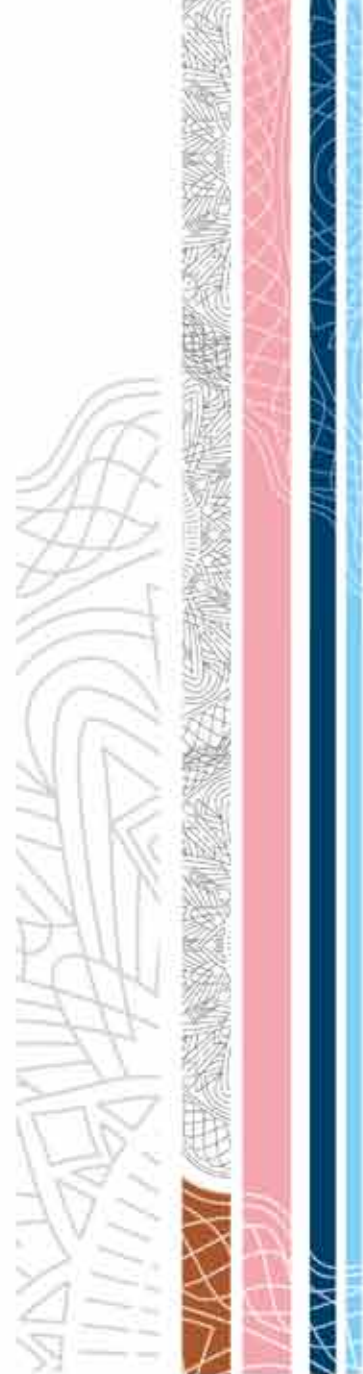
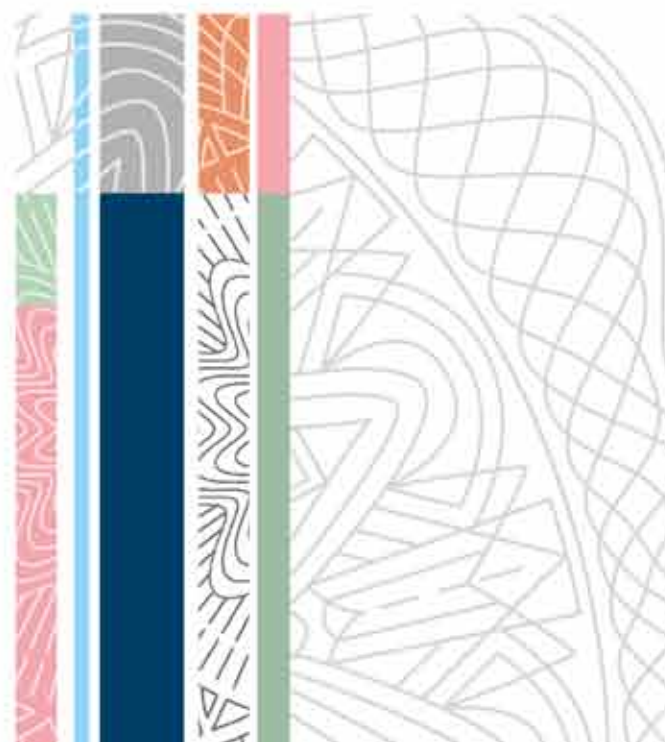




BANK OF THAILAND



PAYMENT SYSTEMS REPORT 2012



Payment Systems Report

2012

Message from the Chairman of the Payment Systems Committee



The year 2012 is the year that marks the beginning of the Payment Systems RoadMap 2012-2016, the third Roadmap in a series, which has been carefully sequenced and formulated by the Payment Systems Committee (PSC) since 2004 to provide directions and guidance on Thailand's payment systems development

I, Chairman of the PSC, and members of the PSC believe that the progress in the development of Thailand's payment systems during the past year has all been in the right direction, with particular emphasis on efficiency enhancement, safety and stability, to deal with the continuously evolving environment and consumer needs. Given the improvement in these qualities, I believe that Thailand's payment systems will be ready to fully support users' requirements, whether public or private, thus serving as an important infrastructure to support both domestic and international economic activities.


In this regard, the development of Thailand's payment systems in the next four to five years will focus on three key areas.

The first key area of development is progression towards greater use of electronic payment system. The PSC realizes the importance and benefit in encouraging people to utilize electronic payments instead of relying on cash transactions in order to minimize the cash handling cost. As such, the PSC has mobilized various work plans, which includes cooperating with the Comptroller General's Department to encourage government offices to manage their transactions electronically, promoting financial literacy amongst payment systems, and formulating consumer protection guidelines for uses of electronic payment cards.

The PSC has also embraced the plan to improve the security technology in debit card and ATM card service in order to strengthen users' confidence. Moreover, the PSC has supported the introduction of common ticket for public transportation under the operation of the Office of Transport and Traffic Policy and Planning (OTTPP), Ministry of Transport, which aims to allow travellers to use a single ticket to travel on various types of public transportation as well as use it to make electronic payments at the merchants, thereby promoting a more convenient lifestyle for the people.

The second key area of development is cross-border payment systems connectivity, which is becoming all the more important the expansion in trade and international investments. Given the upcoming ASEAN Economic Integration in 2015, the PSC has emphasized on preparing for greater and more complex future payment systems connectivity by increasing the availability of payment systems channels, enhancing the convenience in international transactions, reducing FX settlement risk arising from time zone differences, and encouraging the use of local currencies to settle for international transactions. Moreover, the BOT has also been cooperating with neighboring countries such as the Kingdom of Cambodia, the Lao People's Democratic Republic, and the Republic of the Union of Myanmar in an effort to improve payment systems infrastructure and intra-regional payment systems connectivity.

With reference to international payment systems network, a key consideration is the establishment of common payment message standards. In this regard, Thailand is the first



country in ASEAN that has developed the National Payment Message Standard, which allows domestic businesses and banks to receive and send payment messages in the same standard format. At present, the BOT is in the process of promoting this standard for ASEAN usage in order to further enhance the convenience in receiving and sending international payment messages.

Lastly, the third key area of development is payment systems stability. The PSC fully recognizes that payment systems efficiency must be augmented with payment systems soundness in order to promote overall stability. Thus, the PSC has approved various projects to enhance Thailand's payment systems stability, namely the application of the Principles for Financial Market Infrastructures to our national context. In addition, rules, procedures, and conditions for electronic payment service providers have been improved to ensure greater security, reliability as well as suitability, given the changing economic and business environment.

The establishment of a Local Switching Network to process domestic debit card payments has also been promoted in order to reduce the reliance on foreign networks and lower risks originating from problems in foreign networks which could potentially impact domestic card users. This initiative too, will help ensure payment systems stability.

Apart from various projects under the RoadMap, the PSC has also been working to develop a vital payment systems infrastructure, that is, the Imaged Cheque Clearing and Archive System (ICAS), which has been operating in Bangkok and vicinities since February 2012, and is due to extend operation nationally by 2013. With full coverage, the ICAS will help reduce cheque clearing time for inter-provincial cheques from three to five days to only one day, thereby allowing customers to receive funds quicker as well as making currency circulation in business and economy more efficient.

Of course, the PSC and BOT alone cannot carry out all of the above tasks. Cooperation and support from related agencies such as the Ministry of Information and Communication Technology, the Electronic Transactions Commission, the Electronic Transactions Development Agency (Public Organization), the Comptroller General's Department, the Thai Chamber of Commerce, the Federation of Thai Industries, the Thai Bankers' Association, and the Foreign Banks' Association, is crucial in ensuring that efforts spent will eventually bear fruit, that is, leading to efficient and stable payment systems that is ready for incoming challenges as well as convenient and able to meet international safety standards.

I wish to take this opportunity to express my appreciation for the efforts by all related parties in supporting, assisting, and driving these projects to deliver such a commendable progress. I very much hope to receive your continued support in our future work.

Prasarn Trairatvorakul

(Mr. Prasarn Trairatvorakul)

Chairman of the Payment Systems Committee

10 June 2013

The Payment Systems Committee (PSC) |



Chairman

Mr. Prasarn Trairatvorakul
Governor



Vice Chairman

Mr. Krirk Vanikkul
Deputy Governor
Financial Institutions Stability



Committee Members

Mrs. Tongurai Limpiti
Deputy Governor
Corporate Support Services
and Banknote Management



Committee Members

Mr. Chatsiri Soponpanich
Chairman
The Thai Bankers' Association



Committee Members

Mr. Somkiat Anurath

Vice Chairman

Thai Chamber of Commerce



Committee Members

Miss Suthirat Ratanachote

Advisor

Financial and Fiscal System Development

The Comptroller General's Department



Committee Members

Mr. Rom Hiranpruk

Expert in Information Technology



Secretary

Mrs. Ruchukorn Siriyodhin

Assistant Governor

Financial Institutions Policy Group

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 interbank clearing and settlement systems.



Key payment statistics in | 2012

Total population	64.5	million
Nominal Gross Domestic Product (GDP)	11,363.0	billion baht

Technological Infrastructure

Number of fixed-line telephone subscribers per 100 persons	9.5
Number of mobile phone subscribers per 100 persons	122

Payment Statistics

Number of Thai commercial banks 16 with	6,391	branches
Number of foreign commercial banks 15 with	19	branches
Number of Specialized Financial Institutions branches	2,425	branches
Number of post office branches	1,298	branches
Number of Automated Teller Machines (ATM)	52,242	terminals
Number of EFTPOS terminals ¹	264,236	terminals
Number of credit cards	16,870,025	cards
Number of debit cards	42,988,140	cards
Number of ATM cards	24,108,467	cards
Currency in circulation per capita as of 31 December 201	17,628	baht per capita
Average cheque usage per capita ²	2	cheques per capita per year
Monthly average value of credit card payments ³	4,611	baht per credit card
Monthly average value of cash withdrawals via ATM card	6,967	baht per ATM card
Monthly average value of debit card payments ⁴	183	baht per debit card
Monthly average value of cash withdrawals via debit card	9,639	baht per debit card

¹EFTPOS (Electronic Funds Transfer at Point Of Sale) terminals are machines that banks or service providers install at retailers to collect and send information on payment transactions made through debit and credit cards.

²Average cheque usage per capita includes both interbank and in-house cheques

³Refers only to payments for goods and services through EFTPOS within and outside Thailand using domestically issued credit cards

⁴Refers only to payments for goods and services through EFTPOS within and outside Thailand using domestically issued debit cards

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I Payment systems policy | and oversight in 2012

In 2012, the Payment Systems Committee (PSC) stipulated payment systems policies and supported the Bank of Thailand (BOT) in complying with the Payment Systems Roadmap 2012 – 2016.

Figure 1: Payment Systems Roadmap 2012-2016

Vision: Making payment systems support efficient, stable and safe economic activities of the public and private sectors, both domestically and internationally

L 1 Objectives:	Efficiency enhancement			Risk reduction			Consumer protection
L 2 Projects:	Promotion and development of electronic payments		Promotion of payments systems access	Preparation for the AEC	Payment systems risk reduction		Enhancement of safe ATM usage
L 3 Plans	Promotion of electronic payments in place of cash	Electronic payment systems development	Standard setting		Reduction of risks associated with foreign exchange settlement	Reduction of risks associated with net settlements through BAHTNET	Consumer protection and financial literacy
Results:	Measures to promote efficient and safe usage of electronic payments channels to meet retail customers' needs			Varied, inclusive and efficient payment services for all population groups with appropriate consumer protection measures	Payment infrastructures that support financial systems connectivity and international trade	Risk management mechanism to handle foreign exchange settlements	Measures to deal with multilateral net settlements in BAHTNET
					Guidelines for the improvement of ATM systems to enhance safety	- Financial literacy to promote understanding and confidence in payment systems usage - Supervision to ensure confidence in payment systems usage	

Source: Bank of Thailand

The Payment Systems Roadmap 2012-2016 covers three main objectives, namely, efficiency enhancement, risk reduction and consumer protection. The progress of each objective is as follows.

1. Efficiency enhancement



1.1 Promotion and development of electronic payments

The BOT implemented plans to promote electronic payments to encourage public, as well as public sectors and private organizations, to use electronic payments in place of cash and cheques which would help enhance the efficiency and security, as well as reduce the cost of cash management in Thailand. In the first phase, the plan to promote debit card usage was implemented, covering important issues such as educating the public about the use of debit cards, formulating consumer protection measures, as well as designing benefits, incentives and other promotional measures.

The BOT, in collaboration with the Comptroller General's Department, studied problems and solutions in promoting electronic receipt and payment transactions of government agencies, which was piloted in four agencies, namely the Revenue Department, Department of Land Transport, Department of Lands and Ramathibodi Hospital. Guidelines that would help enhance the public sector's efficiency in financial management were set to ensure that the system would be accurate, fast and secure. The electronic payment system would be another channel for individuals to receive money from and pay money to government agencies in addition to cash and cheques. Moreover, plans to promote electronic payment transactions of public sectors were also prepared and sent to the Ministry of Finance for approval for subsequent implementation.

Furthermore, the PSC approved an action plan which set standards for various types of electronic cards, including ATM and debit cards along with e-Money. A time frame was set for service providers of ATM and debit cards to change the magnetic stripe cards to chip cards, as well as upgrade ATM machines to support the chip cards. These action plans would help enhance the service's safety and support system linkages among ASEAN nations. In addition, the BOT, in collaboration with the Office of Transport and Traffic Policy and Planning (OTP), formulated e-Money card standard for the transport sector's common ticket development project, in order to encourage system linkage between service providers.

1.2 ICAS (Imaged Clearing and Archive System) development

The BOT implemented the ICAS in Bangkok and its vicinities on 3 February 2012, and expanded its service to other provinces, starting with Suphan Buri on 15 November 2012 which performed smoothly. Furthermore, some member banks employed the ICAS to extend the closing time for cheque deposits. The BOT together with member banks expected to expand the use of the ICAS to nationwide coverage in 2013.

In addition, the BOT organized talks to provide knowledge and understanding about the ICAS. It also asked for cheque drawers' cooperation to cease using stamps and seals on cheques as a condition of payment authorization and avoid amending cheques which could result in delayed payment.

Box 1: Adjustments by cheque drawers to optimize the ICAS

The ICAS is a system that uses a digital image of a cheque in place of an original physical cheque in the cheque clearing process. This would help shorten the nationwide cheque clearing cycle to one business day, extend the cut-off time for cheque deposits, reduce costs of transporting physical cheques, enhance the efficiency of Thailand's cheque clearing process in order to meet international standards and strengthen the country's competitiveness.

Nevertheless, each cheque cleared through the ICAS must be converted into grayscale and black & white image so that important information on the cheque remains clear and complete. As a result, cheque drawers should avoid any action that would obscure important information on cheques or obstruct verification of the imaged cheques, thereby resulting in delayed payments. These actions include the use of stamps and seals as a condition of payment and amending cheques. Reasons against such actions are as follows.

- **Use of stamps and seals as a condition for payment approval**

The dark-shaded stamps/seals may interfere with the drawer's signature and other important information on the cheque, causing it to be unverifiable. Moreover, should the condition for payment rely on an embossed or colored stamp, the paying bank will not be able to verify the cheque because imaged cheques used in the ICAS will either be in grayscale or black & white, and as a result, banks will be unable to inspect the stamp's embossment or its true colour.



- **Amending texts on cheques**

Cheques that have been amended could be subject to potential fraud from alteration of important information on cheques. For example, when an amended cheque is accompanied by a stamp or a signature to countersign the amendment, verification and approval becomes difficult when only the cheque's image is used. This is because criminals often commit fraud by

Examples of amended and stamped cheques

Grayscale imaged cheque



Black & White imaged cheque

1.3 Local Switching development support

The BOT, with the PSC's approval, joined hands with related parties to establish a local switching (LSW) network system within Thailand to reduce dependence on international switching operators. The LSW system would help maintain stability of Thailand's payment systems by ensuring that transactions via payment cards were possible, even when problems to the international service provider's system or communication network arose.

The BOT proposed a draft of the Electronic Transactions Commission's (ETC) Notification on "Rules, Procedures and Conditions for the Electronic Payment Service Business" (No.2), B.E. 2555 (2012) to the ETC, which was signed by the Minister of Information and Communication Technology and published in the Royal Thai Government Gazette on 1 September 2012. The Notification stipulates that service providers of debit cards which were issued and used locally are required to exchange information, as well as provide domestic switching, clearing and settlement services within one year from the Notification's effective date. Moreover, existing international service providers could also request to set up a system to provide domestic services without any difficulty. As a result, all service providers would be equally regulated.

Moreover, the BOT cooperated with the Revenue Department concerning tax benefits arrangement for card holders and retailers to encourage the use of debit cards and promote the LSW. The BOT also closely monitored the progress of the National ITMX Co., Ltd., member banks, as well as service providers in taking the necessary preparation to fully utilize the LSW.

Box 2: Notification of the Electronic Transactions Commission on “Rules, Procedures and Conditions regulating Electronic Payment Service Business” (No.2), B.E. 2555 (2012)

Notification of the ETC on “Rules, Procedures and Conditions for the Electronic Payment Service Business” (No.2), B.E. 2555 (2012) stipulates the followings:

1. Local switching operators which offer payment services by debit cards for domestic purchases must only operate within the country and shall provide the following services:

- 1.1. Exchange information on debit card usage between the service provider and the acquirer and issuer;
- 1.2. Transaction switching;
- 1.3. Clearing;
- 1.4. Settlement.

2. Approval must be sought from the BOT before IT outsourcing can be acquired by service providers.

3. Service providers must comply with the rules, procedures and conditions stipulated in this Notification within one year of the effective date (i.e., by 1 September 2013). However, service providers that are unable to comply must seek approval and state their reason to the BOT before the cutoff date.



1.4 Establishment of National Payment Message Standard

The BOT together with the National Electronics and Computer Technology Center (NECTEC), the Electronic Transactions Development Agency (ETDA), commercial banks, public authorities, software and network companies, as well as a number of large businesses, implemented a pilot project to promote the use of the National Payment Message Standard (NPMS) to help facilitate the exchange of payment information between businesses and financial institutions. The standard complies with ISO 20022 and helps reduce data preparation burden for businesses and financial institutions as well as improve convenience for users.

In 2012, progress on the establishment of the NPMS included drafting the Message Standard and reply message, preparing a user's manual for the electronic payment message and conducting tests on information exchanges between commercial banks, entrepreneurs and software and network developers. In addition, a notice promoting the use of the Message Standard was issued for the ETC's approval and was later signed by the Minister of Information and Communication Technology on 2 January 2013. Moreover, the BOT cooperated with the Customs Department and other relating parties on the implementation of the Message Standard. The Customs Department subsequently began to use the Message Standard in its payment systems, namely tax payments via the e-Payment system and tax guarantee via the e-Guarantee system which were officially launched on 1 March 2013.

Furthermore, the National ITMX Co., Ltd. developed a payment gateway system for the National Single Window (NSW) project, incorporating the NPMS with plans to test information exchange of e-Guarantee and e-Payment via the payment gateway system together with the Customs Department and six commercial banks, including Bangkok Bank, Krung Thai Bank, Thai Military Bank, Bank of Ayudhya, Standard Chartered Bank (Thai) and Siam Commercial Bank. The payment gateway system was expected to be launched in August 2013.

Box 3: National Payment Message Standard

The Electronic Transactions Commission (ETC) issued a Notification on the National Payment Message Standard (Message Standard) on 2 January 2013, which was published on the ETC's website. The Notification aims to encourage businesses and financial institutions to use the message standard in exchanging information on electronic payments, as well as to upgrade and develop electronic transactions in Thailand.

Four standardized electronic payment messages were issued, covering six types of electronic payment services, namely, direct credit, direct debit, ITMX bulk payment, cheque outsourcing, BAHTNET and international payment. These four standardized electronic payment messages include two messages that customers send to banks and two messages that banks report back to customers. Details are as follows.

1. Two messages that customers send to banks:

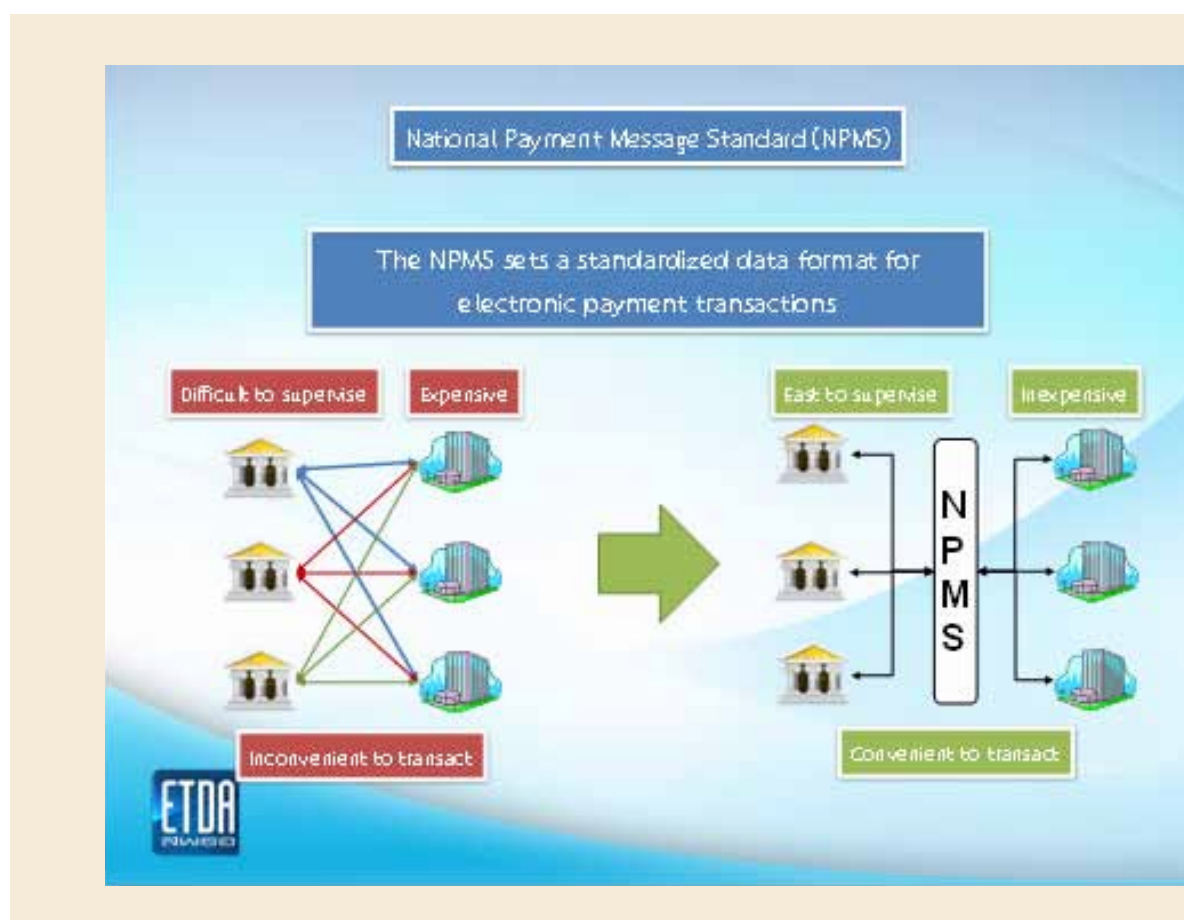
- Credit transfer message (NPMS-PAIN.001.01) For customers to initiate direct credit, cheque outsourcing, ITMX bulk payment, BAHTNET and international payment.
- Direct debit message (NPMS-PAIN.008.01) For customers to initiate direct debit

2. Two messages that banks report back to customers:

- Payment status report message (NPMS-PAIN.002.01) For banks to report payment status.
- Debit or credit notification message (NPMS-CAMT.054.01) For banks to report debit or credit payments.

