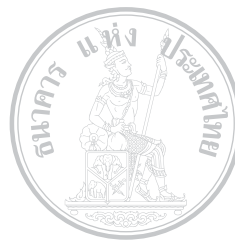


ธนาคารแห่งประเทศไทย

PAYMENT  
SYSTEMS  
REPORT



2010

PAYMENT SYSTEMS REPORT

# Payment Systems Report 2010



June 2011



# Key payment statistics in 2010

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Total population	63.9	million
Nominal Gross Domestic Product (GDP)	10,102.9	billion baht

## Technological Infrastructure

- Number of fixed-line telephone subscribers per 100 people 10
- Number of mobile phone subscribers per 100 people 114



## Payment Statistics

- Number of Thai commercial banks 17 with 5,961 branches
- Number of foreign commercial banks 15 with 15 branches
- Number of Specialized Financial Institutions branches 2,002 branches
- Number of post office branches 1,281 branches
- Number of Automated Teller Machines (ATM) 44,468 terminals
- Number of EFTPOS machines 287,151 terminals
- Number of credit cards 14,196,173 cards
- Number of debit cards 34,130,520 cards
- Number of ATM cards 20,991,627 cards
- Currency in circulation per capita as of 31 December 2010 14,671 baht per capita
- Average cheque usage per capita<sup>1</sup> 2 cheques per capita per year
- Monthly average value of credit card payments<sup>2</sup> 3,764 baht per credit card
- Monthly average value of cash withdrawals via ATM card 6,767 baht per ATM card
- Monthly average value of debit card payments<sup>3</sup> 74 baht per debit card
- Monthly average value of cash withdrawals via debit card 9,165 baht per debit card

<sup>1</sup> Average cheque usage per capita includes both inter-bank and intra-bank cheques

<sup>2</sup> Refers only to payments for goods and services through EFTPOS within and outside Thailand using domestically issued credit cards

<sup>3</sup> Refers only to payments for goods and services through EFTPOS within and outside Thailand using domestically issued debit cards

# Message from the Chairman of the Payment Systems Committee

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The Bank of Thailand (BOT) and its Payment Systems Committee (PSC) are entrusted with an important role in fostering the efficiency, safety and soundness of Thailand's payment systems, which are key infrastructures to sustain economic development.

In the past year, the PSC defined key payment systems policies and initiated many payment systems development projects including, for example, the restructuring of fees and charges to encourage businesses' use of electronic funds transfers instead of paper cheques, the reduction in inter-provincial ATM fees to enhance fair treatment between Bangkok and regional residents, and the development of an Imaged Cheque Clearing and Archive System (ICAS) to replace physical transport and handling of cheques to allow greater cost efficiency and timeliness.

Implementation of the aforementioned projects to enhance payment systems efficiency was in line with international best practices. Nevertheless, Thailand's payment systems still face the following four challenges.

The first challenge is to decrease the reliance on cash transactions given their high handling and management costs. At present, Thailand's proportion of cash transactions remains quite high. The PSC thus formulated a strategy to increase the use of electronic payments, which are far more efficient and cost-saving. In the first phase, efforts will be focused on encouraging debit card usage. In this regard, the PSC deemed it appropriate to develop a local switching system to be used instead of going through international centres. Such an effort will help reduce costs for both banks and retailers. The PSC will also collaborate with other related agencies in formulating measures to promote greater debit card usage.

The next challenge is to foster payment systems linkages. Currently, Thailand's various payment systems services are more or less stand-alone and payment system development is carried out by each service provider independently. This not only impedes efforts to link the systems together but also duplicates investment and hinders economies of scale. Therefore, it is crucial to develop payment systems that foster linkages, both locally and cross-border, for example among ASEAN countries.

The third challenge is to create payment systems innovations that respond to changing customer needs and business models. In this regard, payment systems innovations should be based on a common standard that enables widespread product linkages and shared usage. This will also allow for ease of entry for new service providers, which in turn helps enhance competition both in terms of price and efficiency.

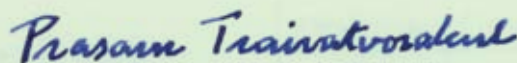
The final challenge is to foster greater consumer confidence in the payment systems. Recently, reports on payment systems fraud have been quite damaging for consumer confidence. Thus, there is a pressing need to enhance financial literacy and understanding of consumers in order to rebuild their confidence in the systems' safety measures. At the same time, concerned agencies should work closely together to develop a monitoring system and safety measures that are based on a common set of standards so that efficiency and investment saving can be maximized.

In dealing with these four challenges, in 2011 the PSC endorsed a Payment Systems Roadmap, which provides a framework for long-term payment systems development. The roadmap is consistent with the Financial Sector Master Plan Phase II, which consists of three main pillars – (1) reduction of system-wide operating cost, (2) promotion of competition and financial access; and (3) strengthening of financial infrastructures.

In this regard, implementation of payment systems policies will give higher priority to stakeholders' interests, particularly those of the service providers. In addition to asking for cooperation from all concerned parties in advancing Thailand's payment systems development efforts toward the planned direction, the PSC will also consider appropriate measures and incentives to help stimulate the progress of various projects in meeting their goals.

Moreover, the BOT also reorganized the functional departments pertaining to financial stability and corporate support services whereby the Payment Systems Policy Department is now part of the Financial Institutions Policy Group. The reorganization aims to unify efforts on policy formulation and supervision of financial institutions and payment systems, thus creating synergy and alignment in the BOT's policy deliberation in various areas, as well as fostering clarity and efficiency in policy implementation and creating a single point of contact for financial institutions and the public.

Finally, on behalf of the PSC, I am proud to be a part in Thailand's payment systems development. I would like to thank all stakeholders, from both the public and private sectors, for the dedication, cooperation and support in driving our projects forward. I am confident that with such great enthusiasm, together we can make Thailand's payment systems efficient, sound, safe and in line with international standards.



(Mr. Prasarn Trairatvorakul)

Chairman of the Payment Systems Committee

5 April 2011

# The Payment Systems Committee (PSC)

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## Chairman

**Mr. Prasarn Trairatvorakul**

Governor

### Responsibilities of the Payment Systems Committee (PSC)

Section 17 of the Bank of Thailand Act mandates the establishment of a Payment Systems Committee (PSC) for formulating the policies and monitoring the implementation of the policies on payment systems under the supervision of the BOT, and on inter-bank clearing and settlement systems.

## Vice Chairman



**Mr. Krirk Vanikkul**

Deputy Governor

Financial Institutions Stability

## Committee Members



**1. Mrs. Suchada Kirakul**

Deputy Governor

Corporate Support Services

## Committee Members



**2. Mr. Chatsiri Soponpanich**  
Chairman of the Thai Bankers'  
Association



**3. Mr. Somkiat Anurath**  
Vice Chairman  
Thai Chamber of Commerce



**4. Miss Suthirat Ratanachote**  
Deputy Director  
The Comptroller General's Department



**5. Mrs. Saowanee Suwannacheep**  
Commissioner  
Electronic Transactions Commission

## Secretary



**6. Miss Pimpa Thawarayut**  
Assistant Governor  
Financial Institutions Policy Group





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# 1

## Payment systems policy and oversight

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The BOT places great importance on maintaining payment systems stability. In this connection, the Bank of Thailand Act B.E. 2551 requires that the Payment Systems Committee (PSC) be set up to formulate policies for the payment systems under the BOT's oversight and the clearing systems between financial institutions to ensure their safety and efficiency. The PSC is also tasked with monitoring of the BOT's progress in establishing or supporting the establishment of a payment system.

To foster greater clarity in Thailand's payment systems development as well as align with technological advancement and needs of stakeholders, both the service users and providers, the PSC has endorsed the development of a Payment Systems Roadmap. The Roadmap is a medium- to long-term framework for the payment systems development with a clear strategic plan that encourages involvement of stakeholders, both public and private, in the development process, as well as enables them to devise business plans that are in line with the overarching strategic plan.



### Box 1: The Payment Systems Roadmap

Since the past, the BOT has already formulated two Payment Systems Roadmaps as follows.

#### **The Payment Systems Roadmap 2004**

This Roadmap was a payment systems development framework for 2002 - 2004 with the aim to establish the necessary foundations for Thailand's payment systems. The main plans under the Roadmap included:

- 1) establishing a platform for cooperation among service providers;
- 2) compiling national payment systems statistics;
- 3) drafting necessary laws to regulate the payment systems;
- 4) setting the payment systems infrastructure and standards; and
- 5) fostering cross-border payment systems linkages.

The main results of the Roadmap included, firstly the **passing of the Royal Decree Regulating Electronic Payment Service Business B.E. 2551** to ensure the financial and commercial soundness of service providers, promote confidence in the electronic data system, prevent damages to the public, and encourage uses of electronic payments. Next, there was the joint **establishment of the National ITMX Co. Ltd.** to serve as the developer and provider of inter-bank payment and transfer services in order to reduce costs and increase the connectivity between various payment services, thereby enhancing efficiency and safety. There was also the **setting of barcode standards for bills statement**, for example electricity, water and telephone bills. Finally, the ASEANPay project was developed to foster inter-regional ATM usage.

#### The Payment Systems Roadmap 2010

This Roadmap was aimed at establishing cooperation among public and private entities to foster greater usage of electronic payments and transfers by offering efficient, safe and fair services.

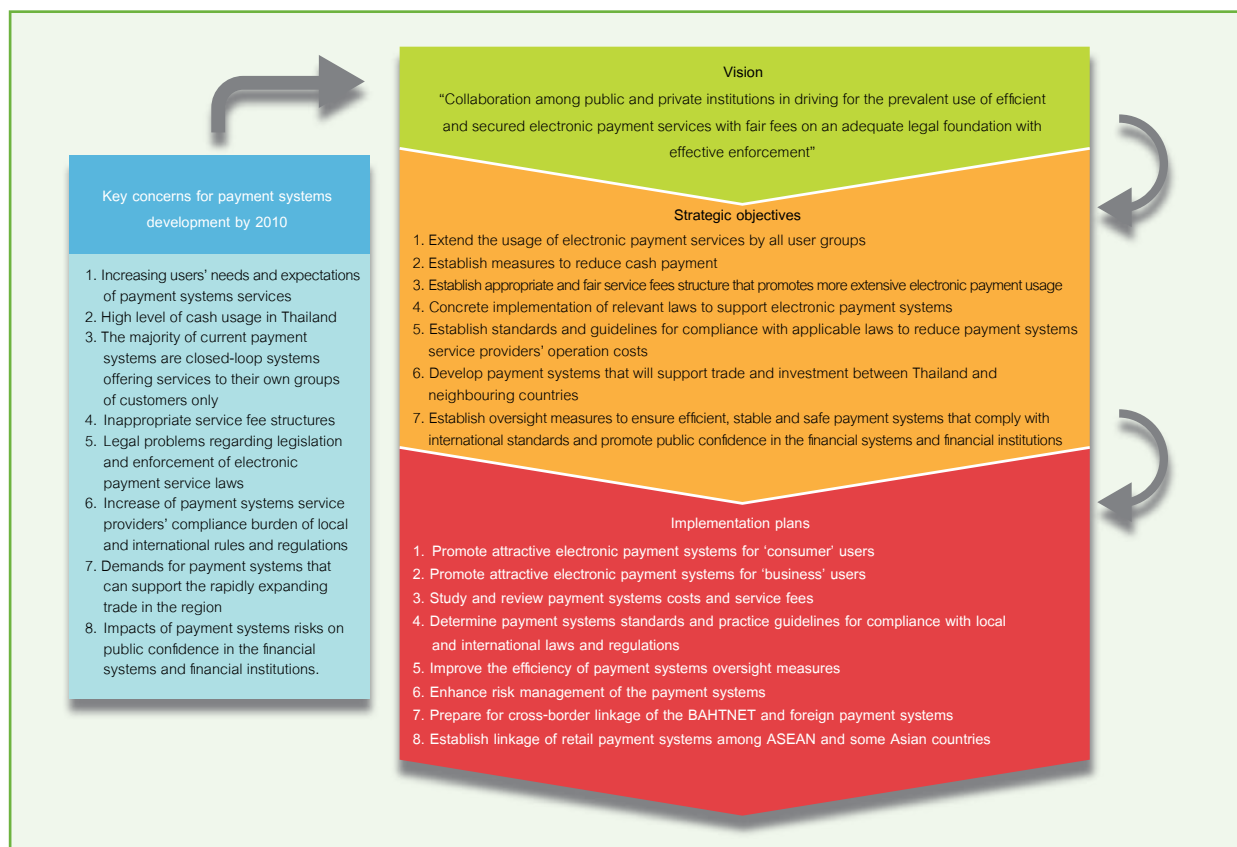
The BOT began to develop this Roadmap since 2006 where important stakeholders within the payment systems namely financial institutions, retailers, independent academics, and regulators were closely consulted. The process enabled key concerns for the payment systems development to be identified as well as allowed the vision, strategic objectives, and various implementation plans to be formulated. In this regard, a working group consisting of experts from both the public and private sectors was formed. Members of the working group included for example, the Thai Bankers' Association, the Association of International Banks, Specialized Financial Institutions, the Thai Chamber of Commerce, the National Electronics and Computer Technology Center (NECTEC), Thailand Development Research Institute, the National Economic and Social Development Board, the Revenue Department, the Comptroller General's Department, the Thai Customs Department, and the Excise Department.





# 1 Payment systems policy and oversight

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Under the Payment Systems Roadmap 2010, the BOT implemented infrastructure development projects in various areas such as legal, technological, and risk management. Progress of the Roadmap, major developments of the payment systems that the BOT operates, and oversight of service providers are summarized as follows.

## 1.1 Infrastructure development

### 1.1.1 Local switching system

The PSC approved the guidelines to promote usage of electronic cards instead of cash and spearheaded the development of a local switching system to handle transactions in order to reduce the reliance on international switching centres and reduce transaction costs incurred by financial institutions and retailers,

for example the fees paid to international switching centres and cash management costs.

In 2010, the BOT together with a working group consisting of members from banks, businesses, and related agencies undertook a feasibility study on the development of such a system in various areas including the security system, cost savings, and legal issues, as well as monitored the development progress carried out by National ITMX - the assigned local switching centre.

Going forward, the BOT and the working group plan to (1) issue guidelines and plans to ensure the readiness of the system, (2) establish an appropriate fee structure that reflects lower operating costs and is fair for all stakeholders, (3) formulate a plan to promote electronic card usage in place of cash, for example, tax incentives for both retailers and consumers, and (4) promote the issuance of local brands to be used with the local switching system.

### 1.1.2 National payment message standard

The PSC agreed on the development of a common message format to improve the efficiency in the exchange of electronic data between users and financial institutions, thereby allowing for ease of data linkage as opposed to the current difficulty that stems from using multiple formats. Adoption of a common standard will help reduce cost and data management burden as well as increase the convenience for users in performing a transaction.



In this regard, the BOT hired NECTEC to develop a payment message standard that complies with ISO 20022 and the Electronic Transactions Act B.E. 2544 for 6 types of payment system services, namely direct credit, direct debit, cheque direct, ITMX bulk payment, high-value fund transfers through BAHTNET, and

# 1 Payment systems policy and oversight

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international payment, whereby the business sector and financial institutions were closely consulted. Moreover, the BOT signed a Memorandum of Understanding (MOU) with 18 corporates and financial institutions in order to take part in a pilot project to begin utilizing and promoting such standard during 2011-2012.

## 1.1.3 National Payment Card Standard: NPCS

The PSC endorsed the guidelines to promote the use of e-Money open loop to allow interoperability between service providers. A common standard for electronic payment connectivity based on the Interoperable Security Access Module (InterOP SAM) was established. In addition, a National Payment Card Standard was set as a main standard in the issuance of electronic cards by new service providers. Such standard will incorporate a flexible information structure to handle different usages, enable data transfers with other service providers, and comply with international standards. This will allow users to use their electronic cards for payments more easily and widely. The National Payment Card Standard will also apply to local debit card schemes as well as e-Money prepaid cards.

In 2010, the BOT hired a consultant to develop the NPCS as well as the InterOP SAM prototype in accordance with the Terms of Reference that were agreed by the e-Money working group. The BOT also consulted with the working group regarding the set-up of a Central Clearing House and the establishment of a fee structure to handle e-Money open loop.





#### 1.1.4 Resolution guidelines for inter-bank retail transfer errors

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The PSC endorsed the resolution guidelines for inter-bank retail transfer errors that were jointly developed by the BOT and commercial banks. Such guidelines establish a common standard for banks in resolving errors in retail inter-bank transfers, thus providing convenience for users and expediting the resolution process. In this way, conflicts and complaints can be minimized.

Such guidelines will cover inter-bank retail transfers through ATM, counter service, internet, pre-authorized bulk payment – credit transfer, and inter-bank deposit through Automatic Deposit Machine (ADM). Errors resulting from both users and staff of the transferring bank, for example, mistakes in filling out forms or data entering, will be covered by the guidelines.

In this connection, the BOT has already disseminated the agreed guidelines to the Thai Bankers' Association, the Association of International Banks, and SFIs for adoption since March 2010.

