<i>0.06</i>

Source : Communications Authority of Thailand

¹ Includes domestic money order and Pay at Post

² Postcheque has been terminated since 2002

**TABLE 20 : SOURCES OF PAYMENT REVENUES OF
 THAI COMMERCIAL BANKS (MILLION BAHT)**

	1999	2000	2001	2002	2003	2004
Total	13,131	14,761	17,744	19,589	22,280	26,994
Credit card	3,709	4,220	5,448	6,489	6,606	7,246
ATM card and e-banking	2,734	3,394	4,327	5,209	6,376	7,593
Money transfer and collection	4,142	4,348	4,605	4,877	6,018	8,420
Securities custodian	237	250	563	313	348	414
Cheque-related fee	795	904	1,232	1,106	1,260	1,239
Letter of credit	1,514	1,645	1,569	1,595	1,672	2,082

Source : Bank of Thailand

**TABLE 21 : SOURCES OF PAYMENT REVENUES OF
 FOREIGN BANK BRANCHES (MILLION BAHT)**

	1999	2000	2001	2002	2003	2004
Total	3,361	2,849	2,783	2,852	2,651	2,767
Credit card	1,447	1,041	931	1,076	557	633
ATM card and e-banking	138	63	79	110	185	92
Money transfer and collection	673	764	830	806	794	810
Securities custodian	819	644	491	593	745	865
Cheque-related fee	37	36	44	38	53	61
Letter of credit	247	301	408	229	317	306

Source: Bank of Thailand

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**TABLE 22 : DAILY AVERAGES OF BOT PAYMENT SERVICES.
VOLUME OF TRANSACTIONS (TRANSACTIONS)**

	1999	2000	2001	2002	2003	2004
BAHTNET ¹	1,042	2,608	3,042	3,277	3,904	4,957
ECS	209,711	214,971	224,335	237,302	251,093	260,592
Provincial Cheque Clearing	76,514	77,866	78,500	83,993	80,396	67,212
B/C ²	nav.	nav.	nav.	nav.	10,882	26,959
SMART	11,375	16,549	23,517	30,051	38,272	48,415

Source : Bank of Thailand

¹ Since 2002, data include interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

² Inter-provincial cheques exchanged at the Electronic Clearing House

**TABLE 23 : DAILY AVERAGES OF BOT PAYMENT SERVICES.
VALUE OF TRANSACTIONS (BILLION BAHT)**

	1999	2000	2001	2002	2003	2004
BAHTNET ¹	27	260	288	274	316	302
ECS	267	103	62	69	81	92
Provincial Cheque Clearing	6.2	6.5	6.5	7.4	7.8	8.3
B/C ²	nav.	nav.	nav.	nav.	0.5	1.1
SMART	0.3	0.5	0.8	1.1	1.6	2.3

Source : Bank of Thailand

¹ Since 2002, data include interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

² Inter-provincial cheques exchanged at the Electronic Clearing House

**TABLE 24 : PEAK DAY FIGURES OF BOT PAYMENT SERVICES.
VOLUME OF TRANSACTIONS (TRANSACTIONS)**

	1999	2000	2001	2002	2003	2004
BAHTNET ¹	1,684	4,468	4,908	5,109	6,115	7,372
ECS	537,593	541,738	525,726	629,130	546,858	539,013
Provincial Cheque Clearing	nav.	192,268	196,266	229,252	227,501	124,743
B/C ²	nav.	nav.	nav.	nav.	120,104	127,845
SMART	62,480	65,428	118,440	155,623	193,870	226,030

Source : Bank of Thailand

¹ Since 2002, data include interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

² Inter-provincial cheques exchanged at the Electronic Clearing House

TABLE 25 : PEAK DAY FIGURES OF BOT PAYMENT SERVICES.
 VALUE OF TRANSACTIONS (BILLION BAHT)

	1999	2000	2001	2002	2003	2004
BAHTNET ¹	229	518	501	967.2	525.8	509.0
ECS	505	450	118	160.3	160.0	178.0
Provincial Cheque Clearing	nav.	10.5	12.2	14.8	14.6	14.2
B/C ²	nav.	nav.	nav.	nav.	3.7	4.1
SMART	2.1	2.7	4.9	8.0	9.5	10.1

Source : Bank of Thailand

¹ Since 2002, data include interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

² Inter-provincial cheques exchanged at the Electronic Clearing House

TABLE 26 : USE OF INTERNET BANKING¹

	1999	2000	2001	2002	2003	2004
No. of agreements	nav.	21,102	97,101	254,989	348,965	2,514,395
Volume of transactions ²	nav.	3,300,000	6,243,407	9,990,969	10,336,929	4,791,898
Value of transactions (billion baht)	nav.	0.3	8.6	730.5	638.0	1,312.5

Source : Bank of Thailand

¹ Data collected since 2000

² Since 2004, enquiry transactions were excluded

TABLE 27 : CARD FRAUD

	1999	2000	2001	2002 ^P	2003 ^P	2004 ^P
Losses ¹ (million baht)	nav.	nav.	nav.	32	47	87

Source : Bank of Thailand

¹ Only credit card and debit card fraud are included.

^P Preliminary data

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Notes to statistical tables

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Symbols used	Definition
"_"	- No data
"nav."	- Data not collected or not available
"neg."	- Data have very low value as compared to other data in the same table
"0"	- Data equal to or near zero

Table 1:

- GDP at current prices
- Foreign exchange rates are annual averages.

Table 6-7:

- Data on credit transfers are based on intra-bank preauthorized direct credit transactions.
- Data on direct debit transfers are based on intra-bank pre-authorized direct debit transactions.
- From 2002, data of BAHTNET consist of interbank funds transfer, third-party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer
- From 2003, data on credit card transaction value include data from non-financial institutions in accordance with the BOT's Notification No.FPG. (21)C.207/2545.

Table 9:

- Data exclude the number and value of accounts at the Bank of Thailand branches.

- Table 10-11** - Data on ATM-ORFT are available from 2000
- Data on inter-provincial cheques include only inter-provincial cheques exchanged at the Electronic Clearing House in Bangkok
- From 2002, data of BAHTNET consists of interbank funds transfer, third-party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer
- Table 12-13** - Equity Securities Settlement is processed through the scripless Book-entry System only
- Table 17** - Since 2002, data on the number of credit cards include data from non-financial institutions in accordance with the BOT's Notification No.FPG. (21)C.207/2545.
- Table 18-19** - Data on domestic money orders include payment services of Pay at Post.
- Table 22-25** - Data on inter-provincial cheques include cheques exchanged at the Electronic Clearing House in Bangkok only.
- From 2002, data of BAHTNET consist of interbank funds transfer, third-party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer
- Table 26** - Since 2004, data on volume of internet banking transactions, excluding enquiry transaction.
- Table 27** - Data are based on credit card company surveys.

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