These message standards would help reduce redundant investments, as well as help easy connect the exchange of payment transaction data between banks, government agencies and entrepreneurs. In addition, transactions would become more convenient through the use of a standardized data format among all banks and different types of electronic payment services.





1.5 Payment systems development to support the AEC

At the October 2003 ASEAN Summit, ASEAN leaders announced their target to pursue closer economic integration by moving towards an ASEAN Economic Community (AEC) in 2020, along with two other pillars, namely political and security cooperation and socio-cultural cooperation. Later on, at the January 2007 ASEAN Summit, ASEAN leaders agreed to accelerate the establishment of the ASEAN Economic Community from 2020 to 2015. To support economic integration under the AEC 2015 blueprint, the Working Committee on Payment and Settlement Systems (WC-PSS) was endorsed at the 6th ASEAN Central Bank Governors' Meeting (ACGM) in April 2010. The WC-PSS would be supervised by ASEAN central banks and co-chaired by the BOT and Bank Indonesia. Furthermore, the WC-PSS aimed to study the current payment systems landscape and propose strategic plans to develop a regional payment system.

In 2012, the BOT hosted the WC-PSS to discuss the scope of work and action plan of the five task forces under the WC-PSS framework. These included the task

force on trade settlement, money remittance, retail payment systems, capital market settlement and standardization. External stakeholders, such as the ASEAN Bankers Association and network operators in ASEAN were asked to attend a briefing and comment on the work of the WC-PSS. The Workshop also prepared capacity building plans and set up a study visit for BCLMV countries (Brunei, Cambodia, Laos, Myanmar and Vietnam) to ASEAN5 countries to prepare member countries' payment systems for the AEC.

Moreover, the BOT organized a workshop on Technical Standards under the Task Force on Standardization which it takes co-responsibility with Bank of Lao PDR. The workshop's objective was to enhance member countries' understanding and knowledge regarding standards on international payment transactions. In addition, two surveys were conducted on member countries, namely, Information Disclosed to Customer by Financial Institutions and Money Remittance Policies. The workshop also evaluated Thailand's readiness in providing payment services to support the move towards the AEC.

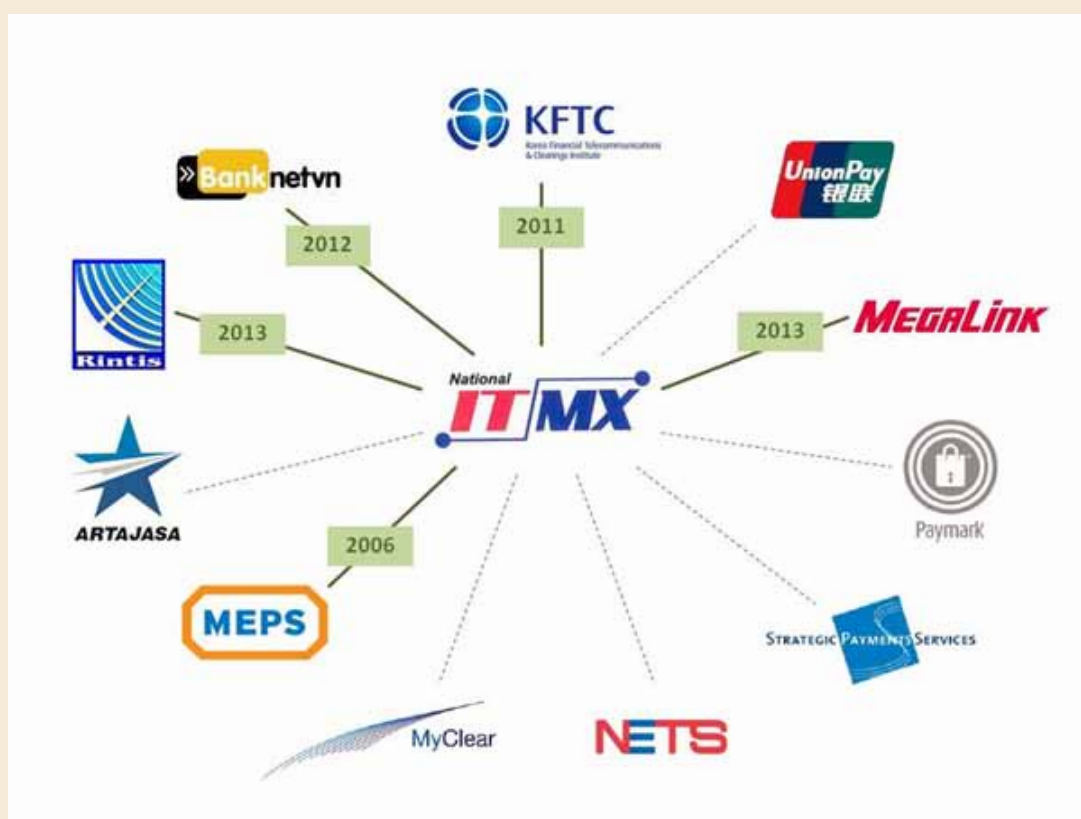
Box 4: Asian Payment Network (APN)

The Asian Payment Network (APN) is a forum for network operators of e-Payment, switching and clearing systems of Asian member countries. The APN was established in 2006 with support from ASEAN central banks. It now consists of 12 members from 10 countries, including NITMX (Thailand), RINTIS (Indonesia), ARTAJASA (Indonesia), MEPS (Malaysia), MyClear (Malaysia), NETS (Singapore), MEGALINK (the Philippines), Banknetvn (Vietnam), Paymark (New Zealand), SPS (Australia), KFTC (South Korea) and UnionPay (China).

National ITMX Co., Ltd. (NITMX) is Thailand's network operator. The NITMX links Thailand's ATM system in a bilateral arrangement to provide cross-border withdrawal services with MEPS (in 2006), KFTC (in 2011), Banknetvn (in 2012), as well as MEGALINK and RINTIS (in 2013). Under this arrangement, holders of ATM cards issued by participating Thai banks can withdraw cash from ATM machines around the world that are linked with Thailand's system and have the ATM pool logo. In addition, NITMX has plans to extend its cross-border linkage to other members and expand its services to include cross-border money transfers and the use of debit cards for payment of goods and services abroad.



APN's operations have gained support from the Retail Payment Systems Committee under the WC-PSS with an aim to promote the development of retail payment systems in the region and extend the cross-border linkage to include all countries in the region. This is also consistent with the Money Remittance Working Group's plan which would help support money remittance through transfer agents authorized.



1.6 Studies and plans for local currency development

The BOT carried out feasibility studies and set up guidelines to encourage the use of local currency for settlement of bilateral trade and investments between Thailand and ASEAN countries, as well as Thai and China, starting with THB/CNY and THB/MYR. The use of local currency would increase the options of foreign currencies that could be used to pay for goods and services, which in turn would help reduce dependence on the US dollar and lessen the risk of baht volatility relative to a particular currency. In the previous periods, the BOT proceeded as follows:

(1) In the case of THB/CNY, the BOT studied different approaches in developing the infrastructure system to support payments in yuan which was then submitted to the PSC. However, given that demand for yuan transactions was not yet substantial, commercial banks and customers would not gain much benefit from a development of a yuan payment system. During the early days, yuan transactions should thus be made through existing channels, that is, via correspondent banks in China or Hong Kong. Moreover, to encourage settlement in yuan, the BOT collaborated with commercial banks to put together a summary on yuan settlement regulations and a manual on making yuan transactions with commercial banks, in order to promote and publish information, as well as improve Thai customers' understanding on the settlement of good and service transactions in yuan. Nevertheless, the BOT would closely monitor the trend of THB/CNY transactions. Once yuan transactions became more significant, the BOT would review the opportunities and benefits gained from developing a clearing and settlement system in order to determine appropriate steps, going forward.

(2) In the case of THB/MYR, the BOT considered approaches that would encourage the use of THB/MYR and joined hands with Bank Negara Malaysia in relaxing foreign exchange regulations. Moreover, central banks were encouraged to publish THB/MYR exchange rates set by commercial banks in order to facilitate THB/MYR transactions. The BOT would also study the overall direction of local

Box 5: Types of local currency payments in ASEAN

With regard to cross-border trade and investment among ASEAN nations, businesses and investors can choose to settle payments with local currencies in the region through commercial banks that provide cross-border transaction services. Nowadays, most commercial banks can make cross-border settlements through correspondent banks located in each foreign country. Under this system, domestic banks will open a nostro account with their foreign country's correspondent bank to pay and receive payment in that country's currency. Through each country's payment system, the correspondent bank will transfer/receive funds for the entrepreneur's bank in the foreign country. The funds will then be transferred to/received from the entrepreneur. Commercial banks in each country must sign an agreement with the correspondent bank and comply with each country's regulations and conditions.

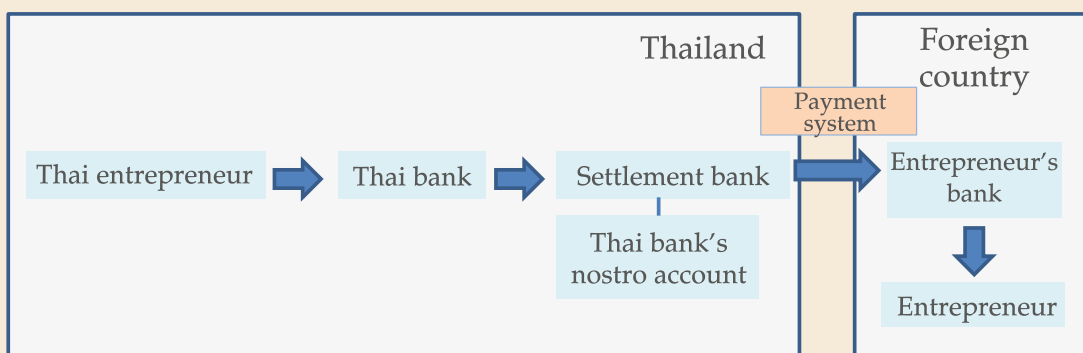




Other forms of local currency payment systems that each country may consider implementing to facilitate transactions include the followings.

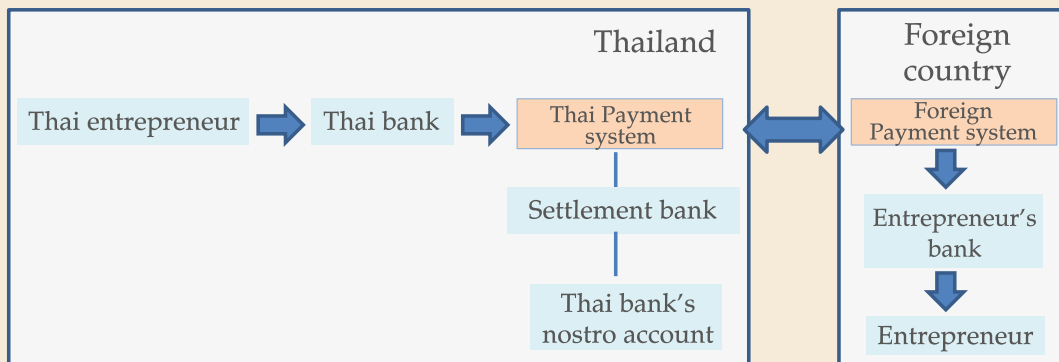
1. Payment in local currency via domestic banks which act as a settlement bank

Commercial banks can pay for goods and services using local currency through a domestic bank which acts as a settlement bank for each local currency. Under this system, a domestic bank opens a nostro account with itself to pay and receive payment in each particular currency. In its role as a settlement bank, that commercial bank must have a payment channel for each local currency so that it can easily transfer and receive transfers for entrepreneurs, for example, by directly becoming a member of that country's payment system.



2. Payment via system linkage

Under this system, a link between domestic and foreign currency payment systems must be established to exchange payment information. Most central banks will appoint a commercial bank to serve as a settlement bank of foreign currency in a linked system. For example, Hong Kong's yuan payment system (RMB RTGS) is linked to China's yuan payment system, with the Bank of China's Hong Kong branch serving as a yuan settlement bank.



Nonetheless, linking payment systems must be considered carefully, taking into account the cost and benefits of the overall system, as well as implementation feasibility and feedbacks from stakeholders regarding the convenience and efficiency of the transaction.



2. Risk reduction in payment systems



2.1 FX settlement risk reduction through Payment versus Payment (PvP) system for the Thai baht

Currently, settlements of foreign exchange transactions in Thailand are conducted through correspondent banks of the buying and selling parties. Due to the difference in timezones, FX settlement risk is inherent in these transactions. In order to prevent FX settlement risk, transactions can be settled in a form of a Payment versus Payment (PvP) where the buying and selling parties can be ascertained that settlements are completed concurrently, and should any party be unable to settle the transaction, payment from the other side would not be initiated.

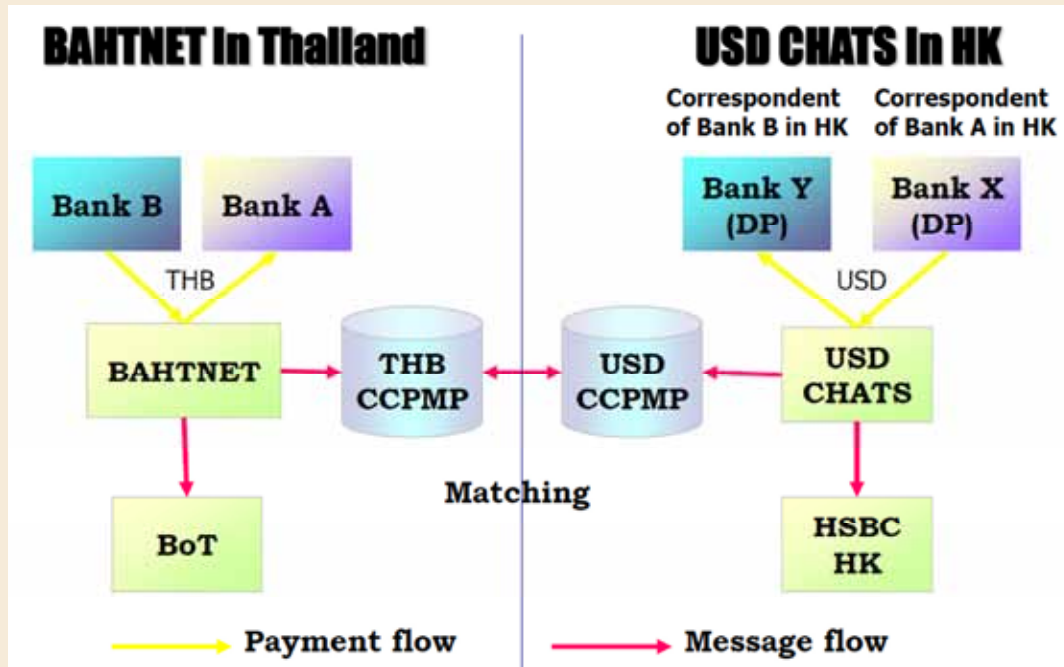
In 2012, the BOT undertook a review of various PvP systems, for example, the Continuous Linked Settlement (CLS) and the US Dollar Clearing House Automated Transfer System (USD-CHATS) of the Hong Kong Monetary Authority (HKMA), to determine the pros and cons of these systems as well as other implications in terms of foreign exchange settlement's legality and regulations. Dialogues with financial institutions and relating parties were also held to gather views from all stakeholders. In summary, given that the CLS still needed some adjustments in order to support some foreign exchange settlement's regulations together with the issue of payment finality, it was decided that the BAHTNET could be linked with the USD-CHATS in the first phase to expedite the process, especially under the currently volatile global financial markets.

As a result, a Memorandum of Understanding (MOU) was signed by the BOT and the HKMA. A working group was also established to formulate plans to link the BAHTNET and the USD-CHATS as well as determine the appropriate time frame for implementation to be completed by the end of 2014.

Moreover, given that the HKMA also supervises PvP settlements of the euro, Hong Kong dollars and the Chinese yuan, future expansions to cover these currencies would also be possible once the BAHTNET and the USD-CHATS were connected.



Box 6: Linkages between the BAHTNET and the USD-CHATS



Example: A THB/USD foreign exchange transaction between two Thai banks, BANK A and BANK B, with BANK B being the buyer of the USD as well as the seller of the THB.

Step 1 : BANK B, the transferring bank, sends a THB transfer order to the BAHTNET, using the standard message format

Step 2 : BANK A sends a transfer order to BANK X, its correspondent bank in the USD-CHATS system, to transfer USD to BANK Y, BANK B's correspondent bank in the USD-CHATS



Step 3 : The BAHTNET and the USD-CHATS exchange and match the transfer orders through the Cross Currency Payment Matching Processor (CCPMP) system where the BAHTNET and the USD-CHATS will only transfer the currencies once the availability of funds can be confirmed. The BAHTNET will then transfer the THB at the same moment that the USD-CHATS transfer the USD, thereby helping to reduce FX settlement risk.

Step 4 : Once transfers are completed, all banks involved in the transaction will be notified.

Box 7: Restrictions in linking with the CLS

Settlements of foreign exchange transactions in Thailand are conducted through correspondent banks of the buying and selling parties where executions occur at different times. Currently, the majority or 87 percent of foreign exchange transactions in Thailand are USD/THB transactions followed by JPY/THB transactions. The CLS system is a payment system that is operated by CLS Bank International (CLS Bank) established by the G20 group under the supervision of the Federal Reserve Bank. The main objective of the CLS system is to provide foreign exchange settlements for 17 currencies⁵ of CLS system members in a form of PvP. A CLS settlement member needs to open a multi-currency account with CLS Bank while CLS Bank is required to open an account at each of the member country's central bank in order to use the Real Time Gross Settlement (RTGS) system to settle the transactions. The CLS system settles transactions on the basis of gross settlement but transfers with members are conducted on the basis of net funding to reduce members' liquidity requirements

⁵ including USD, EUR, JPY, GBP, CHF, AUD, CAD, DKK, HKD, KRW, NZD, NOK, SGD, SAR, SEK, ILS and MXN

At present, linkage between the BAHTNET and the CLS is subject to two main restrictions, including:

1. The CLS will send and receive payment from a CLS settlement member in a single transaction from one account. At present, the BOT allows non-residents to hold two kinds of baht account, namely the Non-Resident Baht Account for Securities (NRBS) for the purpose of investing in securities and the Non-Resident Baht Account (NRBA) for other purposes where the two accounts cannot be combined.

2. The CLS has a special legal requirement for payment finality that members must meet. Under existing Thai laws, this requirement is not yet supported. A payment finality law is a law that supports the completion of payment orders. In other words, payment orders that are executed through a systemically important payment system such as the BAHTNET must be considered final, unconditional and irrevocable even under circumstances where an insolvency or bankruptcy is declared upon the payer. This condition will help prevent a systemic impact on the payment system and ensure compliance with international standards. The BOT is currently working with concerned legal authorities on this issue so that linkage between the BAHTNET and the CLS can be made possible in the near future.

In addition, the BOT also worked on drafting a law to support payment finality for systemically important payment systems in order to reduce FX settlement risk, ensure compliance with the Bank for International Settlements' recommendations in the Financial Sector Assessment Program (FSAP) on Thailand's payment systems in 2007, and prepare for future linkage between the BAHTNET and the CLS. In 2012, the BOT cooperated with the Fiscal Policy Office, Ministry of Finance, to amend the draft Act on the Payment and Settlement through Systemically Important Payment Systems, which according to the opinion of the Legal Execution Department, previously made an exemption for the Bankruptcy Act from payment finality. The new draft is currently under a joint review. Once approved, it will be submitted to Parliament and the Office of the Council of State for consideration.



2.2 Risk Management of the BAHTNET

The BOT formulated the BAHTNET's Securities Requirement for Settlement (SRS), consisting of risk management measures aimed at reducing settlement risk that is inherent in a net settlement payment system. In this regard, members are required to hold debt securities approved by the BOT as collateral for the transaction to guarantee that payment would be completed at a predetermined time. According to the BIS Core Principles for Systemically Important Payment Systems, this requirement should apply even in the case of settlement failure by a highest indebted member.