## 1.2 Restructuring of payment systems fees and charges

Consultations between the BOT and the Thai Bankers' Association were held to review alternatives in the restructuring of payment systems fees and charges. The restructuring was aimed to achieve greater fairness and appropriateness, thereby reducing the burden and operating cost of both service providers and consumers as well as promoting the use of electronic payments instead cash and cheques that incur high management costs.

This consultative process led to an adjustment in the fee structure for ITMX bulk payment – credit next day transactions that became effective in mid-December 2010. The restructuring of the fee structure for ATM usage will be effective in the second quarter of 2011.

# 1 Payment systems policy and oversight

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Table 1: Summary of the restructuring of payment systems fees and charges by the Thai Bankers' Association and the Bank of Thailand

Current fees	New fees	Effective date
<p>1. NITMX Bulk Payment - Credit Next Day)</p> <ul style="list-style-type: none"> <li>- ≤ 100,000 baht charged at 12 baht</li> <li>- &gt; 100,000 – 500,000 baht charged at 40 baht</li> <li>- &gt; 500,000 – 2,000,000 baht charged at 100 baht</li> </ul>	<p>A single fee not exceeding 12 baht/transaction (Maximum transfer of 2,000,000 baht/ transaction)</p>	15 December 2010
<p>2. Inter-provincial in-house transfers via ATM</p> <p>Most banks charge 10 baht for each 10,000 baht transferred (minimum 10 baht and maximum 1,000 baht) + service charge of 10 baht</p>	<p>Free once a month and 15 baht/ transaction onwards</p>	By 31 March 2011
<p>3. Inter-provincial in-house withdrawals via ATM</p> <p>Most banks charge 10 baht for each 10,000 baht withdrawn (minimum 10 baht and maximum 1,000 baht) + service charge of 10 baht</p>	<p>Not exceeding 15 baht/transaction</p>	By 31 March 2011
<p>4. Intra-provincial inter-bank withdrawals and balance enquiries via ATMs</p> <p><u>Bangkok</u></p> <ul style="list-style-type: none"> <li>• Free 4 times/month and not exceeding 5 baht/ transaction for the 5<sup>th</sup> time onwards</li> </ul> <p><u>Outside Bangkok</u></p> <ul style="list-style-type: none"> <li>• Minimum of 20-25 baht/transaction and an additional charge not exceeding 5 baht/ transaction for the 5<sup>th</sup> time onwards</li> </ul>	<p>Free 4 times/month and an additional charge of not exceeding 10 baht/ transaction for the 5<sup>th</sup> time onwards*</p> <p>Same rate nation-wide</p>	By 30 June 2011
<p>5. Inter-provincial inter-bank withdrawals via ATMs</p> <p>Most banks charge 10 baht for each 10,000 baht withdrawn, minimum 20-25 baht/transaction, and an additional charge not exceeding 5 baht/ transaction for the 5<sup>th</sup> time onwards</p>	<p>Not exceeding 20 baht/transaction and an additional charge not exceeding 10 baht/transaction for the 5<sup>th</sup> time onwards*</p>	By 30 June 2011

\* The additional charge not exceeding 10 baht/transaction for the 5th time onwards for item 4 and 5 will count the total number of inter-bank withdrawals/transfers via ATMs for intra-provincial usage (4) and inter-provincial usage (5).



Furthermore, the BOT has provided a financial service fee comparison table on its website for users to compare fees that each bank, credit card company and personal loan company charges for consumers to use as a source of information for their decision making.

The BOT has also developed an educational multimedia tool on its website to provide payment services knowledge to businesses, the general public and students. The easy-to-understand media is user-friendly and is designed to help users decide on an appropriate service for their needs.

#### Box 2: Benefits of bulk payment

The inter-bank Bulk Payment System previously known as SMART is a system used for pre-authorized transfers from a customer's account at one bank to another customer's account at a different bank, anywhere nation-wide. Execution is usually done in bulk, for example, direct credit of employees' salaries, payment for goods and services, and direct credit of shareholders' dividends.

The Bulk Payment System is operated by the National ITMX Ltd. (NITMX) - a private company owned by 11 Thai banks under the supervision of the Bank of Thailand. Currently, two types of services are offered namely the ITMX Bulk Payment Credit-Next Day and the ITMX Bulk Payment Credit-Same Day. (List of participating banks is available on NITMX's website: [www.itmx.co.th](http://www.itmx.co.th))

Benefits of bulk payment are various, including:

- No requirement to open an account at many banks, thus making funds management an easy task



# 1 Payment systems policy and oversight

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- Provides convenience for the receiver of funds who does not need to hold an account at the same bank as the transferor
- Transfer is accurate, timely and safe
- Application of one nation-wide fee, which can be cheaper than in-house transfers, particularly inter-provincially
- Transaction can be pre-authorized, thus reducing paperwork, for example, cheque writing and cash counting, thereby reducing mistakes.



## 1.3 Payment systems services operated by BOT

### 1.3.1 Bank of Thailand Automated High-value Transfer Network (BAHTNET)

BAHTNET is a high-value transfer network developed and operated by the BOT to reduce inter-institutional settlement risks, create fast and secured payment service, and act as the main financial infrastructure for real time gross settlement between institutions. Major services provided by BAHTNET include inter-bank transfers, third-person transfers, and inter-bank messaging services.

The BOT's progress on BATHNET operations in 2010 are as follows.

#### 1) BOT-Electronic Financial Service: BOT-EFS

The BOT is in the process of developing the BOT-EFS with the aim to modernize payment system architecture in order to handle all of BOT's financial services. These consist of deposits and securities, BAHTNET and other services. The project will also add to the payment systems flexibility and agility, enabling it to easily adapt to new types of transactions. This will help enhance the accuracy, effectiveness and stability of financial transactions.

In 2010, the BOT drafted the details of business requirements and prepared to hire a consultant to design the software architecture. The necessary hardware and software were also determined. The development will begin in 2011 and is expected to be ready for service in 2012.

2) Securities Requirement for Settlement: SRS

The BOT established the securities requirement for settlement in BAHTNET whereby financial institutions are required to hold securities approved by the BOT as a means to reduce settlement risk, which can affect liquidity conditions of other financial institutions. In this regard, the BOT held consultations with BAHTNET participating financial institutions as well as other institutions including Thailand Clearing House Company Limited and NITMX who act as the senders of settlement instructions to design guidelines that are most appropriate, in line with BAHTNET users' needs, and able to mitigate risks to the payment systems and financial institutions overall.

3) Revisions to the laws on Payment Finality and the Zero Hour Rule

The BOT is in the process of submitting recommendations to the Sub-committee on the Amendments to the Bankruptcy Act B.E. 2483 on Payment Finality and non-enforcement of the Zero Hour Rule to be applied to payment orders that are executed by a systemically important payment system. Such revisions will make the BAHTNET system more comparable with international standards as well as prevent the loss occurred in case that a BAHTNET participant who are declared insolvent by Court, whose completed transactions may be revoked under current legislations. From consultations with the Secretariat to the Sub-Committee, there are two ways to amend the Act: 1) make revisions to the sections concerning the BOT; and 2) draft a new Act.





# 1 Payment systems policy and oversight

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Given that amendments to the Bankruptcy Act B.E. 2483 may affect the structure and many principles of the Act, together with the fact that only some parts had already been drafted, the PSC assessed that it may be more appropriate to follow the second route. As a result, the working group on the drafting of the Payment Systems Act consisting of members from the Thai Bankers' Association, the Association of International Banks, SFIs, and the Securities and Exchange Commission proceeded to finish drafting the new Act. In the period ahead, the BOT will work closely with concerned agencies in pushing the draft Act for approval and enactment.



## Box 3: Principles of Zero Hour Rule and Finality

According to the Bank for International Settlements (BIS), the Zero Hour Rule is defined as “A provision in the insolvency law of some countries whereby the transactions of a closed institution that have taken place after midnight on the date the institution is ordered closed maybe retroactively rendered ineffective.”

Under this definition, when the Court declares insolvency on an institution, such Court order is considered effective since the first second of the day in which the order is given. This implies that any legal transaction that has been carried out and completed from midnight to the time that the Court order is made will be revoked. This rule also applies to payment systems transactions, thereby creating a possible systemic risk. Thus, there should be an exception from the

Zero Hour Rule for transactions that are conducted via a systemically important payment system.

According to the BIS, Finality means irrevocable and unconditional. In other words, when a payment or settlement order is completed, such order is considered unconditionally final and irrevocable.

In the assessment of the BAHTNET system under the Financial Sector Assessment Program (FSAP) in 2007, the assessors from the International Monetary Fund (IMF) were of a view that the BAHTNET system and BAHTNET transactions broadly observe the guidelines under the Core Principle I “The system should have a well-founded legal basis under all relevant jurisdictions”. However, there is not enough clarity to assure that an insolvent participant’s transaction cannot be revoked. In this connection, the mission team recommended that a law that exempts the Zero Hour Rule and ensures Payment Finality should be drafted to ascertain that completed payment or settlement orders are final, irrevocable, irreversible, unchangeable and unstoppable even under circumstances where an insolvency or bankruptcy is declared upon the payer. Such a law will help prevent systemic risk.

Examples of international laws that exempt the Zero Hour Rule for transactions carried out by a systemically important payment system and ensure Payment Finality are given below.



# 1 Payment systems policy and oversight

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## Zero Hour Rule

- Malaysia's Payment Systems Act 2003 and Singapore's Payment and Settlement Systems (Finality and Netting) Act 2002 both contain sections which state that a payment order that is executed through a designated payment system before the end of day on a day that the Court declares bankruptcy on the payer, shall be considered enforceable.
- Australia's Payment Systems and Netting Act 1998 contains sections which prohibit the enforceability of the Zero Hour Rule on transactions and settlements executed through an approved RTGS system such that the Court order shall be treated as if issued on the following day instead.

## Payment Finality

- Malaysia's Payment Systems Act 2003, Singapore's Payment and Settlement Systems (Finality and Netting) Act 2002, Australia's Payment Systems and Netting Act 1998, and Canada's Payment Clearing and Settlement Act 1996 contain sections which state that payment or settlement orders that are executed and completed through a designated payment system shall be considered final, subjected to the requirements of that system. Such transactions shall be enforceable, final, irrevocable, unchangeable and unstoppable regardless of the Court order and requirements of other Laws.
- Although Korea does not have a specific law for the payment systems, a revision to the Debtor Rehabilitation and Bankruptcy Act 2006 was made to ensure that a payment or settlement order of a participant of a designated payment system who is going through a rehabilitation or bankruptcy process shall be enforceable and complete subjected to requirements of that payment system and cannot be revoked.



### 1.3.2 Imaged Cheque Clearing and Archive System: ICAS

The BOT has introduced the Imaged Cheque Clearing and Archive System: ICAS - a system that uses an image of a cheque instead of a physical cheque in the inter-bank clearing process and serves as an electronic archive centre for cheque data and images. The system will improve the efficiency of the clearing system, thereby benefiting all parties concerned in the following ways.

- Businesses and consumers nation-wide can present a cheque for collection and receive payment within day. The cut-off time for cheque deposits can also be extended.
- Commercial banks can reduce costs and risks associating with physical transportation of cheques. The burden in maintaining data and archiving cheques will also decrease as banks can access the BOT's Imaged Cheque Archive System 24 hours a day, every day.
- The nation as a whole will benefit from faster flows of funds within the business sector as well as the general economy.

The BOT expects that ICAS will be launched in Bangkok and vicinity areas in 2011, with its coverage extended nation-wide in 2012. Important implementation progresses so far are as follows.

- 1) The BOT together with member banks pilot-tested and improved the system, held trainings on ICAS for staff of member banks, formulated operating guidelines to be used among participants, as well as devised procedures for the clearing of stamped cheques (Box 4) and altered/amended cheques.



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- 2) The BOT cooperated with the Electronic Transactions Commission, the Ministry of Information and Communication Technology and the Thai Bankers' Association in establishing confidence and acceptance in using imaged cheques as Court evidence in the judicial system (Box 5). In 2010, the Electronic Transactions Commission issued a Notification on the Practices and Methods for Arrangement or Conversion of Document and Text into Electronic Format (e-Document) B.E. 2553, which was published in the Government Gazette on 26 October 2010. The Notification then became effective on the day after.



## Box 4: Usage of stamped cheques on ICAS

A stamped cheque is a cheque that requires the presence of a stamp that can be single-coloured, multi-coloured, or emboss, as part of the conditions for payment authorization, as stated in the contract to open a current account with a bank. When a cheque is presented for collection, the paying bank (cheque owner's bank) will inspect and approve the account holder's signature and other related requirements.

In ICAS, the paying bank authorizes a cheque payment by inspecting an imaged cheque which is in either grayscale or black and white. As such, the cheque owner should not use a stamp/emboss stamp/coloured stamp as part of the conditions for payment approval because the bank can inspect neither the stamp's embossment nor its true colour. Moreover, the stamp may conceal important text such as signatures of the payer or the payee name as well as the payment date so much so that the completeness of a cheque cannot be assured. This may in turn result in delayed payment.

Examples of stamped cheques that conceal the payer's signature and other important information



(Grayscale image on ICAS)



Examples of stamped cheques that use coloured stamps which are not shown on ICAS (Original cheque)





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(Grayscale image on ICAS)



(Black and white image on ICAS)



## Box 5: Laws on electronic documents relating to ICAS

ICAS is a system that uses a digital image of a cheque, which is electronic data, in place of an original physical cheque in the inter-bank clearing system. As a result, it may be possible that the imaged cheque will be used as evidence during a prosecution.

At present, Thailand has a number of laws to support the use of imaged cheque as a legal Court evidence, namely:

- 1) The Electronic Transactions Act B.E. 2544, amended B.E. 2551, particularly Sections 10, 11, 12 and 12/1 which prohibit a refusal of electronic documents as evidence during Court hearings, whether the case is criminal, civil or other, based solely on the fact that the evidence is in electronic form. The law also prescribes rules in the production, presentation and archiving of electronic information that conform to the legal requirements on the preservation of documents.
- 2) The Notification on the Practices and Methods for Arrangement or Conversion of Document and Text into Electronic Format (e-Document) B.E. 2553, which summarizes the main issues concerning the legal process, as follows:
  - The use of an imaged cheque as Court evidence instead of the original cheque can be done according to Sections 11 and 12/1 of the Electronic Transactions Act. The weight of such evidence will depend on the credibility in the characteristic, or the production and archiving, or presentation of the cheque, which is within the Court's judgment.
  - The cheque that can be used in the production or conversion to electronic form must be the original cheque only.
  - The production or conversion of the original cheque to electronic form for ICAS should follow the guidelines attached to the Electronic Transactions Commission's Notification on the Practices and Methods for Arrangement or Conversion of Document and Text into Electronic Format (e-Document) B.E. 2553 (No. 2). Such practice will then conform to the Bank of Thailand's regulations on electronic cheque clearing and archive system. The standards should at least require the following types, colour scales, and pixilations.





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Image 1: The front must be JPEG 8-bit Grayscale 100 dpi

Image 2: The front must be TIFF Black and White 200 dpi

Image 3: The back must be TIFF Black and White 200 dpi

- ICAS member banks have a duty to comply with related laws. In particular, member banks that carry out the production or conversion of the original cheque to electronic form must inspect the quality of the produced or converted electronic image to ensure that it is readable and sharp, with the types, colour, scales, and pixilations conforming to the BOT's prescribed standards.

## 1.3.3 Operations during the political unrests in May 2010

During the period of political unrests in Bangkok, the BOT was able to operate the BAHTNET system – the high-value inter-bank transfer network, and the interbank cheque clearing system, which handles trade and payment transactions of the general public, smoothly and continuously. When the BOT announced that 20-21 May 2010 would be bank holidays, the BAHTNET and current account systems were still running in order to support cash withdrawals of banks so as to enable them to manage customers' cash transactions adequately during the period of uncertainties.

The BOT placed great importance on following the crisis management plan in case of an unrest. In this regard, the BOT made preparations concerning the ongoing operations of various functions as well as the operations at the alternate site in order to mitigate the impact on the country's payment systems and banks' liquidity. As a result, the BOT and member banks were able to operate efficiently and effectively during the time, offering smooth financial services without interruptions to the general public.





## 1.4 Cross-border linkages

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### 1.4.1 Reduction in FX settlement risk

The BOT is aware of the necessity in minimizing payment systems risk as well as improving the system's efficiency. Thus, the BOT uses BAHTNET - a high-value transfer system which utilizes Real Time Gross Settlement (RTGS), to help reduce settlement risk. However, given the increasing trend of cross-border payments, the BOT thus formulated a plan to reduce FX settlement risk by cooperating with banks to review methods to minimize such risk through the inclusion of the Thai baht in the CLS.

#### Box 6: FX Settlement Risk

An FX settlement risk is a risk that arises from a foreign exchange transaction whereby a counterparty that is the seller of a foreign currency delivers his sold currency to the buyer but still awaits confirmation from the buyer, that the purchased currency will be delivered in exchange as previously agreed. In other words, an FX settlement risk is a risk that arises because deliveries of the 2 currencies occur at different times, thereby subjecting the counterparty who is the seller to an FX settlement risk because he/she has already delivered his/her currency to the buyer but still awaits a delivery from the other side. A foreign exchange risk usually occurs because of fundamental differences in the laws, deliveries across time zones, and the payment systems of each country. As a result, counterparties generally face many kinds of risks during the delivery period of foreign exchange transactions.

