

PAYMENT SYSTEM REPORT
2008



JUNE 2009



KEY PAYMENT STATISTICS IN 2008

Total Population 63.4 million people

Nominal Gross Domestic Product (GDP) 9,102.8 billion baht

Technological Infrastructure

- Number of fixed-line phone subscribers per 100 people: 11
- Number of mobile phone subscribers per 100 people: 100



Payment Statistics

- Number of Thai commercial banks 18 with 5,477 branches
- Number of foreign commercial banks 16 with 16 branches
- Number of Specialized Financial Institutions (Bank only) 6 with 1,812 branches
- Number of post office branches 1,188
- Number of automated teller machines (ATM) 34,745
- Number of EFTPOS machines 259,567
- Number of Credit Cards 12,971,694
- Number of Debit Cards 26,266,359
- Number of ATM Cards 22,423,525
- Currency in circulation per capita as of 31 December 2008 11,889 baht
- Average cheque usage per capita¹ 2 cheques per year
- Monthly average value of credit card payments² 3,395 baht per card
- Monthly average value of cash withdrawals via ATM card 6,056 baht per card
- Monthly average value of debit card payments³ 75 baht per card
- Monthly average value of cash withdrawals via debit card 7,640 baht per card

¹ includes intrabank and interbank cheque transactions.

² Only payments from credit cards issued in Thailand for goods and services via EFTPOS in Thailand and overseas.

³ Only payments from credit cards issued in Thailand for goods and services via EFTPOS in Thailand and overseas.

Message from the Chairman of the Payment Systems Committee (PSC)

04 The business of payment services has evolved rapidly with advancing technology, trending towards more use of efficient electronic payments and non-bank service providers. Since efficient and secured payment systems are vital to a vibrant economy, regulators around the world have become more involved in reshaping the payment service businesses. Accordingly, the Bank of Thailand Act (IV), enacted in early 2008, recognizes the maintenance of payment systems stability as one of the central bank's core mandates, in addition to ensuring monetary and financial institution stabilities.

The Act mandates the establishment of a Payment Systems Committee (PSC), tasked with defining policies for payment systems under the supervision of the central bank as well as the systems for interbank settlement. It also oversees the BOT's activities in the establishment and facilitating the payment systems. The Committee is chaired by the BOT Governor, and comprises two BOT deputy governors and the Chairman of the Thai Bankers Association as ex-officio appointment, Together with representatives from other public and private enterprises.

As one key policy objective is to facilitate an orderly reduction in the usage of cash and cheques to more use of electronic payments that are less costly for the overall economy, the Payment Systems Roadmap 2010 envisions "Cooperation among government and private enterprises in driving for more usage of electronic payments with efficient and secured services and fair fees under effective enforcement of regulations." In this connection, the PSC and its various working groups serve as an important mechanism for cooperation. In the past year, much work has been accomplished namely:

Promoting greater usage of electronic payments instead of cash

The assigned working group reviewed the framework to develop the country's local debit card scheme that will make greater use of ATM cards as an alternative to cash for domestic payment transactions at the point-of-sale.

Enacting new law to strengthen BOT's oversight role to promote the greater adoption of electronic payment services

The enactment of the Royal Decree Regulating Electronic Payment Service Business, B.E. 2551 expands BOT's purview to cover electronic payment business operations by both banks and non-banks, to ensure the security of payment systems and promote greater consumer acceptance of electronic payment services.

Payment costs study and the review of pricing structure

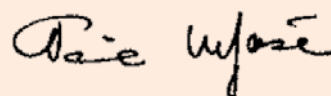
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BOT undertook the costs study with aimed at awareness of commercial banks on efficient cost management for their payment operations to enhance their competitiveness. The final report will be available and presented at the annual payment systems seminar in December 2009. On the appropriate pricing structure, the assigned working group has engaged in an ongoing review of the framework that will effectively encourage fair competition among payment service providers and promote greater adoption of electronic payment services..

Managing relevant risks in the country's RTGS or BAHTNET

The assigned working group studied measures for risk management to mitigate related risks, including legal risk, for the large value funds transfers via BAHTNET in order to ensure payments finality and the reduction of systemic risk in the financial system. In this regard, the Securities Requirement for Settlement (SRS) will soon be introduced to further contain net settlement risk in BAHTNET.

In sum, BOT recognizes that achieving the stated objectives of payments system development requires the devotion of time and efforts from all members of the assigned working groups. Their contributions are essential to the success of the Payment Systems Roadmap 2010. I would therefore like to take this opportunity to express my sincere appreciation to all working groups and the advisory group. I look forward to welcoming further cooperation from all involved parties.



Mrs. Tarisa Watanagase

Chairman of the Payment Systems Committee

1 June 2009

Payment Systems Committee (PSC)

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Chairman

Dr. Tarisa Watanagase

Governor

Responsibilities of the Payment Systems Committee (PSC)

1. Set national payment policies and directives to ensure the efficiency and soundness of the payment systems, induce reduction in related transaction costs and promote business activities that further strengthen the country's competitiveness. The scope of the policy covers:
 - Risk mitigation in financial systems.
 - Implementation of required standards that ensure security and efficiency of the payment systems, as well as relevant technological requirements and implementation procedures.
 - Promotion of fair competition among payment service providers to ensure that users' demands are fulfilled at reasonably achievable prices.
 - Encouragement of cooperation among participants of the payment systems in maintaining the efficiency and security of the payment systems.
2. Be responsible for provision of an annual report summarizing the Committee's activities in a standardized and transparent manner.

The Committee is to hold a meeting, whenever necessity arises, or at least once every three months.

Vice Chairman



1. Miss Nitaya Pibulratanaagit

Deputy Governor

Corporate Support Services



2. Dr. Bandid Nijathaworn

Deputy Governor

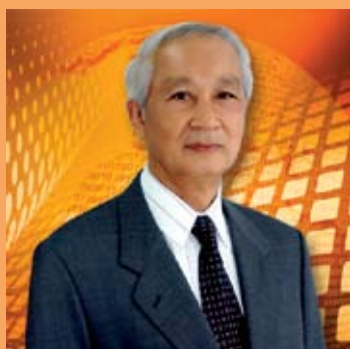
Financial Institutions Stability

Committee Members



1. Mr. Apisak Tantivorawong
Chairman,
Thai Bankers' Association

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2. Mr. Pramon Sutivong
Chairman
Board of Trade of Thailand



3. Dr. Somchai Jitsuchon
Research Director for Macroeconomic
Development and Income Distribution,
Thailand Development Research Institute

Secretary



4. Dr. Chim Tantiyaswasdikul
Assistant Governor
Information Technology Group



Payment Policy for 2008

08 Bank of Thailand Act, section 17 mandated the establishment of the Payment Systems Committee (PSC), which engages in policy formation and oversight of policy implementation relating to the payment and settlement systems supervised by BOT. In 2008, PSC held two meetings, from which important policy approvals were made as follows:

Principle policies approved by PSC in 2008

- ***Efficiency Enhancement for Cheque Clearing System***

PSC has given its approval in principal on the improvement and the utilization of the Imaged Cheque Clearing and Archive System (ICAS) as the system to be used by BOT for the interbank cheque clearing process. Initial implementation is planned to be completed in 2009 to cover Bangkok and vicinity, and eventually the services will be extended to nationwide coverage by 2012. Furthermore, the PSC has formed a working group, called the “Working Group on Commercial Banks’ Cost and Fees of Payment Services” to consider appropriate guidelines for cheque processing fees.

- ***Restructuring of ITMX Bulk Payment Fee Structure***

PSC has approved the restructuring of ITMX bulk payment fee structure charged by commercial banks to their customers. The decision resulted in the abolishment of the variable fee structure applied to fund transfers of different amount ranges and the cancellation of the limit on the maximum amount of each fund transfer. These decisions better facilitate the use of fund transfer services by the general public. PSC also assigned the “Working Group on Commercial Banks’ Service Cost and Fees for Payment Services” to subsequently monitor such implemented actions.

- *Lender of Last Resource for Net Settlement in BAHTNET System*

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PSC approved the pledge of SRS (Securities Requirement for Settlement) as a protective measure against possible settlement risks that might be incurred in the process of “net settlement” in the BAHTNET system.

Message from the Chairman of the Subcommittee on National Payment Cooperation (SNPC)

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In 2008, significant progress was made in Thailand's payment systems as operations under the Payment Systems Roadmap were completed according to its plan. During the year, a central body which was incorporated as National ITMX Company Limited (NITMX), to provide payment services for the country, managed to produce a complete range of services as per its planned target. These services include:

1. Smart Credit Services, which have already been offered to 33 member banks since the end of 2007.
2. Smart Credit for Same-Day Payment Service, an extended service of Smart Credit that allows interbank fund transfers to be effective on the same day and accelerate both the efficiency and the convenience of the local fund transfer process to meet business demands for same day payment and settlement.
3. Interbank Liability Management was implemented to monitor settlement positions of member banks on a Real-Time format. The implementation is part of the overall risk management measures outlined in the Payment Systems Roadmap.
4. Reassign the supervision and transfer the operation of the Electronic Switch System, which provides direct interbank support to the interrelated ATM pools in the country, to NITMX or National Interbank Transaction Management and Exchange Company Limited. This task entails a high level of complexity and is a high risk operation due to a significant volume of involved transactions, and the fact that member banks only have a limited time span for undertaking such relocation process that needs to be completed without any disruption of the continual function of the domestic ATM pools in order to avoid any adverse impact to network users, clientele, and the public. The achievement was made possible thanks to excellent coordination and cooperation among member banks as well as major commercial banks which are the shareholders of NITMX. NITMX presently acts as the key interbank payment infrastructure that provides hardware and software support, communications services, as well as central data processing systems to all member banks, under the supervision of the SNPC.

Indeed, 2008 statistics revealed that the highest processing record for interbank payment and settlement transactions in a single business day reached 115 transactions per second. Even at such a high rate of processing volume, the country payment and settlement systems proved that it did not operate with stability, and the task only occupied up to 30 percent of its system capacity. With this finding, the SNPC is confident that Thailand's payment systems have sufficient capacity to efficiently and effectively support further expansion in payment volume, whether under the current channels or other modes of future endeavors.

In addition, the SNPC has also advised and encouraged NITMX to continually improve its service standards both for security measures of the system, data processing, and overall management. The SNPC also request NITMX to apply for the I.S.O 27001 certification. For 2009, NITMX is required to provide analysis of service data and performance made to member banks, while applying such analysis for process and service improvement. It was also urged to improve its communication with member banks and offers continual trainings to member banks aiming to elevate the overall service standards of the country's interbank payment systems.

The success to date of the nation's payment systems is the result of the Payment Systems Committee and the Bank of Thailand's foresight in setting clear defined objectives and relevant implementation framework, together with excellent cooperation and support among member banks and from the public as well as the private sectors. As the chairman of the SNPC, I would like to express my sincere gratitude for the support from each and every organization that helped make our task successful as per the established objectives.



Teera Aphaiwongse

Chairman of the Subcommittee on National Payment Cooperation

26 March 2009

Subcommittee on National Payment Cooperation (SNPC)

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Chairman

Mr. Teera Aphaiwongse

Senior Executive Vice President

Bangkok Bank Public Company Limited

The Subcommittee on National Payment Cooperation (SNPC)

Responsibilities of the subcommittee on National Payment Cooperation (SNPC)

1. Establish a code of conduct for payment services provision as well as technical infrastructure standards to support safe, sound, and efficient payment systems, included encourage fair competition among all parties in the systems.
2. Establish the following policy guidelines:
 - 2.1 Promote cooperation among member banks for joint implementation of fund transfer, as well as payment and settlement systems aimed to enhance efficiency and reduce duplications in potential investments
 - 2.2 Encourage and instigate the usage of payment mediums, applications of relevant technologies, and provisions of modern payment services.
 - 2.3 Promote linkages among various payment systems, both domestic and international.
 - 2.4 Enhance systematic data collections and encourage research work on payments and settlements, aimed at supporting the task of operational agencies / entities involved in payment transactions for public and private sectors.
3. Consider and develop guidelines for an establishment of a collaborative body of service providers for payments, which shall effectively take over the SNPC's responsibilities as aforementioned in Clauses (1) and (2)

Subcommittee Members



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



2. **Mrs. Suwannee Sukawat**
Executive Vice President
Krung Thai Bank Public
Company Limited



3. **Miss Wanna Tammasiri**
First Executive Vice President
Bank of Ayudhya Public
Company Limited



4. Miss Sriprapa Yimsmith
Financial Market and Retail Manager
Thailand Post Company Limited



7. Mr. Prasert Wangrattanapranee
First Executive Vice President,
Financial Control Department Division,
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5. Mrs. Vira-anong Chiranakhorn Phutrakul
Senior Director,
Division of Foreign Trade Payment System,
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Citibank, N.A.



8. Miss Charinya Kaewmanee
Senior Director, Payment Systems
Bank of Thailand

**Honorary Subcommittee
Member**

**Subcommittee Member
and Secretary**



6. Mr. Pairat Nakapa
Senior Vice President, Finance
Department
Government Savings Bank



9. Miss Vilawan Vanadurongvan
Advisor, Bank of Ayudhya Public
Company Limited



10. Mr. Pramoth Chaiamphorn
First Senior Vice President
Kasikorn Bank Public Company Limited



SNPC's Achievements in 2008

14 The Subcommittee on National Payment Cooperation (SNPC) was formed by the Payment Systems Committee on 25 December 2002, to set conduct rules for payment services, to prescribe technical standards for payment and settlement infrastructures, and to encourage efficiency in the interlinking which can avoid unnecessary costs of replicating investments. Additionally, it is also the SNPC's intention to modernize payment services, and to foster the linkage between various payment systems, both on national and international platforms.

During 2008, SNPC took action, through the National ITMX Company Limited (NITMX), to develop the ITMX system and offered the "Liability Management Service" in June 2008, as well as the same-day-value "Bulk Payment Service", in July 2008. In September 2008, NITMX completed its "Bulk Payment- Debit" system and planned to commence commercial services of the system in 2009 upon the completion of relevant protocol procedures.

As for the Single Payment System (SPS), in January 2008, NITMX successfully transferred its participating members from ATM Pool to the ITMX system, and then it subsequently began its transfer process for the "Back-Office & Settlement" and the ASEANPay Cross-border Link systems.



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Key Developments in Domestic Payment Systems

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1.1 Payment Policy

The Payment Systems Roadmap 2010 outlines the courses of action that are designed for developing payment systems and promoting the increase in usage of electronic payment systems under the efficient, stable and safe services, the justified fee structures together with the existence and the effective enforcement of laws. Under such guidelines, the Payment Systems Committee (PSC) appointed various working groups to oversee developments in different aspects of the payment systems, namely, the extension of electronic payment services to cover all user groups, the establishment of measures to minimize cash usage, the encouragement of reasonable payment fee structure, the promotion of electronic payment services, as well as the solid enforcement of laws that govern electronic payment systems.

The progress made by the appointed working groups is summarized as follows;

1) Implementation Plan to promote attractive electronic payment systems for “consumer” users.

- (1) Appointed a working group on promotion of electronic funds transfer and payment schemes for “consumers”, and instructed this working group to explore current obstacles to the electronic payment systems, models and possibilities to develop the systems to successfully support the consumers’ demands. The working group is consisted of representatives from National Electronics and Computer Technology Center (NECTEC), Thailand Development Research Institute (TDRI), Thai Bankers’ Association, Thai Chamber of Commerce, and the e-money service providers and BOT
- (2) The working group on promotion of electronic funds transfer and payment schemes for “consumers” have organized four working groups to explore feasibilities in developing four different areas of the electronic payment systems, namely (1) Local Switching (2) Electronic Money (3) Electronic payment systems for E-Commerce and (4) Electronic Bill Presentment and Payment. The study groups on the local switching and e- money started to work in 2008, whereas the other two working group will begin their work in 2009.



(3) The working group on local switching takes responsibility for exploring the potential in developing the local switching system to support domestic payments by using credit, debit and electronic money cards to reduce the related service costs and to promote the usage of electronic payment over cash usage. Its work progress is summarized as following:

3.1) Study the payment pattern and process of credit, debit and electronic money cards transactions in Thailand, problems involved in using these card-based products, as well as potential solutions to promote electronic money card usage over cash usage.

3.2) Conduct surveys on providers' opinions on card-based products (card issuer and card acquirer) and merchants in August 2008 to investigate the potential of local switching systems development to support payments by credit, debit and electronic money cards. The survey result shows that majority concurred with such proposed idea and suggested the setting up of clear course of actions supporting card usage through local switching systems, the establishment of rules and formation of relevant protocols.

3.3) Study the development practices of the local switching systems in other countries, namely Australia, Japan, Korea, Taiwan, Singapore and Malaysia, all of which have successfully developed their local switching systems to support payments via local debit cards.

3.4) The working group defined "Business Case" and "Business Model" based on their studies of the current systems, the impacts of system development on related parties, the readiness assessment on technical, business, and legal grounds. The working group also proposed three following stages of system development:

- Stage 1 Readiness for payments made via local debit card
- Stage 2 Readiness for payments via international debit card and e-money transaction
- Stage 3 Readiness for the systems to support international credit card



1 Key Developments in Domestic Payment Systems

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(4) The responsibilities of the electronic money working group include studying and defining standard conventions for the electronic money open-loop systems, specifying the appropriate model of Central Clearing House and proper fee structure to drive electronic money achievable in the interoperability environment. Its work progress is summarized as following:

- 4.1) Studying e-money service models of other countries, namely Korea, Malaysia, Singapore, Japan, and Hong Kong, and use the findings as supporting information for its work.
- 4.2) Concluding appropriate e-money standard conventions that can support the interoperability. The process involves:
 - Development of central security module or InterOP SAM (Interoperability Security Access Module) to support cross-activities among e-money operators without impacts on current operations service of service providers and to ensure service providers in continuously using their own current data security system.
 - Defining the establishment of national card standard to be the guided standard for new electronic money issuers in issuing their electronic cards.
- 4.3) Collaborate with the Office of Transport and Traffic Policy and Planning (OTP), whereby OTP sends its representatives to participate in a committee on e-money and BOT sends its representatives to participate in a joint-committee formed to oversee study plans on the common ticketing system for public transportation. The collaboration is aimed to promote the use of public transportation by the general public, and to set-up the standard application for a common stored value pass for transit payments that is also acceptable by other retail businesses outside the transit agency that issued the card, as well as to establish a central body to manage and administer the fund flows.