In 2012, the BOT together with member financial institutions worked to design principles and methodologies for the SRS. The final set of principles and methodologies were approved by the PSC and it was agreed that enforcement would begin in 2013.

Box 8: The BAHTNET's Securities Requirement for Settlement (SRS)

The BAHTNET's Securities Requirement for Settlement (SRS) is a risk management measure to reduce settlement risk, approved by the PSC on 11 May 2012. A hearing was held for member financial institutions on 26 September 2012 whereby it was agreed that enforcement would begin in 2013.

Salient features of the SRS

The SRS requires the paying/receiving members to hold debt securities approved by the BOT as collateral to guarantee the ability to settle. The collateral's value must cover the highest Potential Debit Position (PDP) of each party, with a 99 percent confidence level. To calculate the PDP, daily net settlements for the previous twelve months for each member are used. The BOT will calculate the PDPs and each member will be informed of their PDPs at least 15 days before enforcement. Each PDP is valid for six months.

Collateral for the SRS

Each member must hold debt securities as collateral to guarantee the ability to settle in the BAHTNET as follows.

Hold the entire amount of collateral according to the PDP by themselves

Hold at least 50 percent of the PDP by themselves and allow the collateral provider (CP) to hold the rest

The BOT will assess each member's collateral adequacy on a daily basis at a predetermined time.

Other uses of SRS collateral

The BOT is aware of the cost of holding collateral as well as the implication on the effectiveness of collateral management faced by member financial institutions. Thus, other uses of SRS collateral are allowed to enable member financial institutions to manage both their liquidity and risk appropriately. For example, a member can use a portion of collateral held at its institution, to pledge for the use of a cheque credit and to provision for a bulk payment credit next day retail transfer, in full. In addition, the portion of collateral that exceeds 80 percent of the PDP can also be used in the Intraday Liquidity Facility (ILF).



3. Payment systems consumer protection



3.1 Payment systems oversight

Given the rapid expansion in electronic payment (e-Payment) services, more complex payment systems technology, and the broadening range of bank and non-bank service providers, the BOT's payment systems oversight was thus designed to ensure the soundness and reliability of e-Payment service providers. At the same time, oversight measures were aimed at enhancing the business sector's competitiveness and the government sector's efficiency. Important oversight areas were as follows.

3.1.1 Oversight of e-Money service providers

The BOT conducted oversight activities on non-bank e-Money service providers according to 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) dated 4 October 2004. In 2012, the number of non-bank e-Payment service providers was eight, unchanged from 2011.

In addition, this year, the BOT also cooperated with relating authorities, for example, the FPO to improve rules and regulations pertaining to e-Money operations to achieve better alignment with changes in the business environment as well as other laws. At present, the BOT is in the process of drafting an amendment to the Ministerial Notification to be submitted to the Minister of Finance for approval.

3.1.2 Supervision of e-Payment

The BOT supervised e-Payment service providers according to the Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008), under the Electronic Transactions Act B.E. 2544 (2001). Under the Royal Decree, there are three categories of supervisory standards, namely, List A for businesses that are required to make notification to the BOT, List B for businesses that are required to make regi

stration with the BOT and List C for businesses that are required to acquire licenses before providing services⁶. Accordingly, in 2012, the BOT conducted the following oversight activities.

(1) Considered the applications for List C licenses and submitted the recommendations to the ETC for approval. Ten List C service providers were approved and twelve List C licenses were issued. In addition, at the end of 2012, there were seven List B service providers and eighty-two List C service providers including thirty-one banks and fifty-one non-banks and the total number of licenses issued was 124. There was still no List A service provider.

(2) Monitored, regulated and supervised e-Payment service providers in complying with the Royal Decree Regulating Electronic Payment Service Business B.E. 2551 (2008) and related Notifications and reported findings to the ETC regularly. In 2012, the BOT was also tasked by the ETC to conduct a comparative study on the administrative fine for e-Payment service providers along with the composition of the Sub-committee on Administrative Fine Judgement in order to review cases of misconduct.

(3) Proposed amendments for rules, regulations and conditions in providing e-Payment services to the ETC for consideration with the aim to make them better aligned with the current economic environment as well as changes in business models. The BOT is currently in the process of drafting related notifications for comments from stakeholders before submitting the final versions to the ETC for approval.

(4) Drafted the Royal Decree under the Electronic Transactions Act B.E. 2544 (2001) on the supervision of e-Payment services provided by Specialized Financial Institutions (SFIs) as tasked by the ETC. The FPO was also consulted in the process and the draft would later be presented to the ETC for consideration.

⁶List A 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. (e-Money List A)

List B includes

- (1) Credit Card Network
- (2) EDC Network
- (3) Transaction Switching List B
- (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 (e-Money List B)

List C includes

- (1) Clearing
- (2) Settlement
- (3) Electronic payment service through a particular instrument or a network
- (4) Transaction Switching List C
- (5) Payment agent



Box 9: The Electronic Transactions Commission (ETC)



The ETC was formed in accordance with the Electronic Transactions Act B.E. 2544 (2001) with the Minister of Information and Communication Technology (MICT) as Chairman, the Permanent Secretary of the MICT as Deputy Chairman, and the Director of the Office of the ETC as Committee Member and Secretariat. Other committee members include prominent persons from both the public and private sectors in the fields of finance, electronic commerce, legal, information technology, science or engineering, and sociology, whereby any committee member can hold at most two terms of three years each. The twelve committee Members are approved by the Cabinet to perform the following duties.

1. Make recommendations to the Cabinet regarding the policy to promote and develop electronic transactions as well as resolve related issues
2. Monitor the activities of e-Payment service providers
3. Make recommendation or act as consultant to the the Minister regarding the approval of Royal Decrees
4. Issue guidelines or notifications on the legality of electronic signature
5. Perform other duties according to the Electronic Transactions Act or related legislations

Moreover, in order to promote and support activities under the e-Payment development policy framework, the ETC was allowed to appoint sub-committees to assist it in various tasks. In this regard, five sub committees were appointed by the previous ETC to perform designated tasks as follows.

1. The sub committee on e-Payment policy and e-Payment policy implications, to formulate policies, plans and measures to promote and develop electronic transactions or electronic commerce, and to propose measures to resolve issues that may affect the credibility in the provision of services as well as public confidence.
2. The sub committee on the supervision of commercial and public e-Government service, to formulate development plans, support both private and public sector service providers to ensure that services follow the required standards, as well as propose guidelines for good governance.

3. The sub committee on legal policy, to make recommendations on the drafting or amendment of electronic transactions laws as well as provide opinion on the approval of Royal Decrees or regulations issued under the Electronic Transactions Act B.E. 2544 (2001) or related legislations.

4. The sub committee on safety and security, to study issues pertaining to the safety of electronic transactions, computer system, network, and mobile commerce, with the aim to formulate standards and policy recommendations to the ETC and to support the ETC with useful information regarding electronic transactions.

5. The sub committee on e-Payment standards, research and development, to make recommendations on the adoption of appropriate e-payment standards and to support research initiatives about electronic transactions so as to enhance the country's competitiveness.

3.2 Knowledge Dissemination and Promotion of e-Payment to the public and private sectors

Knowledge dissemination and promotion of e-Payment to the general public together with the government and business sectors would greatly assist them in choosing the appropriate services to meet their needs, thereby strengthening their confidence in the use of electronic transactions in place of cash and cheque.

In 2012, the BOT organized talks and disseminated knowledge on e-Payment to various users, for example, students, the general public and businesses. Different types of activities were arranged, including the Teachers' Education Program, the Financial Wisdom Fair, the Money Expo 2012 and the BOT Challenge and Experience 2012.



3.3 Consumer Protection Mechanism

The BOT is in the process of reviewing the existing consumer protection measures for e-Payment services in order to strengthen confidence in the use of e-Payment instead of cash and cheque. In the initial phase, the BOT would focus on establishing consumer protection measures for electronic card usage, covering debit cards, credit cards, and e-Money. A comparative study on Thai and international consumer protection mechanisms for electronic cards would be carried out in order to stipulate an appropriate framework of minimum standards for electronic cards in Thailand.

III

Principles |

for Financial Market Infrastructures

2.1 Background

Having efficient and secured payment systems is of utmost importance in driving the country's financial and economic sectors, in particular, Systemically Important Payment Systems (SIPS) which could affect financial stability, domestically as well as internationally. As a result, stability of SIPs must be ensured at all times to safeguard financial stability.

Pursuant to the above requirement, in January 2001, the Committee on Payment and Settlement System (CPSS) under the Bank of International Settlement (BIS), formulated a set of international standards for the supervision of payment systems' efficiency and stability, including payment systems' clearing and settlement, called the Core Principles for Systemically Important Payment Systems (CPSIPS). Later on, the CPSS also cooperated with the Technical Committee of the International Organization of Securities Commission (IOSCO), which is the governing body of international securities markets, to issue the Recommendations for Securities Settlement Systems (RSSS) and the Recommendations for Central Counterparties (RCCP) in November 2001 and November 2004, respectively.

In the case of Thailand, the BAHTNET, which is a payment system for high-value settlements, was assessed to be a SIPS according to the CPSIPS. In 2008, an assessment of the BATHNET was performed as part of the Financial Sector Assessment Program (FSAP), which was jointly conducted by the International Monetary Fund (IMF) and the World Bank. It was assessed that the majority of the BAHTNET's operations were observant of international standards. Only issue on pertaining to the legal structure and payment finality issue were considered broadly observed. At present, the BOT is in the process of passing the legislation on payment finality in order to ensure that Thailand's payment systems are fully in line with international standards.

2.2 Principles for Financial Market Infrastructures

Due to greater complexity and interconnectedness of payment transactions, the CPSS together with the IOSCO thus cooperated to improve the rules and regulations on payment systems oversight to ensure better alignment with the current environment. Oversight measures of the payment systems and securities were also combined into one set of principles. As a result, in April 2012, the Principles for Financial Market Infrastructures (FMIs) were launched as guidelines for the oversight of financial market infrastructures.

2.2.1 Objectives of the Principles for Financial Market Infrastructures (FMIs)

The objectives of the Principles for FMIs comprise:

- (1) To serve as guidelines for oversight of important FMIs, including:
 - 1) Systemically Important Payment Systems (SIPS) e.g. the High-Value Payment System;
 - 2) Central Securities Depositories (CSD);
 - 3) Securities Settlement Systems (SSS);
 - 4) Central Counterparties (CCP); and
 - 5) Trade Repositories (TR)
- (2) To provide standards for self assessment by FMIs supervisors and service providers
- (3) To help manage inherent risks, namely technical risk, legal risk, credit risk, liquidity risk, general business risk, securities deposit and investment risk, and operational risk

2.2.2 Relevant Documents for the Principles for FMIs

The CPSS and IOSCO published documents pertaining to the Principles for FMIs, including details of each principle, accountability of the oversight bodies, standards on data dissemination, assessment guidelines as well as crisis prevention and recovery plan. Details are as follows.

(1) Principles for Financial Market Infrastructures, including:

(1.1) Twenty-four principles on the operation of FMIs to be used in risk management, for example, legal risk, credit and liquidity risk, business risk, settlement risk, securities depository and investment risk and operational risk. The principles also set out standards on transparency and efficiency as well as guidelines for regulatory standard and data dissemination.

(1.2) Five principles on the responsibilities of the central bank, market regulators and other relevant authorities, for example, requirement for relevant rules and conditions, availability of resources and human capital, dissemination of regulatory standards, application of international standards, and cooperation with domestic and foreign bodies for the purpose of enhancing payment systems efficiency. The final set of Principles for Financial Market Infrastructures was published by the BIS and IOSCO in April 2012.

(2) Disclosure framework and assessment methodology, including:

(2.1) FMIs data dissemination standards for members and other relevant authorities, stipulating required details and formats for data dissemination as well as guidelines for biennial data revision to promote transparency.

(2.2) Assessment guidelines for the 24 principles for FMIs and five assessment guidelines for the central bank, market regulators and other relevant authorities, stipulating orders and methodologies, guidelines for grading evaluation, comments and recommendations as well as sample questions to ensure alignment with assessment standards. The final set of FMIs data dissemination standards and assessment guidelines was published by the BIS and IOSCO in December 2012.

(3) Recovery and resolution of FMIs

The document outlines recommendations on the prevention of systemic risk together with important recovery and resolution measures to ensure that payment systems can resume their normal operations in a timely manner should a crisis occur. A consultative report was published by the BIS and the IOSCO in July 2012 to gather comments from stakeholders before the final report can be released.



2.2.3 Assessment of financial market infrastructures according to the Principles for FMIs

The objectives of the assessment of FMIs together with the functioning of market regulators and other relevant authorities are to ensure that FMIs' operation and oversight are in accordance with the Principles for FMIs, and to make recommendations for improvements. The assessment is carried out in three levels as follows.

(1) FMIs service providers must carry out a self assessment according to the Principles for FMIs whereby each type of FMI would be assessed against a particular Principle. For instance, an SIPS would be assessed in terms of compliance with 18 principles while an SSS would be assessed in terms of compliance with 20 principles.

(2) The central bank, market regulators and other relevant authorities must carry out an assessment of FMIs under their supervision according to the Principles for FMIs. They must also carry out a self assessment on the responsibilities of the central bank, market regulators and other relevant authorities.

(3) The IMF and the World Bank must also carry out an assessment of FMIs as part of the FSAP according to the relevant Principles for FMIs and guidelines for the responsibilities of supervisory authorities.

2.3 BOT's progress in assessing Thailand's financial market infrastructures according to the Principles for FMIs

In 2012, the BOT studied approaches to apply the Principles for FMIs to the oversight of Thailand's payment systems in order to ensure compliance with international standards, particularly the categorization of Thailand's payment systems according to their importance to the stability of the country's financial systems. For example, a payment system that is of highest importance such as the high-value funds transfer system would be identified to ensure compliance with 18 related principles while the other system in line, such as the retail payment system, would also be identified to ensure compliance with some principles.

In 2013, the BOT will prepare self-assessment guidelines so that payment systems service providers could use these to assess themselves according to the Principles for FMIs. Furthermore, the BOT will use these principles to assess the BAHTNET system, which is a system for high-value funds transfer provided by the BOT. After that, the BOT will work to align understanding with important retail payment systems service providers, including sharing the standards and guidelines for self-assessment with them in order to prepare for upcoming self-assessments.

Box 10: Principles for Financial Market Infrastructures

The Principles for FMIs are used in the oversight of financial market infrastructures and consist of 24 principles which are inter-related. Nonetheless, in using these principles to assess FMIs systems, supervisors first need to ensure that each type of FMI is matched with relevant principles. For example, Systemically Important Payment System (SIPS) must be assessed according to 18 principles. Meanwhile, Central Securities Depository System (CSD), Securities Settlement System (SSS), Central Counterparty Clearing House systems (CCP) and Trade Repositories (TR) must be assessed according to 15, 20, 22 and 12 principles, respectively.

The Principles for FMIs can be divided into nine categories according to their content as follows:

1. General organization: content on legal implication and risk management of FMIs system
2. Credit and liquidity risk management
3. Settlement: principles on the conduct of settlement to prevent potential risks that can arise during the process
4. Central Securities Depositories and Exchange-of-value settlement: risk management principles for the operation of the CSD
5. Default management: risk management principles for default risk of members
6. General business and operational risk management: risk management principles for general business operation, securities deposit and investment activities, and operational risk
7. Access: guidelines in managing members and linkage with other FMIs system
8. Efficiency: FMIs system must have rules, agreements and conditions regarding system design that meet members and other stakeholders' needs as well as use communication format that is consistent with international standards
9. Transparency: FMIs system must disseminate system information to members and other stakeholders in order to promote operational transparency.



Overview of the Principles for FMIs

1. General organization

Principle 1 : Legal basis
 Principle 2 : Governance
 Principle 3 : Framework for the comprehensive management of risks

2. Credit and liquidity risk management

Principle 4 : Credit risk
 Principle 5 : Collateral
 Principle 6 : Margin
 Principle 7 : Liquidity risk

3. Settlement

Principle 8 : Settlement finality
 Principle 9 : Money settlements
 Principle 10 : Physical deliveries

4. Central securities depositories and exchange-of-value settlement systems

Principle 11 : Central securities depositories
 Principle 12 : Exchange-of-value settlement systems

5. Default management

Principle 13 : Participant default rules and procedures
 Principle 14 : Segregation and portability

6. General business and operational risk management

Principle 15 : General business risk
 Principle 16 : Custody and investment risks
 Principle 17 : Operational risk

7. Access

Principle 18 : Access and participation requirements
 Principle 19 : Tiered participation arrangements
 Principle 20 : FMI links

8. Efficiency

Principle 21 : Efficiency and effectiveness
 Principle 22 : Communication procedures and standards

9. Transparency

Principle 23 : Disclosure of rules, key procedures, and market data
 Principle 24 : Disclosure of market data by trade repositories

III

Data and statistics | in payment systems

The PSC fully realized the importance of monitoring the country's payment systems trend and development in order to ensure the systems' efficiency, security and stability. Data and statistics on payment systems would thus reveal such trends and development, thereby leading to better formulation of payment systems policy.

In 2012, it was observed that the popularity of portable technology such as mobile phones, smart phones and tablets as well as usage of high-speed internet increased rather significantly. Recognizing that such technology would enable users to access information and payment services more conveniently and quickly, service providers thus began to offer more services through these channels. In addition, data and statistics on payment systems in 2012 also revealed a strong growth in electronic transactions, for example, e-Payment services through electronic cards (ATM, debit and credit cards), internet banking, mobile banking and e-Money. Meanwhile, cheque usage declined though it remained an important payment method for businesses' and high-value transactions.

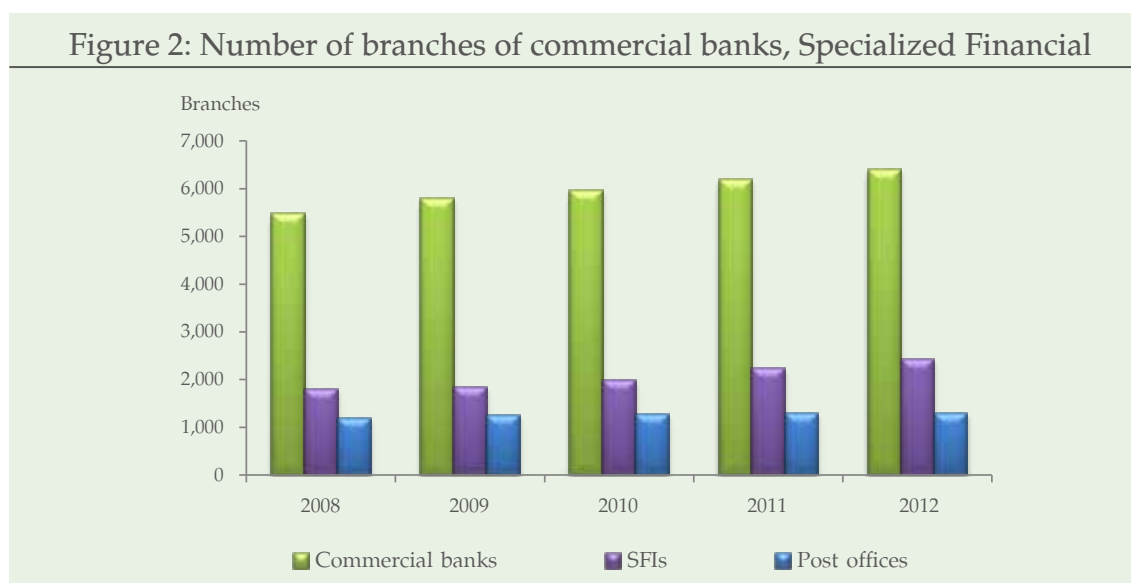
3.1 Payment infrastructure development

Payment infrastructure is an important supporting factor for payment systems development as it allows different groups of users to access a broad range of services widely and efficiently. Important payment infrastructures include branches of bank and non-bank service providers, internet and mobile communication networks, Automated-machine (ATMs and CDMs) as well as Electronic Funds Transfer at Point Of Sales (EFTPOS), which facilitates electronic payment cards such as debit card, credit card and e-Money. These payment infrastructures play a crucial role in expanding payment services inclusion to more users.

In 2012, there was a shift in payment systems infrastructure towards greater promotion and availability of payment systems' self-service channels. In other words, there was a significant increase in the numbers of mobile phones, smart phones and high-speed internet subscribers due to the fact that such technologies allowed users to perform their daily activities more conveniently and quickly. Meanwhile, the numbers of Automated-machine continued to increase. In contrast, there was a slow down in new branches of commercial banks, SFIs and post offices.

Despite the continued expansion in these payment infrastructures together with their importance in electronic payment access, it was found that most of the increase was concentrated in Bangkok and its vicinies as well as the central region more than other parts of the country. However, there was an increase in the number of non-bank service providers that offered services via internet to consumers in the rural parts of the state.