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An FX settlement risk is also called “Herstatt risk” where the name comes from the failing of Germany’s Bankhaus Herstatt in 1984. Despite being a small bank, its failure had widespread consequences to banks in other countries.

CLS (Continuous Linked Settlement) system is a payment system tool operated by CLS Bank International (CLS Bank). The system was developed through joint cooperation between central banks and banks in the G20 countries with the aim to reduce FX settlement risk that arises from foreign exchange transactions.

## Box 7: CLS Bank International (CLS Bank)

CLS Bank was established by the G20 under the supervision of the Federal Reserve Bank with the aim to offer foreign exchange settlement services through the CLS system in the form of Payment - versus - Payment (PvP). At the beginning, CLS Bank offered foreign exchange settlements of 7 main currencies. However, there are currently 17 currencies included namely the US dollar, the euro, the Japanese yen, the British pound sterling, the Swiss franc, the Australian dollar, the Canadian dollar, the Danish krone, the Hong Kong dollar, the Korean won, the New Zealand dollar, the Norwegian krone, the Singapore dollar, the Saudi Arabia riyal, the Swedish krona, the Israeli shekel, and the Mexican peso. Moreover, CLS Bank is in the process of considering the inclusion of the Indian rupia and the Chinese yuan to the list. CLS Settlement members must open a multi-currency account with CLS Bank, which is situated in New York, the United States and the CLS Bank must open an account with the central banks of its members. This allows for the use of the Real Time Gross Settlement system. Single currency and matched pair of two currency payment instructions are settled in CLS Bank on a gross basis. On the other hand, funding between CLS Bank and its members



occurs on a multilateral net basis in order to help reduce liquidity requirements of each member.

The CLS system has risk management standards for credit risks, market risks and liquidity risks. Every transaction that is sent to the CLS system will be settled only if such transaction passes 3 risk management tests as follows.

- (1) Short Position Limit – refers to the total short position of each currency of each member. The total for each currency shall not exceed the short position limit set by CLS Bank for that currency. For each currency, the limit is the same for all members.
- (2) Aggregate Short Position Limit – refers to the total short position of all currencies of each member. The US dollar equivalence of the overall total that is adjusted for hair cuts should not exceed the aggregate short position limit set by CLS Bank. This limit is different for each member, depending on the creditworthiness of each member as assessed by CLS Bank.
- (3) Positive Adjusted account balance – refers to the summation of total short position and total long position of all currencies of each member. The US dollar equivalence of the summation that is adjusted for hair cuts should not be negative.



In 2010, the BOT together with commercial banks, the Anti-Money Laundering Office and the Fiscal Policy Office entered the assessment program for Thailand's capacity to participate in the CLS system. Various areas were assessed, including legal and technological capacities. CLS Bank will send the results of the assessment to the BOT in the upcoming period.

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## 1.4.2 ASEANPay Project

The plan to link retail payment systems of ASEAN countries and some Asian countries, also known as ASEANPay, aims to develop an intra-regional retail payment system infrastructure to support the increasing trade and investment in the region, thereby improving its competitiveness within the global economic environment. Member countries include Thailand, Singapore, Malaysia, Indonesia and the Philippines.

The BOT has closely monitored the progress of the intra-regional ATM system linkage program under the ASEANPay Project where each member's central bank was assigned a monitoring role to support the operations of service providers in their jurisdictions. In the case of Thailand, this is National ITMX. In the previous period, the service providers organized an Asian Payment Network (APN) Forum for the six members (Thailand, Singapore, Malaysia, Indonesia, the Philippines and South Korea) to present their progress reports as well as discuss various issues, including participation of domestic commercial banks, extension of the APN to other countries, and future plans. In this regard, the APN's operation was jointly assessed by the Working Committee on Payment and Settlement System (WC-PSS) under the purview of ASEAN central banks.

## 1.5 Payment systems oversight

### 1.5.1 Oversight of electronic payment service providers

The BOT is mandated to supervise electronic payment service providers, both bank and non-bank, by the Royal Decree Regulating Electronic Payment Service Business B.E. 2551. It also oversees the operation of non-bank e-Money service providers as authorized by Section 5 of the Notification of the Revolution Council NO. 58. Oversight activities can be summarized below.



- 1) Considered the issuance of notification acknowledgements and registration acknowledgements for those wishing to be service providers under Lists A and B and reviewed the applications of List C candidates before submitting recommendations to the Electronic Transactions Commission for approval. In 2010, the BOT reviewed 8 applications in total and licenses were issued to all applicants by the Electronic Transactions Commission.

At the end of 2010, there were 6 service providers registered in List B and 71 service providers licensed in List C (32 commercial banks and 39 non-banks), resulting in a total of 109 licenses. There was no service provider falling under the requirements of List A.

- 2) Legal oversight of the service providers

- 2.1 Supervised electronic payment service providers in complying with the Royal Decree Regulating Electronic Payment Service Business B.E. 2551 and related Notifications and reported findings to the Electronic Transactions Commission regularly.

- 2.2 Oversaw and supervised 6 e-Money service providers according to Section 5 of the Notification of the Revolution Council NO. 58, in complying with related laws and Notifications. In the past year, legal actions were taken against service providers who did not comply with the rules. Additional capital requirements were also ordered to ensure a continuous provision of services.

- 3) Drafted the guidelines for administrative fine for electronic payment service providers in line with the Royal Decree Regulating Electronic Payment Service Business B.E. 2551 to be submitted to the Electronic Transactions Commission for approval.





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- 4) Conducted an assessment of the payment systems under the BOT's operation. In 2010, the BOT assessed the BAHTNET system, which is a systemically important payment system and infrastructure to support inter-bank transfers in the form of Real Time Gross Settlement (RTGS) as well as handle bulk settlements of various transactions, for example, inter-bank cheque clearing, bulk payment settlements, and inter-bank ATM transactions. Moreover, the BAHTNET system also supports BOT transactions with financial institutions in the transmission of monetary policy via liquidity injection and absorption.

The assessment was conducted in line with the BIS Core Principles for Systemically Important Payment Systems and various Notifications issued under the Royal Decree Regulating Electronic Payment Service Business B.E. 2551. The BOT also reviewed and monitored the progress to follow the recommendations of the external auditor (Price Waterhouse Coopers Co. Ltd.) in 2007. Overall, the assessment deems that BAHTNET has a credible security system, with an appropriate risk management system encompassing credit risk, liquidity risk and operational risk, that meets international standards. Furthermore, BAHTNET services are efficiently responsive to various transaction needs of the general economy. No issues requiring urgent attention are present.

## Box 8: The Royal Decree Regulating Electronic Payment Service Business B.E. 2551

The Royal Decree Regulating Electronic Payment Service Business B.E. 2551 became effective on 13 February 2009 with an objective to oversee the operations of 8 types of electronic payment service businesses. Under the Royal Decree, the BOT is mandated to oversee such businesses, which are categorized into 3 Lists according to the degree of oversight. The categorization is based on financial and commercial soundness considerations, credibility and acceptance of the electronic data system, and damage to the general public, as follows.





List A: Businesses that are required to make notification to the BOT

Includes the provision of e-Money services to be used to purchase specific goods and services that are previously determined from a single provider. An exception is made in the case where the use is limited to providing convenience to customers without a profit-making objective, as announced by the BOT and endorsed by the Electronic Transactions Commission.

List B: Businesses that are required to make registration with the BOT

- (1) Credit card network
- (2) EDC network
- (3) Switching service for one system
- (4) E-Money services to be used to purchase specific goods and services that are previously determined from many providers at the outlets which are part of the same sales and distributions system

List C: Businesses that are required to acquire licenses before providing services

- (1) Account debit
- (2) Settlement service
- (3) Electronic payment service through a particular instrument or a network
- (4) Switching service through many systems
- (5) Bill payment service provider
- (6) E-Money services to be used to purchase specific goods and services that are previously determined from many providers with no restrictions on outlets and sales and distributions systems



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## 1.5.2 Collaboration with the Anti-Money Laundering Office

The Anti-Money Laundering Act (No. 3) that became effective on 19 November 2009 stipulates that e-Money service providers classified as non-bank according to the Ministry of Finance's Notification concerning the Business of Electronic Money Card and E-payment Service Providers pursuant to the Royal Decree on Regulating Electronic Payment Service Business, are required to comply with the Act as well as relating Ministerial rules and regulations. For example, they shall be required to report transactions to the Anti-Money Laundering Office (AMLO), comply with Know Your Customer (KYC) requirements, and conduct Customer Due Diligence (CDD).

The BOT, acting as the responsible party to ensure that the service providers comply with the above laws, has collaborated with service providers as well as AMLO in gathering comments on the drafting of related Ministerial rules and regulations. Moreover, a Memorandum of Understanding (MOU) between the BOT and AMLO regarding the oversight of Anti-Money Laundering and Countering Financing of Terrorism (AML/CFT) has been drafted, ready to be co-signed.



### 2.1 Payment Systems Roadmap

The BOT is in the process of drafting the Payment Systems Roadmap to be used as a policy framework for the country's payment systems development during and to serve as a guide for concerned public and private parties in formulating their own plans in order to achieve policy coherence.

The objectives of the Roadmap remain committed to enhancing the efficiency and safety of domestic payment systems, with due considerations given to linkages and consistency with the Financial Sector Master Plan Phase II (2010 – 2014) previously announced by the BOT. Such objectives are prompted given the important role of financial institutions in the provision and development of Thailand's payment systems. Nevertheless, due regards will be given to non-banks whose role will become more important in the future.

The BOT endeavours that the Roadmap will be endorsed by the PSC and ready for public announcement towards the end of 2011.

### 2.2 International Cooperation

In order to support the ASEAN Economic Community (AEC 2015), the 6th ASEAN Central Bank Governors' Meeting (ACGM) in April 2010 endorsed the establishment of a Working Committee on Payment and Settlement System (WC-PSS) under the supervision of ASEAN central banks, with Bank Indonesia and the BOT appointed as co-chairs. The aim of the WC-PSS is to assess the current payment systems environment and formulate strategic plans for the intra-regional payment systems development.

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The first and second WC-PSS meetings were held in June and September 2010 at Yogyakarta, Indonesia and Kota Kinabalu, Malaysia, respectively. Progress reports were given, and discussions took place in preparation for the third meeting, which was hosted by the BOT in Pattaya during 24-25 January 2011. At the latest meeting, findings from the assessment were reported. Discussions were mainly on the formulation of strategic plans for payment systems development to support the AEC 2015 vision. All findings shall be reported to the ASEAN Central Bank Governors' Meeting (ACGM) and ASEAN Central Bank Deputies' Meeting (ACDM) in April 2011.

### Box 9: ASEAN Economic Community

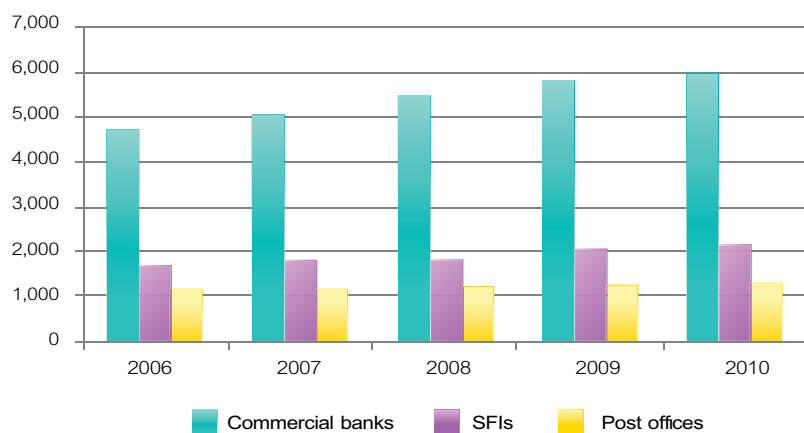
At the 2003 ASEAN Summit, ASEAN leaders announced a vision towards ASEAN economic integration – the ASEAN Economic Community, by 2020. Two other pillars of the vision are Stability and Society and Culture. Then at the 2007 ASEAN Summit, the leaders agreed to expedite the establishment of the ASEAN Economic Community within 2015.

The ASEAN Economic Community will make ASEAN *a single market and production base*. This objective consists of 5 main considerations: 1) free movement of goods; 2) free movement of services; 3) free movement of investment; 4) free flow of capital; and 5) free movement of skilled labour. It is envisaged that ASEAN will become a *highly competitive economic region* and emphasis will be given to policies that support economic integration. It also aims for *a region of equitable economic development* whereby various cooperative projects will be implemented to reduce the economic gaps. Finally, it is hoped that ASEAN will become *a region that is fully integrated into the global economy*. Here, policy collaboration and networking with non-ASEAN countries will be emphasized.

### 3.1 Developments of payment infrastructure

#### 3.1.1 Branches of commercial banks, Specialized Financial Institutions, and post offices

Figure 1: Number of branches of commercial banks, Specialized Financial Institutions and post offices



Source: Bank of Thailand

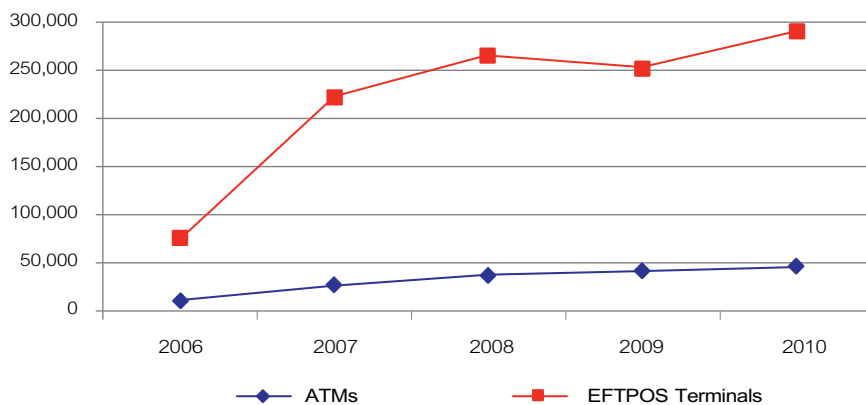
- In 2010, commercial banks, SFIs and post offices continued to open more branches but at a slower pace compared to that in 2009. In this regard, commercial bank branches increased by 2.9 percent, equivalent to an increase from 5,806 branches in 2009 to 5,976 branches in 2010. Of this, 5,961 branches belong to commercial banks registered in Thailand while the number of foreign bank's branches remained the same at 15 branches.
- SFIs branches grew by 8.0 percent and stood at 2,002 branches, representing an increase of 149 branches from 2009.
- In 2010, there were 1,281 post office branches, up by 27 branches or 2.2 percent.

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#### 3.1.2 ATM/ADM and EFTPOS terminals

Figure 2: Number of ATM and EFTPOS terminals



Source: Bank of Thailand

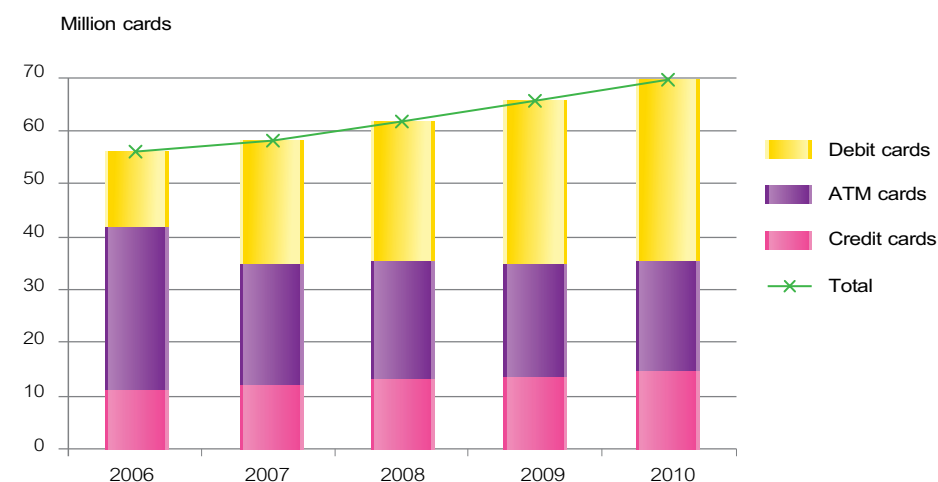
- **ATM installation** continued to increase from the previous year with banks proceeding to open more branches and installed more ATMs to provide convenience for customers. The move also helped reduce operating cost given that ATM/ADM can now handle many types of transactions, for example deposits and debt repayment.
- There were 44,468 **ATM terminals** all together, up from 39,454 terminals in 2009 or equivalent to a 12.7 percent growth. The ratio of debit and ATM cards to the number of commercial banks' ATMs declined from 1,314 cards per terminal in 2009 to 1,260 cards per terminal in 2010. When SFIs were included, the ratio became 1,240 cards per terminal.
- The number of **EFTPOS terminals** totalled at 287,151 terminals, up from 247,837 terminals registered in the previous year, or equivalent to an increase of 15.9 percent. As a result, the ratio of debit and credit cards per EFTPOS terminal equaled to 168 cards per terminal – a similar ratio to the previous year's 178 cards per terminal.