2) Implementation plan to promote attractive electronic payment systems for “operator” users.

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A working group on promotion of electronic funds transfer and payment schemes for “business operators”, which was established by BOT is consisted of representatives from both public and private sectors, such as Thai Bankers’ Association and Foreign Bankers’ Association, the National Electronics and Computer Technology Center (NECTEC), the Thai Chamber of Commerce, government agencies and BOT. Goal of this plan is to reduce limitations on electronic payment, push for the legal acceptance of electronic payment documents and to set up standard of electronic payment. Its work progresses are:

- (1) Investigating problems / obstacles to electronic payments usage by the service users, banks, and government agencies, defining solutions and promoting the usage of electronic payment.
- (2) Review standard message formats for electronic payments by establishing a working group to work on a proposed format standard. This working group reviewed the currently used message formats and prepared a draft on the standard e-payment formats suggested by five pilot banks, which include KBank, Bangkok Bank, Thai Military Bank, Krung Thai Bank and Standard Chartered Bank, which cover;

- Local Payment Message Format
- Direct Debit Message Format
- International Payment Message Format

Furthermore, BOT has contracted NECTEC to study and recommend appropriate guidelines for standardizing of message format used in e-payment. The draft proposed by the five pilot banks for the standard e-payment formats will also be considered for possible application from January - June, 2009.



1 Key Developments in Domestic Payment Systems

- 22 (3) Study domestic and international payment processes, as well as e-banking and e-corporate systems currently used by commercial banks.

3) Implementation plan to study and revise payment costs and fee structure

BOT set up a working group on the payment costs study and review of pricing structure consisting of representatives from the Thailand Development Research Institute (TDRI), the Thai Bankers' Association, the Association of International Banks, the Thai Chamber of Commerce and the BOT. Its achievements made during the past year were:

- (1) Assigning the University of the Thai Chamber of Commerce to conduct a payment costs study with an objective to promote commercial banks' awareness of more efficient cost management for their payment operations, as a mean to enhance their competitiveness. The final report will be available and presented in the annual payment systems seminar in December, 2009.
 - (2) Reviewing the framework for transaction fees of interbank bulk payments by comparing the strengths and weaknesses of each proposed fee structure. The findings were used for a preparation of a proposal on the standard structure for payment fees, to be submitted to the Payment Systems Committee (PSC) for approval, and subsequently be adapted for implementation by the commercial banks.
- ## 4) Implementation plan on establish standards and guidelines for the observance of local and international laws and regulations

BOT set up a working group on establishment of guidelines and standards for payment activities, which consists of representatives from Thai Bankers' Association and International Bankers' Association, specialized Financial Institutions, the National Electronics and Computer Technology Center (NECTEC), and BOT. It is the intention of BOT and the working group to set standards and practice codes for electronic payment providers which are in compliance with applicable international and domestic laws and regulations, and to promote safety and soundness of the electronic payment systems without overburdening payment service providers. Its work processes are:





- (1) Compile identified problems / obstacles arising from compliance of applicable laws, regulations, and notifications imposed by government agencies.
- (2) Present their findings on such problems / obstacles to relevant parties for consideration and solutions, in order to mitigate unproductive burdens that might be caused to the commercial bank in their compliant attempts. In relation to these actions, the following issues are under the consideration process of responsible agencies:
 - 2.1) The use of e-receipt as lawful evidence of payment receipt or tax invoice instead of using paper evidence by the revenue department.
 - 2.2) The use of an electronic promissory note (P/N) as interbank lending documents, in replacement of the physical exchange of a promissory note or bill of exchange. The matter is being reviewed by the Thai Bankers' Association.
- (3) Prepare a draft guideline covering actions required by banks in assisting their customers for the rectification of interbank funds transfer errors. The guideline is intended to provide standard practices among banks. Prior to its implementation, relevant hearings will be conducted during the 2nd quarter of 2009 to obtain banker's views.

5) Implementation plan to improve payment system oversight efficiency

The plan for efficiency enhancement for the supervision of payment systems aims to align the oversight standards for domestic payment systems and the governance of electronic payment service providers with the internationally accepted standards, while making such supervision acceptable by payment service providers, and enforceable by laws. Such plan shall further enhance the stability of the country's monetary system and the soundness of the local financial institution community. In 2008, BOT implemented the following actions:

1 Key Developments in Domestic Payment Systems

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- (1) Push for the passing of relevantly required laws; BOT has participated in the drafting of the Royal Decree on Regulating Electronic Payment Business, which shall be enacted by virtue of section 32 of the Electronic Transaction Act B.E. 2544, in conjunction with the approval in principle by the Cabinet in its resolution dated 21 November 2006. The draft was eventually enacted as a royal decree and published in the Government Gazette on 16 September 2008 and came into force on 14 January, 2009.
- (2) Prepare the drafts of relevant notifications, rules and regulations to be enforced by virtue of such decree to govern stakeholders in the electronic payment business. BOT also organized hearings with payment service providers (both banks and non-banks) in the electronic payment business prior to the enforcement of such decree.
- (3) Publicize and disseminate the relevant information regarding the enactment of such decree in order for all participants to be prepared to abide by the law. The actions were made in close collaboration with the Electronic Transactions Commission and the Ministry of Information and Communication Technology. In addition, BOT also presents relevant - information regarding the subject on its own website (www.bot.or.th).



6) Implementation plan for the BAHTNET risk management

BOT set up a working group on legal drafting of payment systems legislation, which consists of representatives from the Thai Bankers' Association, the International Bankers' Association, the Security and Exchange Commission and BOT. It is the intention of BOT and the working groups to set protection measures against possible risks in the payment systems, and assure that the payment systems function in accordance with international standards. These arrangements shall further enhance the stability of the country's monetary system and the soundness of the local financial institution community. The working group also reviews the relevance of the legal framework for the finality of multilateral netting, or the "Payment Finality" and the "Zero Hour Rule", and concludes two possible solutions:

1. Amendment of relevant laws currently in force.
2. Drafting of special legislations which govern payment systems.

The working group compiled and studied relevant information which can be used to support its above mentioned solutions. It also undertook appropriate actions to uplift the operational standards of the payment systems to an internationally accepted level. The following actions were taken:

- (1) Study and analyze critical problems / obstacles in the payment systems in Thailand, such as BAHTNET system, which involves high value funds transfers, and electronic cheque clearing, etc.
- (2) Study and analyze payment systems in other countries as well as their legal framework. The essence for the enforcement of specific laws to govern payment systems such as the protection against systemic risk, particularly the enforcement of the "Payment Finality" and "Zero Hour Rule" provisions (in order to clearly defy the insolvency status of payment institutions), the enforcement of netting obligations among parties, and the governance scope for the payment systems etc.
- (3) Study the current Thai laws, particularly the Bankruptcy Act B.E. 2483, and closely follow the progress of the assigned drafting commission on the drafting of its new Bankruptcy Act, in order to propose the inclusion of explicit legal framework for the "Payment Finality" and the "Zero Hour Rule". The proposed amendment shall provide greater certainty and confidence for payment transactions.



1 Key Developments in Domestic Payment Systems

26 7) Implementation plan in preparation for cross-border linkage of the BAHTNET system

The assigned working group reviewed advantages and disadvantages of BAHTNET cross-border linkage under the Payment versus Payment (PvP) mechanism, including, determining guideline for appropriate linkage methods, prepares procedures to counter various impacts on monetary policy, exchange rate policy, international fund flows, legal implications related to applicable laws, regulations, as well as business, technical, and operational conventions, etc. After which, the group will prepare the implementation plan for the BAHTNET cross-border linkage which shall mitigate exchange risks related to foreign exchange settlement, as well as increase the efficiency of international funds transfers.

The progress made by the working group is summarized below:

- (1) Meet the representatives from CLS and HKMA, to gain informative detail regarding the CLS system (Continuous Linked Settlement System) and the USD-CHATS system (USD Clearing House Automated Transfer System), respectively.
- (2) Consult other central banks, which have already established cross-border linkage with USD-CHATS systems and CLS systems, to support its considerations on the issue.
- (3) Study potential impacts of the linkages.
- (4) Discuss advantages and disadvantages of the linkages, risk management for foreign exchange settlement, and gather information and opinions on matters related to the payment system linkages.





As for the course of action in 2009, the working group will make a summary on opinions and suggestions made by representatives of commercial banks in the working group and consult with CLS, other central banks, and other departments of the BOT to jointly determine the appropriate guidelines for the payment system linkages and eventually submit its proposed work plan to the Payment Systems Committee.

8) Implementation plan for linkage of retail payment systems among ASEAN and some Asian countries

The ASEANPay, which is the cross-border linkages for retail payments among ASEAN members via the ATM networks, was initiated to support the increasing trade and investments in the region, and to promote economic competitiveness of the member countries in the global arena. The initial stage of the project involves four pilot countries, namely Thailand, Singapore, Malaysia and Indonesia.

Implementations undertaken in 2008 were:

(1) The Steering Committee Conference was held on 24-25 April 2008 in Chiang Mai, to discuss the following issues:

1.1) Revision of the ASEANPay standard framework, which covers policies, rules and regulations, measures against money laundering, fee structure, and risk management for international payments and settlements. The Monetary Authority of Singapore was assigned to be in charge of such revision as per suggestions made by the Steering Committee and the network service providers of the ASEAN members. It was agreed that each participating central bank will submit its standard framework to the network service providers. The meeting acknowledged the completion of actions on the ASEANPay standard framework, and accepted the participation of the Philippines in the Steering Committee.

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In addition, the Committee also considered matters relating to the linkages of member countries' ATM networks, on such issues as; confidentiality of information, statement of funds transfer purpose, and evidence of funds transfer. During the meeting, presentations are made on various international payment channels, such as the mobile funds transfers and the internet funds transfers.

1.2) BOT discussed with network service providers from the member countries, on several issues such as, new membership acceptance, the involvements of financial institutions among the ASEAN countries, the expansion of Asian Payment Network (APN) to other countries, and other future plans. In addition, a specialist from Edgar, Dunn & Company also presented the current developments in international payments and settlements , and its impact on the ASEAN countries.

(2) BOT confers with relevant agencies concerning the deregulation of foreign exchange control to support international funds transfer via the ATM systems. The Exchange Control and Credits Department agrees with this deregulation concept, and having a view that any funds transfer via ATM system in an amount less than \$1000 per remittance, or in an aggregate amount less than \$2500 per day per person, an authorized agent who processes the transaction need not require documentary evidence from the remitter. However, the member banks and the National ITMX Company Limited must have an adequately equipped system and must be able to duly report the transfer details to the BOT. The purpose of this deregulation is to promote international collaboration on funds transfer and to facilitate remitters of retail funds transfer.



9) Implementation plan for payment systems development, which related to trade and investment promotion, between Thailand and neighboring countries

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To promote payment options for trade and investment in border trade, BOT appointed BOT's internal working group on a development plan for payment systems to support trade and investment transactions between Thailand and its neighboring countries. In addition, with an intention to efficiently respond to the needs of the private sector, BOT also appointed another advisory group comprised of representatives from the Thai Bankers' Association and the Thai Chamber of Commerce, to advise on this plan, particularly on development directions of the payment systems and on the aspects of trade and investment promotions between Thailand and its neighboring countries. This advisory group also provides BOT with observations and suggestions on the side of the directly participating parties.

In the past year, the advisory group on a development plan for payment systems to support trade and investment transactions between Thailand and its neighboring countries has gathered problems and obstacles relating to trade and investment between Thailand and its neighboring countries that are mainly concerned with payment aspects. The findings revealed the entrepreneurs' demand for support in bank funds transfer either in Baht or in the currencies of the neighboring countries via their accounts with the commercial bank in the Thai and neighboring countries' trading zones, as well as the need to include money traders in the payment system. In response to these demands, BOT has encouraged the collaboration between Thai commercial banks and commercial banks of the neighboring countries to become the trading counterparts so that the entrepreneurs on the borders between Thailand and its neighboring countries can utilize bank payment services in their trading zones.



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Indeed, the findings also brought to light other problems and obstacles caused by relevant tax structure, import and investment regulations of the trading countries. Meanwhile, Thai entrepreneurs also remarked on the insufficient support provided to them for their trade and investment within the neighboring countries. The advisory group took notes of the findings and will present the issues to relevant agencies in the process.



1.2 Payment infrastructures

1.2.1 BAHTNET Initiatives in 2008

(1) Actions undertaken by the BAHTNET advisory group in 2008

Since 2007, BOT sought the cooperation from the Thai Bankers Association, the International Bankers Association, and the state-run special financial institutions, to send their representatives to participate in the BAHTNET advisory group, and to present their opinions and suggestions on the development of BAHTNET, so that the system can be well adjusted to the changing financial environment and be equipped with technological advancement. All of these shall benefit its user as well as the Thai monetary system. The group holds a meeting at least once every four months, or whenever necessity arises.

From the meetings held in 2008, the BAHTNET advisory group, which consists of representatives from 11 financial institutions, agreed on many issues, namely:

- Opinions and suggestions regarding Securities Requirement for Settlement (SRS) for BAHTNET
- Opinions regarding the restructuring of service fee and penalty fee structures for BAHTNET
- Guidelines for extension fee of BAHTNET services
- Guidelines for extension fee of cut-off time for the third party funds transfer

(2) Restructuring of BAHTNET fee structure

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In 2008, the BOT reconsidered the revision of the BAHTNET fee structure and consulted with the BAHTNET advisory group to determine the appropriate range for service fees and penalty fees. The new fee structure became effective on 1st August 2008. The details of the revision can be summarized as follows:

2.1) For the restructuring to be processed according to its schedule and plan, and not to impact any other systems that are also connected to BAHTNET, such as, the security clearing and settlement system of the Thailand Securities Depository Co., Ltd. (TSD), BOT issued notification No.SorRoKho. 3/2551, Re: Service fees for BAHTNET (Second amendment), which set the service fee rate for service users who requested for the extension of time beyond usual service hours.

2.2) The BOT issued notification No. SorRoKho. 4/2551, Re: Fine on BAHTNET service for multilateral funds transfer (First amendment), which terminates the collection of penalty fees from entities which make the payment / receives payment in the case of late settlement delay more than 3 times in a month, thereby reducing the cost burden for these entities and avoiding the redundancy of required penalty charges.

2.3) To ensure efficient implementation of its monetary policies and to facilitate liquidity management of financial institutions after the closing of the REPO market, BOT issued notification No.SorRoKho 5/2551, Re: Criteria on intraday liquidity facilities (ILF) and proportion of funds transfer via BAHTNET (First amendment), which exempted the inclusion of the primary dealer bond trading transactions under the e-bilateral REPO agreement in the calculation for the daily fund transfer ratio.



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- (3) Issuance of notification to support the improvement of the central settlement system (CSS)

BOT issued notification No.SorRoKho 7/2551, Re: Multilateral funds transfer, which came into force on 10th November 2008, to support the improvement of the central settlement system. Multilateral funds transfer service is added into the BAHTNET settlement process. Moreover, the transfer instruction also includes more settlement details aimed to assist service users in their review process of settlement counterparties.

- (4) Amendment of its prior notification to support the security upgrading process of SWIFT transfers

Due to the security upgrading process of SWIFT transfers that were switched from the bilateral key exchange (BKE) to the relationship management application (RMA), the BOT therefore amended its prior notification governing this matter, namely notification No. SorRoKho 9/2551, Re: Protocol actions in case of the disruption of SWIFT, the cancellation of transfer instruction, and the SWIFT key exchange. The amendment became effective on 1 October 2008.

- (5) Extension of cut-off time for the third party funds transfer via BAHTNET

To enhance the efficiency of funds transfers via BAHTNET to meet increasing demands of the payment service users, BOT issued circular No.PhoRoChor. (12) Wor. 79/2551 Re: cut-off time and the guidelines for third party funds transfers via BAHTNET. The circular specifies the extension of the cut-off time for acceptance of transfer instructions by local residents for third party funds transfer via BAHTNET from 14.30 p.m. to 15.00 p.m., while keeping the cut-off time for acceptance of non-residents transfer instructions for third party funds transfer via the BAHTNET system the same at 15.30 p.m. The amendment became effective on 2 January, 2009.





(6) Risk management for BAHTNET

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BOT determined protective measures against potential risk in BAHTNET, and ordered payment service users of the BAHTNET system to maintain required securities reserves, or securities requirement for settlement (SRS) as a cushion for the net settlement risk in the multilateral funds transfer (MFT) process, which covers activities such as interbank cheque clearing, settlement of retail funds transfers etc. The actions help in mitigating potential systemic risks and assure a successful process for same day settlement. BOT is currently in the process of developing its internal systems to support such operations which shall be in force in 2009.

1.2.2 Development Plan for the Image Cheque Clearing and Archive System (ICAS)

In 2008, BOT launched a development plan for the Image Cheque Clearing and Archive System (ICAS) with the intention to improve interbank cheque clearing processes by using electronic cheque images instead of collecting physical cheque nationwide.

ICAS is composed of two sub-systems which are the Image Cheque Clearing System (ICS), cheque clearing process by using data and images, and the Image Archive System (IAS), process of physical check truncation and storing of image and other related electronic documents. The ICAS development plan has progressed as following:

- (1) BOT organized meetings between member banks and the Working Group for Improvement of Cheque Clearing Efficiency to clarify its policies and development plans for cheque clearing and settlement processes, to discuss and gather suggestions on improvement of the ICAS and to assess the preparation processes taken by the member banks to and assure those processes in line with BOT's plan.