3.1.1 Branches of commercial banks, Specialized Financial Institutions, and Post offices



Source: Bank of Thailand

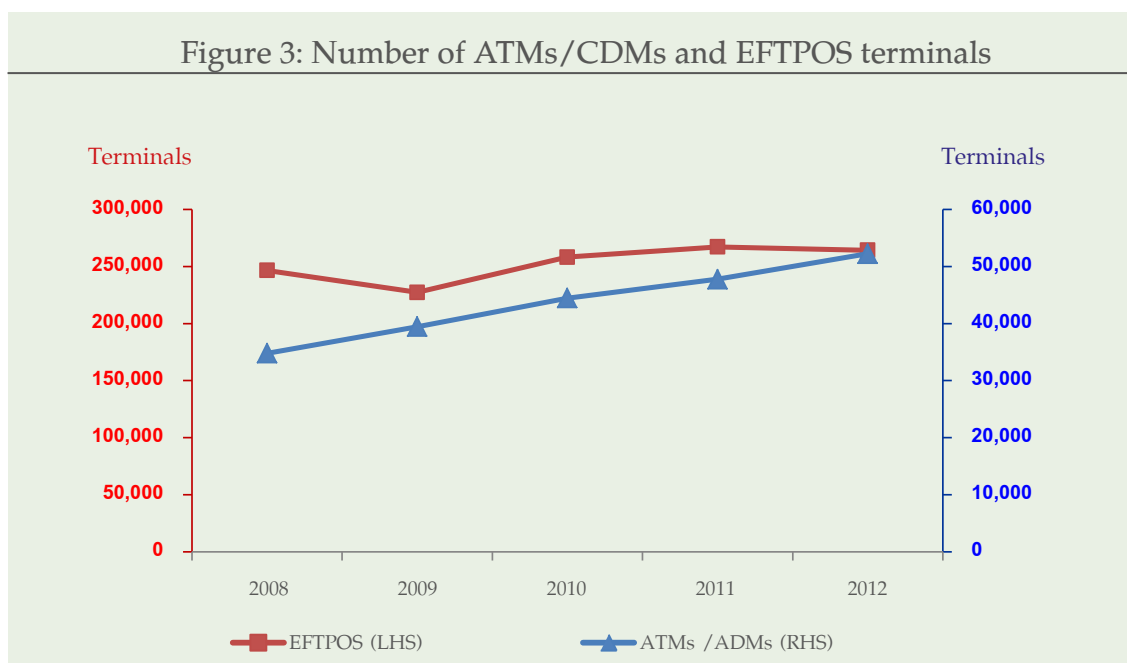
In 2012, branches of commercial banks, SFIs and post offices continued to increase by 3.4, 8.3 and 0.2 percent, respectively.

Compared to 2011, the numbers of branches of these service providers were as follows.

- Branches of commercial banks increased by 209 branches, from 6,201 branches to 6,410 branches, including 6,391 Thai commercial bank branches and 19 foreign bank branches (an increase of one branch).
- Branches of SFIs increased by 185 branches, making the total number of branches 2,425 branches.
- Branches of post offices increased by 3 branches, making the total number of branches 1,298 branches.

3.1.2 ATM/CDM and EFTPOS terminals

At the end of 2012, there were 52,242 ATMs and CDMs in total, increasing by 9.4 percent from the previous year. Meanwhile, the number of EFTPOS terminals stood at 264,236, declining by 1 percent from the previous year. The decline in the number of EFTPOS terminals was largely due to improvement in technology, which made usage of the old Zip Zap⁷ terminals obsolete, declining from 46,491 terminals in 2011 to 29,440 terminals in 2012.



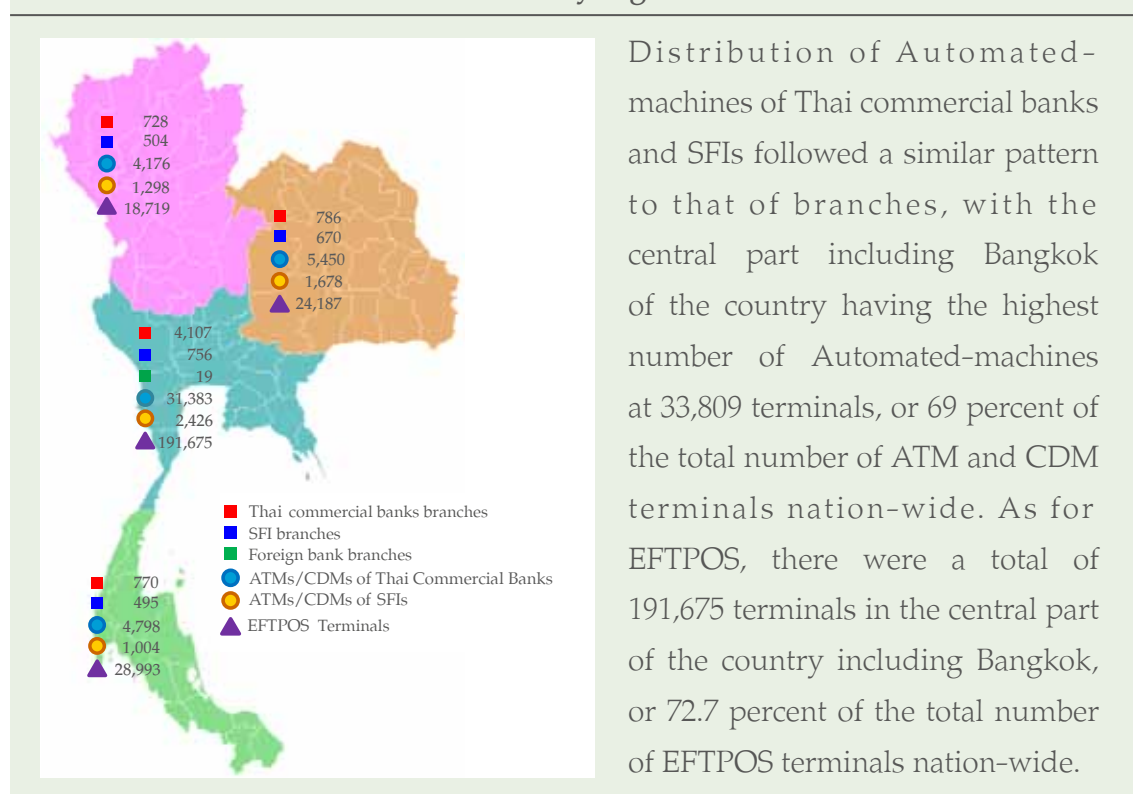
Source: Bank of Thailand

⁷Credit card terminals with the Imprinter or Zip Zap technology are not directly connected to the credit card network. When merchants want to use these terminals, the credit card would be placed underneath a carbon paper receipt so that when the card is swiped, the credit card numbers could be recorded on the paper. Normally, banks or merchants would set the maximum authorization limits themselves and these could vary among merchants. However, if a particular payment exceeds the pre-authorized amount, the merchant would need to contact the bank or credit card terminal issuer to ask for approval.



In terms of regional distribution, the numbers of branches of Thai commercial banks, foreign banks, and SFIs in the northern, north-eastern and southern regions were similar at 1,232, 1,456, and 1,265 branches, respectively. The central part of the country including Bangkok and vicinies, though, had the highest number of branches at 4,882 branches, or 55.3 percent of the total number of branches nation-wide.

Figure 4: Distribution of financial institutions' branches, ATMs/CDMs and EFTPOS terminals by region

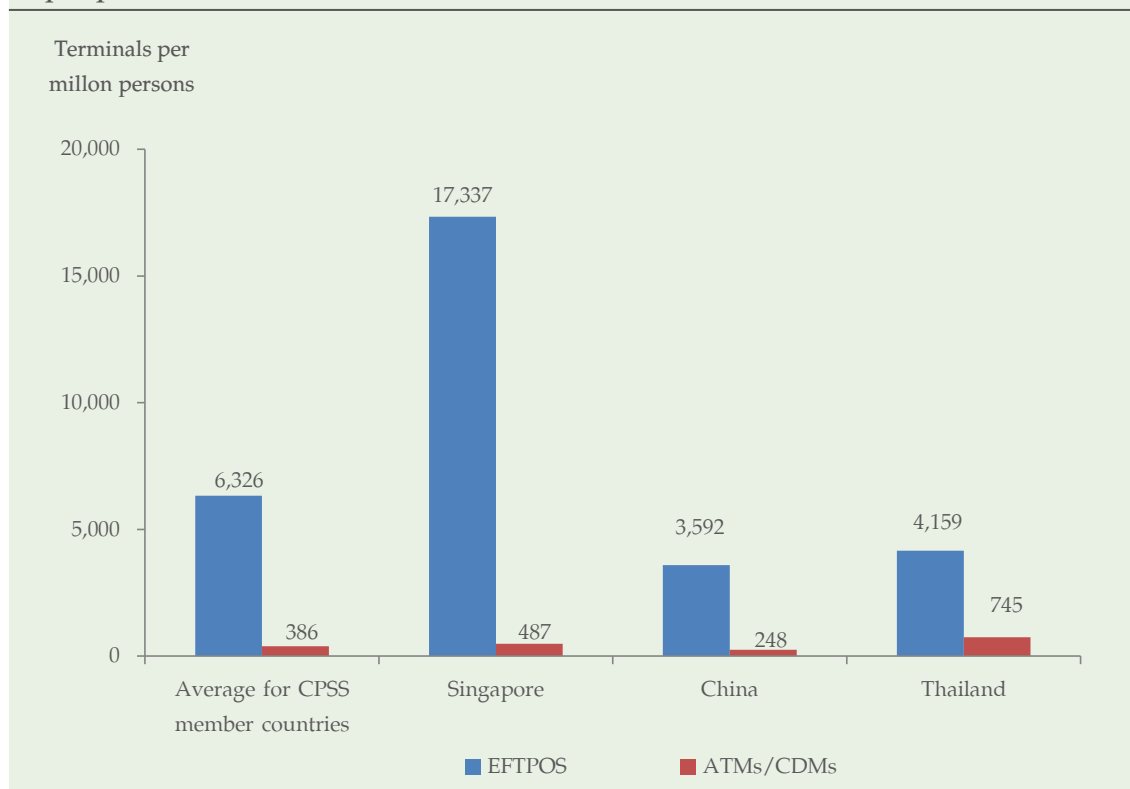


Distribution of Automated-machines of Thai commercial banks and SFIs followed a similar pattern to that of branches, with the central part including Bangkok of the country having the highest number of Automated-machines at 33,809 terminals, or 69 percent of the total number of ATM and CDM terminals nation-wide. As for EFTPOS, there were a total of 191,675 terminals in the central part of the country including Bangkok, or 72.7 percent of the total number of EFTPOS terminals nation-wide.

Source: Bank of Thailand

At present, the ratio of Automated-machines per capita in Thailand stood at 800 machines per one million persons due to the increase in number of automated-machines of Thai commercial banks and SFIs in previous periods. When compared to other CPSS members, it was found that Thailand's ratio was higher than the average ratio of CPSS members of 386 machines per one million persons, and higher than the ratios in Singapore and China. However, the ratio of EFTPOS terminals per capita in Thailand stood at about half of the average ratio for CPSS members and 4 times smaller than Singapore as Thai consumers preferred to deposit or withdraw cash from Automated-machines rather than using electronic cards to pay for goods and services at the stores. This behavior also continued to be true for the majority of consumers in large cities.

Figure 5: Proportion of ATMs/CDMs and EFTPOS terminals per million people in 2011



Source: BIS (2013) Statistics on payment, clearing and settlement systems in the CPSS countries and Bank of Thailand

⁸ The Committee on Payment and Settlement Systems (CPSS) was established by the Bank for International Settlement (BIS) to monitor payment systems development in member countries as well as international linkages. A working group was established to study and present various data and statistics of 23 member countries including Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Italy, Japan, Korea, Mexico, Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Sweden, Switzerland, Turkey, United Kingdom and United States.



Box 11: Mobile Point of Sale (M-POS)

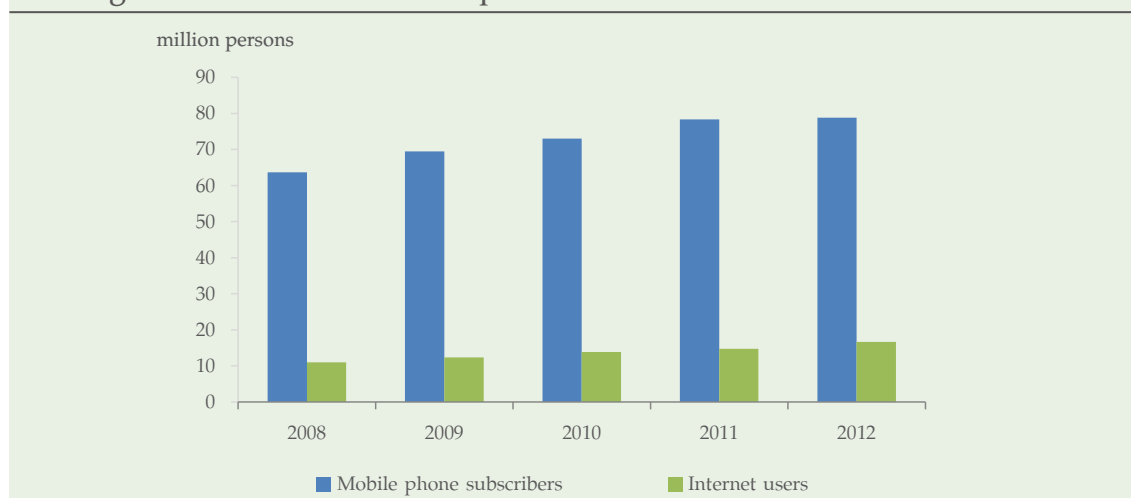


EFTPOS (Electronic Funds Transfer at Point Of Sale) or EDC (Electronic Data Capture) has been continuously improved from the early Zip Zap technology where merchants needed to imprint customers' credit card information onto carbon paper receipt to the present online technology where an EFTPOS could process transactions in real-time. In addition, EFTPOSs now come in greater varieties, for example, an EFTPOS that allows customers to sign directly on the terminal and a portable EFTPOS or Mobile-Point Of Sale (M-POS), which are now being used in Thailand. M-POS is a payment innovation that has been developed by smart phone and tablet manufacturers and electronic card payment service providers to allow customers to use debit and credit cards to purchase goods and services anywhere with internet coverage. M-POS needs to be connected to the merchant's smart phone/tablet and uses the internet to verify and process the transaction instead of a leased line that is used with normal EFTPOSs. As a result, M-POS is suitable for small and medium sized merchants as well as on-site services.

3.1.3 Subscribers of mobile phones and Internet users

At the end of 2012, the number of mobile phone service providers remained the same as last year at six service providers, including Advanced Info Service Public Co. Ltd., Total Access Communication Public Co. Ltd., Digital Phone Co. Ltd., True Co. Ltd., CAT Telecom Public Co. Ltd., and TOT Public Co. Ltd.

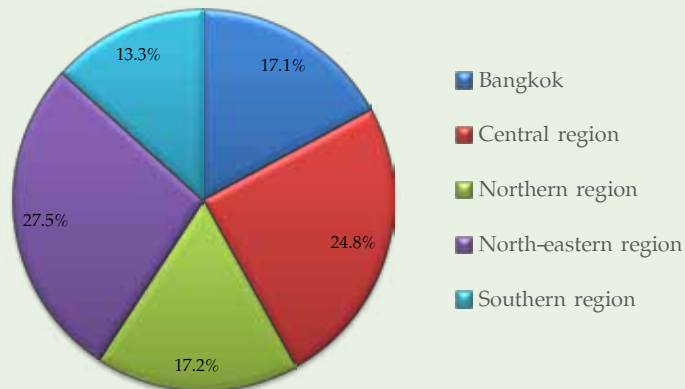
Figure 6: Number of mobile phone subscribers and Internet subscribers



Sources: CAT Telecom Public Co. Ltd. and TOT Public Co. Ltd.

⁹Not including five Mobile Visual Network Operators (MVNOs) which are partners of TOT 3G (information from the Office of the National Broadcasting and Telecommunications Commission)

Figure 7: Number of internet users in 2012



Sources: The National Statistics Office, Survey on technology and communication usage by households in 2012

Meanwhile, thanks to improvement in technology which led to a significant decrease in mobile phone prices, the number of mobile phone subscribers stood at 78.83 million numbers, increasing by 0.47 million numbers and covering as much as 122.3 percent of the total population. Moreover, there was also higher usage of smart phones, which offer more services and greater convenience. As a result, the number of mobile banking subscribers rose from 706,439 accounts in 2011 to 864,312 accounts this year, or increasing by as much as 22 percent.

At the same time, internet users in 2012 stood at 16.63 million persons of which, 77.6 percent were high-speed internet users and 22.4 percent were narrowband or low-speed internet users. Internet users in Bangkok and the central region accounted for 42.0 percent of the total number of users nation-wide and the number of internet banking subscribers increased from 5,626,248 accounts in 2011 to 6,645,161 accounts, or increasing by 18 percent.

3.2 Major channels and payment instruments

Summary of 2012

The trends in usage of major channels and payment instruments remained the same as the previous year and in line with the objective to enhance payment systems efficiency. There was greater use of electronic payments in place of cash and cheques in terms of both volume and value. However, cheques were still predominantly used for high-value transactions, which expanded in line with eco-



conomic growth. Meanwhile, high-value funds transfer through the BAHTNET was lower compared to average usage during the past five years as a result of a decline in interbank transactions resulting from the BOT's changes in liquidity management regulations.

At the same time, retail electronic payments used by shops, businesses and the general public, were higher compared to average usage during the past five years. These electronic payment channels included transfers via ATM, internet, mobile phones, branches of commercial banks, electronic cards, including ATM, debit and credit card as well as e-Money. In this regard, low-value transactions of e-Money such as payments at convenient stores, public transportation networks, and on-line games expanded at the highest rate in terms of both volume and value.

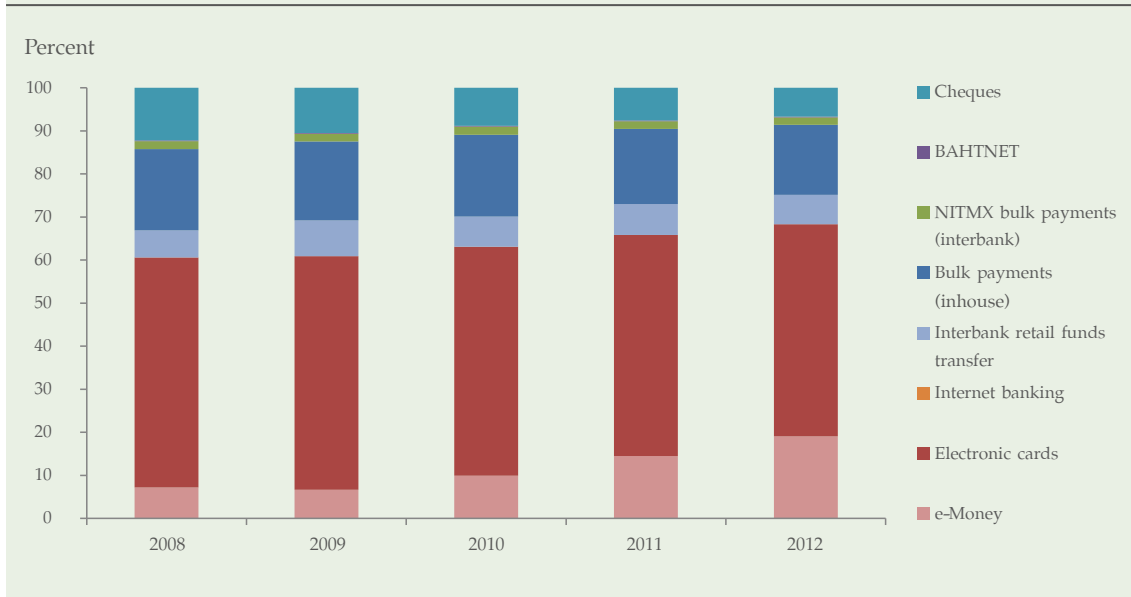
Table 1: Payment transactions via different payment systems in 2012

	Volume	Value	Average per transaction	Growth		Cumulative Annual Growth Rate (CAGR) 2008 – 2012	
	(thousands)	(billion baht)	(baht)	Volume (%)	Value (%)	Volume (%)	Value (%)
Cheque	122,875	64,832	527,628	6	15	-1	1
High-value funds transfer	2,946	649,119	220,325,649	8	-15	11	24
Bulk Payment	329,378	17,518	53,185	12	20	11	19
Retail transfer ¹⁾	542,144	24,524	45,235	25	39	21	24
Electronic card ²⁾	901,581	6,596	7,316	15	22	12	17
E-Money	512,311	35	68	47	43	60	43

1) Include interbank Online Retail funds transfer and intrabank funds transfer (including payment for goods and services) via Automated-machine, internet, mobile phones and branches of commercial banks
 2) For example, ATM, debit and credit cards for payment for goods and services and transfers

A comparison of different types of payment channels revealed that the proportion of electronic cards remained highest at 46 percent of overall transaction volume, though declining slightly from the previous year's proportion of 49 percent. Meanwhile, the proportions of transactions through internet banking and e-Money began to increase and were expected to continue rising in the periods ahead thanks to improvement in technology and expansion of internet coverage, which allowed consumers to purchase through portable devices such as smart phones and tablets at cheaper prices, as well as the increase in the types of payment services available at retailers, for example, payment for goods and services, bill payment, and mobile phone top-up.