### 3.1.3 ATM, debit and credit cards

- The total number of **ATM cards** stood at 21.0 million cards, declining by 0.2 percent from 2009.
- The total number of **debit cards** stood at 34.1 million cards, increasing by 11.2 percent from 2009 where there were 30.7 cards issued.

In 2010, the ratio of debit cards was highest among all plastic cards for the fourth year in a row since 2007, standing at 49.3 percent of all plastic cards, up from 47.1 percent last year. Meanwhile, the number of ATM cards, still the second highest, trended downward as commercial banks moved to market debit cards in terms of both new issues and ATM card replacements. As of 2010, the ratio of ATM cards to all plastic cards stood at 30.3 percent, declining from 32.3 percent recorded the previous year. Meanwhile, the ratio of credit cards remained roughly the same at 20.5 percent of all plastic cards.

Figure 3: Number of credit, ATM and debit cards



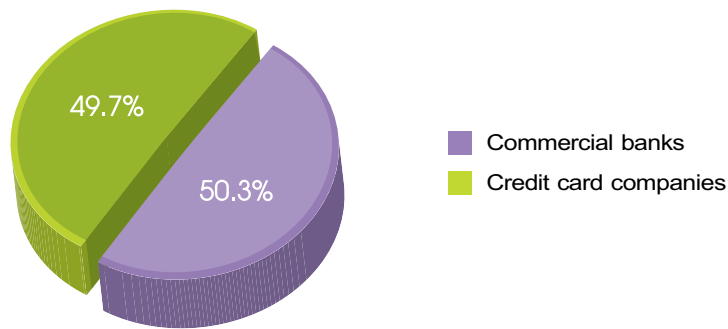
Source: Bank of Thailand

### 3 Data and statistics in payment systems

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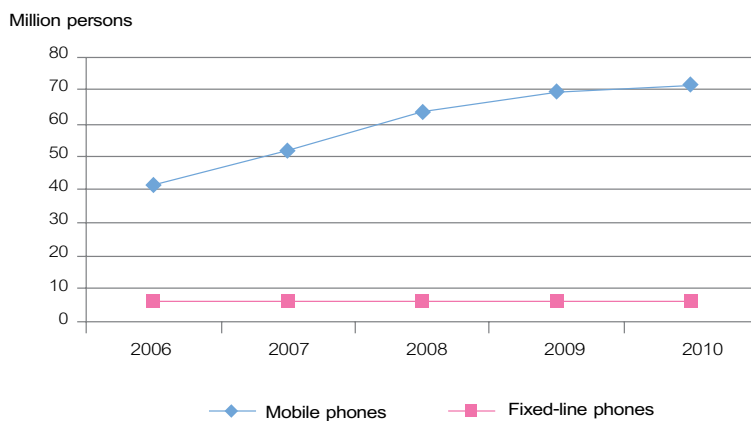
- The total number of credit cards stood at 14.2 million cards, increasing by 5.2 percent from 2009. Of these, cards issued by commercial banks stood at 7.14 million cards while those issued by non-bank credit card companies<sup>4</sup> stood at 7.06 million cards, making their proportions 50.3 percent and 49.7 percent, respectively.

Figure 4: Composition of credit cards issued by issuer in 2010



Source: Bank of Thailand

Figure 5: Number of subscribers of fixed-line phones and mobile phones



Source: Bank of Thailand

<sup>4</sup> These non-bank credit card companies were Khrunghthai Card Company Limited, Krungsri-ayudhya Card Company Limited, Ayudhya Capital Services Company Limited, Ayudhya Card Services Company Limited, General Card Services Company Limited, Citi Consumers Products (Thailand) Company Limited, Tesco Card Services Company Limited, American Express (Thai) Company Limited, AEON Thana Sinsap (Thailand) Public Company Limited, EASY BUY Public Company Limited, and Capital OK Company Limited.

### 3.1.4 Subscribers of fixed-line telephones and mobile phones

In 2010, the number of subscribers of fixed-line telephones accounted for 10.4 percent of total population. There were 6.65 million numbers registered, declining from 6.85 million numbers registered the previous year, or down by 2.9 percent. Meanwhile, the number of subscribers of mobile telephones stood at 73.05 million persons, or 114 percent of total population. This was an increase of 3.55 million persons or 5.1 percent from the previous year – a slower rate of increase compared to that of 2009 which was 9.1 percent. Moreover, most mobile phone subscribers continued to use the prepaid system.

## 3.2 Major channels and mediums of payment

### 3.2.1 Use of cash

Currency in circulation per capita increased in line with the expansion of the Gross Domestic Product (GDP) and registered at 14,671 baht per capita in 2010, up from 13,286 baht per capita in 2009. At the same time GDP per capita rose from 142,330 baht per capita to 158,154 baht per capita. (Table 2)

Table 2: Volumes of currency and Gross Domestic Product (GDP)

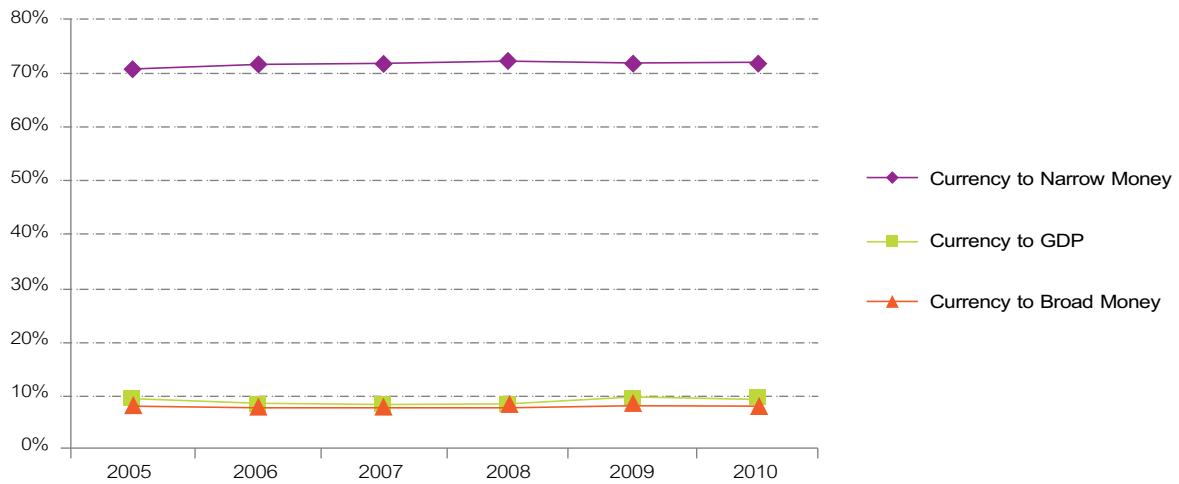
	2548	2549	2550	2551	2552	2553
Currency in circulation per capita (baht)	10,104	10,392	11,422	11,868	13,286	14,671
GDP at current prices per capita (baht)	113,632	124,862	135,239	143,247	142,330	158,154

Source: Bank of Thailand



### 3 Data and statistics in payment systems

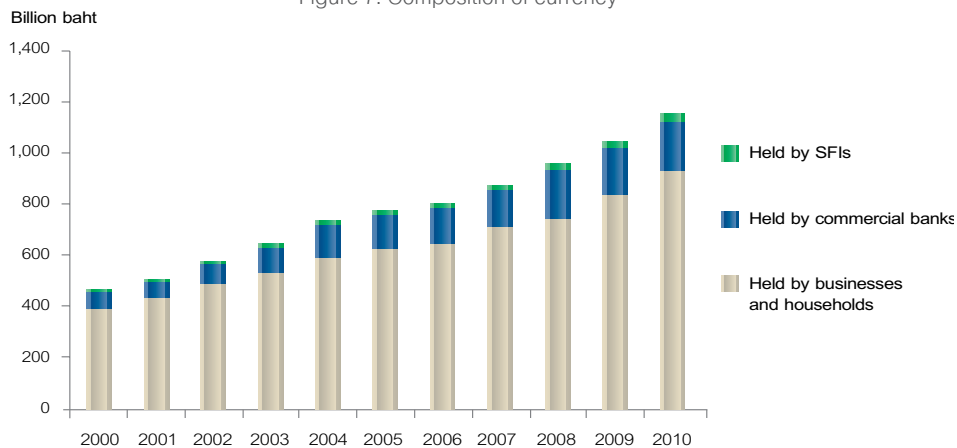
Figure 6: Ratios of currency to GDP, Narrow Money and Broad Money



Source: Bank of Thailand

Figure 6 shows that the ratio of currency to GDP, Narrow Money, and Broad Money remained more or less constant. In this regard, the ratio of currency to GDP continued to register at 8 percent since 2005. Nevertheless, at the disaggregated level, cash in hand has been on an increasing trend whereby in 2010, it increased by 11.0 percent from the previous year. (Figure 7)

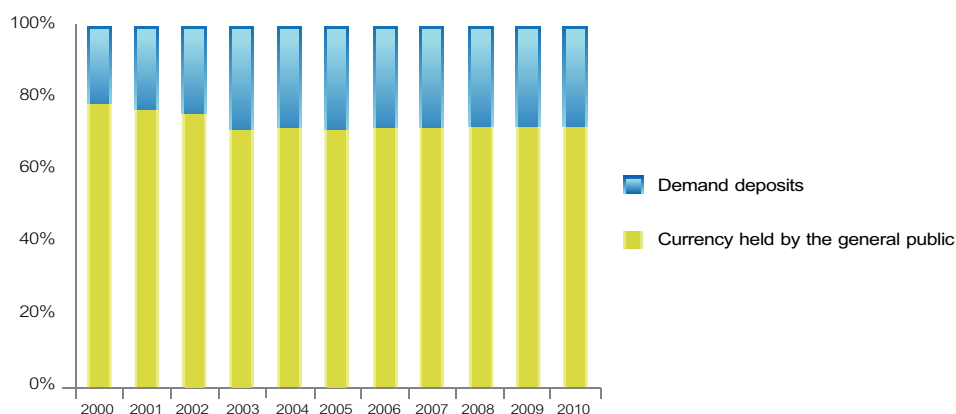
Figure 7: Composition of currency



Source: Bank of Thailand

Moreover, when considering cash usage in terms of the ratio of currency to Narrow Money (Figure 8), it can be seen that the ratio has remained at around 71-72 percent since 2004.

Figure 8: Composition of Narrow Money



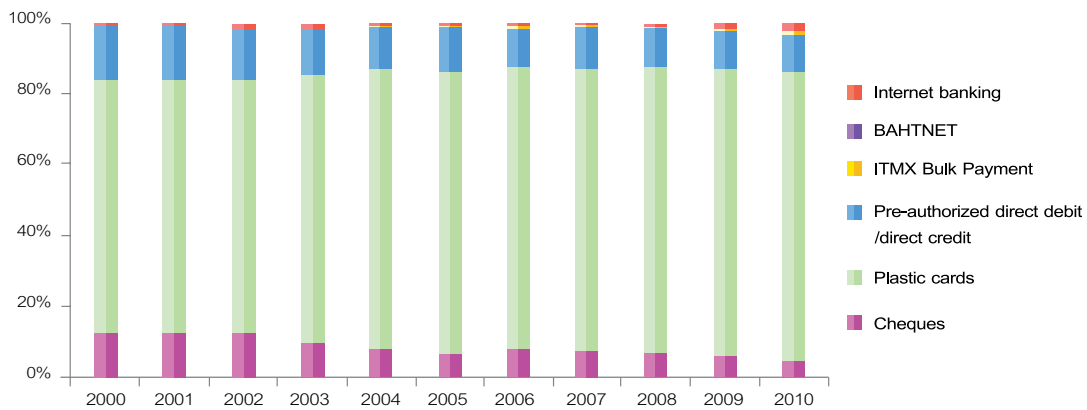
Source: Bank of Thailand

The main payment systems and payment mediums in Thailand consist of the high-value funds transfer system or BAHTNET and the retail funds transfer systems such as the cheque clearing system, the ITMX Bulk Payment system, the pre-authorized direct credit/direct credit system, plastic cards including ATM, debit and credit cards, and internet-banking.

### 3 Data and statistics in payment systems

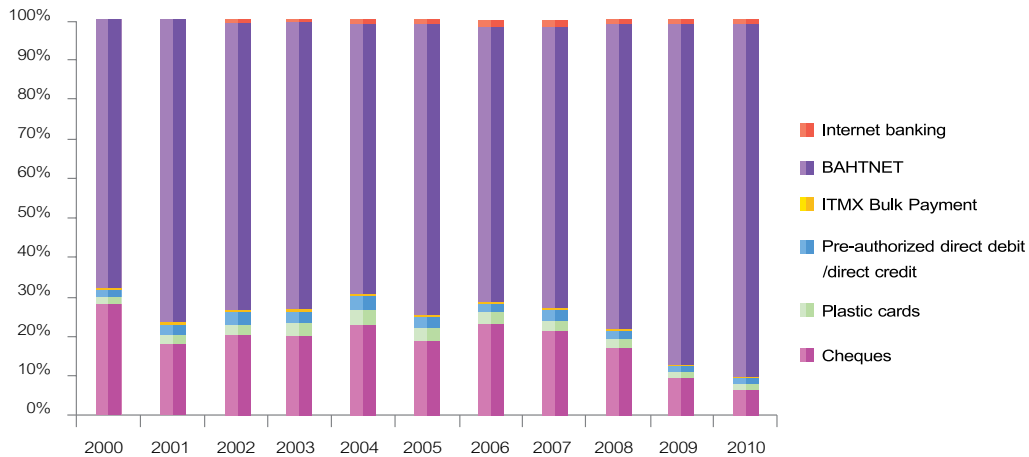
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Figure 9: Comparison of various payment instruments in volume of transaction



Source: Bank of Thailand

Figure 10: Comparison of various payment instruments in value of transaction



Source: Bank of Thailand

In terms of value (Figure 10), transfers through BAHTNET continued to be highest at 89.0 percent of total value of transfer amount. The second highest was cheque payment at 7.0 percent

### 3.2.2 High-value funds transfer system

The BAHTNET system (Bank of Thailand Automated High-Value Transfer Network) is an inter-bank high-value funds transfer system developed and operated by the BOT. The system is available for financial institutions as well as other institutions to help reduce risk in high-value funds transfer, making the transaction fast and safe. Major transactions through BAHTNET include inter-bank funds transfers, foreign exchange trading, inter-bank lending, internal funds transfers, securities purchases, government bond purchases and others.

At the end of 2010, there were 66 BAHTNET participating institutions, consisting of 17 commercial bank registered in Thailand, 15 foreign bank's branches, 11 finance and securities companies, 14 Specialized Financial Institutions and 9 departments of BOT. There were 2,323,258 BAHTNET transactions recorded, up from 2,004,954 transactions in 2009 – an increase of 15.9 percent. The total value of these transactions stood at 654.6 trillion baht, increasing from 489.6 trillion baht recorded the previous year, or an increase of 33.7 percent. This large increase was chiefly due to bilateral repurchase operations with the BOT.

BAHTNET transactions can be categorized as follows.

#### 1) Inter-bank funds transfers

The total number of transactions in this category stood at 164,044 transactions with a total value of 502.1 trillion baht. Such volume and value of inter-bank funds transfers increased from the previous year by 10.0 and 38.8 percent, respectively. The increase in terms of value was mainly a result of the continued increase in bond trading with primary dealers under the bilateral repurchase agreements.

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### 2) Third-party funds transfers

The total number of transactions in this category stood at 2,155,854 transactions with a total value of 144.3 trillion baht. Such volume and value of third-party funds transfers increased from the previous year by 16.4 and 21.1 percent, respectively. Foreign exchange trading volume and value also increased from the previous year with those conducted by residents increasing by 1.9 and 1.3 folds, respectively. At the same time, foreign exchange trading volume and value of non-residents increased by 17.7 and 37.0 percent, respectively.

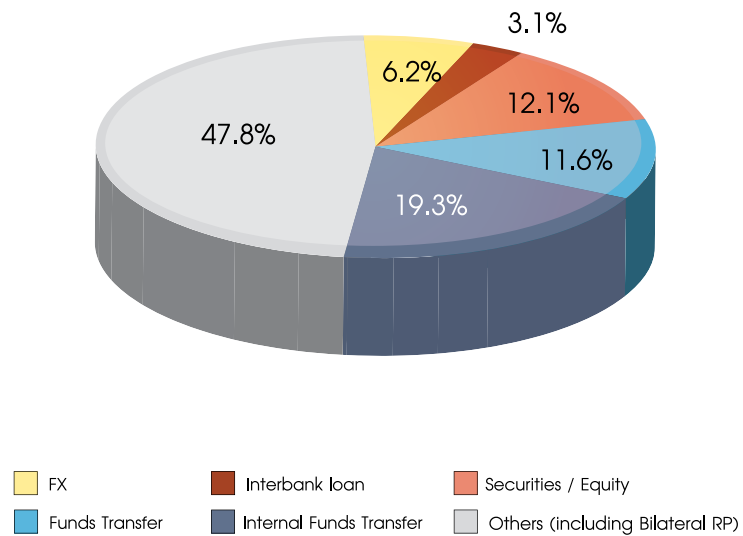
### 3) Multilateral funds transfers (settlement and netting between institutions)

The total number of transactions in this category stood at 3,360 transactions, increasing by 15.8 percent from 2009 mainly because NITMX began to settle inter-bank withdrawals and transfers through BAHTNET instead of going through commercial banks since the end of 2009.