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- (2) BOT announced to all commercial banks about the standard of “image friendly” and “image quality” including plan to implement those on April 29, 2008 . For the standard of “image friendly”, it was made effective since February 2009.
- (3) BOT gathered essential business and technical requirements for the implementation of ICAS, and arranged the terms of reference for bidding, as well as the vendor selection process.
- (4) The Oversight Subcommittee on Electronic Transactions Services and Electronic Transactions of State Agency presented BOT’s ICAS project to the National Electronic Transaction Commission as a pilot project for the e-transaction implementation that provides both standardized guidelines and credibility assurance for electronic transactions. Details of relevant implemented actions are presented as following:
 - 4.1) The Subcommittee on Standard and Research & Development for Electronic Transactions is in the process of setting up principles and procedures required for transforming existing data and documents into structured electronic information.
 - 4.2) The Subcommittee on Legal Structure reviewed and provided its opinions on the utilization of image-based cheques, instead of original physical cheques, as evidence in court.
- (5) BOT together with the assigned working groups from the member banks are working to set standards for the Image Quality Assurance (IQA) that shall be applied in the verification process of the image cheque collecting under ICAS.

BOT contracted IBM (Thailand) Co., Ltd., OGA SynCom Co., Ltd., and MLL Software (Thailand) Co., Ltd. to develop the ICAS which shall be in service by the end of 2009 and can be extended to serve nationwide coverage by 2013.



1.2.3 Central Settlement System Enhancement

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Since 2005, BOT has begun the plan for efficiency improvement for its Central Settlement System, and its Multilateral Funds Transfer services (MFT). BOT notified and trained member banks on the application of the system and test-run the system in 2008. This enhancement plan was kicked-off on 10 November 2008. The actions successfully benefit the payment requirements of both private and public sectors, as well as facilitate funds management and treasury operations of member banks.

1.2.4 Common Ticket Project for Public Transport

BOT joined in a joint-committee, formed by OTP, to study plans on; the common ticking system for public transportation, the standard common smart pass, and the establishment of a central body to administer relevant apportionment and clearing functions. This collaborative project intends to promote the use of public transportation by the general public, as well as the application of a common stored value pass for transit payments which will allow citizens to travel in any transport mode, and eventually use such pass as a payment method that is also acceptable by businesses outside the transit agency that issued the card.

1.2.5 The Executives' Meeting of East Asia-Pacific Central Banks (EMEAP)

In the past year, BOT participated in EMEAP working group on payment and settlement systems for two times which were:

- The 18th EMEAP Working Group on Payment and Settlement Systems (WGPSS), in Bangkok, hosted by BOT during March 13-14, 2008, and
- The 19th EMEAP Working Group on Payment and Settlement Systems (WGPSS), held in Oakland, New Zealand during September 22-23, 2008.



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Both meetings covered important agendas in payment and settlement systems such as impacts of major US financial institutions' failure and their liquidity issues on EMEAP member countries, as well as actions and progress of various EMEAP sub-working groups; namely the crisis management survey which provides EMEAP members data on causes and impacts of the US crisis on the payment and settlement systems. This data can be adapted by member countries for their own crisis protection and contingency actions. The sub-working groups are The Risk Management subgroup, The Oversight subgroup and The Standards and Best Practices subgroup. Other discussed topics included efficiency enhancements and risk protection measures for the member countries' payment systems. As for the 20th Working Group on Payment and Settlement Systems (WGPSS), this was held in Shanghai, China in March 2009.

1.3 Payment Systems Oversight

1.3.1 Enforcement of the Royal Decree on Regulating Electronic Payment Business B.E. 2551

The Royal Decree on Regulating Electronic Payment Business B.E. 2551 was published in the Government Gazette on 16 September 2008 and came into force on 14 January 2009. By the virtue of this decree, BOT is vested with supervisory authority to govern and regulate electronic payment business.

Earlier on the 3rd and 7th November 2008, BOT organized meetings with payment service providers (both banks and non-banks) in the electronic payment business, who are governed under this decree, to hear and discuss opinions regarding relevant issues on the decree draft. The suggestions made during the meetings were applied to improve the decree contents. Thereafter, BOT submitted the final draft of the decree to the Electronic Transaction Commission for their review and approval prior to its eventual publication in the Government Gazette.





By virtue of this decree, three groups of electronic payment service providers are to be supervised by BOT. Grouping of relevant service providers is based on the severity of potential impacts that might affect the overall electronic payment business. Whereas:

- The service providers listed in the prescribed List A annexed to the decree are required to make notification to BOT prior to the commencement of their business operation.
- The service providers listed in the prescribed List B annexed to the decree are required to make and obtain registration with BOT prior to the commencement of their business operation.
- The service providers listed in the prescribed List C annexed to the decree are required to be licensed by BOT prior to the commencement of their business operation.

For service providers in the prescribed List B & C, who had been operating their electronic payment services prior to the enforcement of this decree, they were requested to respectively submit their request for registration and license from 12 February 2009 to 16 March 2009. Those who failed to submit their required requests during the prescribed time period could merely continue their current activities until 13 May 2009. For new service providers who engage in the services after enforcement of this decree can submit their required requests from 14 January 2009 onward.

1.3.2 Oversight of E-Money operations



As a supervisory authority in charge of electronic payment business, BOT is responsible for the oversight of non-bank participants who provide electronic money services within the country. Presently, 6 non-bank agents are authorized to operate e-money services under the Ministry of Finance's ministerial notification governing authorization of business as prescribed by clause 5 of the Notification of the Revolutionary Council No. 58 (Control of Business Relating to Public Safety) dated 4th October, 2004. In 2008, all the 6 non-bank e-money service providers complied with the prescribed rules and regulation of the business.

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38 Indeed, complaints were filed to BOT in 2008 against unauthorized e-money service providers; BOT is currently investigating the matter for proper legal enforcement.

1.4 Outlook for payment services

Innovations in new payments and settlements technology have evolved increasing convenient choices of payment medium for consumers, and inducing further reduction in operating costs for payment agents. Electronic payment schemes show a rising tendency of continued growth, particularly for payments made via plastic cards and mobile phones.

Plastic cards. There is an increasing tendency for the use of plastic cards in retail points of sale environment as commercial banks are substituting the issuance of ATM cards with debit cards and providing various sales promotion attachments to them. These actions provide consumers with benefits, ease and safety for the use of debit cards over cash. Though, the present use of debit cards is rather minimal in comparison to the use of credit cards, it is likely that debit card usages may increase overtime with the launch of new services that could satisfy consumers and retailers, an improvement in the payment and settlement network, a lower commission fee taken by card issuers, and an ability of cross utilizations with ATM cards. All of these should eventually increase the use of plastic cards.

Mobile payments, or payment made by mobile, is another alternative payment method which has rapidly been adopted and is continually increasing in popularity. New payment solutions become possible for mobile payment users through new technology developed and applied by mobile payment service providers, such as payments via an Interactive Voice Response (IVR) system, payments via a Short Message Service (SMS), transfers of payment data through the access of internet network via Wireless Application Protocol (WAP) and General Packet Radio Service (GPRS), as well as mobile payments and settlements for goods and services via telebanking, credit card debit process, and e-purse.



Growth prospects for mobile payment evolve from various supportive factors such as user demand for payment mode that is swift, convenient and easy to handle. Continual expansion in mobile phone usage and increase in competition among network providers are apparent, while commercial banks are still eager to provide mobile banking services because of their capability in reaching a large consumer base and leading to a reduction in the need for ATM transactions and other banking payment infrastructure, namely branch network, which incurs much higher operating and administrative costs.

Technology innovation is another factor that supports evolution in mobile payment. New forms of technology such as contactless, Radio Frequency Identification (RFID), and short-range high frequency wireless communication technology known as Near Field Communication (NFC) that enables the exchange of data, are considered as the key contributors. These technologies make mobile payment easy and efficient while reducing transaction processing time. All of these offer suitable payment solutions for a wide range of industries and services, particularly public transports and mass transits. The 3G technology used in wireless communications also enables network operators to achieve simultaneous use of data services at higher data rates and a greater degree of security that benefit mobile payment users in terms of better security and efficiency. These benefits directly entrust payment users with increased confidence and demand.



The earlier mentioned social and technological aspects unavoidably pose impacts to the payment service industry and force market participants, particularly commercial banks, to adjust themselves and their strategies to cope with the changing business environment and increasing competition. Indeed, there are also other external factors that maneuver key market participants such as commercial banks to quickly make these adjustments and pay more attention to the operating costs and the fee structure of their payment services. These external other factors are:

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1. Global Economic Crisis

The global economic crisis directly cuts banks' revenues, forces banks to pay more attention to their service costs and undertakes various cost reduction measures. Banks turn to electronic payment media which involves less handling and processing costs than cash or cheque transactions. Though these banks may initially require huge technical investments in their data processing systems to accommodate such electronic payment process, over the long run they should benefit from a significant reduction in their operating and servicing costs.

2. Government and Central Bank's Roles on the Payment Services Fee Structure

In the past, various governments and central banks were likely to be less involved in the regulating activities of the fees charged for payment service, and allowed the market to liberally function. Governments and central banks only govern commercial banks to sufficiently disclose information on the fees charged to customers. However, during the recent years many governments and central banks, particularly those from developed economies, began their active role in regulating fee structure and payment rate for payment and settlement services, due to inefficiency of prevailing market forces that load excessive fee burden and inappropriate rate structure to consumers.

Indeed, governments and central banks also administer market performances to assure relevant degrees of market competition among payment service providers, aiming to foster the best possible market structure that encourages perfect competition among players. For the payment service types that governments mostly administer are retail funds transfer system which handles the payment volume that largely impact the general public in such forms as ATM, credit card and debit card usages. Countries which are regulating rates for payment fees are Australia, European Communities, U.S.A, Spain, Israel, Mexico, New Zealand, Poland, and Netherlands etc.





3. Increase in Users' Complaints against inappropriate Fee Structure

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Users' complaints increasingly cause changes in the fee structure for payment services. An example is the class action launched by Wal-Mart and its allies against Visa for its inappropriate payment fees, which resulted in the out-of-court settlements which included a reduction of fee charges, and a provision of settlement compensations to the retailers.

Despite the fact that innovations of new payment technologies may largely satisfy the needs of consumers, familiar payment modes such as cheque and cash remain comfortable means of payment for them. However, the increases in electronic payment transfers ratio and the enthusiasm of payment service providers and users in accepting the changing environment of modern payment technologies, including the public concerns over inappropriate service fee structure signify a brighter trend and a good supportive ground for further development of the effective payment systems.

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42 Imaged Cheque Clearing System

The imaged cheque clearing system is an online image-based cheque clearing system that utilizes electronic data and scanned cheque images, instead of the physical exchange of cheques, in its clearing process. The data and images of cheques, captured in standard format, are sent by the collecting bank to the paying banks for collection. The physical cheque, in this case, is retained by the collecting bank.

The electronic images of cheques in the clearing process are normally stored at the central clearing house. In most countries, a central clearing house is operated by the nation's central bank. In many countries, an electronic cheque image can also be used as evidence in court, thus, once a cheque is processed and collected, its original physical copy can then be destroyed.

Overtime, the Imaged Cheque Clearing System can help reduce both processing and storing costs for cheque clearing. In addition, the System also improves collection efficiency due to the ease in administration of workflow, transmission and collection process, as well as data retrieval.

1. Singapore

The Cheque Truncation System (CTS) was implemented in Singapore on 12 July 2003, under a joint initiation of the Monetary Authority of Singapore (MAS), the Singapore Clearing House Association (SCHA) and the Association of Banks in Singapore (ABS). The CTS was launched to replace a previous cheque clearing system which had been in function for more than 10 years.





1.1 Data Transmission Process

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The collecting banks capture data and images of the out-clearing cheques in the CTS and transmit them for collection. For out-clearing cheques during each clearing cycle, in both normal and return round the electronic data and cheque images are sent by the CTS to the bank for further processing.

For the cheque return process, the paying banks only submit cheque data into the CTS, which will retrieve its return cheque images from the system, then batch the return cheque images with their data and resend them back to the collecting bank.

In case of a returned cheque, the collecting bank will not return the physical cheque to the cheque payee but forward the Image Return Document (IRD) which is a legally recognized replacement of the original cheque to the cheque payee. The advantage of IRD is a reduction in the number of processing man-hours and protection against the re-presentation of a cheque into the system.

1.2 Operating Hours

The CTS offers a six-day clearing week, from Monday to Saturday. During Monday to Friday the system opens for two clearing rounds; the mid-day cheque clearing and the end-of-day cheque clearing. On Saturday it is only open for the end-of-day cheque clearing. Settlement takes place on the business day after the date on which the data is transmitted into the system. During Monday to Friday the system provides two settlement rounds at 3.45 pm. (for the return cheque process and the mid-day cheque clearing) and 6.15 pm. (for the end-of-day cheque clearing). As for Saturday it is open for one settlement round at 2.30 pm (for the return cheque process and end-of-day cheque clearing). Once the collecting banks receive data of its return in-clearing cheques, the bank then releases the funds in the customer's account which was put on "hold" and the money is available for use at around 2.00 p.m.

2 Key Developments in International Payment Systems

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1.3 Benefits of the system

- (1) Reducing operational costs for cheque clearing such as labor costs involved in physical cheque processing for both collecting and returned cheques, as well as transporting and storage costs.
- (2) Reducing collection time for USD cheques from the previous 2 business days to 1 business day.
- (3) Enabling member banks to provide the express cheque collection service, for which clients may be required to pay a special fee.
- (4) Laying the technical foundation for electronic image banking applications, such as internet banking and cheque deposit machines.

2. Hong Kong

Prior to the establishment of the Hong Kong Interbank Clearing Limited (HKICL), a central interbank clearing and settlement center founded by the Hong Kong Monetary Authority (HKMA) in May 1995, Hong Kong's cheque clearing activities were administered by the Hong Kong and Shanghai Banking Corporation Limited (HSBC). HKMA owns 50 percent shares in HKICL; the remaining 50 percent belong to the Hong Kong Association of Banks (HKAB).

Hong Kong began to use its Cheque Imaging and Truncation System (CITS) on 21 June 2004. HKMA provides policy guidelines supervise, supports the operation of the CITS as well as is responsible for the legislative aspects of the CITS, whereas HKICL and HKAB work together to plan and develop the system.

2.1 Data Transmission Process

The collecting banks, which are equipped to capture cheque data and images of the presented cheques, submit data and images of the presented cheques into the CITS for collection. Banks which are not well-equipped to handle the capturing process have to transport actual cheques to HKICL for processing. For high value cheques with an amount over HKD 20,000 (or 100,000 baht) or suspicious cheques, the collecting bank that captures cheque data and images by themselves are also required to deliver the original physical cheques to HKICL for a further transportation to the relevant paying banks for verification and payment approval.





In case of a returned cheque, for a small value, the paying bank will only return the cheque data, but for a high value cheque the paying bank will return the cheque data together with the original physical cheque to the collecting bank. Unlike Singapore, the collecting bank will return the original physical cheque to the cheque payee, not the Image Return Document (IRD).

2.2 Operating Hours

The banks, which submit the cheque data and images to the CITS by themselves, are required to forward the electronic cheque data and images to HKICL by 9.00 pm. As for the banks, which use HKICL to capture the cheque data and images, they must present the physical cheques to HKICL by 7.00 pm.

Once the paying banks have verified the cheques data and images, they are to present their returned cheque list by 1.00 pm of the next business day. The CITS will send the information on returned cheques to the collecting banks by 2.15 pm. The settlements are processed by HKICL at 3.00 pm and the money is available for use in the customers' account at around 4.00 p.m.

2.3 Benefits of the system

- (1) Reducing operational costs for cheque clearing.
- (2) Reducing storage costs for physical cheques in the long run.
- (3) Enhancing the efficiency in administration of workflow, since the electronic cheque image is easier than physical cheques for transmission and processing, and data retrieval.



3. Malaysia

The interbank cheque clearing system in Malaysia is administered by its central bank, the Bank Negara Malaysia (BNM). After relying on the previous system for an extended period of time, BNM developed the Cheque Truncation and Conversion System (CTCS) to substitute its former system. The first development phase involved an implementation of the CTCS in the capital city, Kuala Lumpur, on June 13, 2008, and thereafter the CTCS will provide nationwide coverage by the first half of 2009.

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3.1 Data Transmission Process

For the cheque clearing operation of both the normal clearing and the cheque return process, Malaysia operates similar procedures for its data capturing and data transmission as Singapore. During the clearing cycle, the collecting banks capture data and images of the cheques and transmit them to the CTCS for collection. For the cheque return process, the paying banks submit dishonored cheque data and images into the CTCS. All physical cheques presented for clearing are stored with the collecting banks. In case of suspicion over possible forgery, or alteration, or invalidity, the collecting banks can insert their remark tags into the cheque data records to alert the paying banks' attention. This tagging process also identifies the scope of responsibility between the collecting banks and the paying banks.

3.2 Operating Hours

The collecting banks can submit the data of their out-clearing cheques into the CTCS from 8.30 a.m. to 9.00p.m. The paying banks will receive the data of their in-clearing cheques on the subsequent business day from 12.00 p.m. to 04.00 a.m. The paying bank can enter the returned cheque data from 8.30 a.m. to 1.00 p.m. of the next business day. The collecting bank will receive the list and information of their returned cheques by 2.00 p.m. There are two rounds of settlement for cheque clearing and cheque return at 8.45 a.m. and 3.30 p.m., respectively. Once the cheque is cleared, the customer can use the available funds at around the midnight of the third business day since the cheque is processed for clearing.

3.3 Benefits of the system

- (1) Reducing processing time for cross-region cheque clearing from 5 - 8 business days to only 1 business day.
- (2) Removal of fee previously charged for cross-region cheques clearing, as the nation currently operates only one central interbank clearing house.
- (3) Member banks can extend their cheque deposit service hours for an additional 30 minutes, from 4.00 p.m. to 4.30 p.m.
- (4) Reducing operational costs for cheque clearing.
- (5) Quicker availability of funds in the customers' account.