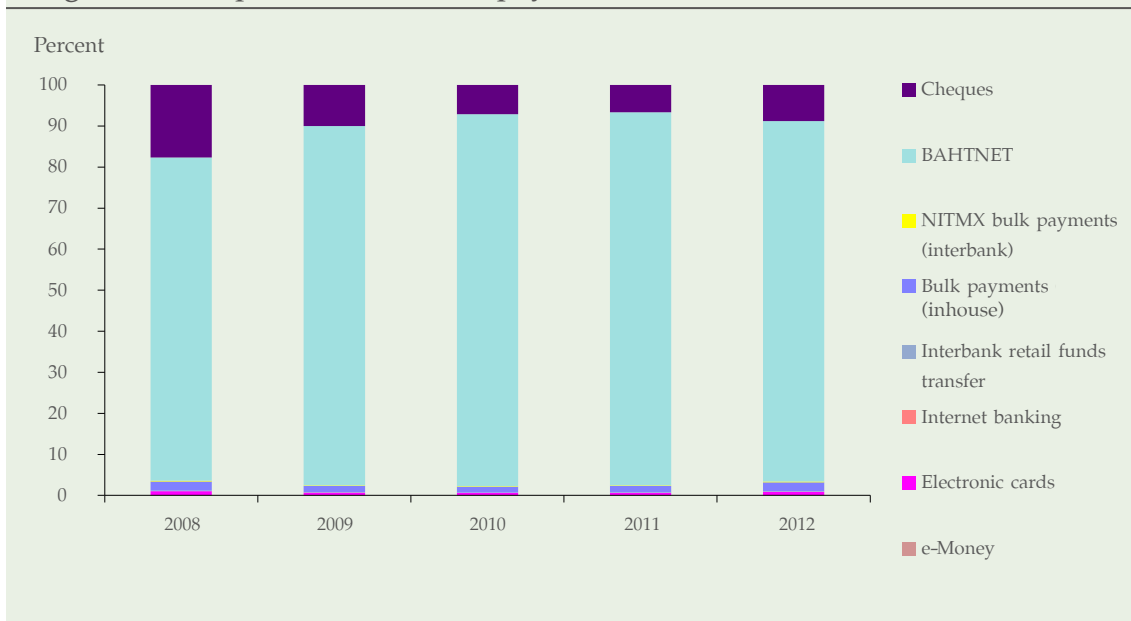
Figure 8: Comparison of various payment instruments in volume of transaction



Source: Bank of Thailand

In terms of value, the proportion of high-value transfers through the BAHTNET continued to be highest at 86 percent of overall transaction value, declining from the previous year's proportion of 90 percent due to a decrease in interbank transactions. Cheque usage rose from 7 percent to 9 percent. Although the proportion of internet banking was still rather small but a significant growth in value was noted as was the case for volume of transactions. This trend was also expected to continue in the periods ahead. Meanwhile, there were no significant changes in the proportions of other payment instruments.

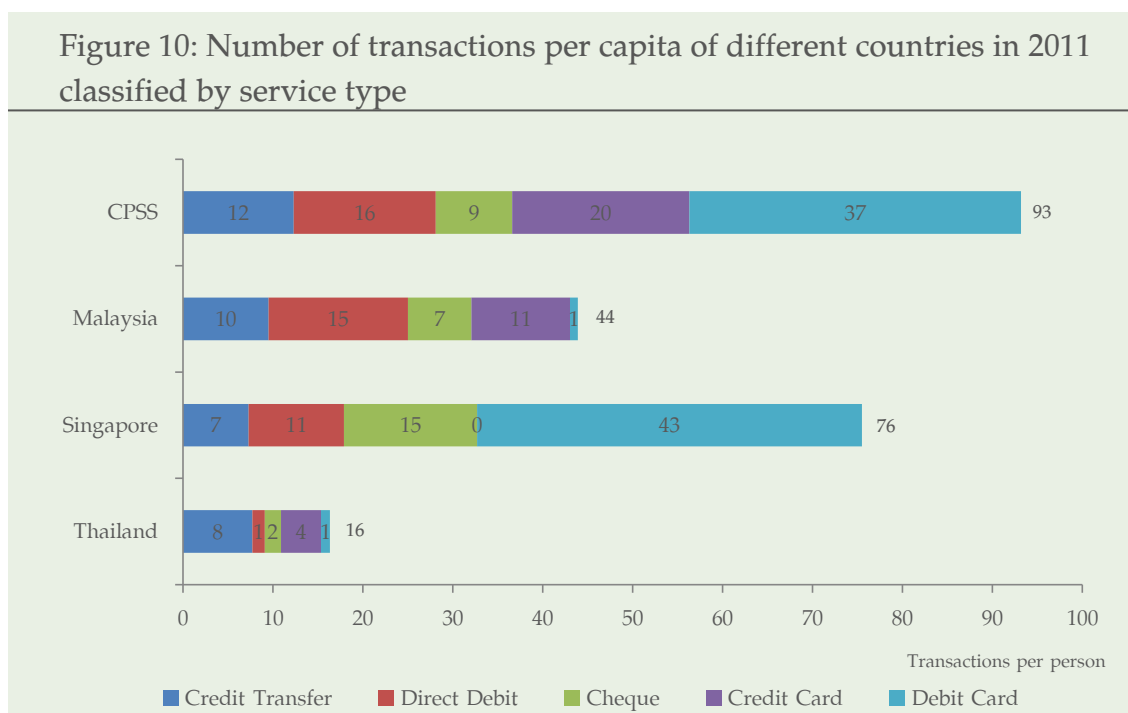
Figure 9: Comparison of various payment instruments in value of transaction



Source: Bank of Thailand



Despite the rising trend in electronic transactions in Thailand, the proportions of usage were still quite low compared with other CPSS members especially transactions through credit and debit cards. As a result, one of the main goals of the Payment Systems Roadmap 2012-2016 was to promote greater usage of electronic transactions amongst the general public as well as government and private organizations.



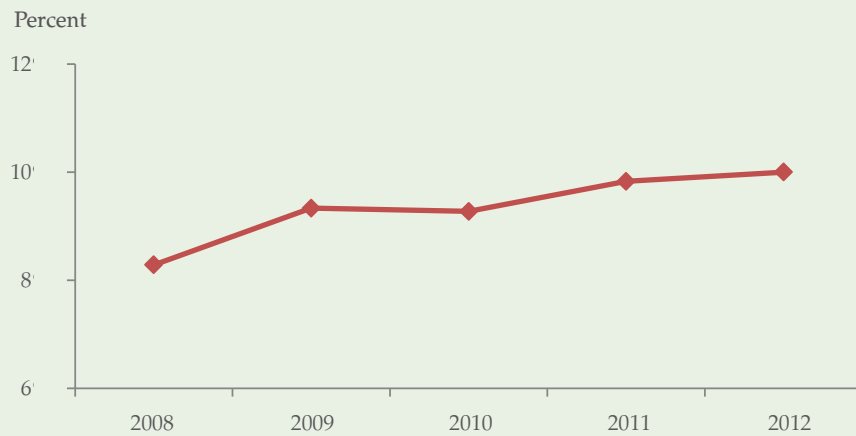
Source: BIS (2013) Statistics on payment, clearing and settlement systems in the CPSS countries, Bank of Negara Malaysia and Bank of Thailand

Note: No data on credit card transactions of Singapore

3.2.1 Use of cash

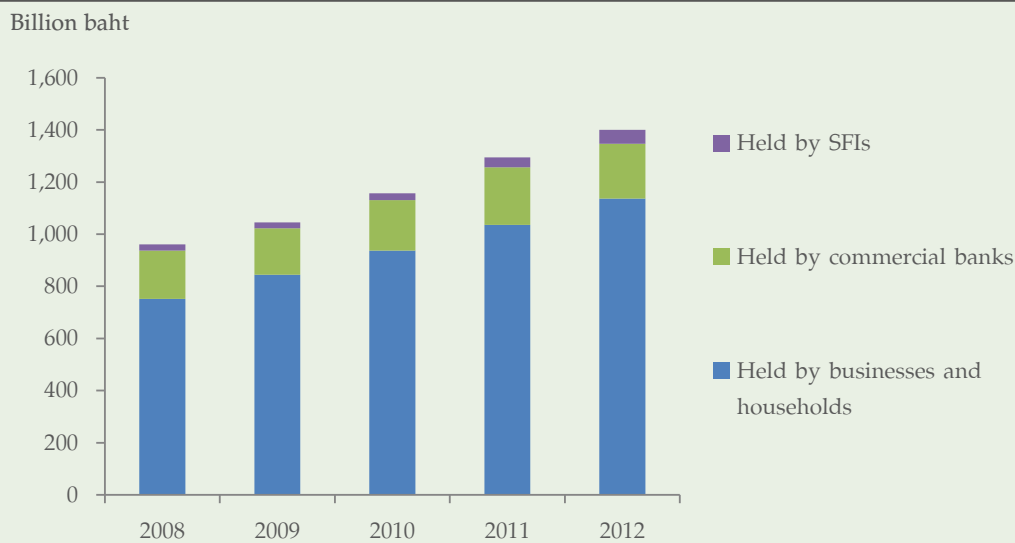
At the end of 2012, currency in circulation to GDP stood at 10 percent, rising from 9.8 percent recorded in the previous year. Compared to other countries, Thailand’s currency in circulation to GDP was higher than South Korea’s and Singapore’s of 3.9 and 8.4 percent, respectively. Nonetheless, Thailand’s currency in circulation to GDP was lower than Japan’s, which stood as high as 18.8 percent. In terms of component breakdown, the proportion of currency in the hands of households and businesses was the highest at 81.1 percent, followed by the proportion of currency held at commercial banks at 15 percent. Meanwhile, the proportion of currency held at SFIs stood at 3.8 percent and the rest were held in the hands of other institutions, including the government and cooperatives.

Figure 11: Currency in circulation to GDP



Source: Bank of Thailand

Figure 12: Composition of currency of main institutions



Source: Bank of Thailand

Meanwhile, currency held by households and businesses to narrow money declined from 73.3 percent in 2011 to 71.1 percent this year, partly because of the major flooding at the end of 2011 which led to a significant increase in the demand for cash. Once the situation returned to normal, the amount of currency held by households and businesses thus declined

¹⁰Narrow money includes 1) cash held by depository institutions and the government and 2) current deposits at depository institutions



Table 2: Comparison of currency in circulation

	2551	2552	2553	2554	2555
Currency in circulation per capita (baht/person)	11,868	13,285	14,671	16,169	17,734
Currency held by households and businesses to narrow money (percent)	72.3	71.9	72.0	73.3	71.1

Source: Bank of Thailand

3.2.2 Cheque

In 2012, total cheque usage (including interbank and in-house cheques) was 122.9 million cheques, increasing by 6.4 percent from the previous year. The total value of cheque usage was 64.8 trillion baht, increasing by 15.4 percent owing to the government's policy to stimulate domestic spending. The average value per collected cheque was 0.52 million baht, increasing from 0.48 million baht recorded in the previous year, representing an increase of 8.4 percent. The number of cheques per capital was 1.91 cheques per person.

The number of returned cheques totaled at 1.5 million cheques, equivalent to the total value of 302.2 billion baht. Of these, one million cheques were returned on the ground of insufficient funds, equivalent to the total value of 157.5 billion baht. Moreover, the ratios of volume and value of dishonoured cheques were 0.8 and 0.2 percent, respectively, in line with the previous year.

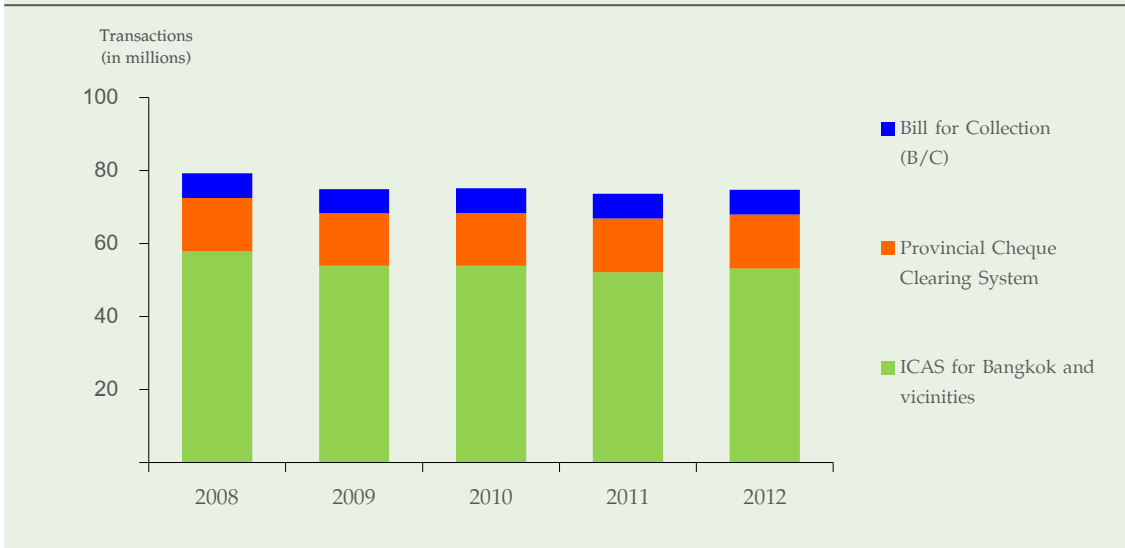
Interbank cheque clearing system¹¹

In 2012, interbank cheques totaled at 74.7 million cheques, increasing by 1.1 percent from the previous year. The total value of these interbank cheques stood at 38.8 trillion baht, increasing by 7.9 percent from the previous year. In this regard, the ratios of the volume and value of interbank cheques in Bangkok and its vicinities were 71.1 and 89.0 percent, respectively, remaining approximately the same as of the previous year. Meanwhile, the ratios of the volume and value of provincial interbank cheques followed at 19.8 and 9.8 percent, respectively. In addition, the ratios of the volume and value of B/C stood at only 9.1 and 1.2 percent, respectively.

¹¹Interbank cheque clearing system comprises of the systems as follows

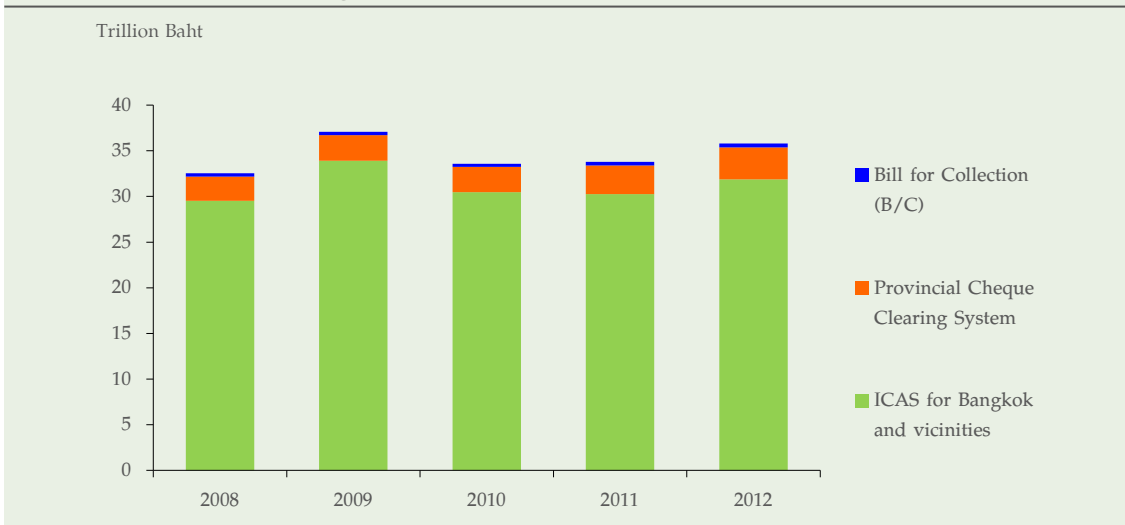
- 1) Imaged Cheque Clearing and Archive System (ICAS) in Bangkok and vicinities, which was launched on 3 February 2012 to replace the usage of the Electronic Cheque Clearing System (ECS)
- 2) Provincial Cheque Clearing System
- 3) Bill for Collection (B/C)

Figure 13: Volume of interbank cheques



Source: Bank of Thailand

Figure 14: Value of interbank cheques



Source: Bank of Thailand

In terms of usage breakdown, of the total amount of cheques in Bangkok and its vicinities of 53.2 million cheques, as many as 52.7 million cheques or 99.2 percent of the total amount were cheques of less than 10 million baht in value. Cheques of greater than 10 million baht in value, or high-value cheques¹², accounted for only 0.8 percent of the total amount. Nonetheless, it was found that the rising trend in usage of high-value cheques in Bangkok and its vicinities was higher than other types of cheques.

¹²The BOT changed definition of high-value cheque was changed from one million baht to 10 million baht on 2 July 2012



Figure 15: Volume of cheques classified by cheque value in Bangkok metropolitan region and vicinities

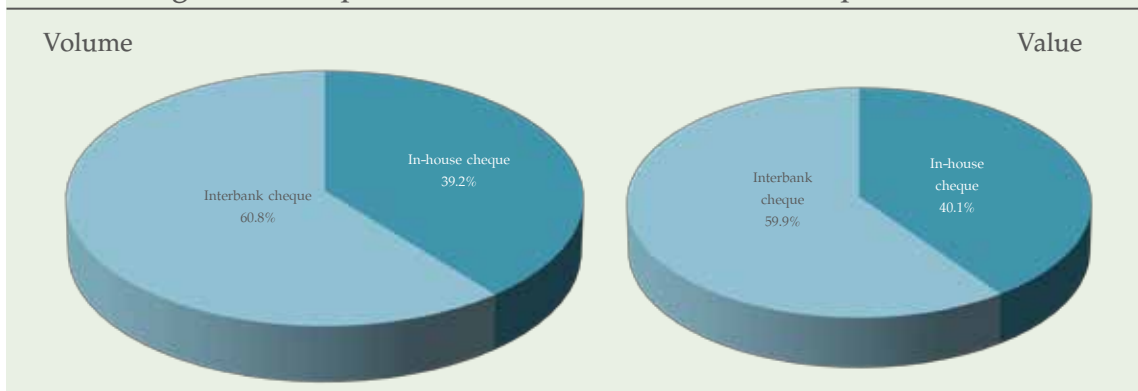


Source: Bank of Thailand

In-house cheque clearing system

In-house cheques data refer to the volume and value of in-house cheques cleared in Bangkok and its vicinities, in other provinces, and inter-provincially.

Figure 16: Proportion of volume and value of cheques in 2012



Source: Bank of Thailand

In 2012, in-house cheques that commercial banks report to the BOT totaled at 48.1 million cheques, equivalent to 25,989 billion baht. When compared to the previous year, the volume and value of in-house cheques increased by 15.1 and 27.6 percent, respectively. Moreover, the ratios of the volume and value of in-house cheques to total collected cheques stood at 39.2 and 40.1 percent, respectively.

3.2.3 High-value funds transfer

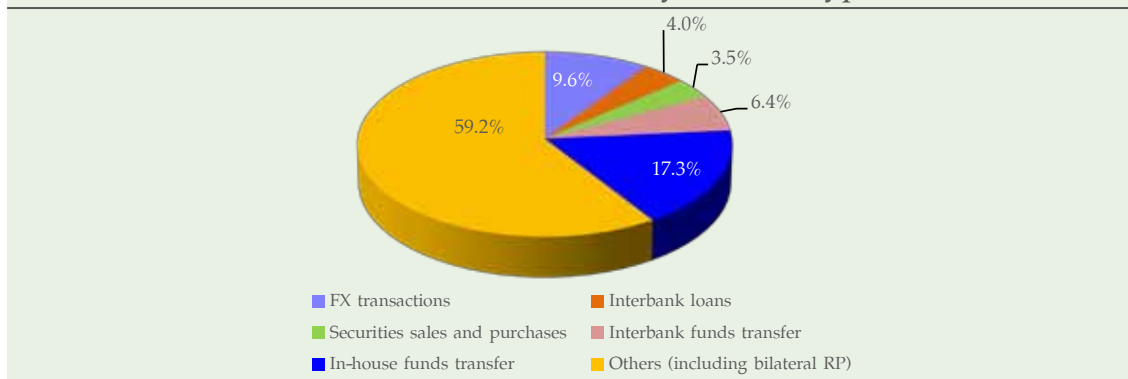
The Bank of Thailand Automated High-Value Transfer Network (BAHTNET) was developed to offer fast and secured high-value funds transfer service to commercial banks and other institutions. Main services include interbank funds transfer, third-party funds transfers, and sending general messaging between BAHTNET users.

At the end of 2012, there were 65 BAHTNET users in total. Of these, there were 16 commercial banks, 15 foreign bank branches, 10 finance and securities companies, 14 SFIs government and other agencies, and 10 BOT departments.

There were 2.9 million transactions through the BAHTNET in 2012, increasing from 2.7 million transactions recorded last year, equivalent to an 8.0 percent increase. The total value of transactions was 649.1 trillion baht, decreasing from 765.7 trillion baht recorded last year, equivalent to a 15.2 percent decline. The factor behind the decrease in BAHTNET value was the reduction in the BOT's bilateral repurchase operation (bilateral RP), stemming from the decision to increase BOT bond issuances to mop up liquidity instead of selling bonds in the RP market as was the case earlier.

BAHTNET transactions can be categorized by business types, including interbank funds transfer, Foreign exchange (FX), interbank borrowing, in-house funds transfer, sales of securities and other transactions.