Meanwhile, the value of multilateral funds transfers in 2010 was 8.2 trillion baht, declining from 2009 by 4.3 percent as a result of a decrease in inter-bank cheque clearing.

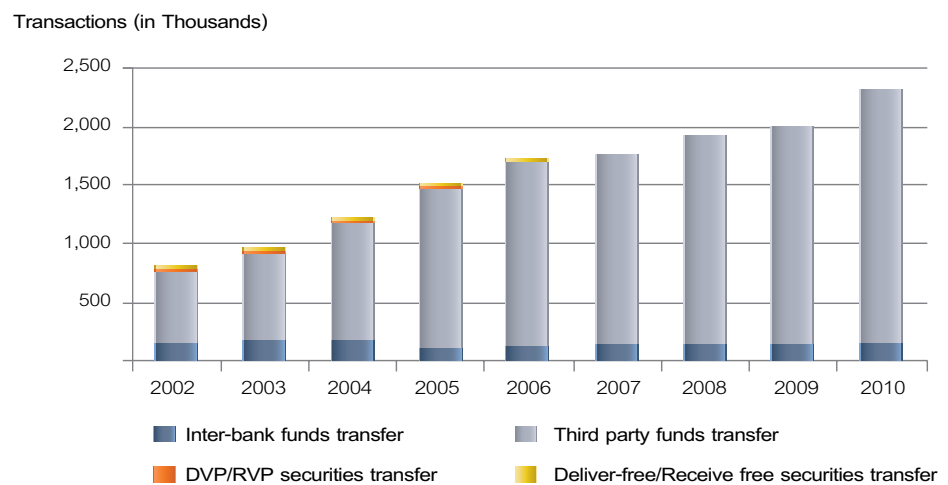
When classified by types of business, it can be seen that in 2010, the transaction with the highest value was bilateral repurchase transactions, which accounted for 47.8 percent of the total value of BAHTNET transfers. The second highest was internal funds transfers, which accounted for 19.3 percent of the total value of BAHTNET transfers. Meanwhile, securities/equity trading and inter-bank funds transfers accounted for 12.1 and 11.6 percent of the total value of BAHTNET transfers, respectively. (Figure 11)

Figure 11: Value of BAHTNET transfers classified by business type in 2010



Source: Bank of Thailand

Figure 12: Volume of BAHTNET funds and securities transfers

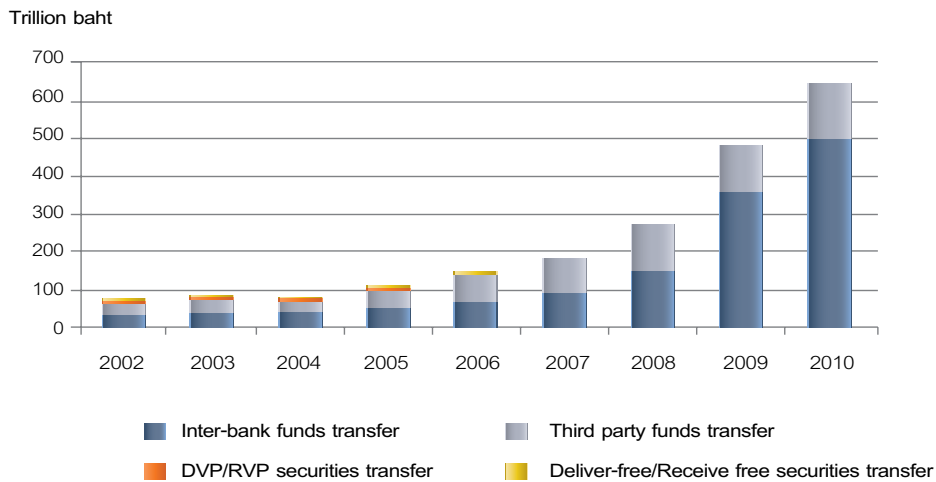


Source: Bank of Thailand

## 3 Data and statistics in payment systems

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Figure 13: Value of BAHTNET funds and securities transfers



Source: Bank of Thailand

### 3.2.3 Cheque clearing system

In 2010, the volume of cheque usage (including inter-bank and intra-bank cheques) totalled at 114.6 million cheques, declining by 7.0 percent from the previous year. Of these, the total value of cheque usage was 51.7 trillion baht, decreasing by 7.8 percent from the previous year. The number of cheques per capita was 1.8. The value per collected cheque averaged at 0.5 million baht, slightly declining by 0.8 percent from the previous year.

The number of returned cheques totalled at 1.6 million cheques, equivalent to the total value of 258.3 billion baht. Of these, 1.1 million cheques worth 140.7 billion baht were returned on the ground of insufficient funds. Moreover, the ratios of the volume and value of dishonoured cheques to collected cheques were 1.0 and 0.3 percent, respectively.

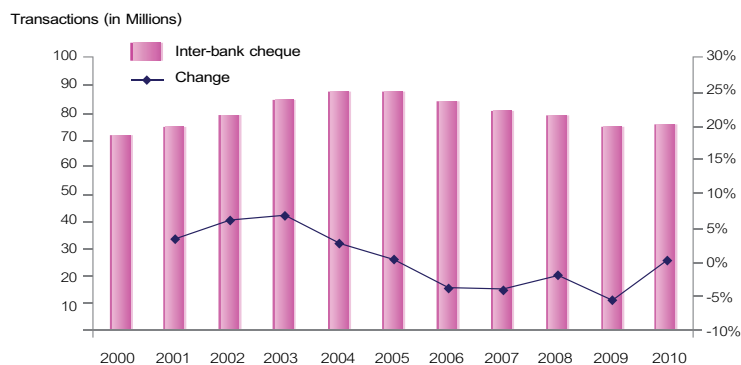
### Inter-bank cheque clearing system

The inter-bank cheque clearing system comprises of the Electronic Cheque Clearing System (ECS) for Bangkok and vicinity, the Provincial Cheque Clearing System for other provinces, and the Bill for Collection (B/C) system for inter-provincial clearing.

In 2010, the total number of inter-bank cheques stood at 75.1 million cheques, equivalent to the total value of 33,780 billion baht. Compared to 2009, such volume and value of inter-bank cheques increased only marginally by 0.3 and 0.6 percent, respectively.

The number of returned cheques in 2010 stood at 1.3 million cheques, equivalent to the total value of 204.2 billion baht. The ratios of returned cheques to collected cheques in terms of volume and value were 1.7 and 0.6 percent, respectively.

Figure 14: Volume of inter-bank cheques



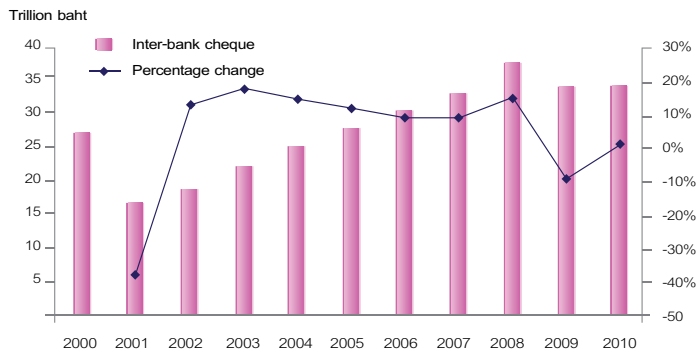
Source: Bank of Thailand



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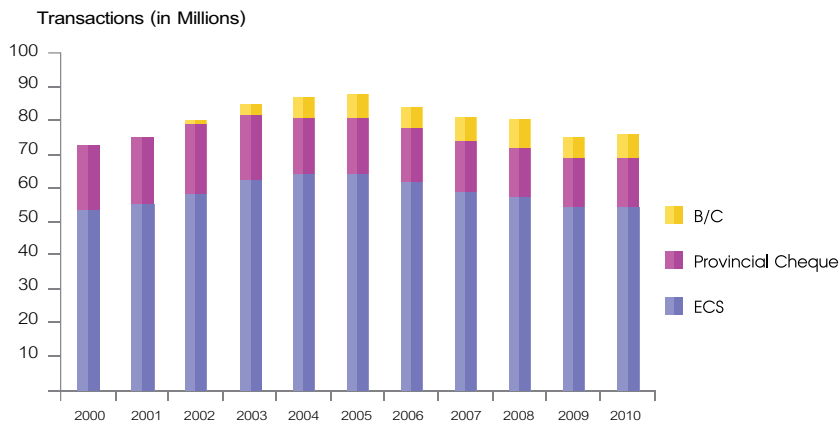
Figure 15: Value of inter-bank cheques



Source: Bank of Thailand

The proportions of the volume and value of cheques processed in Bangkok and vicinity in 2010 remained similar to those in the previous year at 71.7 and 89.5 percent, respectively. Meanwhile, the proportions of the volume and value of cheques processed in other provinces stood at 19.4 and 9.3 percent, respectively. B/C or inter-provincial cheques continued to remain at 9.0 and 1.2 percent of the total volume and value, respectively.

Figure 16: Volume of inter-bank cheques classified by clearing system



Source: Bank of Thailand

### Intra-bank cheque clearing system

The BOT started to collect information on in-house cheque clearing from commercial banks and some SFIs since 2006. Such information includes the volume and value of intra-bank cheques cleared within Bangkok and vicinity, in other provinces, and inter-provincially.

In 2010, the volume of intra-bank cheques totalled at 39.4 million cheques, equivalent to the total value of 17,918.1 billion baht. Compared to 2009, such volume and value of intra-bank cheques declined by 18.4 and 20.3 percent, respectively. The ratios of the volume and value of intra-bank cheques to total collected cheques stood at 34.3 and 34.7 percent, respectively.

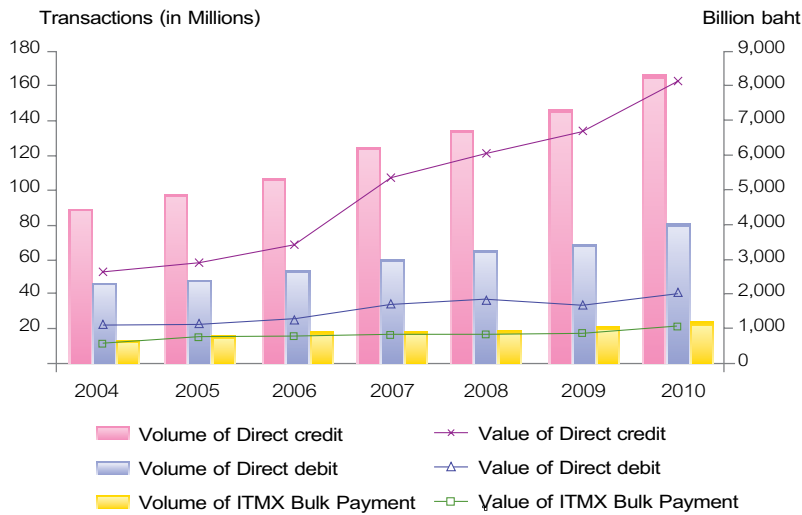
### 3.2.4 Pre-authorized funds transfer

The pre-authorized funds transfer system is designed for retail funds transfers of regular payments and/or multiple transfer transactions under prior arrangements with the banks. It can be classified into (1) in-house pre-authorized transactions which include direct credit transactions such as transfers of salaries, wages, dividends, tax refunds, as well as direct debit transactions such as payment of utility bills, insurance premiums, and credit card payments; and (2) inter-bank pre-authorized transfers or ITMX Bulk Payment System which is operated by NITMX and provides only account crediting services.

In 2010, the value of pre-authorized funds transfers totalled at 11.2 trillion baht, increasing by 21.4 percent from the previous year. The total number of transactions stood at 271.7 million transactions, increasing by 15.3 percent. Of these, direct credit transactions

### 3 Data and statistics in payment systems

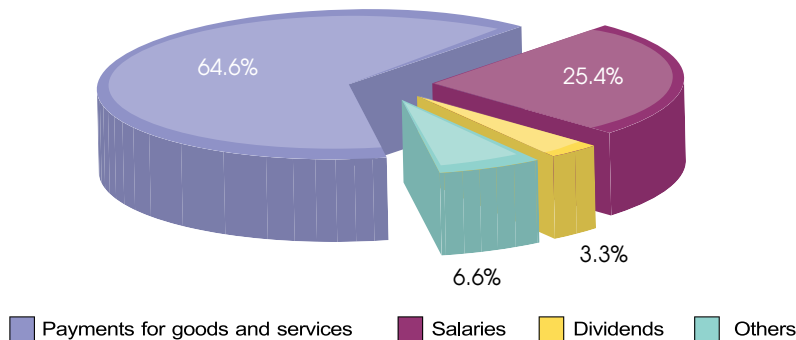
Figure 17: Volume and value of pre-authorized funds transfers



Source: Bank of Thailand

accounted for the highest proportion in terms of both volume and value at 61.2 and 72.4 percent, respectively. Next in line were direct debit transactions, which accounted for 29.7 percent of the total volume and 18.0 percent of the total value. Meanwhile, the ITMX Bulk Payment system accounted for 9.1 percent of the total volume and 9.6 percent of the total value.

Figure 18: Proportion of value of funds transfers via ITMX Bulk Payment system



Source: Bank of Thailand

Retail funds transfers through the ITMX Bulk Payment System stood at 24.7 million transactions this year, equivalent to the total value of 1,080.6 billion baht – increasing from the previous year by 18.2 and 24.5 percent, respectively. In terms of volume, payments for goods and services accounted for the highest portion at 44.4 percent. Second was payment of salaries and wages at 32.6 percent. Similarly, in terms of value, payment for goods and services accounted for the highest proportion at 64.6 percent followed by payment for salaries and wages at 25.4 percent.

Total direct credit transfers stood at 166.4 million transactions, equivalent to the total value of 8,121.4 billion baht, increasing by 13.8 and 21.3 percent, respectively. Most of the transfers were for salaries and wages, which accounted for 53.5 percent of the total value and 78.0 percent of the total volume of transfers.

At the same time, total direct debit transfers stood at 80.6 million transactions, increasing by 17.6 percent. The total value of these transactions was 2,021.1 billion baht, increasing by 20.6 percent. Almost all of such transfers were for payments of goods and services, which accounted for 90.0 percent of the total value and 96.9 percent of the total volume of transfers.

### 3.2.5 Bank and non-bank counter services

#### Bill payment

In 2010, the number of bill payments for utilities and purchases of goods and services at bank and non-bank counters registered at 263.8 million

### 3 Data and statistics in payment systems

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transactions, representing a total value of 6,674.1 billion baht. Of these, non-bank counter services accounted for as high as 182.3 million transactions or 69.1 percent of the total number of transactions, worth 448.2 billion baht. Such development was likely a result of non-banks' marketing strategy to reduce fees and charges. At the same time, bank counter services accounted for 81.5 million transactions, declining by 3.9 percent from the previous year. However, the total value of transactions through bank counter services were significantly higher than those through non-banks, and stood at 6,225.9 billion baht, representing an increase of 19.7 percent from the previous year.

Cash continued to be the most popular means for bill payment at bank and non-bank counters and accounted for 96.9 percent of the total volume and 34.1 percent of the total value of transactions. The second most popular means for payment was cheque, which accounted for 1.1 percent of the total volume and 45.9 percent of the total value of transactions.

By comparing different payment channels offered by banks, it can be observed that counter services were more popular than direct debit, which recorded an overall number of transactions of 73.9 million transactions, equivalent to the total value of 1,795.6 billion baht. Figures 19 and 20 summarize the volumes and values of bill payment transactions through these two channels at both banks and non-banks.

### Box 10: Bill payment service providers

The number of authorized payment service providers according to the Royal Decree Regulating Electronic Payment Service Business B.E. 2551 was 33 providers – of which 20 providers are banks and 13 providers are non-banks.