4. India

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Previously, India used physical cheque exchange in its cheque clearing process, which took quite some time for clearing and collection. For the intra- region collection it took around 3 days for the funds to be available, whereas with cross-region collection, it took almost 20 to 25 days, as India is a big country with a large population and many clearing houses. The delay in funds collection caused certain impacts to its economy. In addition, there were also cases of lost cheques in the transportation process. The Reserve Bank of India (RBI) thus formed a working group to determine an appropriate roadmap for its cheque truncation system. The cheque truncation system was later implemented in New Delhi in February 2008.

4.1 Data Transmission Process

Under India's Negotiable Instrument Act, the collecting banks are required to initially verify all presented cheques on behalf of the paying banks. Then, the collecting banks capture data and images of the cheques and transmit them to the CTCS for collection, while retaining the original physical copies of the presented cheques. In some cases, such as cheques images with substandard qualities prescribed under the Image Quality Assurance (IQA) , government cheques, and cheques re-presented for collection, the original physical copies of the presented cheques are sent to the paying banks .

4.2 Operating Hours

The India's CTS offers a six-day clearing week from Monday to Saturday. During Monday to Friday the system opens for two clearing rounds of normal and returned cheques; the first rounds are between 9.00 - 12.00 a.m. for normal cheque clearing and between 4.00 - 5.00 p.m. for returned cheques clearing, the second rounds are between 3.00 - 8.00 p.m. for normal cheque clearing and between 12.00 a.m. - 1.00 p.m. of the next business day for returned cheques. On Saturday, the system only opens for one clearing round of normal and returned cheques; the 2.00 - 5.00 p.m. round for normal cheque clearing and the 12.00 a.m. - 1.00 p.m. round of the next Monday for returned cheques. Settlement takes place at 1.00 p.m. of the business day after the date on which the data is transmitted into the system; after the settlement process the money is then available in the customers' accounts.



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4.3 Benefits of the system

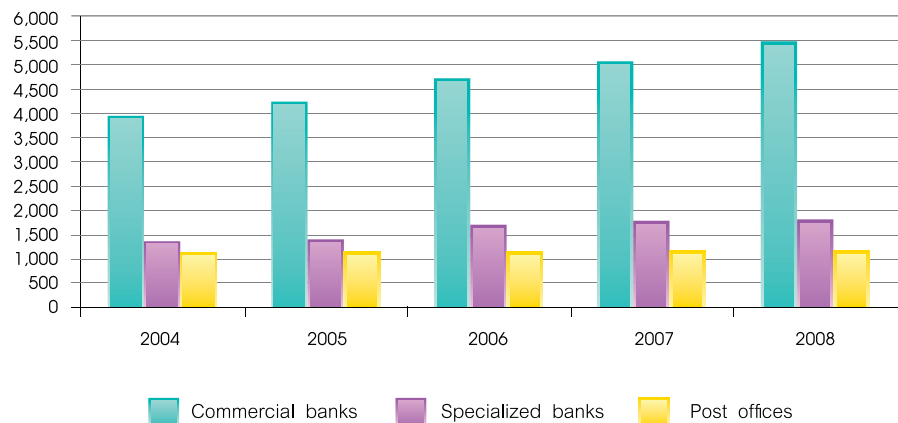
- (1) Reducing the collection time for both intra-region and inter-region cheque clearing.
- (2) Enabling member banks can extend the service hours for cheque deposit.
- (3) Reducing operational costs for cheque transaction.
- (4) Reducing the risk of losing physical cheque in transport.



3.1 Developments of Payment Infrastructure

3.1.1 Branches of Commercial Bank, Specialized Banks, and Post Offices

Figure 1 : Number of Branches of Commercial and Specialized Banks and Post Offices



Source: Bank of Thailand

In 2008, the global economic and financial institution crises, domestic political turmoil, as well as other negative onset issues have marginally impacted the development of payment system infrastructures. Overall, commercial banks, specialized banks and post offices continue the expansion of their branches at a rate close to, or slightly lower than those of year 2007. This resulted from the fact that some banks postponed their decision for new branch openings and some reconsidered the necessity of new branch openings in the context of economic slowdown.

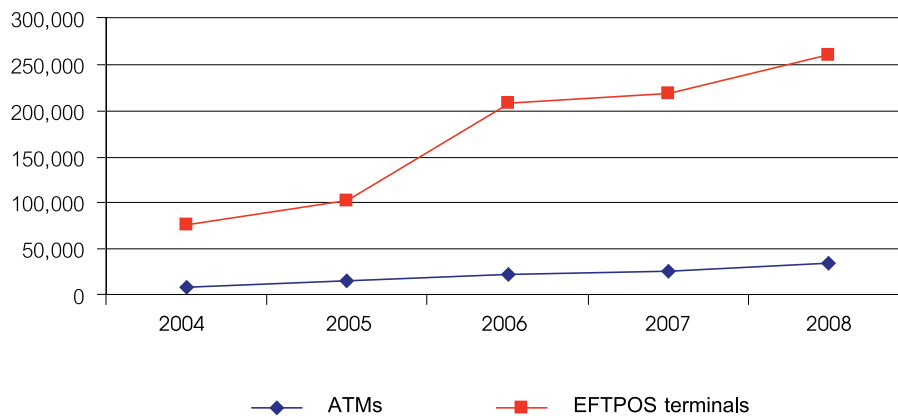
3 Data and Statistics in Payment Systems

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- **Commercial Banks** : The total number of commercial bank branches increased by 8.0 percent from 5,086 branches in 2007 to 5,493 branches in 2008. Among these branches 5,477 were branches of local banks, whereas 16 are branches of foreign banks. There was no change in the number of foreign bank branches during the year.
- **Specialized banks** : From 2007, the total number of specialized banks branches increased by 7.0 percent, or 3 branches, to 1,812 branches in 2008. Newly opened branches are the branches of the Bank for Agriculture and Agricultural Co-operatives (BAAC), whereas the Government Saving Banks and the Government Housing Bank both closed down some of their branches. There was no change in the number of other specialized bank branches during the year 2008.
- **Post Offices** : The total number of post offices expanded by 1 percent to 1,188 offices in 2008.

3.1.2 ATM and EFTPOS Terminals

Figure 2 : Number of ATMs and EFTPOS Terminals



Source : Bank of Thailand

Despite the economic slowdown, commercial banks remain focused on the continued installations of new ATM machines to serve their clients. Current market assessments reveal increasing competition among commercial banks especially in their quality of services. In order to increase their competitive positions, service channels and accessibility to all types of consumers, commercial banks are expanding their branches into areas such as highly populated neighborhoods and department stores, while promoting a wider range of self-service banking products that facilitate consumers with the ability to perform 24 hour banking transactions. Therefore, there were a substantial increase in the installations of ATMs, Automatic Deposit Machines (ADM) and Automatic Passbook Update Machines.

- **ATMs:** The total number of ATMs rose to 34,796 from 25,943 in 2007, or the equivalent of a 35 percent increase from 2007. In 2008, the proportion of bank debit cards and ATM cards to the number of ATMs was 1,410 cards per unit of ATM, down from 1,851 cards per unit of ATM in the previous year. For ratio of debit cards and ATM cards issued by all banks, including the specialized Financial Institutions, to ATM machine, it was 1,399 cards per unit of ATM.
- **EFTPOS:** The number of EFTPOS terminals increased from 218,829 units to 259,567 units in 2008, or an equivalent of 18.6 percent increase from 2007. As a result, the ratio of bank debit cards and ATM cards to EFTPOS terminals was down to 151 cards per unit of EFTPOS terminal from 161 cards per unit of EFTPOS terminal in 2007.

In 2008, the credit card industry faced intense competition, evidenced in the vigorous marketing campaigns for the increase in card user numbers as well as the high frequency of card usage and payment amounts. Meanwhile, extra caution was placed in credit risk and personal loan. In the debit card market, in 2008, card issuers continued their marketing campaigns that encouraged card users to switch from the use of ATM cards to debit cards, and offered sales discounts for customers who purchase goods or services via debit cards at their alliance stores.

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3.1.3 ATM, Debit and Credit Cards

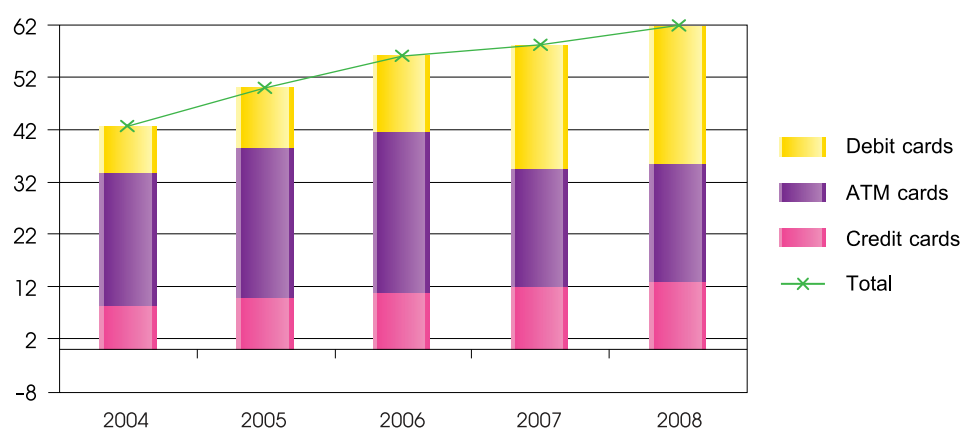
- **ATM Cards:** The total number of ATM cards dropped by 0.9 percent from 22.6 million to 22.4 million in 2008.
- **Debit Cards:** The total number of debit cards rose by 12.8 percent from 23.3 million to 26.3 million in 2008.

2008 became the second consecutive year that debit cards accounted for the highest share among all plastic payment cards, while the ATM card took second place with an outlook of lower usage, as card operators are promoting the substitution of debit cards for ATM cards.

In 2008, the total outstanding number of debit cards accounted for 43 percent of all plastic payment cards currently in use, as compared to 40 percent in the previous year, whereas the outstanding number of ATM cards dropped from 39 percent to 36 percent, and the outstanding number of credit cards remained unchanged at 21 percent.

Despite the extensive and promotional effort in supporting debit card usage over ATM card usage such as additional sales discount, sales promotion and the increase in point of sale counter services, the use of debit cards have not gained much popularity as expected due mostly to the insufficient number of participating stores that willingly accept debit cards. In some cases, stores even encourage their customers to substitute payments by debit cards with cash payment.

Figure 3: Number of Credit Cards, ATM Cards and Debit Cards



Source: Bank of Thailand

- **Credit Cards:** The total number of credit cards in circulation was 13 million cards in 2008, an increase of 8.1 percent from 12.0 million cards in 2007. This number included 6.4 million cards issued by commercial banks, and 6.6 million cards issued by non-bank financial institutions⁴, or 49.2 percent and 50.8 percent in their respective shares.

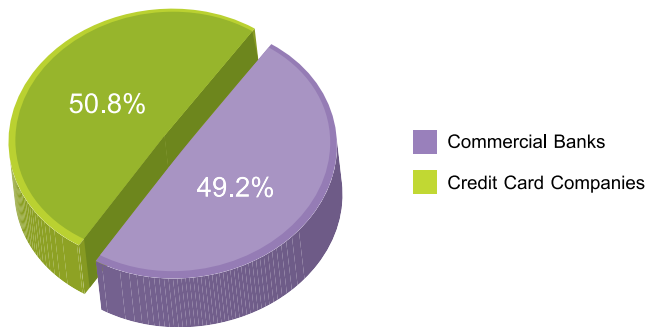
The reasons for the increase in the number of credit cards at the end of 2008 was an increase in the customer base, a success of various ongoing promotion campaigns, particularly the launching of segment marketing and the creation of specialized card types to serve certain business niches or particular card segments, increased benefits just from such specialized card types. All these resulted in an increasing tendency for a card holder to hold more than one credit card.

⁴ These non-bank institutions are credit card companies such as Krungthai Card Company Limited, Krungsriyudhya Card Company Limited, General Card Services Company Limited, Cetelem (Thailand) Company Limited, Diners Club (Thailand) Company Limited, Tesco Card Services Company Limited, American Express (Thai) Company Limited, AEON Thana Sinsap (Thailand) Public Company Limited, AIG Card (Thailand) Company Limited, GE Money (Thailand) Company Limited, EASY BUY Public Company Limited, and Capital OK Company Limited.

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Figure 4 : Composition of Credit Cards issued by Commercial Banks and Credit Card Companies

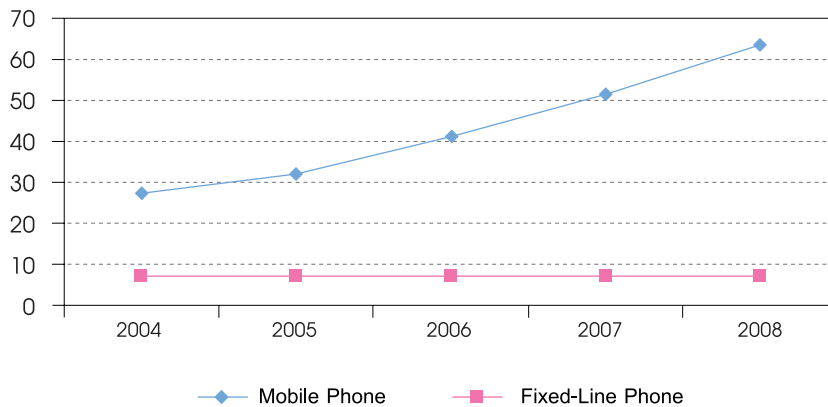


Source: Bank of Thailand

3.1.4 Subscribers of Fixed-Line Telephones and Mobile Phones

Figure 5 : Number of Fixed-Line and Mobile Phone Subscribers

Million of Transactions



Source: Bank of Thailand

In 2008, there were three operators of fixed-line telephone services, which were the same as the earlier year. They were TOT Public Company Limited, that operates a service network that covers Bangkok and the provincial regions; True Corporation Public Company Limited, that provides service coverage only within Bangkok; and TT&T Public Company Limited, that operates only in provincial regions. In 2008, 11 percent of the country's population subscribed to fixed-line telephone services, or a total of 6.97 million telephone lines, showing a decline of 0.8 percent from 7.0 million lines in 2007.

In 2008, there were six mobile phone operators, some of which were newcomers. They were Advanced Info Service Public Company Limited, Total Access Communication Public Company Limited, Thai Mobile Company Limited, Hutchison CAT Wireless MultiMedia Company Limited, True Move Company Limited and Digital Phone Company Limited.

In 2008, the total number of mobile phone subscribers amounted to 63.3 million, an increase of 11.7 million over the previous year. The growth rate for the year was 22.7 percent, a slight decline from a 24.9 percent growth rate in 2007. Most mobile phone users are those registered in the prepaid system.

3.2 Major Channels and Mediums of Payment

3.2.1 Use of Cash

The volume of cash in circulation per capita tends to grow in accordance with the growth in economic activities and as a percentage of GDP growth. The volume of cash in circulation per capita increased from 11,443 baht in 2007 to 11,889 baht in 2008, whereas GDP per capita rose from 134,733 baht in 2007 to 143,601 baht in 2008.

Table 1: Currency in circulation per capita and GDP per capita

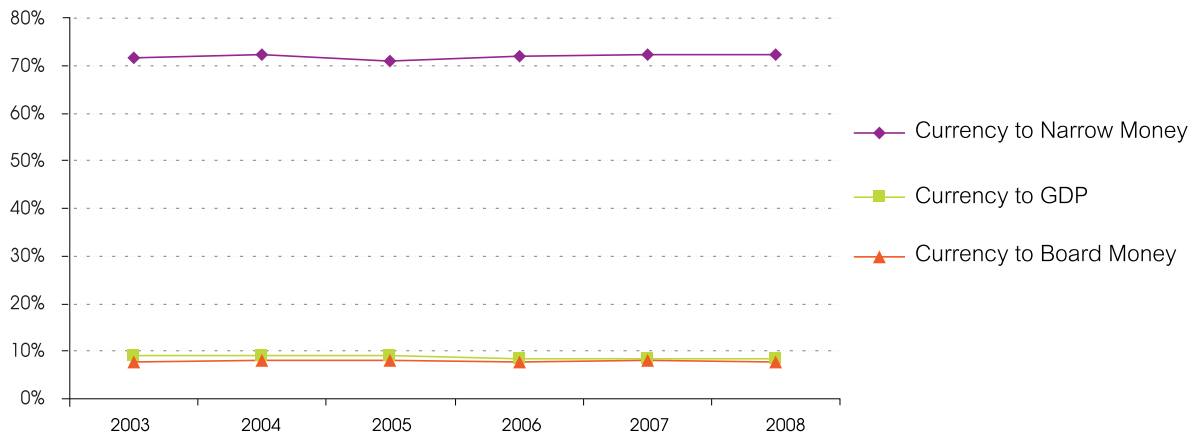
	2003	2004	2005	2006	2007	2008
Cash in Circulation Per Capita (Baht)	8,545	9,662	10,123	10,411	11,443	11,889
Gross Domestic Product Per Capita (Baht)	93,808	104,720	113,632	124,804	134,733	143,601

Source: Bank of Thailand

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Figure 6 : Ratios of Currency to GDP, Narrow Money and Broad Money

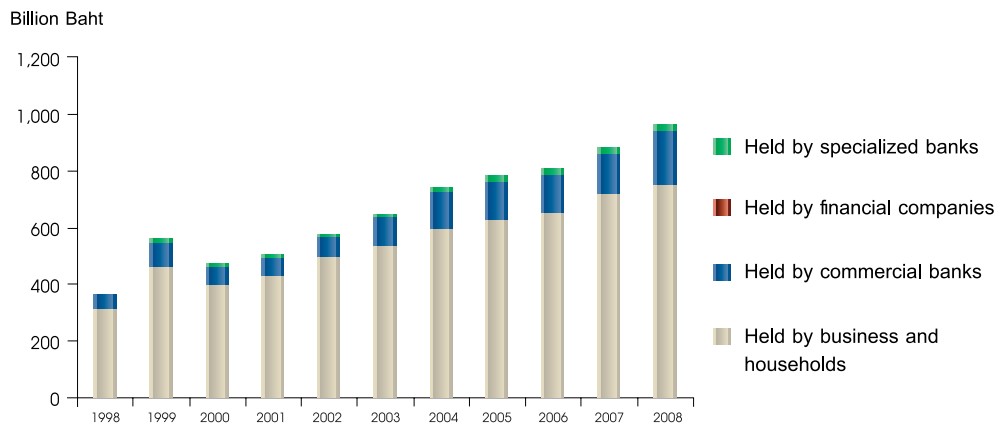


Source: Bank of Thailand

Figure 6 represents the amount of cash in circulation in comparison to GDP, Narrow Money and Broad Money. The cash amount proportion remains largely unchanged overtime. The amount of cash in circulation compared with GDP has remained at 8 percent since 2005.