Figure 17: Proportion of interbank funds transfer through the BAHTNET classified by business type in 2012

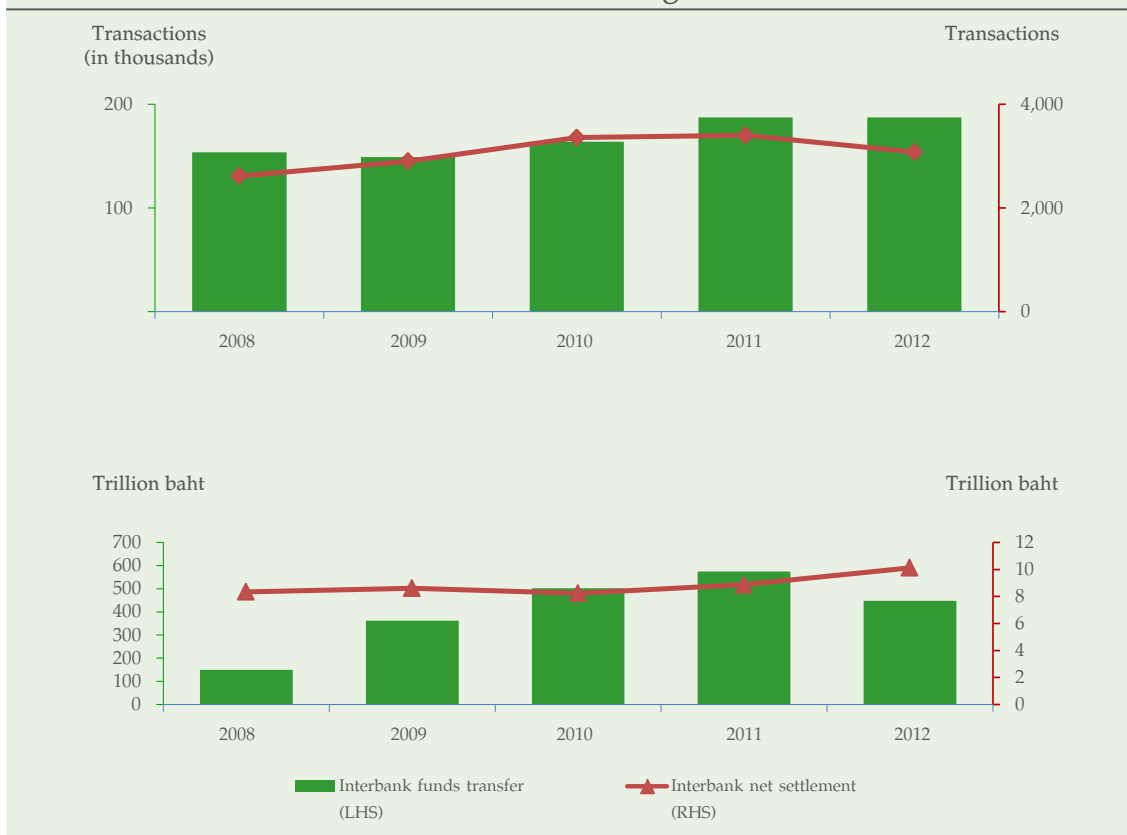


Source: Bank of Thailand

¹³Source: BAHTNET transactions quarterly report 2012



Figure 18: Volume and value of funds transfer and settlement between institutions through the BAHTNET



Source: Bank of Thailand

Overall, BAHTNET transactions in 2012 can be summarized as follows.

1) Interbank funds transfer amounted to 187,434 transactions, totaling 447.2 trillion baht, declining by 22.2 percent from the previous year. Most of the decline in the value of interbank funds transfer was attributed to the decline in bilateral RP transactions between the BOT and primary dealers.

2) Multilateral funds transfer (settlement and netting between institutions) amounted to 3,079 transactions, declining by 9.5 percent from the previous year. Nonetheless, the total amount of multilateral funds transfer totaled at 10.1 trillion baht, increasing by 14.0 percent from the previous year.

3) Third-party funds transfer are nation-wide retail funds transfer at a customer's request to the account of designated beneficiaries.

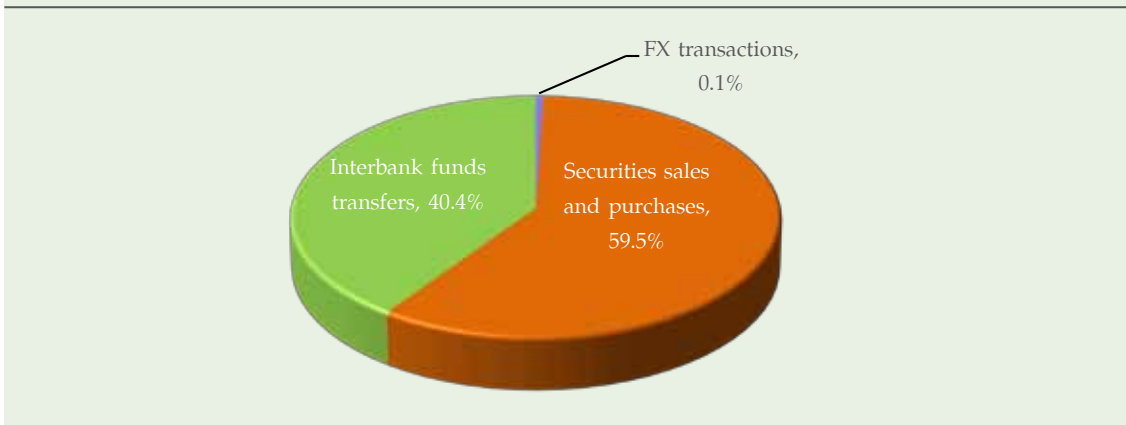
In 2012, the proportions of sales of securities, interbank funds transfer and FX were 59.5, 40.4, and 0.1 percent, respectively. The number of transactions amounted to 2.8 million transactions, increasing by 8.6 percent from the previous year. Meanwhile, the value of transactions totaled at 191.8 trillion baht, increasing by 5.2 percent from the previous year.

Figure 19: Volume and value of third party funds transfer via BAHTNET



Source: Bank of Thailand

Figure 20: Proportion of value of third party funds transfer via BAHTNET in 2012 classified by transaction type



Source: Bank of Thailand



3.2.4 Bulk payment

Bulk payment refers to a pre-authorized retail funds transfer that is conducted in bulk. In 2012, the value of bulk payment stood at 17.5 trillion baht, increasing by 19.9 percent and totaled 329.4 transactions, increasing by 12 percent from the previous year. The increase in bulk payment has been a noticeable trend for the past several years and can be explained as follows.

Bulk payment can be categorized into two types.

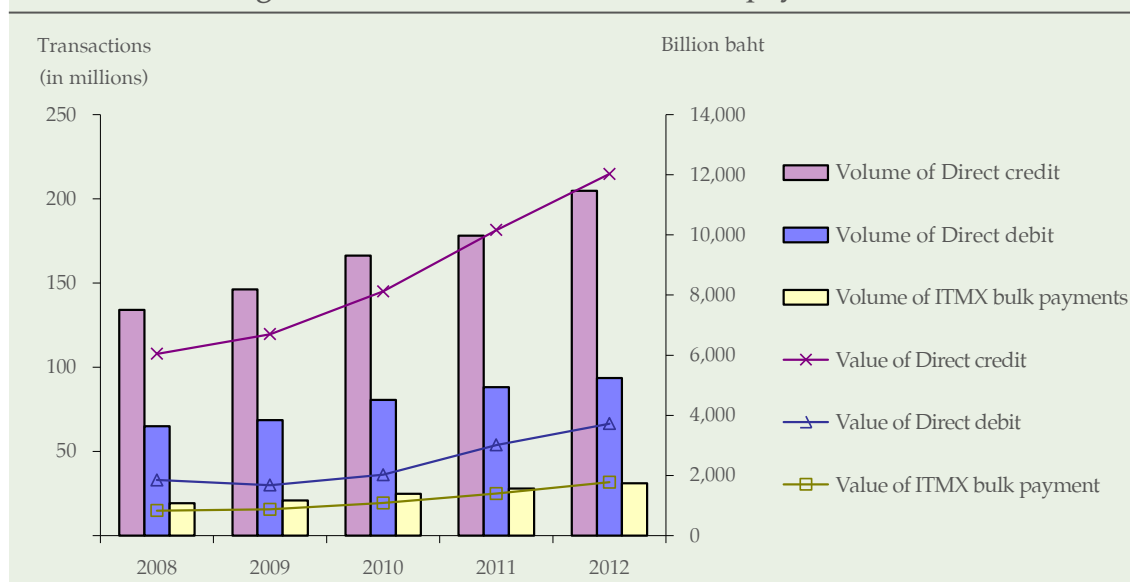
(1) In-house pre-authorized transactions, which include

- Direct credit, for example, transfers of salaries, wages and dividends, which recorded a value of 12 trillion baht this year, increasing by 20 percent from the previous year. The total number of transactions stood at 196.5 million transactions, also increasing by 16 percent from the previous year.

- Direct debit, for example, payment of utility bills, insurance premiums, credit card payments and other payments, which recorded a value of 3.7 trillion baht this year, increasing by 24 percent from the previous year. The total number of transactions stood at 88.7 million transactions, also increasing by 7 percent from the previous year.

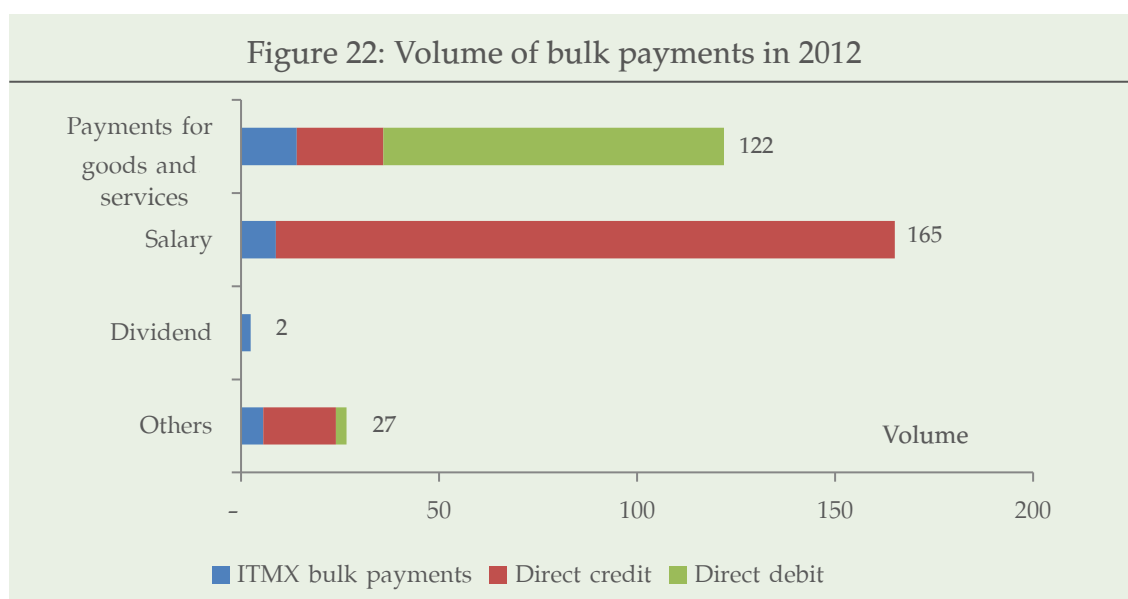
(2) Interbank pre-authorized transfers or ITMX bulk payment, currently providing only account crediting services, which recorded a value of 1.8 trillion baht this year, increasing by 27.1 percent from the previous year. The total number of transactions stood at 31 million transactions, also increasing by 11.2 percent from the previous year.

Figure 21: Volume and value of bulk payments



Source: Bank of Thailand

Upon closer examination of the purpose of bulk payment, it can be found that for in-house preauthorized direct credit, salary and wages was the most popular type of transaction followed by payment for goods and services, and other transactions. For in-house preauthorized direct debit, payment for goods and services such as payment of utility bills was the most popular type of transaction.

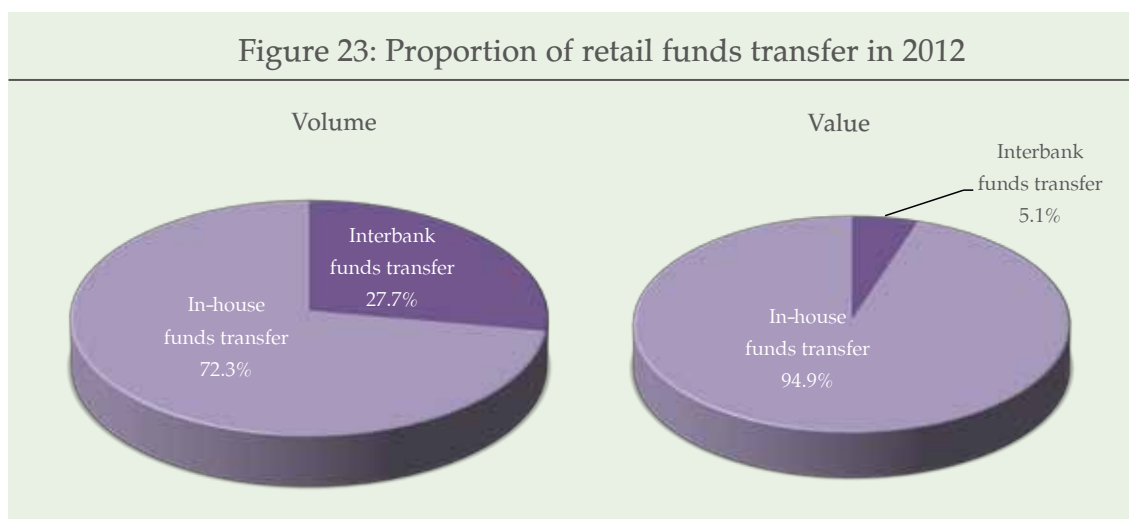


Source: Bank of Thailand

In terms of transaction type, direct credit proved to be the most popular where the average value per transaction was the highest at 261,000 baht per transaction. Meanwhile, the average values of ITMX bulk payment and direct debit transactions were 79,500 and 41,500 baht per transaction, respectively. In this regard, ITMX bulk payment and direct credit for the purpose of paying salary and wages did not have much difference.



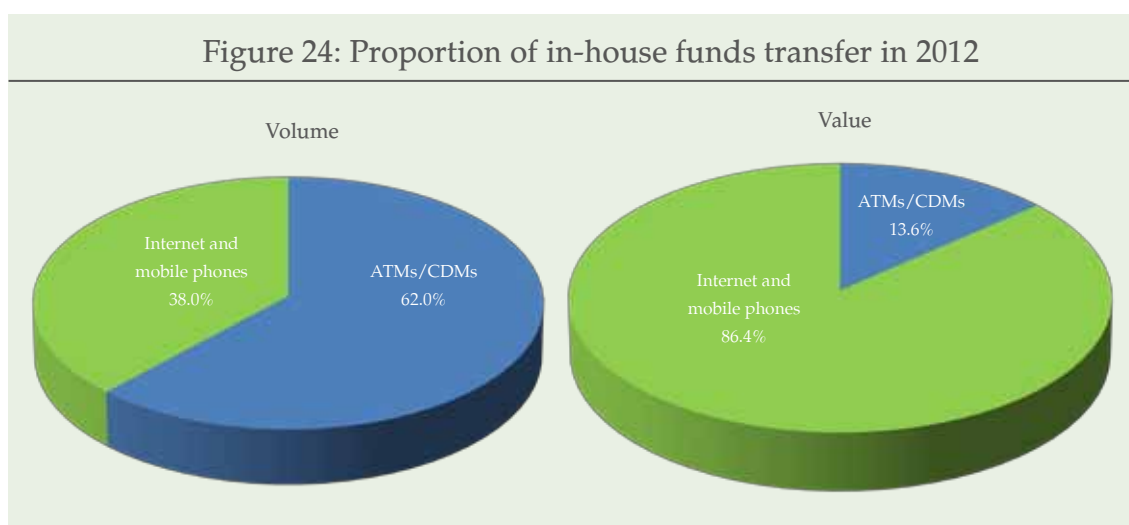
3.2.5 Retail funds transfer



Source: Bank of Thailand

Retail funds transfer can be divided into in-house funds transfer and Online Retail Funds Transfer (ORFT). In 2012, the value of retail funds transfer reached 24.5 trillion baht, increasing by 38.9 percent from the previous year. The number of transactions amounted to 542.1 million transactions, increasing by 24.6 percent. In-house funds transfer continued to be the most popular type of retail funds transfer, amounting to 72.3 and 94.9 percent of the total volume and value, respectively.

In-house funds transfer¹⁴



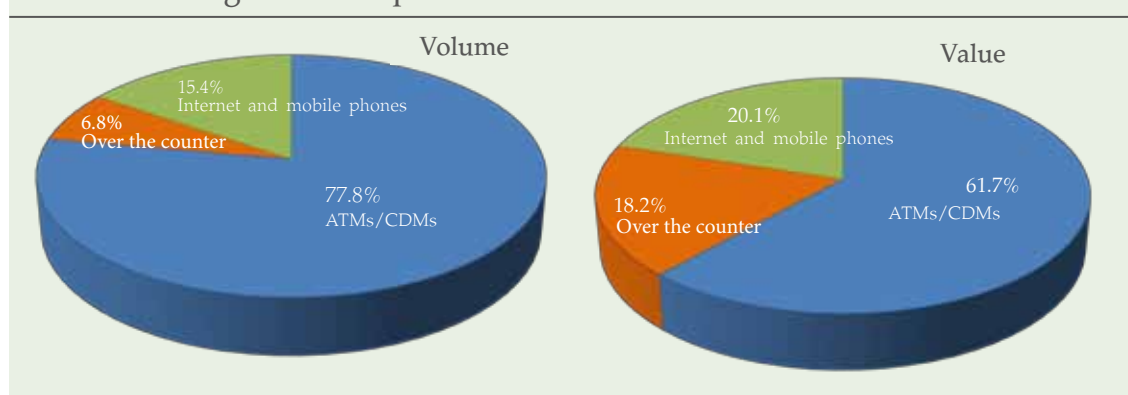
Source: Bank of Thailand

¹⁴Not including in-house funds transfer at the counter

In-house funds transfer, which included payment for goods and services via ATM as well as transfers through the internet and mobile phone had the total of 391.7 million transactions with 23.3 trillion baht, increasing by 26.3 and 39.8 percent from the previous year respectively. Most transfers were Business to Business (B2B) through the internet. The proportions of transfers through the internet and mobile phone vis-vis transfers via ATM were 86.4 and 13.6 percent, respectively.

Online Retail Funds Transfer¹⁵

Figure 25: Proportion of interbank funds transfer in 2012



Source: Bank of Thailand

There are many ways that a customer can transfer funds to other bank account. These include transfers through ATM, at the counter, and through the internet and mobile phone.

In 2012, Online Retail Funds Transfer (ORFT) amounted to 150.4 million transactions, increasing by 20.5 percent from the previous year. The value of transactions totaled at 1.2 trillion baht, increasing by 23.2 percent from the previous year. Most ORFT transfers were through ATM whereby the proportions in terms of total volume and value were 77.8 and 61.7 percent, respectively.

¹⁵Online Retail Funds Transfer (ORFT) is a service where a customer can transfer funds through the ATM, at the counter, or through the internet where the receiver's bank account will be credited instantaneously. Commercial banks that offer ORFT services include Bangkok Bank, Kasikorn Bank, Krung Thai Bank, Thai Military Bank, Siam Commercial Bank, Standard Chartered Bank (Thai), CIMB Thai, UOB, Bank of Ayudhya, Thanachart Bank and Thai Credit Retail Bank

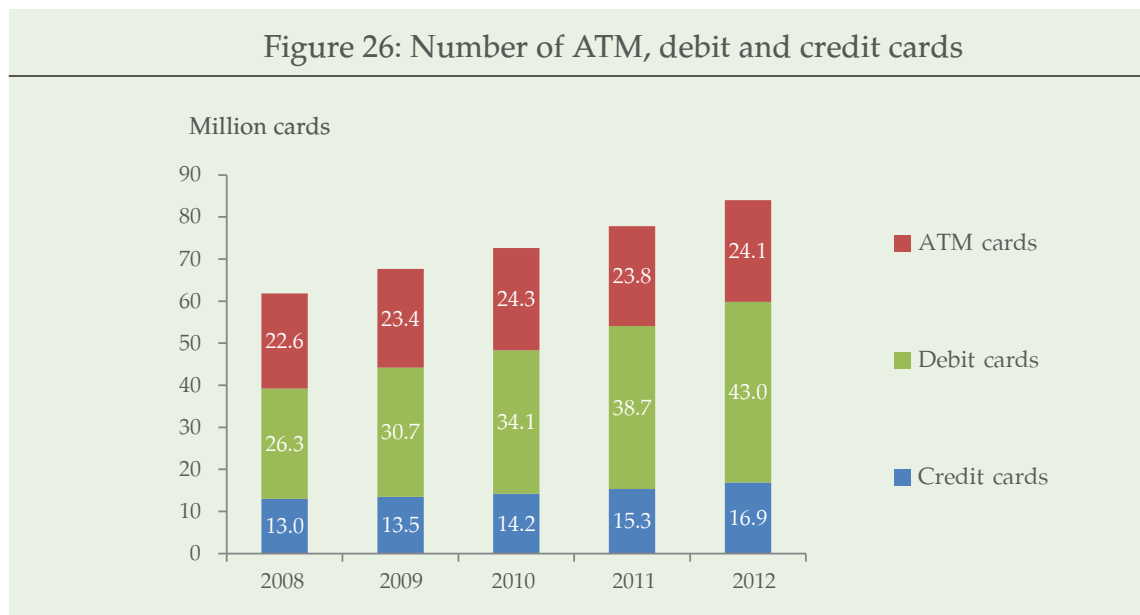


3.2.6 Electronic card

Number of electronic cards

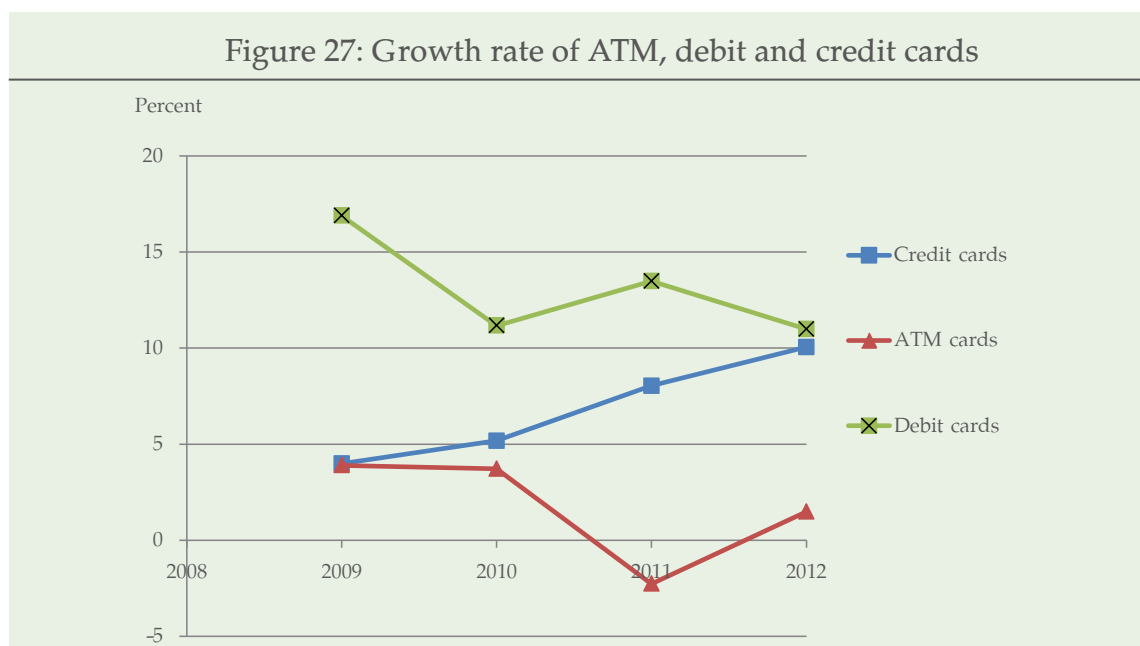
In 2012, the number of electronic cards, including ATM, debit and credit cards continued to increase. In terms of card type, the number of ATM cards stood at 24.1 million cards, increasing by 1.5 percent from the previous year. Meanwhile, the number of debit cards stood at 43.0 million cards, increasing by 11 percent from the previous year. Finally, the number of credit cards stood at 16.9 million cards, increasing by 10.1 percent from the previous year.