#### Banks

1. Bangkok Bank Public Company Limited
2. Bank of Ayudhya Public Company Limited
3. Bank of Tokyo-Mitsubishi UFJ Limited
4. CIMB Thai Bank Public Company Limited
5. Citibank N.A.
6. Deutsche Bank A.G.
7. Hongkong and Shanghai Banking Corporation Limited
8. JPMorgan Chase Bank, National Association
9. Kasikornbank Public Company Limited
10. Krung Thai Bank Public Company Limited
11. Land and House Retail Bank Public Company Limited
12. Siam City Bank Public Company Limited
13. Siam Commercial Bank Public Company Limited
14. Standard Chartered Bank (Thai) Public Company Limited
15. Sumitomo Mitsui Banking Corporation
16. Thai Credit Retail Bank Public Company Limited
17. Thanachart Bank Public Company Limited
18. Tisco Bank Public Company Limited
19. TMB Bank Public Company Limited
20. United Overseas Bank (Thai) Public Company Limited

#### Non-banks

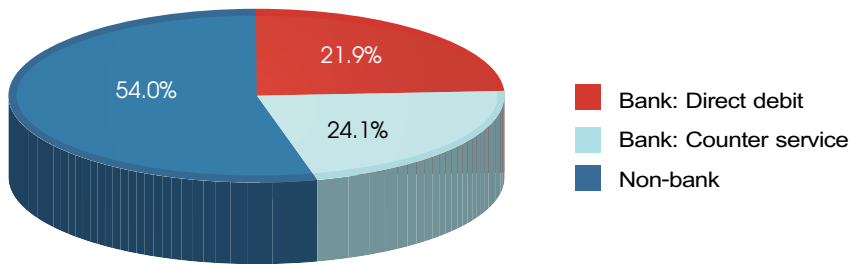
1. Advanced Info Service Public Company Limited
2. Advanced mPay Company Limited\*
3. AEON Thana Sinsap (Thailand) Public Company Limited
4. CAT Telecom Public Company Limited\*
5. Counter Service Company Limited
6. Ek-Chai Distribution System Company Limited
7. Global Service Center Company Limited
8. J Mart Public Company Limited
9. Saha Pathanapibul Public Company Limited
10. Samart i-Mobile Public Company Limited\*
11. Thailand Post Company Limited
12. TOT Public Company Limited
13. True Money Company Limited

\*Not yet operational

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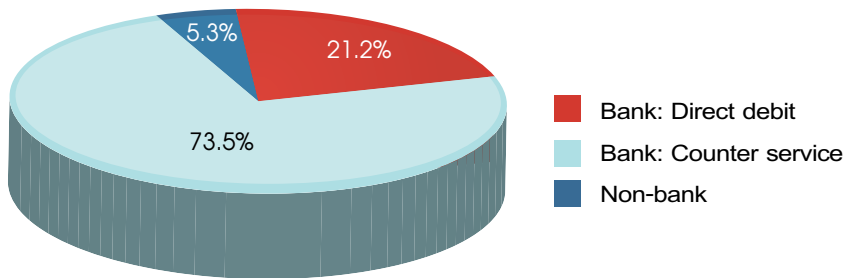
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Figure 19: Proportion of volume of bill payment via banks and non-banks in 2010



Source: Bank of Thailand

Figure 20: Proportion of value of bill payment via banks and non-banks in 2010



Source: Bank of Thailand

#### Interbank Online Retail Funds Transfer (ORFT)

Inter-bank transfers at the counter through the Online Retail Funds Transfer (ORFT) system totalled at 9.2 million transactions, equivalent to the total value of 172.0 billion baht, increasing from the previous year by 13.8 and 32.3 percent, respectively.

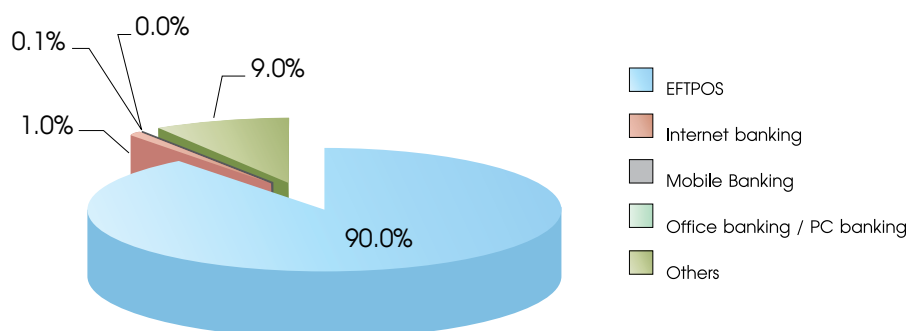
### 3.2.6 Plastic cards

Plastic cards, which include credit, debit and ATM cards, continued to be important alternatives to cash payments given their safety, convenience and cost savings both in terms of note printing and cash management and handling of retailers and banks. In 2010, debit card usage continued to expand while ATM card usage slowed down. This development was partly owing to the fact that many financial institutions tended to offer more services to debit card holders compared to ATM card holders. However, even-though debit cards can be used to pay for goods and services in the same way as credit cards, debit card holders were more inclined to treat them like ATM cards – using them mainly for cash withdrawals.

#### Credit cards

The value of credit card transactions in 2010 totalled at 1,051.6 billion baht, increasing from the previous year's total value of 937.1 billion baht or equivalent to a growth rate of 12.2 percent. In terms of the usage of credit cards for payments of goods and services, it can be observed that credit card holders continued to prefer payment through EFTPOS the most with the volume and value of transactions registering

Figure 21: Volume of credit card transactions classified by channel in 2010



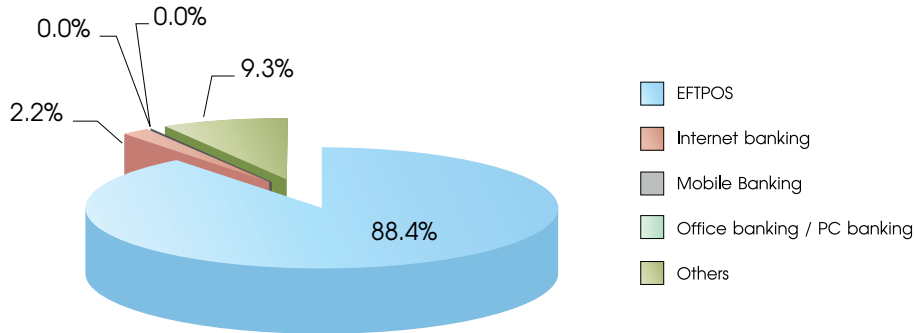
Source: Bank of Thailand



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Figure 22: Value of credit card transactions classified by channel in 2010



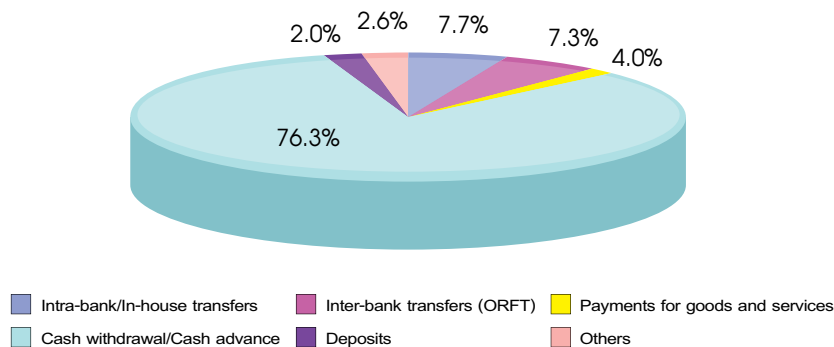
Source: Bank of Thailand

at 90.0 and 88.4 percent of the total volume and value of credit card transactions, respectively. Meanwhile, usage of internet banking and mobile banking continued to be low as was the case in the previous year both in terms of volume and value.

#### Debit cards

Debit cards were still mostly used to withdraw cash in the same manner as ATM cards while usage of debit cards for payments of goods and services remained very low. In 2010, the number of cash withdrawals through debit cards was 828.6 million transactions, accounting for 76.3

Figure 23: Volume of debit card transactions in 2010



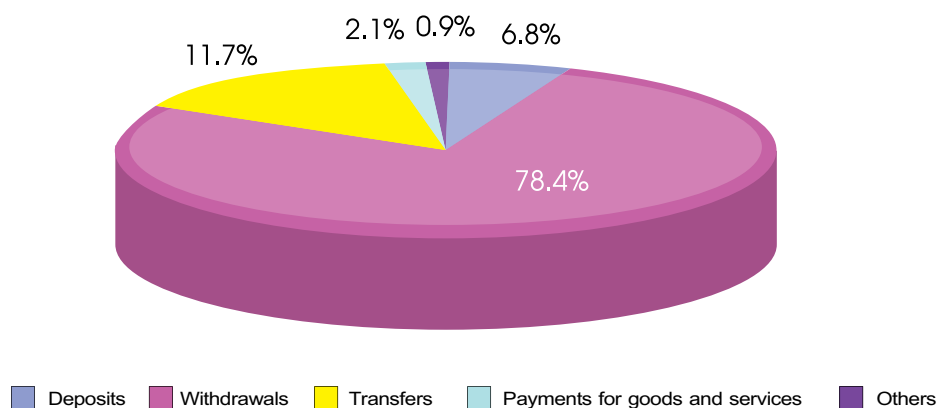
Source: Bank of Thailand

percent of all debit card transactions. Meanwhile, the proportions of inter- and intra-bank transfers through debit cards were only 7.7 and 7.3 percent, respectively. At the same time, the proportion of debit card usage for payments of goods and services was 4.0 percent.

### ATM cards

The number of ATM transactions<sup>5</sup> in 2010 continued to decline from the previous year, from 516.3 to 491.3 million transactions, or equivalent to a decrease of 4.8 percent. Of these, ATM transfers, which decreased by 31.2 percent accounted for most of the overall slowing trend. In contrast, payment for goods and services at ATM terminals increased significantly by 18.9 percent. Although the value of cash withdrawals accounted for 66.1 percent of the total value of ATM transactions, it is interesting to observe that the number of transactions has been decreasing for four years in a row since 2007 due to the reduction in the number of ATM cards. Nevertheless, cash deposits through ADM

Figure 24: Composition ATM card transactions 2010



Source: Bank of Thailand

<sup>5</sup> Only commercial banks excluding SFIs

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Table 3: Commercial banks' plastic card transactions in 2010

	Volume		Value	
	Transactions (in Millions)	Percentage	Billion baht	Percentage
ATM cards				
- Withdrawals	385.2	78.4%	1,508.0	66.1%
- Transfers	57.6	11.7%	425.9	18.7%
- Payments for goods and services	10.5	2.1%	24.2	1.1%
- Deposits	33.3	6.8%	323.6	14.2%
- Others	4.6	0.9%	0.9	0.0%
<b>Total</b>	<b>491.3</b>	<b>100.0%</b>	<b>2,282.7</b>	<b>100.0%</b>
ATM cards				
- Withdrawals	828.6	76.3%	3,670.2	58.3%
- Transfers	163.3	15.0%	2,294.4	36.5%
- Payments for goods and services	43.7	4.0%	111.9	1.8%
- Deposits	22.0	2.0%	217.1	3.5%
- Others	27.8	2.6%	0.0	0.0%
<b>Total</b>	<b>1,085.4</b>	<b>100.0%</b>	<b>6,293.7</b>	<b>100.0%</b>

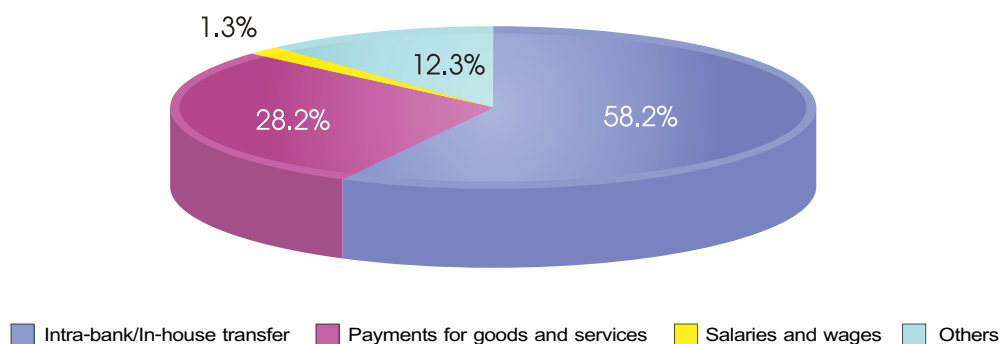
terminals continued to grow despite a small rate of growth of 5.5 percent while other transaction categories either declined or remained stable. From these statistics, it can be seen that cash deposits through ADM terminals are welcomed by users.

#### 3.2.7 Internet banking

Internet banking was popular among bank customers and usage expanded swiftly in line with greater confidence in the security system.

In 2010, the number of internet banking transactions increased by 23.1 percent from 49.4 million transactions to 60.8 million transactions. The total value of transactions in turn rose by 38.6 percent, from 5.7 to 7.9 trillion baht.

Figure 25: Volume of internet banking transactions in 2010



Source: Bank of Thailand

In terms of types of usage, intra-bank transfers accounted for 58.2 percent of all transactions, while payments for goods and services registered at 28.2 percent and inter-bank transfers and payments of salaries and wages were 12.3 and 1.3 percent, respectively.

### 3.2.8 Electronic money

The provision of e-Money services can be categorized into 2 types: card-based (value stored on card) and network-based (value stored on system). In Thailand, at the end of 2010, there were 17 e-Money operators under the BOT's supervision, increasing from 9 operators registered last year. The number of e-Money transactions was 221.5 million transactions, equivalent to the total value of 17.7 billion baht, increasing from the previous year by 115.0 and 68.2 percent, respectively. Such development reflects a growing popularity in e-Money as well an increase in the number of legally registered service providers. At the end of 2010, there were 11.5 million cards or accounts in the system.

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#### Box 11: Oversight of e-Money operators

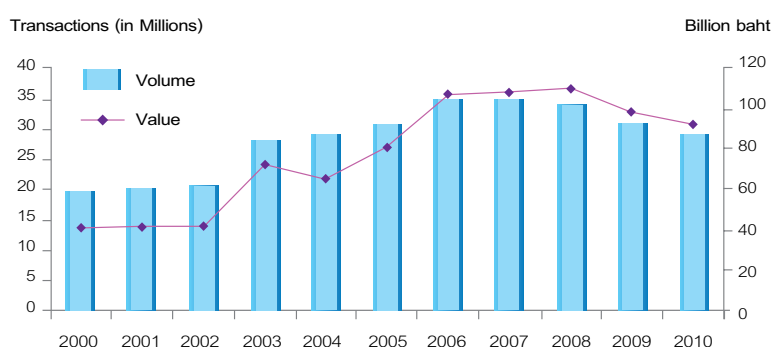
The provision of e-Money services is governed by 2 pieces of legislations namely the Ministry of Finance's Notification on Business that Requires a Permit According to Section 5 of the Notification of the Revolution Council NO. 58 (e-Money operations) and the Royal Decree Regulating Electronic Payment Service Business B.E. 2551. At present, e-Money operators under supervision fall under 2 categories as follows.

1. The provision of e-Money services for the purchase of goods and services from many service providers at the outlets which are part of the same sales and distributions system. At the end of 2010, there were 5 non-bank e-Money service providers namely Central Department Store Company Limited, Chevron (Thailand) Company Limited, Major Cineplex Group Public Company Limited, International Commercial Coordination Company Limited, and Bangkok Mass Transit System Public Company Limited.
2. The provision of e-Money services for the purchase of goods and services from many service providers with no restrictions on outlets and sales and distributions systems. There were 12 bank and non-bank e-Money service providers as follows.

Bank	Non-bank
Bangkok Bank Public Company Limited	Advanced Magic Card Company Limited
Kasikornbank Public Company Limited	Advanced mPay Company Limited
Krung Thai Bank Public Company Limited	Payment Solution Company Limited
Siam Commercial Bank Public Company Limited	Paysbuy Company Limited
Tisco Bank Public Company Limited	Thai Smart Card Company Limited
TMB Bank Public Company Limited	True Money Company Limited

### 3.3 Postal transfer and payment

Figure 26: Volume and value of funds transfers via Pay at Post

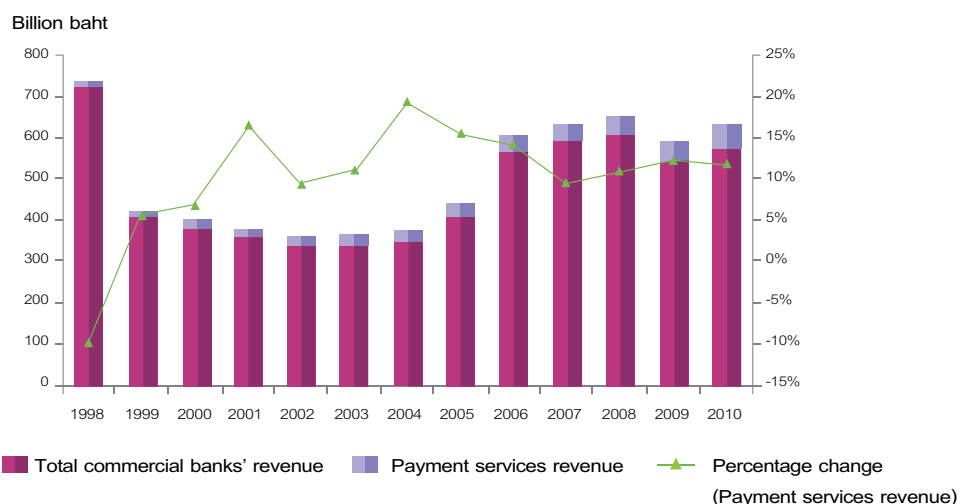


Source: Thailand Post Company Limited

In 2010, postal transfer and payment fell in both volume and value terms from 30.6 million transactions worth 98.5 billion baht to 29.0 million transactions worth 92.2 billion baht, declining by 5.3 percent in volume and 6.4 percent in value. Bill payment remained the main category of transactions conducted through Thailand Post Company Limited.