Figure 7 shows the components of cash in actual possession classified by economic segments. The amount of cash-in-hand for the general public revealed its continued growth; as of 2008 the growth rate was 4.5 percent.

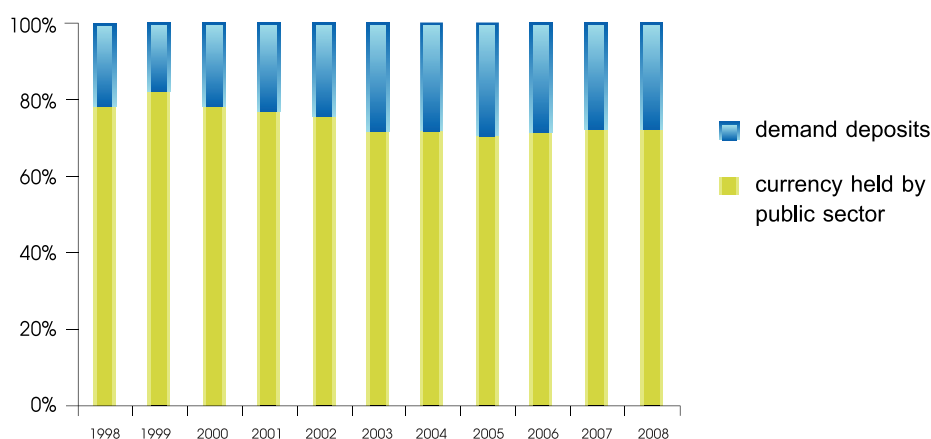
Figure 7 : Components of Currency



Source: Bank of Thailand

In addition, in considering the tendency of cash usage from the ratio of the amount of cash compared to the narrow money, which shows the tendency of the amount of cash used in comparison to the other payment mediums such as payments made via the banks' current accounts or demand deposits, the currency-held by the non-bank public has remained stable at 70-72 percent since 2003.

Figure 8 : Composition of Narrow Money



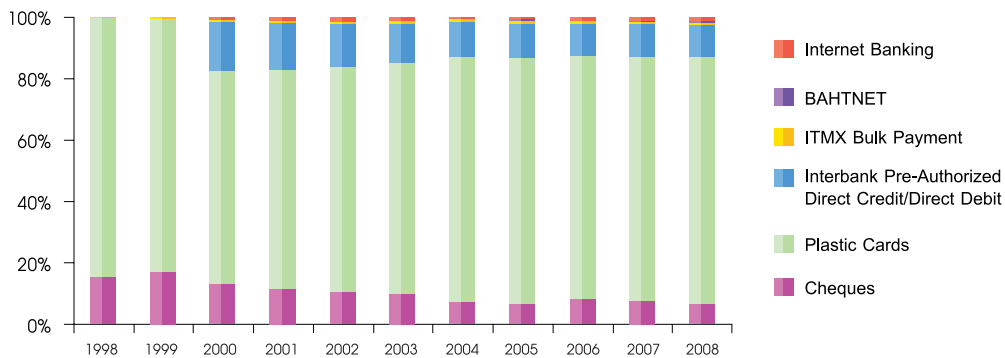
Source: Bank of Thailand

The payment systems and payment mediums which involve high transaction volume and value are BAHTNET System and the retail funds transfer systems, such as cheque clearing and settlement systems, the ITMX Bulk Payment System, the interbank pre-authorized direct credit / direct debit schemes, as well as non-cash payments and non- paper based payments made via plastic cards (e.g. ATM cards, debit cards) and internet banking.

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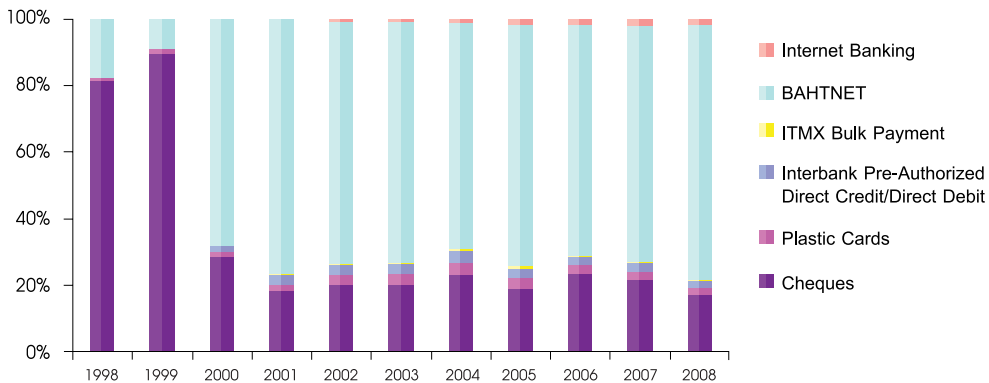
Figure 9: Comparison of Various Payment Instruments in Volume of transaction



Source: Bank of Thailand

The overall payment volume and value made via all types of payment instruments, Figure 9, shows that plastic cards remained the most popular choice of payment medium and accounted for 80.8 percent of the total payment volume. The Interbank Pre-Authorized Direct Credit / Direct Debit schemes were the second most popular choice that accounted for 10.0 percent, followed by cheques which amounted to 6.5 percent.

Figure 10 : Comparison of Various Payment Instruments in Value



Source: Bank of Thailand

Figure 10 shows the overall payment value made via all types of payment instruments, the funds transfer via BAHTNET system ranked the first at 76.5 percent of the total payment value for 2008. Cheque payment ranked the second, at 17.1 percent.

3.2.2 High-Value Funds Transfer System

Funds Transfer via BAHTNET (Bank of Thailand Automated High-value Transfer NETWORK) includes various types of funds transfers such as interbank funds transfer, foreign exchange (FX) trading, interbank loans, internal funds transfer, securities/equity trading, public-sector securities settlement and other transactions.

As of the year-end 2008, BAHTNET had 69 institutions participating as its members, which were 18 Thai commercial banks, 16 foreign commercial banks, 14 finance and security companies, 13 specialized Financial Institutions, government agencies and other institutions, and 8 departments of BOT. The number of BAHTNET transaction was 1,928,920 transactions, rise from 1,765,566 transactions in 2007, or a 9.25 percent increase. Whereas, the aggregate value was 277.47 trillion baht, up from 182.37 trillion baht in 2007, or a 52.15 percent increase. The funds transfer can be classified as follows:

- 1) **Interbank funds transfer** totaled 153,442 transactions, and amounted to 141.10 trillion baht. The volume and the value of interbank funds transfers increased by 3.30 percent and 57.87 percent, respectively. The significant increase in the payment value resulted from bond trading activities among primary dealers under the bond repurchase agreements. The surge in the payment activities related to such bond repurchase transactions directly linked to the close down of BOT's Repo market on 13 February 2008.

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In 2008, the number of the foreign exchange transactions among banks increased by 4.15 percent from 2007, whereas their value declined by 14.5 percent from 2007.

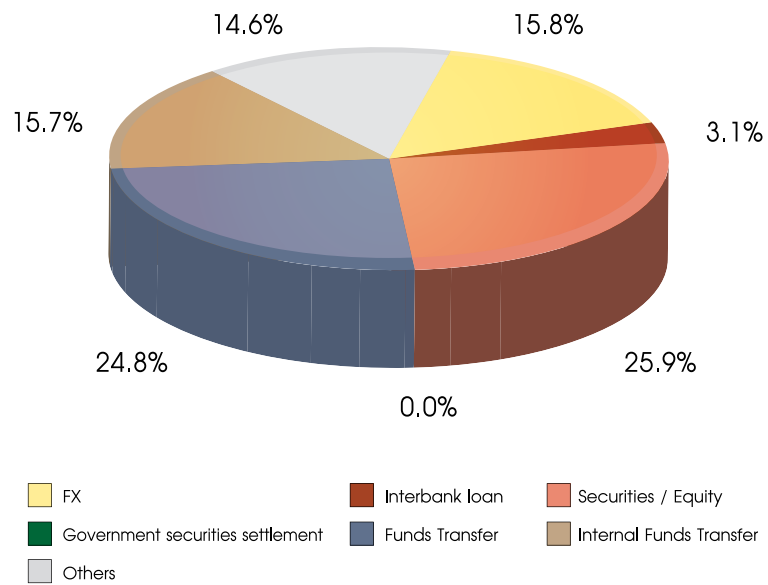
- 2) **Third party funds transfer** totaled 1,772,860 transactions, and amounted to 128.02 trillion baht. The volume and the value of payment transactions relating to third party funds transfer increased by 9.81 percent and 48.95 percent, respectively. The significant increase in the payment value resulted from the settlements of debt instrument trading which grew as a result of the expansion of the local debt instrument market.

The currency exchanges transacted by residents reduced both in volume and value. The volume declined by 48.84 percent from 2007, and the value dropped by 60.68 percent from 2007. The currency exchanges transacted by non-residents increased both in volume and value. The volume surged by 32.18 percent from 2007, and the value rose by 73.05 percent from 2007. The significant increase in the trading value resulted from a waiver of the reserve requirement for short-term inbound remittances by BOT on 31 March 2008.

- 3) **Multilateral funds transfer** can also be described as the settlement of net clearing balance between clearing members. In 2008, the volume of multilateral funds transfers totaled to 2,618 transactions and amounted to 8.35 trillion baht. The volume and the value of the multilateral funds transfers slightly increased from the previous year by 4.89 percent and 18.64 percent, respectively. The increase in the transaction value resulted from the increase in bulk payment activities of NITMX.

In 2008, securities trading was the main activity that commanded the highest payment value via BAHTNET that amounted to 25.9 percent of total value. Funds transfer among payment institutions ranked second, or 24.8 percent of total value. Other activities such as foreign exchange trading, and international funds transfer amounted to 15.8 percent and 15.7 percent of total value, respectively. The remaining were other activities which amounted to 14.6 percent. The two activities showing the lowest in term of value were interbank loan at 3.03 percent and multilateral funds transfer at 3.01 percent. The details appear in Figure 11.

Figure 11 : Value of BAHTNET Transfers by Business Type, 2008



Source: Bank of Thailand

Figure 12 : Volume of BAHTNET Funds and Securities Transfers

Thousand of Transactions

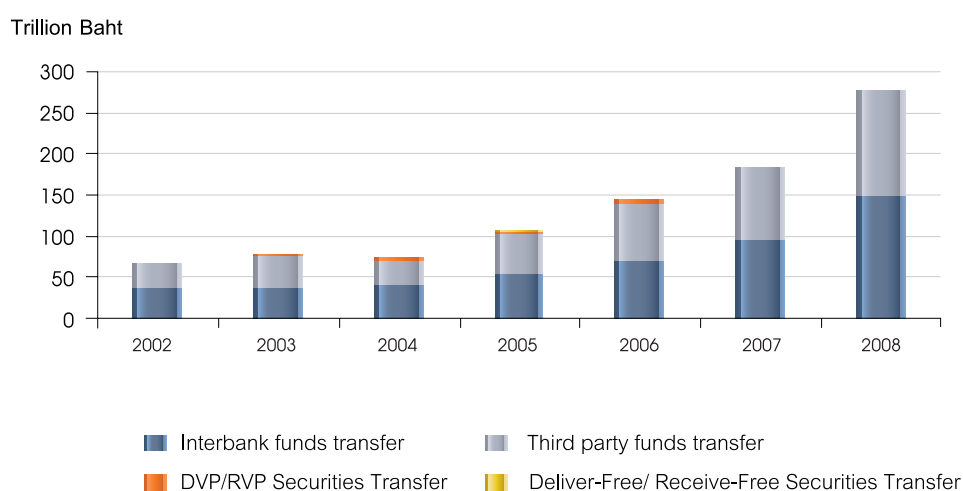


Source: Bank of Thailand

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Figure 13 : Value of BAHTNET Funds and Securities Transfers



Source: Bank of Thailand

3.2.3 Cheque Clearing System

In 2008, the volume of cheque usage (including interbank and intra-bank transactions) totaled 129.1 million or a decline of 0.9 percent from 2007. The overall value of cheque transactions for the year amounted to 62.2 trillion baht or an increase of 11.7 percent from 2007. The use of cheque per capita was 2.04 cheques per person. The collection value per cheque increased from 0.40 million baht to 0.47 million baht, or an increase of 16.1 percent from 2007.

The number of returned cheques for the year was 2.1 million cheques, with an aggregated value of 0.3 trillion baht. Among these cheques sent for collection, 1.4 million were returned because of insufficient funds, or a total of 0.2 trillion baht in value. The volume and value of dishonored cheques due to insufficient funds amounted to 1.1 percent of the total number of cheques, and 0.3 percent of the total collection value, respectively.

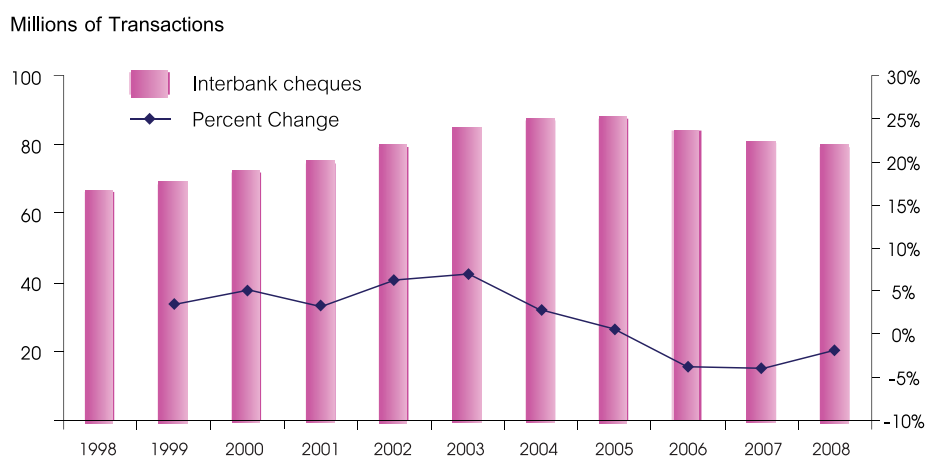
Interbank Cheque Clearing Systems

The interbank cheque clearing systems consists of the Electronic Cheque Clearing System (ECS), the Provincial Cheque Clearing System and the Bill for Collection (B/C)

In 2008, the number of total interbank cheque clearing amounted to 79.2 million, with total value of 37.1 trillion baht. The total volume of the interbank cheque clearing reduced by 1.9 percent from 2007, whereas the total value increased by 14.0 percent from 2007.

The total number of returned cheques in 2008 was 1.14 million, which amounted to 166.28 billion baht. The total volume and the total value of the returned cheques dropped 2.0 percent and 0.5 percent from 2007, respectively.

Figure 14: Volume of Interbank Cheque

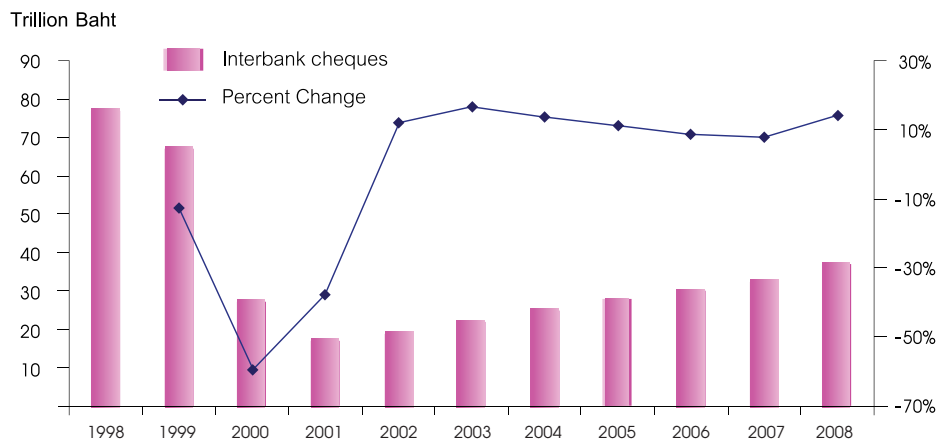


Source: Bank of Thailand

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Figure 15 : Value of Interbank Cheque



Source: Bank of Thailand

In 2008, the volume and value of cheque clearing within Bangkok and vicinity did not differ much from those of the previous year. The volume of cheque clearing within Bangkok and vicinity accounted for 73.0 percent of the total cheque clearing volume and the value of cheque clearings within Bangkok and vicinity accounted for 91.5 percent of the total cheque clearing value. The provincial cheque clearing volume and value accounted for 18.5 percent and 7.5 percent, respectively, whereas bills for collection accounted for 8.5 in volume and 1.0 percent in value

Figure 16 : Volume of Interbank Cheque Classified by Clearing Systems



Source: Bank of Thailand

Intra-bank Cheque Clearing Systems

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BOT began collecting information on intrabank cheque clearing by collecting data from commercial banks and specialized financial institutions in 2006. This data includes volume and value of intrabank cheque collection within Bangkok and vicinity, within provincial areas and intra-regional cheque clearing.