Figure 26: Number of ATM, debit and credit cards



Source: Bank of Thailand

Figure 27: Growth rate of ATM, debit and credit cards



Source: Bank of Thailand

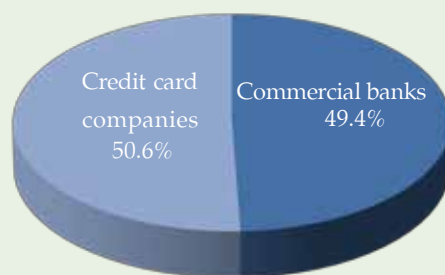
ATM and debit cards

ATM and debit cards are the most popular types of electronic cards because they can be used together with the holders' account with no requirement on income or salary as is the case for credit cards. Previously, commercial banks mainly promoted ATM card usage as most customers were using them to withdraw cash from ATMs. However, since 2007, the increase in debit cards began to exceed that of ATM cards as commercial banks started to promote debit card usage more aggressively as unlike ATM cards, they can also be used to purchase goods and services, thus are able to serve the need and lifestyle of the younger generation better. As a result, debit card usage started to become more popular throughout the country, with growing proportion of total electronic cards. Moreover, the number of debit cards issued was growing at more than 10 percent per year while growth in ATM cards declined from 37 percent in 2008 to 29 percent in 2012. Nonetheless, most debit cards were still used to withdraw cash from ATMs in the same manner as ATM cards.

Credit card¹⁶

Like debit cards, the number of credit cards in Thailand also rose continuously with growth rate of approximately 10 percent per year. At the end of 2012, the number of credit cards issued by commercial banks stood at 8.2 million cards while that issued by credit card companies stood at 8.4 million cards. Thus, the proportions of credit cards issued by commercial banks vis-à-vis credit card companies were 49.4 and 50.6 percent, respectively. In this regard, important factors behind the increasing popularity of credit cards included exemption from annual fee payment, free gifts for new applicants and other promotions such as special discount and reward points. As a result, some customers began to hold more than one credit card. Moreover, the average spending per month also increased from 4,011 baht per card per month in 2011 to 4,611 baht per card per month.

Figure 28: Proportion of credit cards issued by commercial banks and credit card companies in 2012

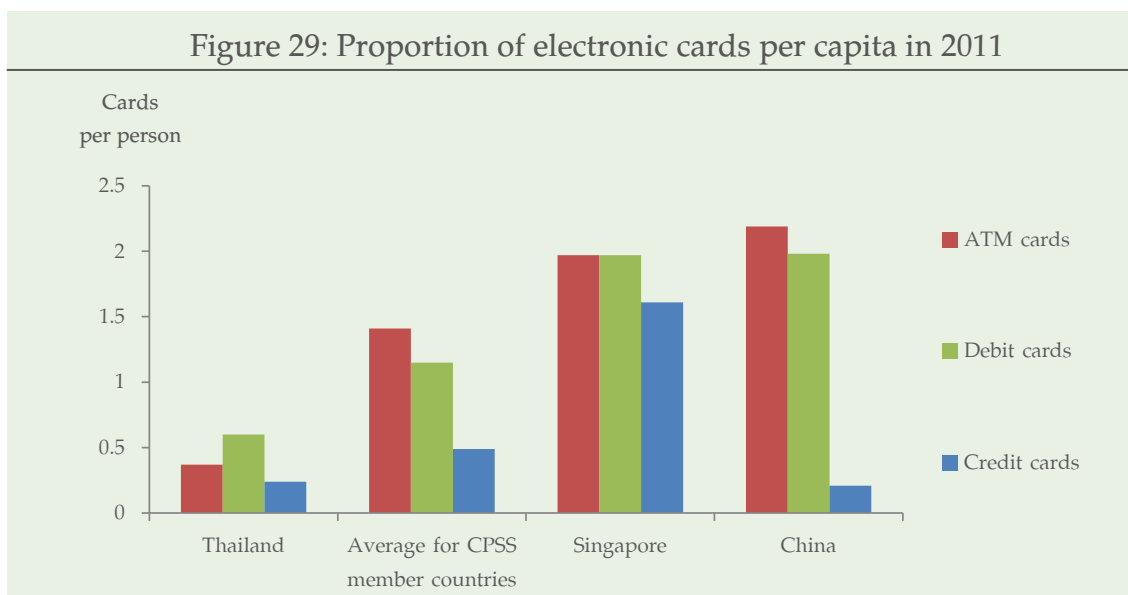


Source: Bank of Thailand

¹⁶Excluding credit cards issued by SFIs



In addition, the ratio of electronic cards per capita in Thailand remained quite low when compared with other CPSS countries, Singapore and China.



Source: BIS (2013) Statistics on payment, clearing and settlement systems in the CPSS countries and Bank of Thailand

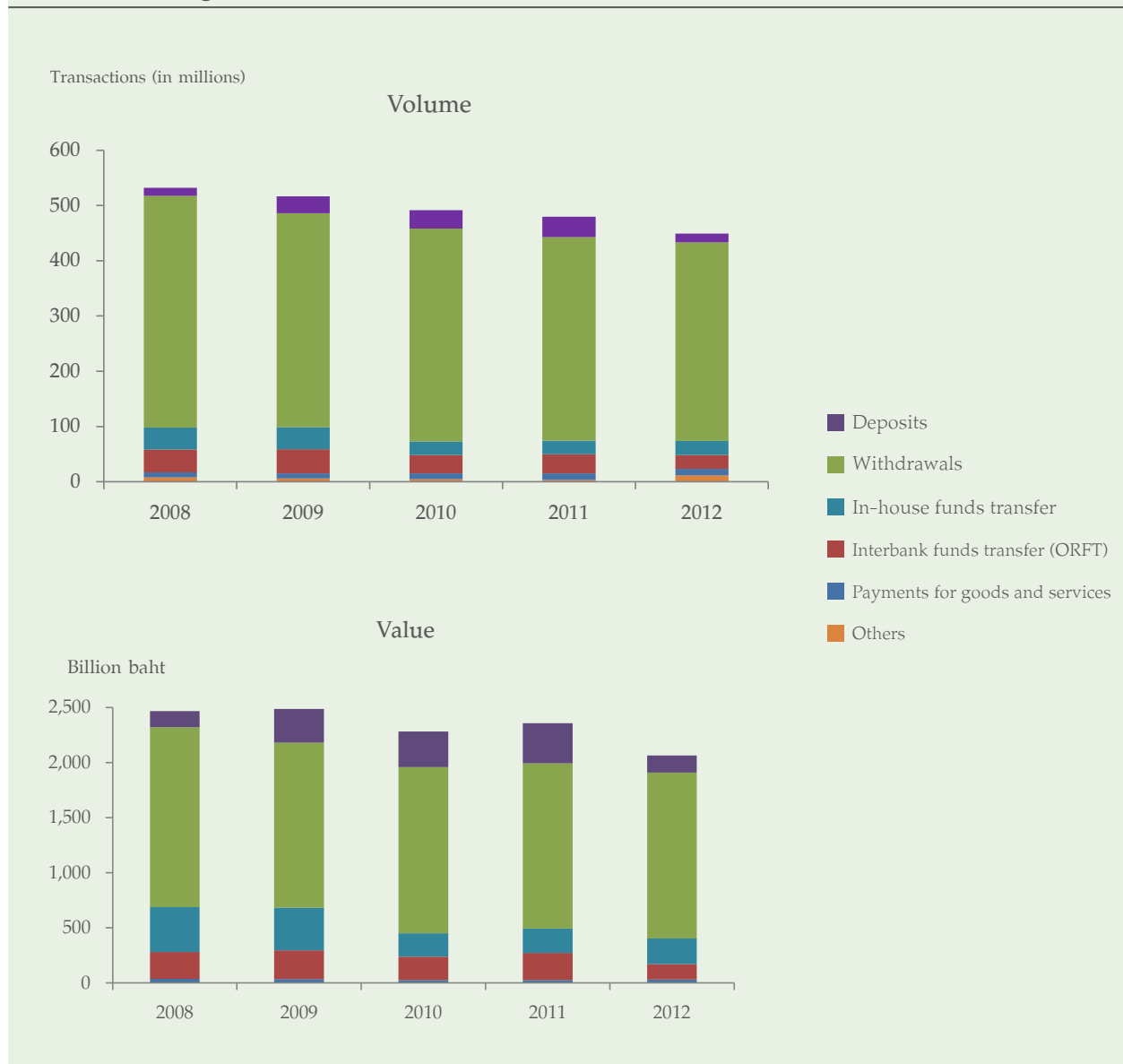
Electronic card usage¹⁷

ATM card

The main usage for ATM cards in Thailand continued to be cash withdrawal, constituting 79.9 percent of all transactions, followed by fund transfer, constituting another 11.3 percent. The number of ATM card transactions, however, was on a decline. In 2012, there were 449.2 million transactions in total, declining by 13 percent from the previous year. In particular, the number of deposit transactions via ATM decreased by 47.2 percent from the previous year, registering at just 16.1 million transactions in 2012. In this regard, the decline in usage via ATM was in line

¹⁷ Only commercial banks excluding SFIs

Figure 30: Volume and value of ATM card transactions



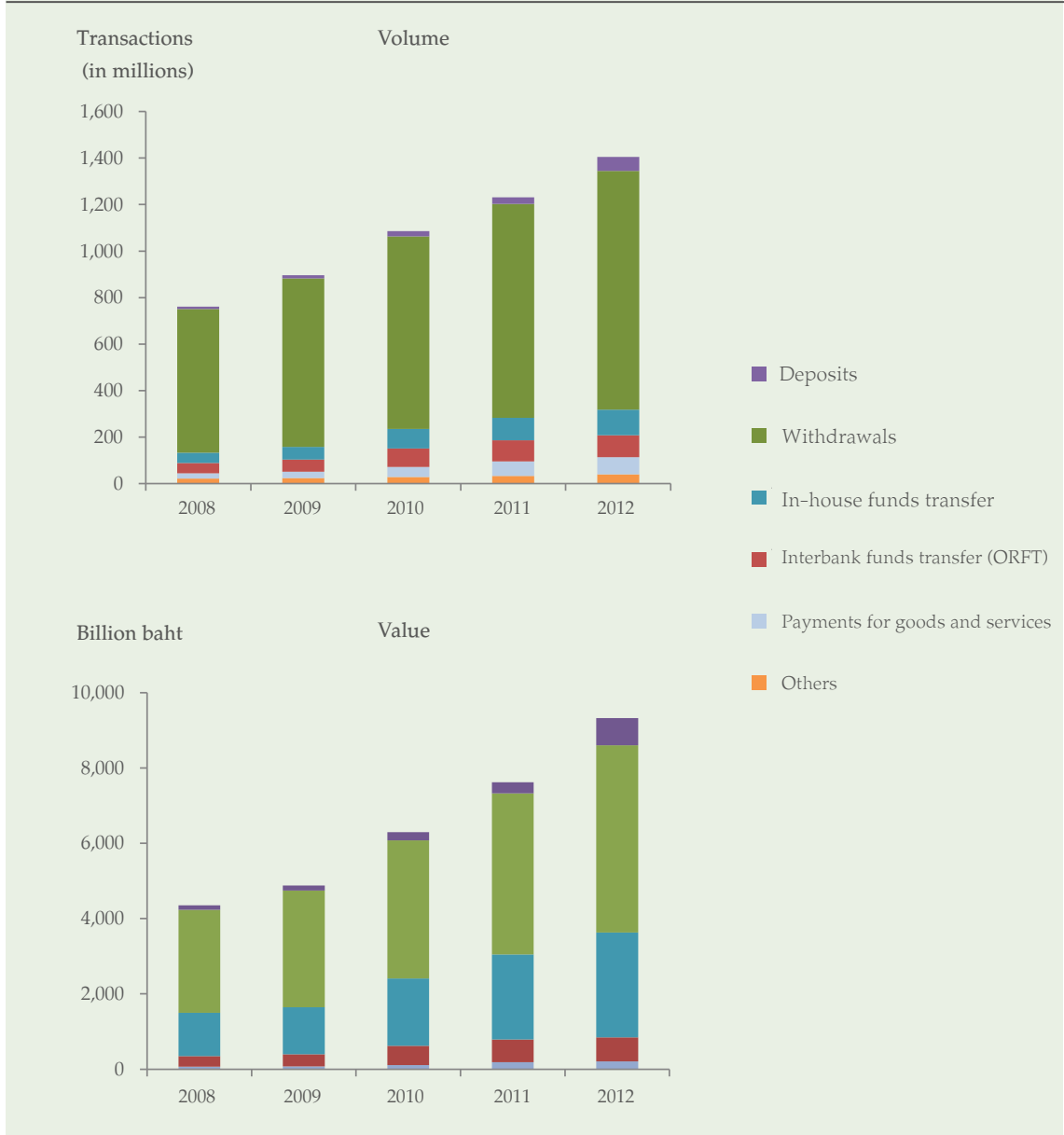
Source: Bank of Thailand

Debit card

Like ATM cards, the main usage for debit cards also remained cash withdrawal, constituting 73.1 percent of all transactions, followed by in-house funds transfer, constituting another 7.9 percent and interbank funds transfer, constituting a further 6.7 percent. Payment for goods and services was only 5.2 percent of all transactions and cash deposit was only 4.3 percent. Nonetheless, in 2010 the total number of transactions stood at 1.405 billion transactions, increasing by 14.1 from the previous year. Of this, the proportion of payment for goods and services and cash deposit increased by 17.1 and 113.0 percent from the previous year, respectively.



Figure 31: Volume and value of debit card transactions



Source: Bank of Thailand

Important factors that led to the rise in debit card usage were both the growing number of issues, commercial banks' strategies in partnering with businesses including schools and universities, retailers and public transportation companies, as well as shopping promotions such as discount and reward points. All these supporting factors were in line with the BOT's policy to promote greater usage of electronic cards in place of cash.

A comparison between usage of ATM and debit cards revealed many similarities, particularly the fact that cash withdrawal remained the most popular usage for both types of cards, representing as much as 80.0 and 73.1 percent of total ATM and debit card transactions, respectively. Meanwhile, other usages, including in-house funds transfer, interbank funds transfer and payment for goods and services were also similar between the two types of cards. Thus, it can possibly be said that Thais' behavior in the usage of ATM and debit cards was the same.

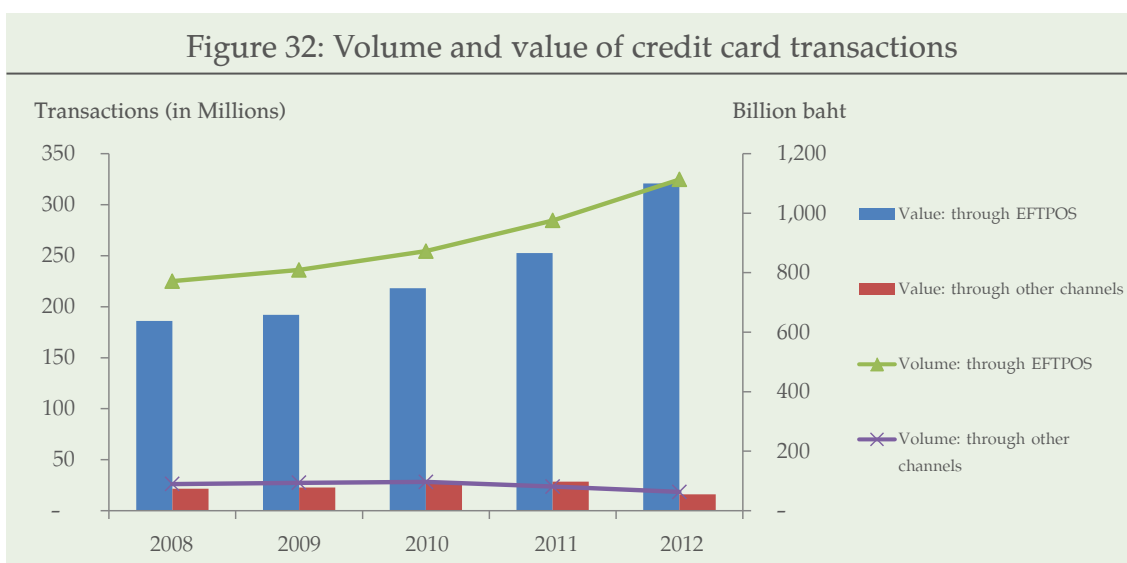
Table 3: Commercial banks' electronic card transactions in 2012

	Volume		Value		Average value (thousand baht/transaction)
	Transactions (in Millions)	Percent	Transactions (in Billions)	Percent	
ATM cards					
Withdrawals	359.1	80.0	1,504.8	72.9	4.2
In-house transfers	25.8	5.8	233.4	11.3	9.0
Interbank transfers (ORFT)	24.7	5.5	140.6	6.8	5.7
Payments for goods and services	12.2	2.7	25.4	1.2	2.1
Deposits	16.1	3.5	156.2	7.6	9.7
Others	11.3	2.5	4.4	0.2	0.4
Total	449.2	100.0	2,064.8	100.0	4.6
Debit cards					
Withdrawals	1,026.9	73.1	4,974.3	53.4	4.8
In-house transfers	110.7	7.9	2,780.5	29.8	25.1
Interbank transfers (ORFT)	94.4	6.6	642.2	6.9	6.8
Payments for goods and services	73.7	5.3	206.4	2.2	2.8
Deposits	60.2	4.3	719.1	7.7	11.9
Others	39.5	2.8	2.2	0.0	0.1
Total	1,405.4	100.0	9,324.7	100.0	6.6



Credit card¹⁸

The total value of credit card transactions in 2012 was 1.157 trillion baht, rising from 963.9 billion baht recorded in the previous year, equivalent to an increase of 26.9 percent. In terms of channel of usage, payment for goods and services through EFTPOS terminals remained the most popular choice, representing 95 percent of the total volume and value of transactions. At the same time, other channels, for example, internet, declined slightly in terms of both volume and value.



Source: Bank of Thailand

3.2.7 Electronic money (e-Money)

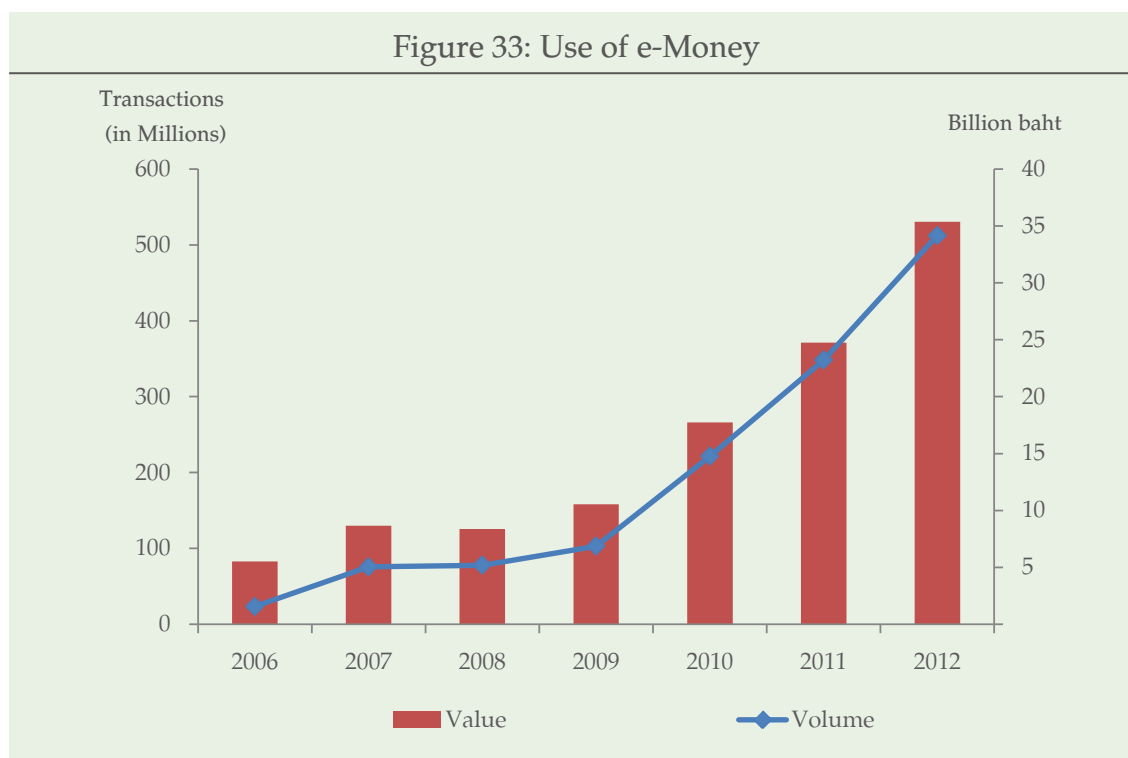
Electronic money or e-Money refers to an electronic store of monetary value on a plastic card (card based) or on an electronic network (network based), for example, mobile phone and internet account. Once a customer prepaid money to a service provider, they can use it to pay for goods and services in the same way as cash at the participating merchants. Therefore, e-Money is a very convenient instrument of payment as it is fast and easy to handle. Examples of e-Money currently available include Mass transportation cards, food court cards, mobile phone prepaid cards, movie tickets, public transport tickets and online shopping.