### 3.4 Revenue from payment services

Figure 27: Revenue from payment services



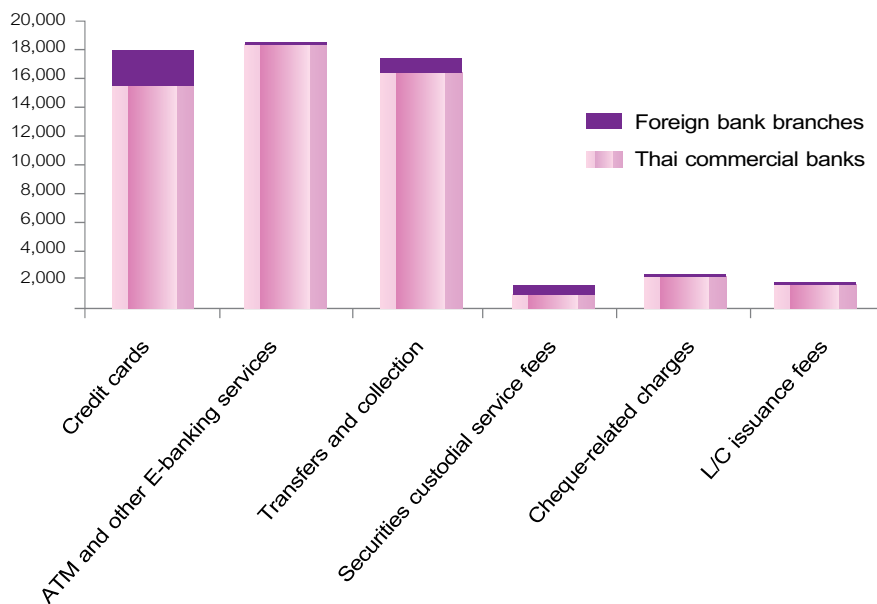
Source: Bank of Thailand

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Commercial banks' revenue from payment systems services in 2010 totalled at 59.9 billion baht or 10.5 percent of total revenue, and representing a growth rate of 11.8 percent from the previous year (Figure 27). Of all payment systems services revenue, the top three categories were ATM usage and electronic banking (30.9 percent), followed by credit card usage (30.3 percent) and transfers and payment (29.3 percent). Income from securities custodian recorded the highest growth of 15.4 percent from the previous year. It should be noted that the main source of payment systems services revenue of Thai banks were ATM usage and electronic banking, which accounted for 33.3 percent of their total payment services revenue while those of foreign banks were credit card services, which accounted for 58 percent of their total payment services revenue.

Figure 28: Revenue from payment services classified by type in 2010



Source: Bank of Thailand

# 4

## Glossary and abbreviation

PSC	Payment Systems Committee
BOT	Bank of Thailand
ACDM	ASEAN Central Bank Deputies' Meeting
ACGM	ASEAN Central Bank Governors' Meeting
AML/CFT	Anti-Money Laundering and Countering Financing of Terrorism
APN	Asian Payment Network Forum
ATM	Automated Teller Machine
ADM	Automatic Deposit Machine
B/C	Bill for Collection
BAHTNET	Bank of Thailand Automated High-value Transfer Network or a network for high-value transfers of funds
BIS	Bank for International Settlements
CLS	Continuous Linked Settlement
CDD	Customer Due Diligence or gathering and investigation of facts about a customer
ECS	Electronic Cheque Clearing System or the system for clearing cheques within Bangkok and vicinity
EFTPOS	Electronic Funds Transfer at the Point of Sale
e-Money	Electronic money
FSAP	Financial Sector Assessment Program
GDP	Gross Domestic Product (at current price)
ICAS	Imaged Cheque Clearing and Archive System or a system for clearing cheques by using their electronic images, and for storing cheque images
IMF	International Monetary Fund
ITMX	Interbank Transaction Management and Exchange
KYC	Know Your Customer or identification checking of a customer
MOU	Memorandum of Understanding



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## Glossary and abbreviation

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NECTEC	National Electronics and Computer Technology Center
NITMX	National ITMC Company Limited
NPCS	National Payment Card Standard
ORFT	Online Retail Funds Transfer
PvP	Payment versus Payment
RTGS	Real Time Gross Settlement
SIPS	Systemically Important Payment Systems
SRS	Securities Requirement for Settlement
WC-PSS	Working Committee on Payment and Settlement System

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*Royal Decree Regulating Electronic Payment Service Business B.E. 2551 (16 September 2008)*, The Government Gazette, Volume 125 Section 99a (Gor), Pages 1-12

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TABLE 1: Basic statistical data

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
Population (millions)	62.42	62.83	63.04	63.39	63.53	63.88
GDP current price (billion baht)	7,092.9	7,844.9	8,525.2	9,080.4	9,041.5	10,102.9
GDP per capita (baht)	103,671.01	114,803.50	124,377.10	131,717.80	129,875.10	143,612.50
Exchange rate vis-à-vis US\$ (at year-end)	41.17	36.04	33.75	34.93	33.36	30.15

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

<sup>P</sup> Preliminary Data

TABLE 2: Technological infrastructure

	2005	2006	2007	2008	2009	2010
Total fixed network telephone subscribers (millions)	7.00	7.04	7.02	6.97	6.85	6.65
Total mobile telephone subscribers (millions)	32.00	41.30	51.60	63.69	69.50	73.05
Postpaid	5.25	6.32	5.60	6.54	7.39	7.84
Prepaid	26.75	34.98	46.00	57.15	62.11	65.21
Total Internet users (millions)	9.91	11.41	13.42	16.10	18.30	nav.
Penetration rates						
Fixed network telephone (%)	11.21	11.21	11.14	10.99	10.78	10.41
Mobile telephone (%)	51.27	65.73	81.86	100.48	109.40	114.36
Internet (%)	15.87	18.17	21.28	25.40	28.81	nav.

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

**TABLE 3: Narrow Money<sup>1</sup> (at year-end, billion baht)**

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
<b>Currency</b>	781.70	806.37	878.33	962.63	1,045.11	1,156.43
Held by business and household sector	630.71	652.90	720.05	752.33	843.96	937.20
Held by commercial banks	132.65	135.11	140.24	184.76	178.97	193.50
Held by finance companies	0.00	0.00	0.00	0.00	0.00	0.00
Held by specialized banks	17.16	17.13	16.71	24.23	22.18	25.74
<b>Demand deposits</b>	259.51	258.57	279.85	288.90	330.59	365.24
Demand deposits at Bank of Thailand	3.30	3.67	3.85	15.11	3.13	2.94
Demand deposits at commercial banks	252.03	252.06	271.41	269.77	321.33	357.38
Demand deposit at specialized banks	4.18	2.84	4.59	4.02	6.14	4.92
<b>Narrow Money</b>	890.22	911.47	999.90	1,041.22	1,174.55	1,302.44
Currency held by business and household sector as % of Narrow money	70.8%	71.6%	72.0%	72.3%	71.9%	72.0%
Demand deposits held by business and household sector as % of Narrow money	29.2%	28.4%	28.0%	27.7%	28.1%	28.0%

Source: Bank of Thailand

<sup>1</sup> Currency in circulation and demand deposits at commercial banks and specialized banks

<sup>P</sup> Preliminary Data

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

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
Banknotes and coins <sup>1</sup>	630.71	652.90	720.05	752.33	843.96	937.20
Demand deposits	259.51	258.57	279.85	288.90	330.59	365.24
Narrow money <sup>2</sup>	890.22	911.47	999.90	1,041.22	1,174.55	1,302.44
Broad money <sup>3</sup>	7,927	8,573	9,109	9,944	10,617	11,776

Source: Bank of Thailand

<sup>1</sup> Banknotes outside depository corporations and coins issued by central government

<sup>2</sup> Currency in circulation and demand deposits at commercial banks and specialized banks

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

<sup>P</sup> Preliminary Data

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

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
Balances held at central bank	57.0	56.8	51.5	58.5	48.2	78.2
Required reserves	375.0	404.8	408.2	426.7	425.9	457.8
Free reserves	648.0	743.2	921.2	1,382.2	1,908.3	2,110.7
Transferable deposits at other banks	6.0	5.1	6.7	5.0	3.7	6.7
Memorandum item:						
Institutions borrowing from central bank	113.0	80.1	75.8	19.2	14.9	10.0

Source: Bank of Thailand

<sup>P</sup> Preliminary Data

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

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
<b>Paper-based<sup>1</sup>:</b>	87,365	127,774	130,235	129,126	123,202	114,558
In-house cheque	nav.	43,681	49,503	49,900	48,310	39,435
Interbank cheque	87,365	84,093	80,732	79,227	74,892	75,123
<b>Payment cards:</b>	1,014,782	1,214,314	1,401,241	1,601,273	1,747,320	1,942,936
ATM card <sup>2</sup>	535,298	646,304	592,653	555,826	556,613	542,707
for cash withdrawal	472,640	553,837	473,532	419,610	387,175	422,546
for other purposes <sup>3</sup>	62,658	92,467	119,121	136,216	169,438	120,161
Debit card	262,484	326,105	538,288	761,142	895,708	1,085,356
for purchasing purpose via EFTPOS	6,016	6,762	9,536	11,496	11,913	13,802
for other purposes <sup>4</sup>	256,468	319,343	528,751	749,646	883,794	1,071,555
Credit card <sup>5</sup>	217,000	241,904	270,300	284,305	294,999	314,873
for purchasing purpose	195,293	215,010	237,798	251,128	263,424	282,597
for other purposes <sup>6</sup>	21,707	26,894	32,502	33,177	31,575	32,276
<b>Automated:</b>	161,885	177,801	203,536	220,128	237,630	274,018
Direct credit <sup>7</sup>	96,828	105,731	124,236	134,010	146,151	166,372
Direct debit <sup>8</sup>	47,825	53,277	59,967	64,985	68,583	80,621
ITMX Bulk Payment (SMART)	15,728	17,072	17,568	19,205	20,891	24,702
BAHTNET <sup>9</sup>	1,504	1,721	1,766	1,929	2,005	2,323

Source: Bank of Thailand

<sup>1</sup> 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.

<sup>2</sup> Include data from three Special Financial Institutions.

<sup>3</sup> Data included purchasing goods and services, deposit and funds transfer

<sup>4</sup> Data included purchasing goods and services via other channels, cash withdrawal, deposit and funds transfer

<sup>5</sup> Data included bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand

<sup>6</sup> Data included cash withdrawal, cash advance, deposit and funds transfer

<sup>7</sup> Intra-bank pre-authorized direct credit

<sup>8</sup> Intra-bank pre-authorized direct debit

<sup>9</sup> Included interbank funds transfer, third party funds transfer, DVP/RVP for securities, Multilateral Funds Transfer and Bilateral R/P.

<sup>P</sup> Preliminary Data



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

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
<b>Paper-based<sup>1</sup>:</b>	<b>27,737</b>	<b>48,200</b>	<b>55,637</b>	<b>62,147</b>	<b>56,066</b>	<b>51,698</b>
In-house cheque	nav.	18,080	23,099	25,061	22,473	17,918
Interbank cheque	27,737	30,121	32,537	37,086	33,593	33,780
<b>Payment cards:</b>	<b>4,730</b>	<b>5,831</b>	<b>6,650</b>	<b>7,919</b>	<b>8,457</b>	<b>9,854</b>
ATM card <sup>2</sup>	2,360	2,859	2,607	2,645	2,643	2,508
for cash withdrawal	1,847	2,190	1,840	1,634	1,498	1,721
for other purposes <sup>3</sup>	513	668	767	1,011	1,145	787
Debit card	1,766	2,240	3,205	4,354	4,876	6,294
for purchasing purpose via EFTPOS	10	12	19	24	24	30
for other purposes <sup>4</sup>	1,756	2,228	3,186	4,330	4,852	6,263
Credit card <sup>5</sup>	604	732	839	921	937	1,052
for purchasing purpose	469	561	636	711	737	845
for other purposes <sup>6</sup>	135	171	203	210	200	207
<b>Automated:</b>	<b>110,457</b>	<b>148,778</b>	<b>190,210</b>	<b>286,191</b>	<b>498,861</b>	<b>665,846</b>
Direct credit <sup>7</sup>	2,907	3,436	5,351	6,044	6,698	8,121
Direct debit <sup>8</sup>	1,111	1,238	1,699	1,847	1,676	2,021
ITMX Bulk Payment (SMART)	806	802	793	828	868	1,081
BAHTNET <sup>9</sup>	105,634	143,302	182,368	277,472	489,619	654,623

Source: Bank of Thailand

<sup>1</sup> 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.

<sup>2</sup> Include data from three Special Financial Institutions.

<sup>3</sup> Data included purchasing goods and services, deposit and funds transfer

<sup>4</sup> Data included purchasing goods and services via other channels, cash withdrawal, deposit and funds transfer

<sup>5</sup> Data included bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand

<sup>6</sup> Data included cash withdrawal, cash advance, deposit and funds transfer

<sup>7</sup> Intra-bank pre-authorized direct credit

<sup>8</sup> Intra-bank pre-authorized direct debit

<sup>9</sup> Included interbank funds transfer, third party funds transfer, DVP/RVP for securities, Multilateral Funds Transfer and Bilateral R/P.

<sup>P</sup> Preliminary Data

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

	2005	2006	2007	2008	2009	2010
Notes and coins	781,698	806,380	878,331	993,148	1,095,159	1,187,828
Notes:	753,256	773,848	842,624	954,484	1,054,484	1,144,480
500000 baht	118	118	117	117	117	116
1000 baht	552,606	571,739	628,175	701,711	774,058	889,617
500 baht	99,488	94,712	98,497	119,283	140,972	113,746
100 baht	70,768	74,843	82,435	97,484	98,605	98,235
60 baht	458	1,154	1,157	1,161	1,163	1,166
50 baht	8,264	8,787	7,819	9,377	13,062	12,799
20 baht	18,087	19,038	20,741	21,674	22,835	25,134
10 baht	3,228	3,218	3,357	3,351	3,346	3,342
5 baht	123	123	196	196	196	195
1 baht	107	107	121	121	121	121
50 satang	9	9	9	9	9	9
Coins:	28,442	32,532	35,707	38,664	40,675	43,348

Source: Bank of Thailand

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TABLE 9: Institutional infrastructure

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
<b>Central Bank</b>						
Number of Institutions	1	1	1	1	1	1
Number of Branches	3	3	3	3	3	3
Number of Accounts <sup>1</sup>	992	366	287	260	226	231
Value of Accounts (million baht) <sup>1</sup>	117,607	174,639	151,137	159,678	250,262	422,059
<b>Thai Commercial Banks</b>						
Number of Institutions	16	15	18	18	17	18
Number of Branches	4,228	4,701	5,070	5,477	5,791	5,961
Number of Accounts	62,416,191	68,154,739	73,108,528	75,259,745	76,078,336	79,073,950
Value of Accounts (million baht)	5,684,676	5,925,445	5,843,995	6,535,094	6,557,653	6,886,058
<b>Specialized Financial Institutions</b>						
Number of Institutions	6	6	6	6	6	6
Number of Branches	1,386	1,699	1,768	1,796	1,853	2,002
Number of Accounts	40,963,967	45,475,345	36,651,097	42,713,869	41,618,537	37,838,856
Value of Accounts (million baht)	1,374,099	1,549,498	1,341,482	1,809,653	2,175,906	2,435,471
<b>Foreign Bank Branches</b>						
Number of Institutions	17	17	16	16	15	15
Number of Branches	17	17	16	16	15	15
Number of Accounts	79,034	83,180	219,789	90,115	89,866	92,402
Value of Accounts (million baht)	558,619	595,896	673,490	507,009	466,418	511,604
<b>Post Office</b>						
Number of Institutions	1	1	1	1	1	1
Number of Branches	1,146	1,158	1,176	1,188	1,254	1,281
Number of Accounts	-	-	-	-	-	-
Value of Accounts (million baht)	-	-	-	-	-	-

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

<sup>1</sup> Exclude regional offices

<sup>P</sup> Preliminary Data

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

	2005	2006	2007	2008	2009	2010
<b>Paper-based:</b>	87,365	84,093	80,732	79,227	74,892	75,123
ECS	64,065	61,445	59,026	57,833	53,926	53,864
Provincial Cheques	16,473	15,935	15,056	14,666	14,353	14,533
B/C <sup>1</sup>	6,827	6,714	6,649	6,728	6,613	6,726
<b>Automated:</b>	45,228	59,872	75,300	100,181	99,110	116,532
BAHTNET <sup>2</sup>	1,504	1,721	1,766	1,929	2,005	2,323
ITMX Bulk Payment (SMART)	15,728	17,072	17,568	19,205	20,891	24,702
ORFT-ATM (Online Retail Funds Transfer)	27,996	41,079	55,966	79,047	76,214	89,506

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

<sup>1</sup> Inter-provincial cheques exchanged at the Electronic Clearing House

<sup>2</sup> Data include interbank funds transfer, third party funds transfer, DVP/RVP for securities, Multilateral Funds Transfer and Bilateral R/P.

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

	2005	2006	2007	2008	2009	2010
<b>Paper-based:</b>	27,737	30,121	32,537	37,086	33,593	33,780
ECS	25,063	27,175	29,524	33,912	30,473	30,247
Provincial Cheques	2,371	2,617	2,667	2,798	2,761	3,137
B/C <sup>1</sup>	303	329	346	376	359	396
<b>Automated:</b>	106,626	144,374	183,509	278,778	490,940	656,252
BAHTNET <sup>2</sup>	105,634	143,302	182,368	277,472	489,619	654,623
ITMX Bulk Payment (SMART)	806	802	793	828	868	1,081
ORFT-ATM (Online Retail Funds Transfer)	187	270	349	478	453	548

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

<sup>1</sup> Inter-provincial cheques exchanged at the Electronic Clearing House

<sup>2</sup> Data include inter-bank funds transfer, third party funds transfer, DVP/RVP for securities, Multilateral Funds Transfer and Bilateral R/P.