In 2008, the total number of the intra-bank cheque clearing was 49.9 million, or 38.6 percent of the total cheque collection volume. The total value of the intra-bank cheque clearing was 25,061.1 billion baht, or 40.3 percent of the total cheque collection value.

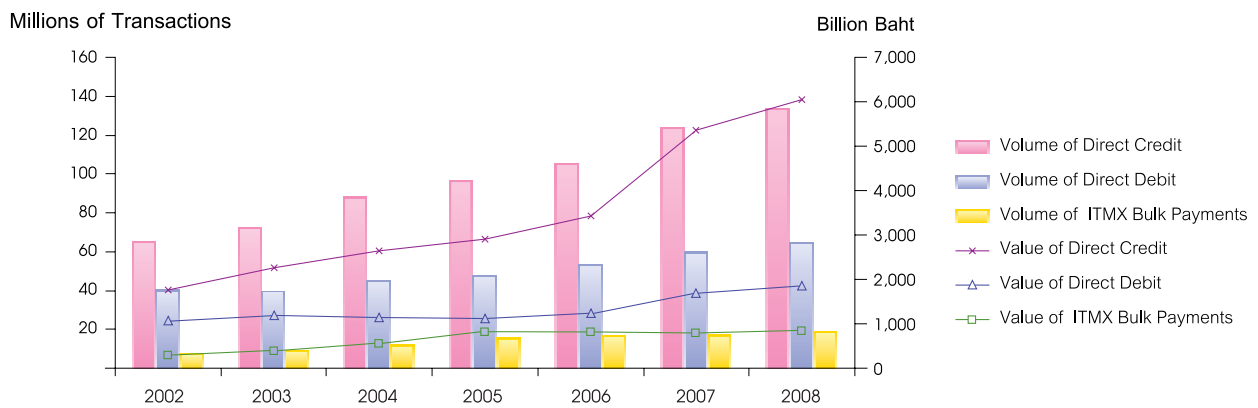
3.2.4 Pre-Authorized funds transfer

The pre-authorized funds transfer is the retail funds transfer system with pre-authorized arrangements of fixed installment amounts and/or significant numbers of payment transactions. It can be categorized as inhouse transactions including credit transfer (Direct Credit), for example, salary payment, dividend payments and returned tax claims and debit transfer (Direct Debit) such as utilities charges, insurance premiums payment, credit card payments, etc. as well as the interbank transactions namely the ITMX Bulk Payment system operated by the National ITMX Company Limited for credit transfer.

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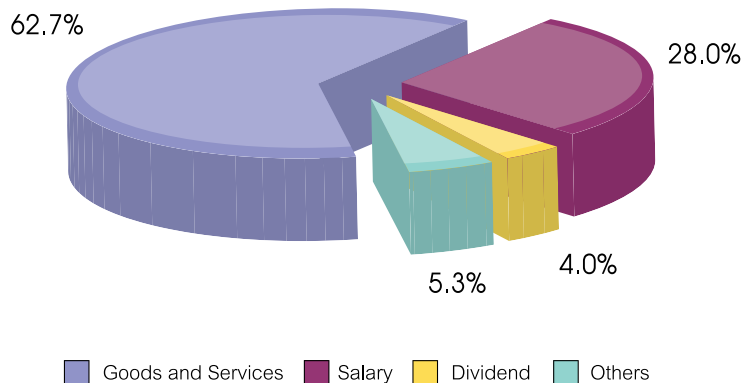
Figure 17 : Volume and value of Pre-Authorized Funds Transfer



Source: Bank of Thailand

In 2008, the total value of pre-authorized funds transfer was 8.7 trillion baht, or an increase of 11.2 percent from 2007. The total volume was 218.20 million transactions, or an increase of 8.1 percent from 2007. The pre-authorized direct credit recorded the highest volume and value of 61.4 percent and 69.3 percent, respectively. The pre-authorized direct debit ranked second with volume and value accounting for 29.8 percent, and 21.2 percent, respectively. The total volume of ITMX Bulk Payments accounted for 8.8 percent and its total value accounted for 9.5 percent.

Figure 18 : Proportion of Value of Funds Transfer via ITMX Bulk Payment system



Source: Bank of Thailand

The interbank retail funds transfers via the ITMX Bulk Payment system in 2008 totaled 19.2 million transactions, with total value amounting to 828.1 billion baht, or an increase of 9.3 percent and 4.4 percent, respectively from 2007. Among all purposes of the interbank retail funds transfer, salary payments ranked the first in terms of transfer volume, or 45.5 percent, seconded by payments for goods and services which accounted for 39.0 percent. However, in terms of value, payments for goods and services took the largest portion of 62.7 percent, seconded by salary payment accounted for 28.0 percent.

For direct credit, the total volume was 134.0 million transactions and the total value was 6,044.4 billion baht, or an increase of 7.9 percent and 13.0 percent respectively from 2007. Among all purposes of the direct credit, salary payments ranked the first, in terms of both transfer volume and value at 51.5 percent and 78.8 percent, respectively.

For direct debit, the total volume was 65.0 million transactions and the total value was 1,846.7 billion baht, increasing of 8.4 percent and 8.7 percent respectively from 2007. Payments for goods and services ranked the first, in terms of both transfer volume and value, or 90.1 percent and 96.6 percent, respectively.

3.2.5 Bank Counter Services

Bill Payments

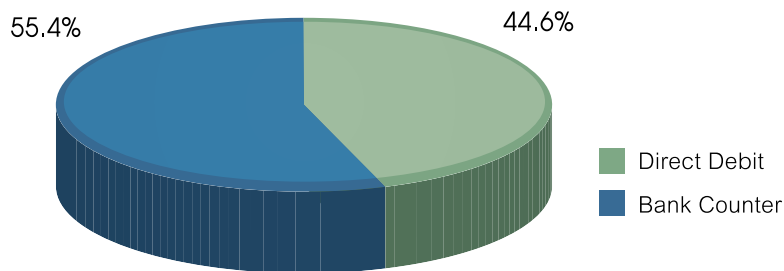
In 2008, payments for utility charges, as well as for goods and services accounted for the largest portion among bill payments via bank counters. This payment channel was more popular than the pre-authorized direct debit. Bill payments via bank counters for utility charges and for goods and services numbered 77.9 million transactions, and amounted to 6,758.0 billion baht, whereas direct debit via bank accounts for the same purpose only numbered 62.8 million transactions, and amounted to 1,663.8 billion baht. Bill payments via bank counters continued its growth both in terms of volume and value. In 2008, bill payments via bank counters increased 7.5 percent in volume and 30.4 percent in value from 2007.

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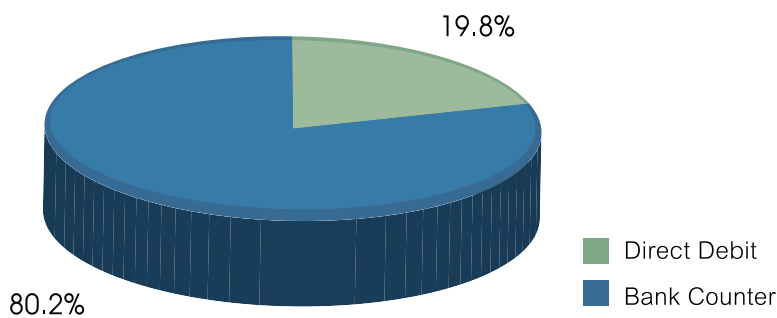
Cash payments still remained the most popular means of payments for bill payments via bank counters, and amounted to 95.0 percent of the overall bill payments. Cheque payments only amounted to 3.1 percent in terms of payment volume, but in terms of payment value, cheque payments possessed the highest portion at 48.1 percent, whereas cash payments accounted for 38.3 percent.

Figure 19 : Volume of Bill Payment via Direct Debit and Bank Counter, 2008



Source: Bank of Thailand

Figure 20 : Value of Bill Payments via Direct Debit and Bank Counter, 2008



Source: Bank of Thailand

Funds Transfers via Online Retail Funds Transfer (ORFT)

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The funds transfers via the Online Retail Funds Transfer (ORFT) at bank counters under the network of the ATM pool continued to receive popularity among users since the inauguration of its service on 15 December 2005. In 2008, the ORFT at counters serviced 8.2 million transactions with total value of 127.7 billion baht, or an increase of 55.3 percent, and 64.3 percent, respectively from 2007.

3.2.6 Plastic Cards

Plastic cards include credit cards, debit cards, and ATM cards. The use of plastic cards for payments, particularly via credit cards and debit cards, played an important role in substituting cash payments for goods and services, as well as for funds transfers. The growth in number of card for debit cards remained higher than credit cards, due to the larger card holder bases, and the fact that credit cards carried limitations on the minimum requirements on the holder's salary scale. ATM cards showed a decline in their outstanding numbers and possible outlook as issuing banks have the tendency to promote the use of debit cards over ATM cards.

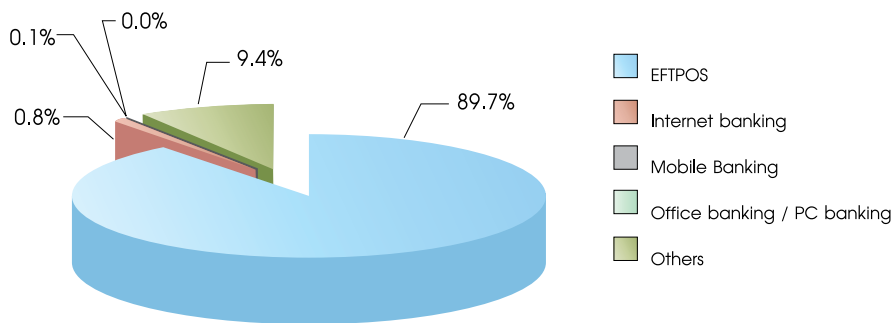
Credit Cards

In 2008, payments via credit cards amounted to 921 billion baht, increasing from 840 billion baht in 2007. The growth rate for credit card usage remained low, dropping from 11.3 percent in 2007 to 9.6 percent in 2008 due largely to the impact of the global recession which compelled card users to be cautious in their spending.

EFTPOS continued to be most popular with cardholders in terms of transactional volume and value, accounting for 89.7 percent and 89.4 percent respectively of the total card usage. Internet banking and mobile banking commanded rather low proportions both in terms of volume and value of usage.

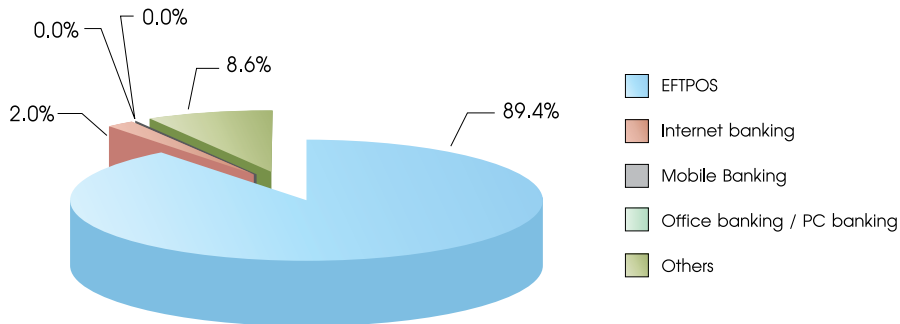
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Figure 21 : Volume of Credit Card Transactions Classified by Channel, 2008



Source: Bank of Thailand

Figure 22 : Value of Credit Card Transactions Classified by Channel, 2008

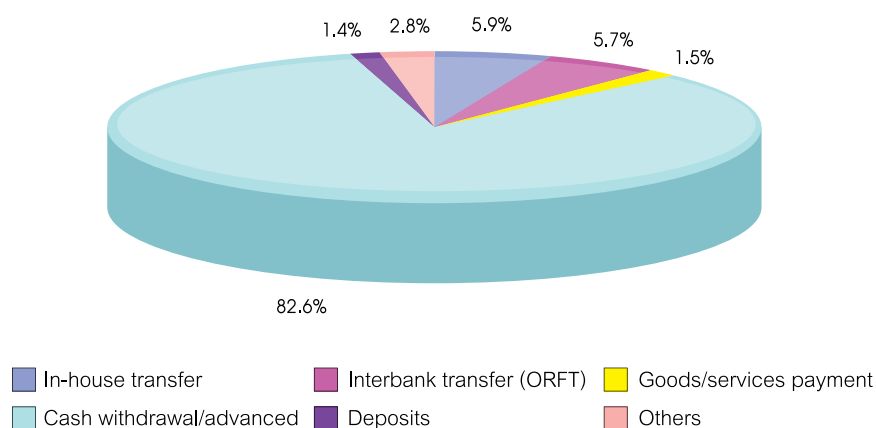


Source: Bank of Thailand

Debit Cards

Similar to ATM cards, cash withdrawal remained the main purpose of use for debit cards. The ratio of debit cards used for funds transfers and payment of goods and services were still low. Out of 760 million transactions made through debit cards in 2008, 83 percent was for funds transfers among accounts within the same banks; funds transfers to other bank accounts and payments of goods and services only accounted for 6 percent and 1.5 percent, respectively. The ratios did not differ much from those of 2007.

Figure 23 : Volume of Debit Cards Transaction, 2008



Source: Bank of Thailand

ATM Cards

In 2008, the usage of ATM Cards⁵ reduced from 571.3 million transactions in 2007 to 531.9 transactions in 2008. The largest drop was cash withdrawals, reduced by 11.4 percent from the prior year, whereas cash deposits and funds transfers via ATM cards significantly increased by 73.0 percent and 13.8 percent, respectively. This reflected a change in consumer behavior which has become more receptive towards the use of ATM terminals for banking transactions. The change benefits ATM users in terms of fewer numbers of visits to bank branches and reduces the operating costs for banks.

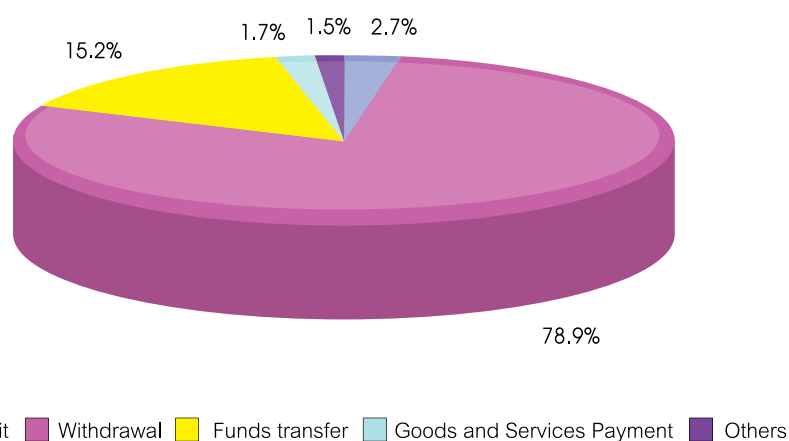
The value of ATM card usage declined 3.2 percent from 2,549.2 billion baht in 2007 to 2,466.5 billion baht in 2008.

⁵ Only for transactions made via ATM cards issued by commercial banks; transactions made via ATM cards issued by state - owned special purpose banks are excluded.

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Figure 24 : Composition of ATM Card Transactions, 2008



Source: Bank of Thailand

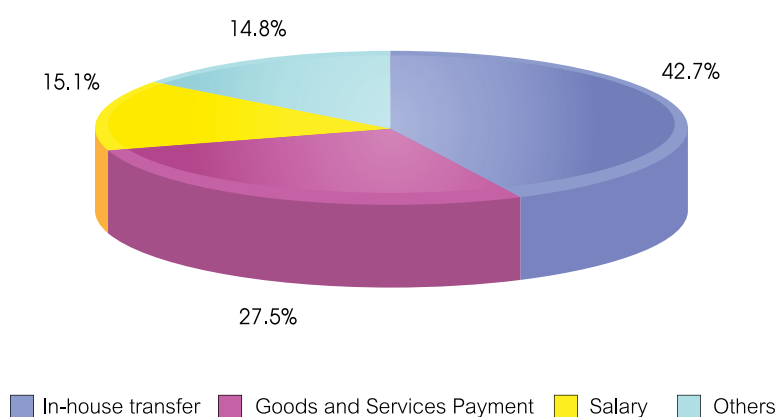
	Volume		Value	
	Millions of Transactions	Percent	Billion Baht	Percent
ATM Cards				
- Withdrawals	419.6	78.9	1,634.1	66.3
- Funds transfers	80.7	15.2	649.4	26.3
- Payment of goods and services	9.0	1.7	36.3	1.5
- Deposit	14.5	2.7	145.5	5.9
- Others	8.0	1.5	1.2	0.0
Total	531.8	100.0	2,466.5	100.0
Debit Cards				
- Withdrawals	627.9	82.7	2,781.7	63.7
- Funds transfers	88.2	11.6	1,481.1	32.5
- Payment of goods and services	11.3	1.5	39.9	0.9
- Deposit	10.9	1.4	121.0	2.8
- Others	21.4	2.8	7.0	0.2
Total	759.7	100.0	4,367.7	100.0

3.2.7 Internet Banking

Internet banking has become well accepted among certain groups of bank clientele, and records a fast growth due to user confidence on the security and reliability of the system. In 2008, internet banking transactions increased 47.9 percent to 31,391,638 transactions from 21,220,469 transactions in 2007, whereas its total transaction value increased 39.3 percent to 6,818.6 billion baht transactions from 4,896.5 billion baht in 2007.

The breakdown of the usage of internet banking services for the year is composed of funds transfers within the same banks (42.7 percent), payments for goods and services (27.5 percent), payments for salary and wages (15.1 percent), and others (14.8 percent).