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

	2005	2006	2007	2008	2009	2010
<b>Bond registry system:</b>						
Equity securities	-	-	-	-	-	-
Government securities	neg.	0.01	0.01	0.01	0.01	0.01
<b>Book-entry system:</b>						
Equity securities	2.47	2.45	2.36	2.41	2.46	2.83
Government securities	0.08	0.06	0.05	0.09	0.09	0.13

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)**

	2005	2006	2007	2008	2009	2010
<b>Bond registry system:</b>						
Equity securities	-	-	-	-	-	-
Government securities	8	35	23	33	42	20
<b>Book-entry system:</b>						
Equity securities	623.0	694.0	713.6	625.8	539.0	816.3
Government securities	6,167	10,666	27,002	58,647	51,071	66,817

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

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

	2005	2006	2007	2008	2009	2010
BAHTNET	68	665	67	69	65	66
ECS	38	40	40	40	38	38
Provincial Cheque Clearing	18	21	22	23	21	22
B/C <sup>1</sup>	37	39	39	39	37	37
ITMX Bulk Payment (SMART)	26	29	33	33	33	33
<b>Bond registry system:</b>						
Equity securities	-	-	-	-	-	-
Government securities	235,380	247,700	296,867	308,188	633,708	529,237
<b>Book-entry system:</b>						
Equity securities	73	74	77	91	88	89
Government securities <sup>2</sup>	5,124	79	77	91	88	89

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

<sup>1</sup> Inter-provincial cheques exchanged at the Electronic Clearing House

<sup>2</sup> Government securities depository services was transferred from Bank of Thailand to Thailand Securities Depository Co., Ltd. in 2006.

**TABLE 15: Number of ATMs**

	2005	2006	2007	2008	2009	2010
<b>Total</b>	<b>15,784</b>	<b>21,988</b>	<b>25,943</b>	<b>34,796</b>	<b>39,454</b>	<b>44,468</b>
Bangkok	6,373	8,675	9,883	12,624	13,586	14,639
Central	5,059	6,951	8,818	11,871	13,951	15,669
Northeast	1,375	2,069	2,491	3,673	4,370	5,314
North	1,367	2,072	2,274	3,230	3,707	4,304
South	1,610	2,221	2,477	3,398	3,840	4,542

Source: Bank of Thailand

**TABLE 16: Number of EFTPOS terminals<sup>1</sup>**

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
<b>Total</b>	<b>102,000</b>	<b>208,942</b>	<b>218,829</b>	<b>259,567</b>	<b>247,837</b>	<b>287,151</b>

Source: Bank of Thailand

<sup>1</sup> Since 2006, data is collected from banks and some credit card companies.

<sup>P</sup> Preliminary Data

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**TABLE 17: Number of payment cards**

	2005	2006	2007	2008	2009	2010
<b>Total</b>	<b>49,754,883</b>	<b>55,698,708</b>	<b>57,929,150</b>	<b>61,661,578</b>	<b>65,232,748</b>	<b>69,318,320</b>
Credit card <sup>1</sup>	9,958,571	10,900,566	12,003,369	12,971,694	13,489,422	14,196,173
ATM card <sup>2</sup>	28,752,512	30,845,358	22,632,173	22,423,525	21,039,987	20,991,627
Debit card <sup>3</sup>	11,043,800	13,952,784	23,293,608	26,266,359	30,703,339	34,130,520

Source: Bank of Thailand

<sup>1</sup> Data include non-bank

<sup>2</sup> Data include Government Saving Bank , Government Housing Bank and Islam Bank of Thailand .

<sup>3</sup> Data include Government Saving Bank

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

	2005	2006	2007	2008	2009	2010
<b>Postal payments total</b>	<b>30.63</b>	<b>34.69</b>	<b>34.45</b>	<b>33.69</b>	<b>30.62</b>	<b>29.00</b>
Domestic money order total <sup>1</sup>	29.66	33.77	33.83	33.19	30.21	28.65
Domestic postal order	0.93	0.86	0.58	0.46	0.38	0.33
International money order	0.04	0.03	0.02	0.02	0.02	0.01
Incoming	0.04	0.03	0.02	0.02	0.02	0.01
Outgoing	0.00	neg.	neg.	0.00	0.00	0.00

Source: Thailand Post Co.,Ltd.

<sup>1</sup> Include domestic money order and Pay at Post

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

	2005	2006	2007	2008	2009	2010
<b>Postal payments total</b>	<b>81.17</b>	<b>107.06</b>	<b>107.91</b>	<b>110.04</b>	<b>98.52</b>	<b>92.24</b>
Domestic money order total <sup>1</sup>	80.19	105.61	106.71	108.86	97.52	91.49
Domestic postal order	0.21	0.19	0.14	0.12	0.10	0.08
International money order	0.77	0.63	0.53	0.53	0.45	0.34
Incoming	0.76	0.62	0.52	0.53	0.44	0.33
Outgoing	0.01	0.01	0.01	0.01	0.00	0.01

Source: Thailand Post Co.,Ltd.

<sup>1</sup> Include domestic money order and Pay at Post

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

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
Total	31,431	36,291	39,858	44,720	49,568	55,448
Credit card	8,007	9,792	11,202	12,934	13,451	15,562
ATM card and e-banking	9,107	9,976	10,710	12,430	16,539	18,477
Money transfer and collection	10,520	11,711	12,977	14,310	15,148	16,641
Securities custodian	548	756	820	856	815	957
Cheque-related fee	1,100	1,965	2,269	2,365	2,128	2,164
Letter of credit	2,149	2,091	1,880	1,825	1,487	1,647

Source: Bank of Thailand

<sup>P</sup> Preliminary Data

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

	2005	2006	2007	2008	2009	2010 <sup>P</sup>
Total	2,936	2,955	3,146	2,990	3,977	4,422
Credit card	717	873	1,083	1,218	2,356	2,564
ATM card and e-banking	60	59	59	57	46	47
Money transfer and collection	788	763	772	919	874	912
Securities custodian	808	732	753	611	577	650
Cheque-related fee	206	244	239	19	15	129
Letter of credit	357	284	240	166	109	120

Source: Bank of Thailand

<sup>P</sup> Preliminary Data

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

	2005	2006	2007	2008	2009	2010
BAHTNET <sup>1</sup>	6,138	6,997	7,206	7,716	8,251	9,600
ECS	261,492	252,858	240,924	231,334	221,919	222,578
Provincial Cheque Clearing	67,236	65,574	61,453	58,663	59,065	60,053
B/C <sup>2</sup>	27,865	27,630	27,141	26,911	27,216	27,795
SMART	64,198	70,255	71,704	76,819	85,972	102,074

Source: Bank of Thailand

<sup>1</sup> Data include inter-bank funds transfer, third party funds transfer, DVP/RVP for securities, Multilateral Funds Transfer and Bilateral R/P.

<sup>2</sup> Inter-provincial cheques exchanged at the Electronic Clearing House



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**TABLE 23: Daily averages of BOT payment services. Value of transactions (billion baht)**

	2005	2006	2007	2008	2009	2010
BAHTNET <sup>1</sup>	431	583	744	1,110	2,015	2,705
ECS	102	112	121	136	125	125
Provincial Cheque Clearing	9.7	10.8	10.9	11.2	11.4	13.0
B/C <sup>2</sup>	1.2	1.4	1.4	1.5	1.5	1.6
SMART	3.3	3.3	3.2	3.3	3.6	4.5

Source: Bank of Thailand

<sup>1</sup> Data include inter-bank funds transfer, third party funds transfer, DVP/RVP for securities, Multilateral Funds Transfer and Bilateral R/P.

<sup>2</sup> Inter-provincial cheques exchanged at the Electronic Clearing House

**TABLE 24: Peak day figures of BOT payment services. Volume of transactions (transactions)**

	2005	2006	2007	2008	2009	2010
BAHTNET <sup>1</sup>	10,165	13,421	11,488	11,969	12,898	15,880
ECS	597,938	590,830	514,286	495,463	473,362	547,686
Provincial Cheque Clearing	144,682	141,274	129,731	115,119	111,561	131,468
B/C <sup>2</sup>	128,748	124,162	120,434	125,038	122,138	122,979
SMART	234,684	300,353	322,497	361,746	314,828	350,156

Source: Bank of Thailand

<sup>1</sup> Data include inter-bank funds transfer, third party funds transfer, DVP/RVP for securities, Multilateral Funds Transfer and Bilateral R/P.

<sup>2</sup> Inter-provincial cheques exchanged at the Electronic Clearing House

**TABLE 25: Peak day figures of BOT payment services. Value of transactions (billion baht)**

	2005	2006	2007	2008	2009	2010
BAHTNET <sup>1</sup>	723.1	1,378.4	1,236.6	1,820.6	2,829.3	4,193.3
ECS	209.3	217.2	247.4	296.3	252.4	292.8
Provincial Cheque Clearing	16.4	18.3	20.3	20.9	19.1	22.6
B/C <sup>2</sup>	4.6	4.7	4.9	5.7	5.3	5.9
SMART	16.6	25.5	14.6	15.0	16.8	15.7

Source: Bank of Thailand

<sup>1</sup> Data include inter-bank funds transfer, third party funds transfer, DVP/RVP for securities, Multilateral Funds Transfer and Bilateral R/P.

<sup>2</sup> Inter-provincial cheques exchanged at the Electronic Clearing House

**TABLE 26: Use of credit cards and debit cards via EFTPOS<sup>1</sup>**  
 (Monthly average per card, baht)

	2005	2006	2007	2008	2009	2010
Credit card	3,248	3,263	3,331	3,395	3,462	3,764
Debit card	nav.	73	73	75	65	74

Source: Bank of Thailand

<sup>1</sup> Domestic and oversea spending of Thai credit cards and Thai debit cards via EFTPOS.

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

	2005	2006	2007	2008	2009	2010
ATM card	nav.	6,063	7,018	6,696	6,459	6,767
Debit card	nav.	7,328	7,051	8,752	8,618	9,165

Source: Bank of Thailand

**TABLE 28: Use of mobile banking<sup>1</sup>**

	2005	2006	2007	2008	2009	2010
No. of agreements	127,240	133,419	168,434	232,758	257,677	519,450
Volume of transactions	206,812	238,501	228,578	4,670,377	11,107,223	15,884,571
Value of transactions (million baht)	334	155	112	25,218	63,363	109,816

Source: Bank of Thailand

<sup>1</sup> Data include mobile banking transactions using credit cards, debit cards and account numbers.

**TABLE 29: Use of internet banking**

	2005	2006	2007	2008	2009	2010
No. of agreements	1,852,007	2,139,325	3,135,502	4,009,907	3,165,663	4,822,947
Volume of transactions <sup>1</sup>	11,099,729	15,488,741	21,220,469	31,375,931	49,368,820	60,793,740
Value of transactions (billion baht)	2,722.4	3,584.0	4,896.5	5,073.0	5,692.6	7,891.7

Source: Bank of Thailand

<sup>1</sup> Enquiry transactions were excluded

## 6 Statistical tables

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**TABLE 30: Use of ORFT interbank retail funds transfer (Online Retail Funds Transfer: ORFT).  
Volume of transactions (in thousands)**

	2005	2006	2007	2008	2009	2010
<b>Total ORFT</b>	27,996	43,279	61,234	87,225	84,265	98,668
ATM	27,996	41,079	55,966	79,047	76,214	89,506
Counter <sup>1</sup>	nav.	2,200	5,267	8,177	8,051	9,162
Internet banking <sup>2</sup>	nav.	nav.	nav.	nav.	6,656	10,941

Sources: National ITMX Co., Ltd. and Processing Center Co., Ltd.

<sup>1</sup> Data collected since 2006.

<sup>2</sup> Data collected since 2009.

**TABLE 31: Use of ORFT interbank retail funds transfer (Online Retail Funds Transfer: ORFT).  
Value of Transactions (billion baht)**

	2005	2006	2007	2008	2009	2010
<b>Total ORFT</b>	187	293	427	606	583	720
ATM	187	270	349	478	453	548
Counter <sup>1</sup>	nav.	23	78	128	130	172
Internet banking <sup>2</sup>	nav.	nav.	nav.	nav.	64	111

Sources: National ITMX Co., Ltd. and Processing Center Co., Ltd.

<sup>1</sup> Data collected since 2006.

<sup>2</sup> Data collected since 2009.

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

	2005	2006	2007	2008	2009	2010
Total bill payment <sup>1</sup>	nav.	66,889	72,471	77,896	84,772	82,737
Cash	nav.	58,806	69,135	74,011	79,117	77,839
Cheque	nav.	1,457	1,889	2,417	3,751	2,667
Others	nav.	6,626	1,446	1,468	1,905	2,231

Source: Bank of Thailand

<sup>1</sup> Data collected from banks since 2006.

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

	2005	2006	2007	2008	2009	2010
Total bill payment <sup>1</sup>	nav.	3,909	5,182	6,758	5,201	6,250
Cash	nav.	898	1,362	2,586	1,650	1,854
Cheque	nav.	1,904	2,241	3,249	2,460	3,064
Others	nav.	1,107	1,578	923	1,092	1,333

Source: Bank of Thailand

<sup>1</sup> Data collected from banks since 2006.

**TABLE 34: Use of e-Money<sup>1</sup>**

	2005	2006	2007	2008	2009	2010
No. of cards/accounts	nav.	3,190,135	3,689,484	5,477,324	7,667,215	11,483,751
Volume of transactions	nav.	23,644,155	75,642,216	77,953,841	103,007,328	221,458,769
Value of transactions (million baht)	nav.	5,532.4	8,660.9	8,383.1	10,549.0	17,742.9

Source: Bank of Thailand

<sup>1</sup> Data collected since 2006 and excluded top-up cards.

## 6 Statistical tables

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TABLE 35: Fraud through specific payment channels and payment instruments<sup>1</sup>  
(million baht)

	2005	2006	2007	2008	2009	2010
Total fraud	nav.	345	620	519	793	186
Payment channels <sup>2</sup>	nav.	90	389	315	561	44
Payment instruments <sup>3</sup>	nav.	254	231	204	232	142

Source: Bank of Thailand

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

<sup>2</sup> Banks report only final result. Fraud through specific payment channels include phone banking, mobile banking, internet banking, pass book and other channels.

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

Symbols used in tables	Meaning
“-”	No data
“nav.”	Data not available
“neg.”	Negligible in value compared to all other data in the same table
“0”	Zero or near zero in value

- Table 1 - Gross Domestic Product expressed in current prices  
 - Using the average foreign exchange rate
- Tables 6-7 - Data on cheque transactions since 2006 includes both intra-bank/in-house and inter-bank cheques and is compiled from all commercial banks as well as three Specialized Financial Institutions.
- Credit transfer data refers to pre-authorized intra-bank direct credit funds transfers.
  - Debit transfer data refers to pre-authorized intra-bank direct debit funds transfers
  - BAHTNET data consists of data relating to inter-bank funds transfers, third-party funds transfers, DVP/RVP securities transfers and multilateral funds transfers.
  - Data on credit card spending includes information on non-bank credit cards
  - Data on volume of credit card transactions includes bank card, affinity cards, non-bank cards/affinity cards, and foreign credit cards used in Thailand
- Table 9 - Excludes data on the number of accounts and outstanding amounts held by Bank of Thailand's regional offices

## 7 Notes of statistical tables

94	Tables 10-11	<ul style="list-style-type: none"><li>- Data on bills for collection (B/C) refers only to bills for collection delivered to the Electronic Clearing House in Bangkok</li><li>- BAHTNET data includes data relating to inter-bank funds transfers, third-party funds transfers, DVP/RVP securities transfers and multilateral funds transfers</li></ul>
	Tables 12-13	<ul style="list-style-type: none"><li>- Equity securities settlements are processed via scripless book-entry system only</li></ul>
	Table 16	<ul style="list-style-type: none"><li>- Data on the number of EFTPOS terminals since 2006 represents information consolidated from commercial banks and some credit card companies</li></ul>
	Table 17	<ul style="list-style-type: none"><li>- Data on the number of credit cards includes non-bank credit cards</li></ul>
	Tables 18-19	<ul style="list-style-type: none"><li>- Data on domestic money orders includes all domestic postal orders and Pay at Post transactions</li></ul>
	Tables 22-25	<ul style="list-style-type: none"><li>- Data on bills for collection (B/C) refers only to bills for collection delivered to the Electronic Clearing House in Bangkok</li><li>- BAHTNET data includes data relating to inter-bank funds transfers, third-party funds transfers, DVP/RVP securities transfers and multilateral funds transfers</li></ul>
	Table 26	<ul style="list-style-type: none"><li>- Average monthly spending via EFTPOS within and outside Thailand of domestically issued debit and credit cards</li></ul>
	Table 29	<ul style="list-style-type: none"><li>- Data on Internet banking transactions does not include enquiry transactions</li></ul>
	Table 33	<ul style="list-style-type: none"><li>- Electronic money data does not include data on prepaid mobile cards</li></ul>
	Table 35	<ul style="list-style-type: none"><li>- Data collected from commercial banks and some credit card companies</li></ul>

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