Figure 25 : Volume of Internet Banking Transactions, 2008



Source: Bank of Thailand

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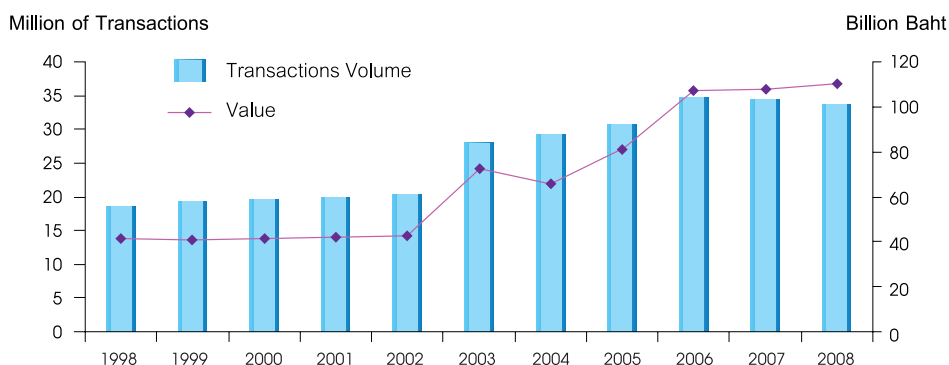
3.2.8 Electronic Money

Presently, services offered for electronic money can be classified into two groups, which are cash value stored in e-money cards and cash value stored as e-money in the service providers' computer network. There are 9 companies and commercial banks in Thailand which are authorized to operate e-money services. They are Thai Smart Card Company Limited, Payment Solution Company Limited, True Money Company Limited, Pays buy Company Limited, Advanced may Company Limited, Advanced Magic Card Company Limited, Siam Commercial Bank Plc., Cavicorn Bank Plc., Tesco Bank Plc.

In 2008, the usage of e-money services slightly increased by 3.1 percent from 2007. The total payment volume via e-money services was 80.0 million transactions. The usage volume increased due to expanded service channels and promotional campaigns. Nevertheless, the total payment value via e-money services declined 3.2 percent from 2007 to 8,383.1 million baht which was in line with a general decline in consumer spending. As of year-end 2008 total e-money cards and e-money accounts were 5.5 million cards/accounts⁶.

3.3 Postal Transfer and Payment

Figure 26 : Volume and Value of Funds Transfer via Pay at Post



Source: Thailand Post Company Limited

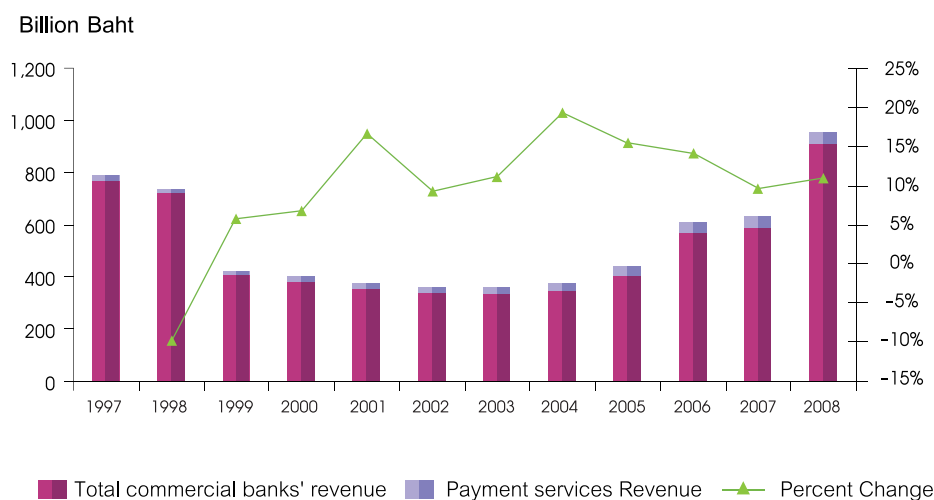
⁶ The payment volume, payment value and numbers of cards/accounts referred therein only accounts for electronic money services which can be used as cash substitution for unlimited number of payments for payments of goods and services and can be topped up.

In 2008, the volume of postal transfers and payments slightly increased by 2.0 percent from 2007, with total value of 110.0 billion baht. The payments were transfers related to payments of invoices, where the Thailand Post Company Limited acted as their authorized payment agent. The total transaction volume declined by 2.2 percent and totaled 33.7 million transactions. The drop resulted from increased competition among payment agents.

The Thailand Post Company Limited has expanded their scope of services to satisfy clients with diversified products, conveniences and speed of services. The new services include online postal orders, express funds transfers via Western Union services, of which the company acts as its agent. However, the new services are similar to the current postal order services and international funds transfer services that the company already offers, therefore the new services competed with its existing services and caused a decline in the payment volume of its postal orders and international funds transfer.

3.4 Revenue from Payment Services

Figure 27 : Revenue from Payment Services



Source: Bank of Thailand

3 Data and Statistics in Payment Systems

76 Figure 27 showed that the total payment revenues of all commercial banks continued to grow with growth rate of 11.0 percent, or 47.7 billion baht in total.

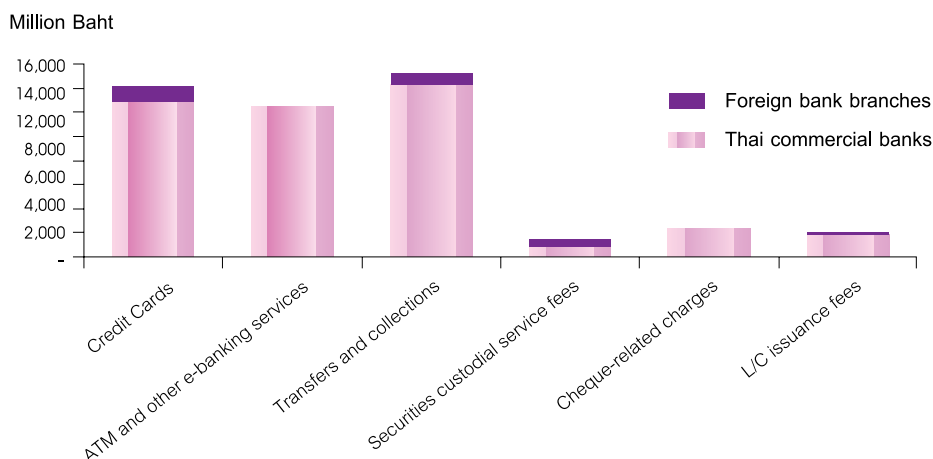
Figure 28 showed that the three major sources of payment revenues for Thai commercial banks were:

1. Funds transfer and collections, which accounted for 32.0 percent of the total payment revenues.
2. Credit cards, which accounted for 28.9 percent of the total payment revenues.
3. ATM cards and electronic banking, which accounted for 27.8 percent of the total payment revenues.

Most of the payment revenues for branches of foreign banks operating in Thailand came from credit card services (40.7 percent), funds transfer and collection (30.7 percent), and securities custodial services (20.6 percent).

The payment service providers which were non-financial institutions remained the active players in this business, posing a long-term competitive threat to commercial banks. Therefore commercial banks should regularly monitor the efficiency of their payment systems, strengthen their market position, and evolve new products and services. Simultaneously, these commercial banks should also form business alliances with other non-bank financial institutions with diversified lines of business to build up their own payment service strength.

Figure 28 : Categorized Revenue from Payment Services, 2007



Source: Bank of Thailand

4

Abbreviations

PSC	Payment Systems Committee
BOT	Bank of Thailand
OTP	Office of Transport and Traffic Policy and Planning (Ministry of Transport)
SNPC	Subcommittee on National Payment Cooperation
APN	Asian Payment Network Forum
ATM	Automated Teller Machine
B/C	Bill for Collection
BAHTNET	Bank of Thailand Automated High-value Transfer Network
BIS	Bank for International Settlements
CPSIPS	Core Principles for Systemically Important Payment Systems
ECS	Electronic Cheque Clearing System
EFTPOS	Electronic Funds Transfer at the Point of Sale
EMEAP	The Executives' Meeting of East Asia-Pacific Central Banks
e-Money	Electronic Money
FSAP	Financial Sector Assessment Program
GDP	Gross Domestic Product
ICS	Imaged Cheque Clearing System
ILF	Intraday Liquidity Facilities
IMF	International Monetary Fund
ITMX	Interbank Transaction Management and Exchange
MFT	Multilateral Funds Transfer
MNCs	Multinational Corporations
NECTEC	National Electronics and Computer Technology Center
NITMX	National ITMX
ORFT	Online Retail Funds Transfer
PvP	Payment versus Payment
RFID	Radio Frequency Identification

4 Abbreviations

78	ROSCs	Reports on the Observance of Standards and Codes
	RSI	Regional Settlement Intermediary
	SMART	System for Managing Automated Retail Funds Transfer
	SRS	Securities Requirement for Settlement
	S.W.I.F.T.	Society for Worldwide Interbank Financial Telecommunication
	TSD	Thailand Securities Depository Co., Ltd.
	WGPSS	Working Group on Payment and Settlement Systems

5

References

Bank of Thailand, "Payment Systems Roadmap 2010", September 2007

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(million baht)

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TABLE 1 : Basic statistical data

	2004	2005	2006	2007	2008 ^P
Population (millions) ¹	61.97	62.42	62.83	63.04	63.39
GDP current price (billion baht) ²	6,489.5	7,092.9	7,841.3	8,493.3	9,102.8
GDP per capita (baht) ²	100,563.70	108,955.48	119,579.36	128,606.64	136,921.05
Exchange rate vis-à-vis US\$ (at year-end)	39.20	41.17	36.04	33.75	34.93

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

¹ Department of Provincial Administration adjusted figures of year 2004

² National Economic & Social Development Board adjusted figures from year 2003-2005

^P Preliminary Data

TABLE 2 : Technological infrastructure

	2004	2005	2006	2007	2008
Total fixed network telephone subscribers (millions)	6.79	7.00	7.04	7.02	6.97
Total mobile telephone subscribers (millions)	27.37	32.00	41.30	51.60	63.33
Postpaid	4.99	5.25	6.32	5.60	6.53
Prepaid	22.38	26.75	34.98	46.00	56.79
Total Internet users (millions)	6.97	9.91	11.41	13.42	16.10
Penetration rates					
Fixed network telephone (%)	10.96	11.21	11.21	11.14	10.99
Mobile telephone (%)	44.17	51.27	65.73	81.86	99.90
Internet (%)	11.25	15.87	18.17	21.28	25.40

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

TABLE 3 : Narrow Money¹ (at year-end, billion baht)

	2004	2005	2006	2007	2008 ^P
Currency	742.27	781.70	806.37	878.33	962.63
Held by business and household sectors	598.74	631.89	654.14	721.38	753.64
Held by commercial banks	126.99	132.65	135.11	140.24	184.76
Held by finance companies	0.00	0.00	0.00	0.00	0.00
Held by specialized banks	16.54	17.16	17.13	16.71	24.23
Demand deposits	232.71	259.51	258.57	279.85	288.90
Demand deposits at Bank of Thailand	6.86	3.30	3.67	3.85	15.11
Demand deposits at commercial banks	222.86	252.03	252.06	271.41	269.77
Demand deposit at specialized banks	2.99	4.18	2.84	4.59	4.02
Narrow Money	829.88	890.22	911.47	999.90	1,041.22
Currency held by business and household sectors as % of Narrow money	72.1%	71.0%	71.8%	72.1%	72.4%
Demand deposits held by business and household sectors as % of Narrow money	28.0%	29.2%	28.4%	28.0%	27.7%

Source: Bank of Thailand

¹ Currency in circulation and demand deposits at commercial banks and specialized banks

^P Preliminary data

TABLE 4 : Settlement media used by non-banks (at year-end, billion baht)

	2004	2005	2006	2007	2008 ^P
Banknotes and coins ¹	598.74	631.89	654.14	721.38	753.64
Demand deposits	232.71	259.51	258.57	279.85	288.90
Narrow money ²	829.88	890.22	911.47	999.90	1,041.22
Broad money ³	7,471	7,927	8,573	9,109	9,942

Source: Bank of Thailand

¹ Banknotes outside depository corporations and coins issued by central government

² Currency in circulation and demand deposits at commercial banks and specialized banks

³ Currency in circulation and all kinds of deposits at commercial banks, specialized banks, and PN issued by financial companies

^P Preliminary data

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TABLE 5 : Settlement media used by banks (at year-end, billion baht)

	2004	2005	2006	2007	2008
Balances held at central bank	46.0	57.0	56.8	51.5	58.5
Required reserves	347.0	375.0	404.8	408.2	426.7
Free reserves	822.0	648.0	743.2	921.2	1,382.2
Transferable deposits at other banks	4.0	6.0	5.1	6.7	5.0
Memorandum item:					
Institutions borrowing from central bank	63.0	113.0	80.1	75.8	19.2

Source: Bank of Thailand

**TABLE 6 : Indicators of the use of various cashless payment instruments.
Volume of transactions (in thousands)**

	2004	2005	2006	2007	2008 ^P
Paper-based ¹ :	86,926	87,365	127,774	130,235	129,126
In-house cheque	nav.	nav.	43,681	49,503	49,900
Interbank cheque	86,926	87,365	84,093	80,732	79,227
Payment cards :	919,211	1,029,713	1,225,961	1,402,398	1,601,273
ATM card ²	506,791	535,298	646,304	592,653	555,826
Debit card ³	210,934	262,484	326,105	538,288	761,142
Credit card ⁴	201,486	231,931	253,551	271,457	284,305
Automated :	146,404	161,885	177,801	203,536	220,128
Direct credit ⁵	87,977	96,828	105,731	124,236	134,010
Direct debit ⁶	45,356	47,825	53,277	59,967	64,985
ITMX Bulk Payment (SMART)	11,862	15,728	17,072	17,568	19,205
BAHTNET ⁷	1,209	1,504	1,721	1,766	1,929

Source: Bank of Thailand

¹ Since 2006, Data include in-house cheque from banks, however, some banks do not report in-house provincial and B/C cheque. Data from some Specialized Financial Institutions are not included.

² Include data from two Special Financial Institutions. Since 2004, debit card data was taken out from ATM card.

³ Data include cash withdrawal transactions from ATM

⁴ Data collected since 2004 and included bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand.

⁵ Intra-bank pre-authorized direct credit

⁶ Intra-bank pre-authorized direct debit

⁷ Since 2002, data include interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

^P Preliminary data

**TABLE 7 : Indicators of the use of various cashless payment instruments.
 Value of transactions (billion baht)**

	2004	2005	2006	2007	2008 ^P
Paper-based¹ :	24,969	27,737	48,200	55,637	62,147
In-house cheque	nav.	nav.	18,080	23,099	25,061
Interbank cheque	24,969	27,737	30,121	32,537	37,086
Payment cards :	4,084	4,752	5,854	6,652	7,919
ATM card ²	2,112	2,360	2,859	2,607	2,645
Debit card ³	1,436	1,766	2,240	3,205	4,354
Credit card ⁴	536	626	755	840	921
Automated :	77,829	110,457	148,778	190,210	286,191
Direct credit ⁵	2,636	2,907	3,436	5,351	6,044
Direct debit ⁶	1,146	1,111	1,238	1,699	1,847
ITMX Bulk Payment (SMART)	553	806	802	793	828
BAHTNET ⁷	73,494	105,634	143,302	182,368	277,472

Source: Bank of Thailand

¹ Since 2006, Data include in-house cheque from banks, however, some banks do not report in-house provincial and B/C cheque. Data from some Specialized Financial Institutions are not included.

² Include data from two Special Financial Institutions. Since 2004, debit card data was taken out from ATM card.

³ Data include cash withdrawal transactions from ATM

⁴ Data collected since 2004 and included bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand.

⁵ Intra-bank pre-authorized direct credit

⁶ Intra-bank pre-authorized direct debit

⁷ Since 2002, data include interbank funds transfer, third party funds transfer, DVP/RVP for securities and Multilateral Funds Transfer.

^P Preliminary data

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TABLE 8 : Notes and coins (at year-end, million baht)

	2004	2005	2006	2007	2008
Notes and coins	742,269	781,698	806,380	878,331	993,148
Notes:	714,650	753,256	773,848	842,624	954,484
500000 baht	118	118	118	117	117
1000 baht	510,434	552,606	571,739	628,175	701,711
500 baht	105,639	99,488	94,712	98,497	119,283
100 baht	69,042	70,768	74,843	82,435	97,484
60 baht	452	458	1,154	1,157	1,161
50 baht	8,132	8,264	8,787	7,819	9,377
20 baht	17,350	18,087	19,038	20,741	21,674
10 baht	3,244	3,228	3,218	3,357	3,351
5 baht	123	123	123	196	196
1 baht	107	107	107	121	121
50 satang	9	9	9	9	9
Coins:	27,619	28,442	32,532	35,707	38,664

Source: Bank of Thailand

TABLE 9 : Institutional infrastructure¹

	2004	2005	2006	2007	2008
Central Bank					
Number of Institutions	1	1	1	1	1
Number of Branches ²	3	3	3	3	3
Number of Accounts ³	1,169	992	366	287	260
Value of Accounts (million baht) ³	335,662	117,607	174,639	151,137	159,678
Thai Commercial Banks					
Number of Institutions	12	16	15	18	18
Number of Branches	3,925	4,228	4,701	5,070	5,477
Number of Accounts	56,780,840	62,391,513	68,154,739	73,235,933	75,259,745
Value of Accounts (million baht)	5,298,553	5,597,040	5,925,451	5,914,318	6,535,094

TABLE 9 : Institutional infrastructure¹

	2004	2005	2006	2007	2008
Specialized Financial Institutions:					
Government Savings Bank					
Number of Institutions	1	1	1	1	1
Number of Branches	588	588	591	598	596
Number of Accounts ⁴	30,214,359	27,078,642	25,884,639	16,448,269	20,883,860
Value of Accounts (million baht)	580,131	583,281	614,234	403,001	702,479
Government Housing Bank					
Number of Institutions	1	1	1	1	1
Number of Branches	109	118	108	135	128
Number of Accounts	366,348	419,658	597,719	837,958	849,405
Value of Accounts (million baht)	331,299	351,019	447,527	409,482	515,149
Bank for Agriculture and Agricultural Cooperatives					
Number of Institutions	1	1	1	1	1
Number of Branches ⁵	595	596	880	931	953
Number of Accounts	12,131,460	13,376,015	18,989,152	19,257,527	20,860,275
Value of Accounts (million baht)	341,879	415,817	467,393	498,491	542,751
Export-Import Bank of Thailand					
Number of Institutions	1	1	1	1	1
Number of Branches	7	11	10	10	10
Number of Accounts	3,071	3,640	3,795	5,747	4,879
Value of Accounts (million baht)	3,928	8,862	6,216	4,655	6,095
Small and Medium Enterprise Development Bank of Thailand					
Number of Institutions	1	1	1	1	1
Number of Branches	80	80	98	99	99
Number of Accounts	nav.	9	40	52	77
Value of Accounts (million baht)	nav.	10,476	5,913	12,889	23,106

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TABLE 9 : Institutional infrastructure¹

	2004	2005	2006	2007	2008
Islamic Bank of Thailand					
Number of Institutions	1	1	1	1	1
Number of Branches	9	27	27	26	26
Number of Accounts	25,553	86,003	nav.	101,544	115,373
Value of Accounts (million baht)	1,654	4,644	8,215	12,964	20,073
Foreign Bank Branches					
Number of Institutions	18	17	17	16	16
Number of Branches	18	17	17	16	16
Number of Accounts	90,910	79,034	83,178	88,419	90,115
Value of Accounts (million baht)	366,761	558,619	594,549	577,881	507,009
Post Office					
Number of Institutions	1	1	1	1	1
Number of Branches	1,146	1,146	1,158	1,176	1,188
Number of Accounts	-	-	-	-	-
Value of Accounts (million baht)	-	-	-	-	-

Sources: Bank of Thailand and Thailand Post Co.,Ltd.

¹ Data collected since 2000

² Since 2004, Lampang office was merged with Chaing Mai office

³ Exclude regional offices

⁴ Data as of 30 November 2006

⁵ Upgrade Service Units to Sub Branches

**TABLE 10 : Payment instructions handled by selected interbank settlement systems.
 Volume of transactions (in thousands)**

	2004	2005	2006	2007	2008
Paper-based:	86,926	87,365	84,093	80,732	79,227
ECS	63,845	64,065	61,445	59,026	57,833
Provincial Cheques	16,476	16,473	15,935	15,056	14,666
B/C ¹	6,605	6,827	6,714	6,649	6,728
Automated:	32,142	45,228	59,872	75,300	100,126
BAHTNET ²	1,209	1,504	1,721	1,766	1,929
ITMX Bulk Payment (SMART)	11,862	15,728	17,072	17,568	19,149
ORFT-ATM (Online Retail Funds Transfer) ³	19,071	27,996	41,079	55,966	79,047

Sources: Bank of Thailand and National ITMX Co., Ltd.

¹ Inter-provincial cheques exchanged at the Electronic Clearing House

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

³ Data collected since 2000

**TABLE 11 : Payment instructions handled by selected inter-bank settlement systems.
 Value of transactions (billion baht)**

	2004	2005	2006	2007	2008
Paper-based:	24,969	27,737	30,121	32,537	37,086
ECS	22,653	25,063	27,175	29,524	33,912
Provincial Cheques	2,039	2,371	2,617	2,667	2,798
B/C ¹	277	303	329	346	376
Automated:	74,161	106,626	144,374	183,509	278,773
BAHTNET ²	73,494	105,634	143,302	182,368	277,472
ITMX Bulk Payment (SMART)	553	806	802	793	823
ORFT-ATM (Online Retail Funds Transfer) ³	114	187	270	349	478

Sources: Bank of Thailand and National ITMX Co., Ltd.

¹ Inter-provincial cheques exchanged at the Electronic Clearing House

² Since 2002, data include inter-bank funds transfer, third party funds transfer, DVP/RVP for securities and multilateral funds transfer.

³ Data collected since 2000

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**TABLE 12 : Securities transfer instructions handled by securities settlement systems.
Volume of transactions (in millions)**

	2004	2005	2006	2007	2008
Bond registry system:					
Equity securities	-	-	-	-	-
Government securities	neg.	neg.	0.01	0.01	0.01
Book-entry system:					
Equity securities	2.11	2.47	2.45	2.36	2.41
Government securities	0.05	0.08	0.06	0.05	0.09

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)**

	2004	2005	2006	2007	2008
Bond registry system:					
Equity securities	-	-	-	-	-
Government securities	8	8	35	23	33
Book-entry system:					
Equity securities	722.0	623.0	694.0	713.6	625.8
Government securities	4,558	6,167	10,666	27,002	58,647

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

TABLE 14 : Number of participants in selected payment and settlement systems

	2004	2005	2006	2007	2008
BAHTNET	69	68	65	67	69
ECS	37	38	40	40	40
Provincial Cheque Clearing B/C ¹	17	18	21	22	23
ITMX Bulk Payment (SMART)	27	26	29	33	33
Bond registry system:					
Equity securities	-	-	-	-	-
Government securities	200,000	235,380	247,700	296,867	308,188
Book-entry system:					
Equity securities	50	73	74	77	91
Government securities ²	3,200	5,124	79	77	91

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

¹ Inter-provincial cheques exchanged at the Electronic Clearing House

² Government securities depository services was transferred from Bank of Thailand to Thailand Securities Depository Co., Ltd. since 2006.

TABLE 15 : Number of ATMs

	2004	2005	2006	2007	2008
Total	10,602	15,784	21,988	25,943	34,796
Bangkok	4,314	6,373	8,675	9,883	12,624
Central	3,381	5,059	6,951	8,818	11,871
Northeast	954	1,375	2,069	2,491	3,673
North	941	1,367	2,072	2,274	3,230
South	1,012	1,610	2,221	2,477	3,398

Source: Bank of Thailand

TABLE 16 : Number of EFTPOS terminals¹

	2004 ^P	2005 ^P	2006 ^P	2007 ^P	2008 ^P
Total	84,000	102,000	208,942	208,942	259,567

Source: Bank of Thailand

¹ Since 2006, data has been collected from banks and some credit card companies.

^P Preliminary data

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TABLE 17 : Number of payment cards

	2004	2005	2006	2007	2008 ^P
Total	42,457,150	49,754,883	55,698,708	57,929,150	61,661,578
Credit card ¹	8,648,100	9,958,571	10,900,566	12,003,369	12,971,694
ATM card ²	25,384,027	28,752,512	30,845,358	22,632,173	22,423,525
Debit Card	8,425,023	11,043,800	13,952,784	23,293,608	26,266,359

Source: Bank of Thailand

¹ Since 2002, data include non-bank

² Some banks revised the data in 2004. Data include Government Saving Bank and Government Housing Bank.

^P Preliminary data

TABLE 18 : Use of postal payment instruments. Volume of transactions (in millions)

	2004	2005	2006	2007	2008
Postal payments total	29.15	30.63	34.69	34.45	33.69
Domestic money order total ¹	27.97	29.66	33.77	33.83	33.19
Domestic postal order	1.12	0.93	0.86	0.58	0.46
Postcheque ²	-	-	-	-	-
International money order	0.06	0.04	0.03	0.02	0.02
Incoming	0.06	0.04	0.03	0.02	0.02
Outgoing	0.00	0.00	neg.	neg.	0.00

Source: Thailand Post Co.,Ltd.

¹ Include domestic money order and Pay at Post

² Postcheque was terminated since 2002

TABLE 19 : Use of postal payment instruments. Value of transactions (billion baht)

	2004	2005	2006	2007	2008
Postal payments total	65.82	81.17	107.06	107.91	110.04
Domestic money order total ¹	64.37	80.19	105.61	106.71	108.86
Domestic postal order	0.29	0.21	0.19	0.14	0.12
Postcheque ²	-	-	-	-	-
International money order	1.16	0.77	0.63	0.53	0.53
Incoming	1.10	0.76	0.62	0.52	0.53
Outgoing	0.06	0.01	0.01	0.01	0.01

Source: Thailand Post Co.,Ltd.

¹ Include domestic money order and Pay at Post

² Postcheque was terminated since 2002

TABLE 20 : Sources of payment revenues of Thai commercial banks (million baht)

	2004	2005	2006	2007	2008
Total	26,994	31,431	36,291	39,858	44,720
Credit card	7,246	8,007	9,792	11,202	12,934
ATM card and e-banking	7,593	9,107	9,976	10,710	12,430
Money transfer and collection	8,420	10,520	11,711	12,977	14,310
Securities custodian	414	548	756	820	856
Cheque-related fee	1,239	1,100	1,965	2,269	2,365
Letter of credit	2,082	2,149	2,091	1,880	1,825

Source: Bank of Thailand

TABLE 21 : Sources of payment revenues of foreign bank branches (million baht)

	2004	2005	2006	2007	2008
Total	2,767	2,936	2,955	3,146	2,990
Credit card	633	717	873	1,083	1,218
ATM card and e-banking	92	60	59	59	57
Money transfer and collection	810	788	763	772	919
Securities custodian	865	808	732	753	611
Cheque-related fee	61	206	244	239	19
Letter of credit	306	357	284	240	166

Source: Bank of Thailand

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TABLE 22 : Daily averages of BOT payment services. Volume of transactions (transactions)

	2004	2005	2006	2007	2008
BAHTNET ¹	4,957	6,138	6,997	7,206	7,716
ECS	260,592	261,492	252,858	240,924	231,334
Provincial Cheque Clearing	67,212	67,236	65,574	61,453	58,663
B/C ²	26,959	27,865	27,630	27,141	26,911
SMART	48,415	64,198	70,255	71,704	76,598

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)

	2004	2005	2006	2007	2008
BAHTNET ¹	302	431	583	744	1,110
ECS	92	102	112	121	136
Provincial Cheque Clearing	8.3	9.7	10.8	10.9	11.2
B/C ²	1.1	1.2	1.4	1.4	1.5
SMART	2.3	3.3	3.3	3.2	3.3

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)

	2004	2005	2006	2007	2008
BAHTNET ¹	7,372	10,165	13,421	11,488	11,969
ECS	539,013	597,938	590,830	514,286	495,463
Provincial Cheque Clearing	124,743	144,682	141,274	129,731	115,119
B/C ²	127,845	128,748	124,162	120,434	125,038
SMART	226,030	234,684	300,353	322,497	361,746

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)

	2004	2005	2006	2007	2008
BAHTNET ¹	509.0	723.1	1,378.4	1,236.6	1,820.6
ECS	178.0	209.3	217.2	247.4	296.3
Provincial Cheque Clearing	14.2	16.4	18.3	20.3	20.9
B/C ²	4.1	4.6	4.7	4.9	5.7
SMART	10.1	16.6	25.5	14.6	15.0

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 credit cards and debit cards via EFTPOS¹
(Monthly average per card, baht)**

	2004	2005	2006	2007	2008 ^P
Credit card	3,203	3,248	3,263	3,331	3,395
Debit Card	nav.	nav.	73	73	75

Source: Bank of Thailand

¹ Domestic and oversea spending of Thai credit cards and Thai debit cards via EFTPOS.

^P Preliminary data.

TABLE 27 : Cash withdrawal via ATM (Monthly average per card, baht)

	2004	2005	2006	2007	2008 ^P
ATM card	nav.	nav.	6,063	7,018	6,056
Debit Card	nav.	nav.	7,328	7,051	7,640

Source: Bank of Thailand

^P Preliminary data.

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TABLE 28 : Use of mobile banking¹

	2004	2005	2006	2007	2008 ^P
No. of agreements	18,312	85,565	133,419	168,434	232,758
Volume of transactions	22,704	329,769	355,048	359,407	4,670,377
Value of transactions (million baht)	745	622	392	336	25,218

Source: Bank of Thailand

¹ Data collected since 2004

Since 2005, data include mobile banking transactions using credit cards, debit cards and account numbers.

^P Preliminary data.

TABLE 29 : Use of internet banking¹

	2004	2005	2006	2007	2008 ^P
No. of agreements	1,581,877	1,852,007	2,139,325	3,135,502	4,009,907
Volume of transactions ²	4,872,407	11,099,729	15,488,741	21,220,469	31,391,638
Value of transactions (billion baht)	1,139.2	2,722.4	3,584.0	4,896.5	6,818.6

Source: Bank of Thailand

¹ Data collected since 2000

² Since 2004, enquiry transactions were excluded

^P Preliminary data

TABLE 30 : Use of ORFT via ATM and counter. Volume of transactions (in thousands)

	2004	2005	2006	2007	2008
Total ORFT	19,071	27,996	43,279	61,234	87,225
ATM	19,071	27,996	41,079	55,966	79,047
Counter ¹	nav.	nav.	2,200	5,267	8,177

Source: National ITMX Co., Ltd.

¹ Data collected since 2006

TABLE 31 : Use of ORFT via ATM and counter. Value of transactions (billion baht)

	2004	2005	2006	2007	2008
Total ORFT	114	187	293	427	606
ATM	114	187	270	349	478
Counter ¹	nav.	nav.	23	78	128

Source: National ITMX Co., Ltd.

¹ Data collected since 2006.

TABLE 32 : Bill payment at bank counters. Volume of transactions (in thousands)

	2004	2005	2006	2007	2008 ^P
Total bill payment ¹	nav.	nav.	66,889	72,471	77,896
Cash	nav.	nav.	58,806	69,135	74,011
Cheque	nav.	nav.	1,457	1,889	2,417
Others	nav.	nav.	6,626	1,446	1,468

Source: Bank of Thailand

¹ Data collected from banks since 2006.

^P Preliminary data

TABLE 33 : Bill payment at bank counters. Value of transactions (billion baht)

	2004	2005	2006	2007	2008 ^P
Total bill payment ¹	nav.	nav.	3,909	5,182	6,758
Cash	nav.	nav.	898	1,362	2,586
Cheque	nav.	nav.	1,904	2,241	3,249
Others	nav.	nav.	1,107	1,578	923

Source: Bank of Thailand

¹ Data collected from banks since 2006.

^P Preliminary data

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TABLE 34 : Use of e-Money¹

	2004	2005	2006	2007	2008
No. of cards/accounts	nav.	nav.	3,190,135	3,689,484	5,477,324
Volume of transactions	nav.	nav.	23,644,155	75,642,216	77,953,841
Value of transactions (million baht)	nav.	nav.	5,532.4	8,660.9	8,383.1

Source: Bank of Thailand

¹ Data collected since 2006 and excluded top-up cards.

**TABLE 35 : Fraud through specific payment channels and payment instruments¹
(million baht)**

	2004	2005	2006	2007	2008 ^P
Total fraud	nav.	nav.	345	620	519
Payment channels ²	nav.	nav.	90	389	315
Payment instruments ³	nav.	nav.	254	231	204

Source: Bank of Thailand

¹ Data collected from banks, some special financial institutions and some credit card companies since 2006.

² Banks report only final result. Fraud through specific payment channels include telephone banking, mobile banking, internet banking, pass book and other channels.

³ Banks report only final result. Fraud via specific payment instruments include cheque, credit card, ATM card, Debit card, prepaid card and other cards.

^P Preliminary data

Symbols Used In The Statistics Table	Definition
"-"	No information
"nav."	No available information or data
"neg."	So negligible in quantity that they can be ignored.
"0"	Zero or near zero in quantity

Table 1	<ul style="list-style-type: none"> - Gross Domestic Product in Current Prices - Average foreign exchange rate
Table 6 - 7	<ul style="list-style-type: none"> - From 2007 onward, data on cheque transactions include the usage of both in-house and interbank cheques. The data is compiled from all commercial banks, together with three state owned special-purpose banks. - Credit transfer data refers to in-house funds transfer under pre-authorized direct credit. - Debit transfer data refers to in-house funds transfer under pre-authorized direct debit. - Since 2002, BATHNET data includes interbank funds transfer, third party funds transfer, DVP/RVP for securities and multilateral funds transfer. - Since 2003, data on credit card payments also includes non-bank payments from credit cards as appears in the new reporting form prescribed on 12 November 2002 (Circular Letter: SorNorSor (21) Wor. 207/2545). - Since 2004, data on volume and value of debit card transactions were taken from data on volume and value of ATM card transactions. - Since 2004, data on volume of credit card transactions included bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand.
Table 9	<ul style="list-style-type: none"> - Excludes data on number of accounts and outstanding amounts at Bank of Thailand's regional offices.

7 Note on Statistical Tables

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Table 10-11	<ul style="list-style-type: none"> - Data on ORFT-ATM has been collected since 200 - Data on bills for collection (B/C) refers only to bills for collection submitted to the Electronic Clearing House in Bangkok. - Since 2002, the BATHNET data includes interbank funds transfer, third party funds transfer, DVP/RVP for securities and multilateral funds transfer.
Table 12-13	<ul style="list-style-type: none"> - Equity securities settlement only processes via Scripless Securities Settlement System.
Table 16	<ul style="list-style-type: none"> - Since 2006, data on the numbers of EFTPOS terminals represents information collected from all commercial banks and some credit card companies.
Table 17	<ul style="list-style-type: none"> - Since 2002, data on numbers of credit card also include non-bank credit cards as appeared in the new reporting form prescribed on 12 November 2002 (Circular Letter: SorNorSor (21) Wor. 207/2545).
Table 18-19	<ul style="list-style-type: none"> - Data on domestic postal orders represents all domestic postal payments which include domestic postal orders and pay-at-post
Table 22-25	<ul style="list-style-type: none"> - Data on bills for collection (B/C) refers only to bills for collection submitted to the Electronic Clearing House in Bangkok. - Since 2002, the BAHTNET data includes interbank funds transfer, third party funds transfer, DVP/RVP for securities and multilateral funds transfer.
Table 26	<ul style="list-style-type: none"> - Average monthly spending of domestic debit cards and credit cards paid via EFTPOS terminals inside and outside Thailand.
Table 29	<ul style="list-style-type: none"> - Since 2004, data on internet banking transactions exclude transaction enquiry.
Table 34*	<ul style="list-style-type: none"> - Data on electronic money does not include prepaid-mobile-recharge cards.
Table 35	<ul style="list-style-type: none"> - Data collected from some commercial banks and credit card companies.

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