¹⁸Excluding cash advances

According to the e-Money regulation, there were no additional service providers at the end of 2012. Thus, the total number of e-Money service providers continued to be 20, whereby 7 were banks and 13 were non-banks. Services can be categorized according to the Royal Decree Regulating Electronic Payment Service Business B.E. 2551 (2008) as follows.

1. The provision of e-Money services by registered service providers (List B) 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 2012, there were 5 non-bank e-Money service providers in this category.

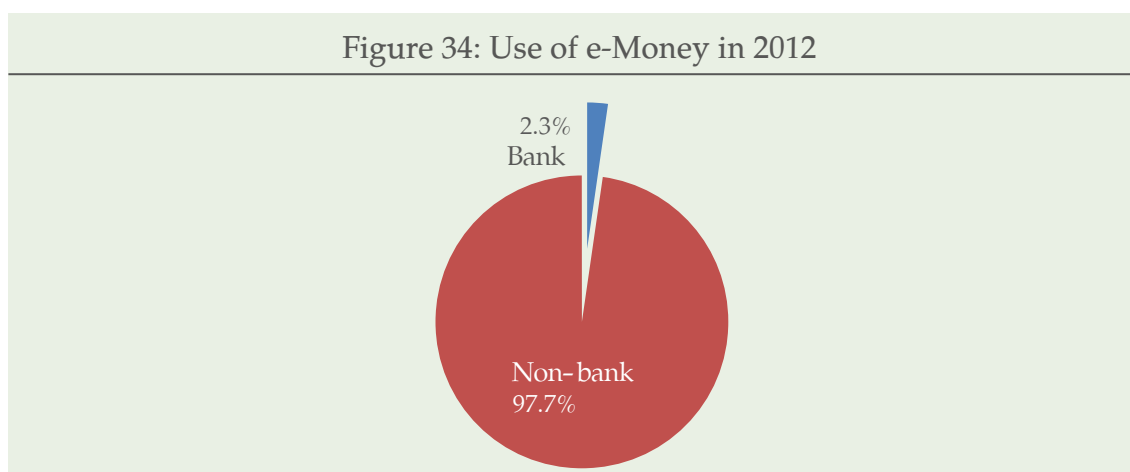
2. The provision of e-Money services by licensed service providers (List C) for the purchase of goods and services from many service providers with no restrictions on outlets and sales and distributions systems. There were 7 bank and 8 non-bank e-Money service providers in this category.



Source: Bank of Thailand



At the end of 2012, there were 20.2 million e-Money cards or accounts in total with the volume and value of transactions of 512.3 million transactions and 35.3 billion baht, respectively. In addition, the number of e-Money cards or accounts rose by 46.4 percent from the previous year, while the proportion of spending also increased by 43.0 from the previous year.



Source: Bank of Thailand

Most e-Money transactions represent those provided by non-bank service providers whereby the proportion of transaction value amounted to 97.7 percent of the total value of e-Money transactions. The average spendings per transaction were 873.1 and 67.6 baht for bank and non-bank service providers, respectively.

3.3 Other services

3.3.1 Bill payment

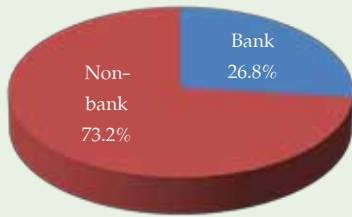
There are various channels that bill payment can be made including 1) at the counter of commercial banks or non-bank service providers such as convenient stores or retail shops; 2) electronic payment channels, for example, through ATM, internet and smart phone; and 3) direct debit.

Nonetheless, bill payment at the counter continued to be the most popular channel due to the large number of payment points and availability of 24 hour service. In addition, the number of authorized service providers according to the Royal Decree Regulating Electronic Payment Service Business B.E. 2551 (2008) was also on the rise.

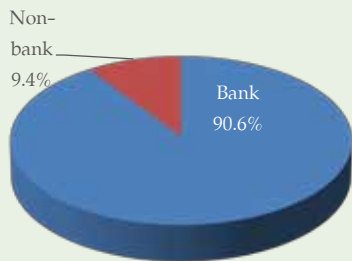
¹⁹ Including e-Money that is used in place of cash to pay for goods and services and excluding pre-paid cards for mobile phones

Figure 35: Volume and value of bill payments in 2012

Proportion of bill payment volume in 2012



Proportion of bill payment value in 2012

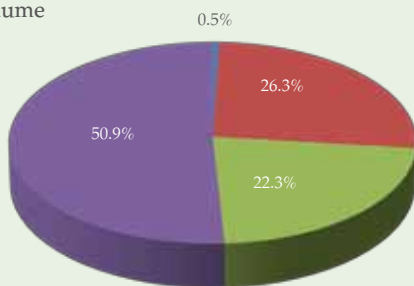


In 2012, the volume of bill payment at the counter totaled at 322.3 million transactions, increasing by 14 percent from the previous year. Of this, as much as 73.2 percent of represented bill payment at the counter of non-bank service providers thanks to their large network coverage and availability of 24 hour service.

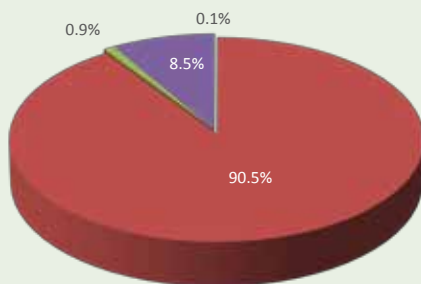
Source: Bank of Thailand

Figure 36: Volume and value of bill payments classified by type

Volume



Value



In terms of payment type, 22.8 percent of bill payment at the counter represented bill payment for utilities, including electricity, water and telephone services. Meanwhile, bill payment at the counter for purchases of goods and services, including credit card, mobile phone, internet, insurance premium, air tickets, and lay-by installments, represented 77.2 percent of bill payment at the counter. The reason for such a large difference was due to the fact that some customers chose to pay for utilities by direct debit.

■ Payments for utilities (Bank) ■ Payments for goods and services (Bank)
■ Payments for utilities (Non-bank) ■ Payments for goods and services (Non-bank)

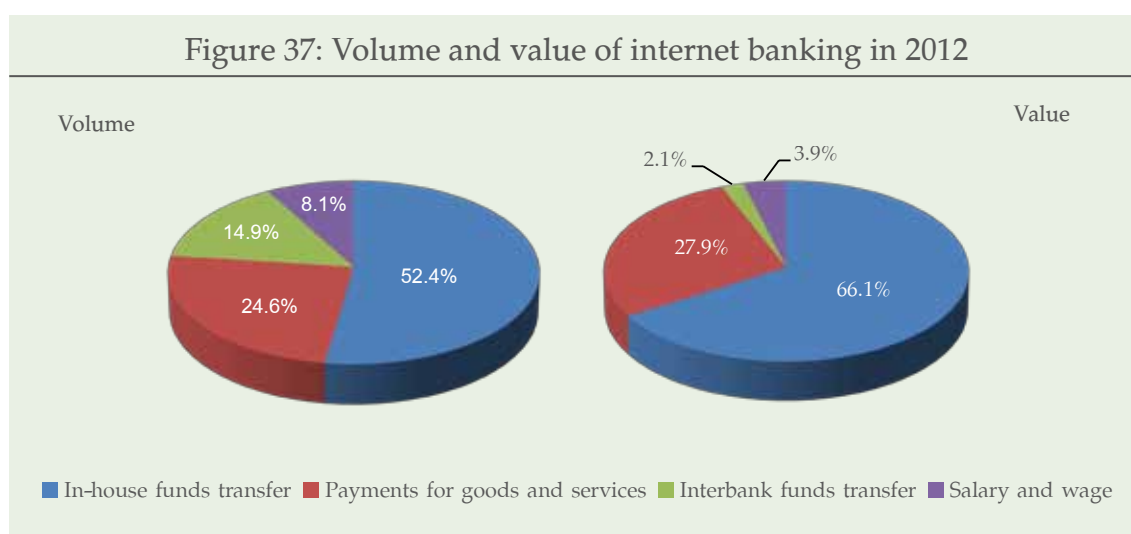
Source: Bank of Thailand



Concerning the value of bill payment at the counter, more than 90 percent of transactions represented bill payment at the counter of commercial banks even though in terms of volume, this channel only represented about ¼ of the total number of transactions. This observation reflected both the fact that customers were more confident in commercial banks and that corporate customers also preferred to make large payment by cheque.

3.3.2 Internet banking

Recently, commercial banks started to be more active in promoting the use of internet banking. Thus, this channel of service became more popular among customers over a short period of time. In 2012, the volume of internet banking transactions increased from 83.8 to 125.1 million transactions, equivalent to an increase of 49.2 percent from the previous year. The total value of transactions also increased from 8.8 to 13.4 trillion baht, equivalent to an increase of 52.5 percent.

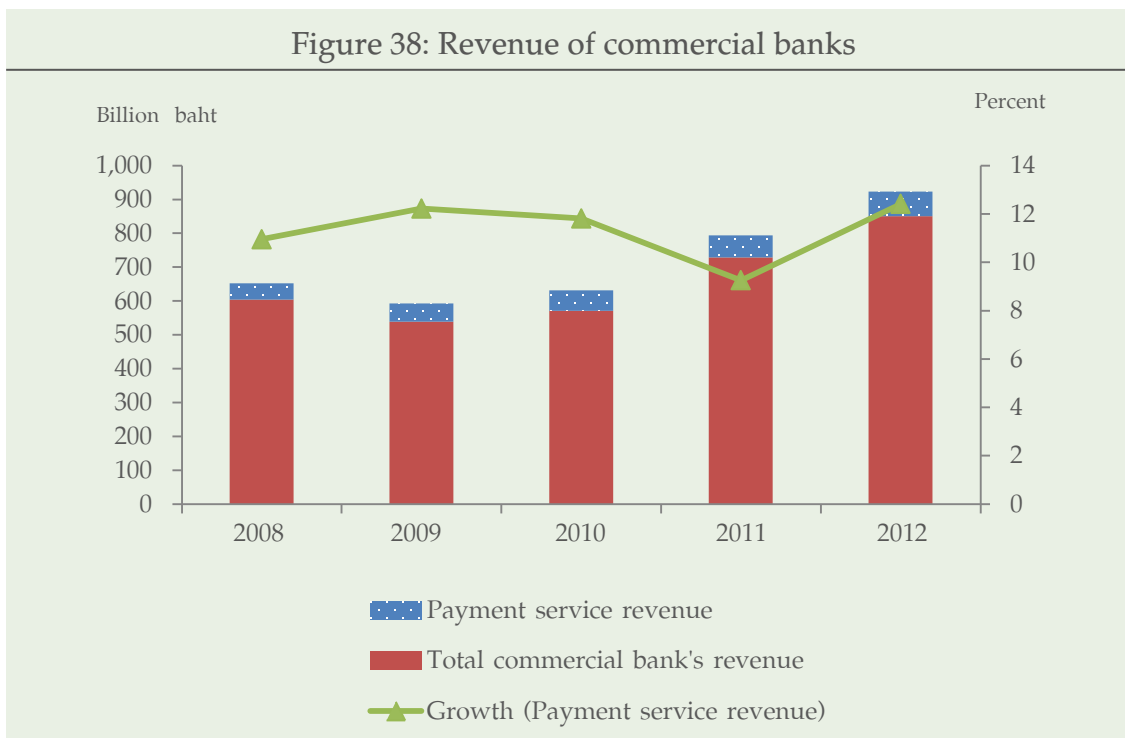


Source: Bank of Thailand

The volume and value of internet banking mostly represented in-house funds transfer, constituting 52.4 and 66.1 percent of the total volume and value of internet banking transactions, respectively. Payment for goods and services constituted 24.6 and 27.9 percent of the total volume and value of internet banking transactions, respectively. Interbank funds transfer represented 14.9 and 2.1 percent of the total volume and value of internet banking transactions, respectively. Finally, payment of salary and wages represented 8.1 and 3.9 percent of the total volume and value of internet banking transactions, respectively.

3.4 Revenue from payment services

Figure 38: Revenue of commercial banks



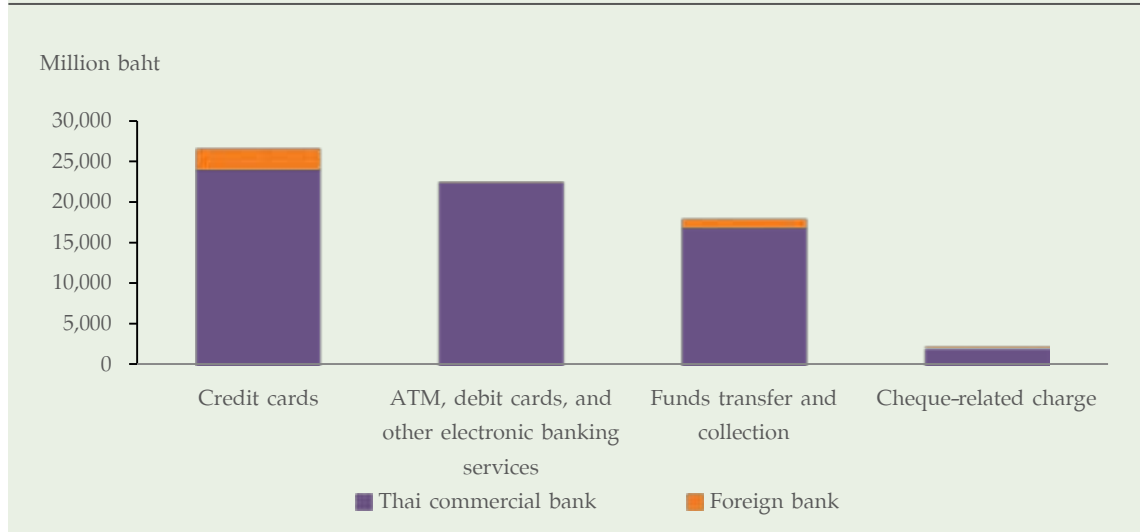
Source: Bank of Thailand

Commercial banks' revenue from payment systems services in 2012 totaled at 73.5 billion baht or 8.6 percent of total revenue of 850.4 billion baht. This year's revenue represented a growth rate 12.4 percent (8.1 billion baht), picking up from the previous year's growth rate as a result of an expansion in the volume of services.

Of all payment services revenue, the top three categories were credit card usage (36.3 percent), followed by ATM and debit card usage together with electronic banking (30.6 percent), and transfers and payment (24.5 percent). It should be noted that the main source of payment services revenue of both Thai and foreign banks was credit card usage, particularly the issuer and acquirer fees. Meanwhile, payment services revenue from ATM and debit card usage as well as electronic banking mainly represented application and annual fees.



Figure 39: Revenue from payment services classified by service type in 2012



Source: Bank of Thailand

IV

Glossary | and abbreviation

ACGM	ASEAN Central Bank Governors' Meeting
ACHs	Automated Clearing Houses
AEC	ASEAN Economic Community
AMBD	Authority Monetary Brunei Darussalam
APN	Asian Payment Network
ASEAN 5	Indonesia, Malaysia, Philippines, Singapore and Thailand
ATM	Automated Teller Machine
AUD	Australian Dollar
BAHTNET	Bank of Thailand Automated High-value Transfer Network
BCLMV	Brunei, Cambodia, Laos, Myanmar and Vietnam
BI	Bank of Indonesia
BIS	Bank for International Settlements
BNM	Bank Negara Malaysia
BOL	Bank of Lao PDR
BOS	Banknote Ordering System
BOT	Bank of Thailand
BSP	Bangko Sentral ng Pilipinas
B2B	Business-to-Business
CAD	Canadian Dollar
CAGR	Cumulative Annual Growth Rate
CCP	Central Counterparties
CDM	Cash Deposit Machine
CHF	Swiss Franc
CLS	Continuous Linked Settlement
CPSIPS	Core Principles for Systemically Important Payment Systems
CPSS	The Committee on Payment and Settlement System
CSD	Central Securities Depositories
DKK	Danish Krone
EDC	Electronic Data Capture
EFTPOS	Electronic Funds Transfer at Point Of Sale
e-Guarantee	Electronic guarantee of tax payment

e-Money	Electronic Money
e-Payment	Electronic Payment
EUR	Euro
FMIIs	Financial Market Infrastructures
FSAP	Financial Sector Assessment Program
FX	Foreign Exchange
GBP	UK Pound Sterling
GDP	Gross Domestic Product
G20	The Group of Twenty Finance Ministers and Central Bank Governors from 20 major economies
HKD	Hong Kong Dollar
HKMA	Hong Kong Monetary Authority
ICAS	Imaged Cheque Clearing and Archive System
ILS	Israeli New Sheqel
IMF	International Monetary Fund
IOSCO	The Technical Committee of the International Organization of Securities Commission
ISO	International Organization for Standardization
IT	Information Technology
ITMX	Interbank Transaction Management and Exchange
JPY	Japanese Yen
KRW	Korean Republic Won (S.Korea)
LSW	Local Switching
MAS	Monetary Authority of Singapore
M-POS	Mobile Point Of Sale
MXN	Mexican New Peso
NBC	National Bank of Cambodia
NECTEC	National Electronics and Computer Technology Center
NGO	Non-Governmental Organization
NITMX	National ITMX
NPMS	National Payment Message Standard
NOK	Norwegian Krone
Non-bank	Non-commercial bank service providers
NRBA	Non-Resident Baht Account
NRBS	Non-Resident Baht Account for Securities

NSPs	Network Service Providers
NSW	National Single Window
NZD	New Zealand Dollar
ORFT	Online Retail Funds Transfer
PDP	Potential Debit Position
PvP	Payment versus Payment
RCCP	Recommendations for central counterparties
RSSS	Recommendations for securities settlement systems
RTGS	Real Time Gross Settlement
SAR	Saudi Riyal
SBV	The State Bank of Vietnam
SEK	Swedish Krona
SGD	Singaporean Dollar
SIPS	Systemically Important Payment Systems
SRS	Securities Requirement for Settlement
SSS	Securities Settlement Systems
TF	Task Forces
TR	Trade Repositories
USD	U.S. Dollar
USD-CHATS	US Dollar Clearing House Automated Transfer System
WC-PSS	Working Committee on Payment and Settlement Systems



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Table 1: Basic statistical data

	2007	2008	2009	2010	2011	2012
Population (millions)	63.04	63.39	63.53	63.88	64.08	64.46
GDP current price (billion baht)	8,525.2	9,080.4	9,041.5	10,104.8	10,539.4	11,363.0
GDP per capita (baht)	135,238.53	143,247.18	142,329.65	158,184.10	164,482.80	176,279.86
Exchange rate vis-a-vis US\$ (at year-end)	33.75	34.93	33.36	30.15	31.70	30.63

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

Table 2: Technological infrastructure

	2007	2008	2009	2010	2011	2012
Total fixed network telephone subscribers (millions)	7.02	6.97	6.85	6.65	6.43	6.16
Total mobile telephone subscribers (millions)	51.60	63.69	69.50	73.05	78.36	78.83
Postpaid	5.60	6.54	7.39	7.84	7.93	7.38
Prepaid	46.00	57.15	62.11	65.21	70.44	71.46
Total Internet users (millions)	9.32	10.96	12.33	13.84	14.77	16.63
Penetration rates						
Fixed network telephone (%)	11.14	10.99	10.78	10.41	10.03	9.56
Mobile telephone (%)	81.86	100.48	109.40	114.36	122.29	122.29

Sources: CAT Telecom Public Company Limited, TOT Public Company Limited, National Statistical Office

Table 3: Narrow Money (at year-end , million baht)

	2007	2008	2009	2010	2011	2012
Narrow money (1+2)	999,902	1,041,224	1,174,551	1,302,442	1,414,297	1,598,262
1. Currency outside DCs & Central Gov.	720,053	752,325	843,958	937,201	1,036,015	1,136,302
Banknotes in circulation	842,624	923,967	1,005,884	1,114,518	1,248,569	1,350,932
Coins in circulation	35,707	38,664	40,675	43,348	46,953	50,864
Less: currency held by Central Gov.	1,176	1,170	1,300	1,256	986	854
Less: currency held by Depository Corp.	157,102	209,136	201,301	219,409	258,521	264,640
Held by commercial banks	140,244	184,762	178,970	193,495	221,289	210,596
Held by finance companies	0	0	0	0	0	0
Held by Specialized Financial Institutions	16,712	24,227	22,183	25,737	36,905	53,602
Held by savings cooperatives	146	147	148	177	326	441
Held by money market mutual funds	0	0	0	0	0	0
2. Transferable deposits at Depository Corp.	279,849	288,899	330,593	365,241	378,282	461,959
Transferable deposits at Bank of Thailand	3,848	15,107	3,131	2,943	3,053	4,554
Transferable deposits at commercial banks	271,414	269,770	321,325	357,378	368,192	451,295
Transferable deposit at Specialized Financial Institutions	4,587	4,022	6,137	4,920	7,037	6,110

Source: Bank of Thailand



	2007	2008	2009	2010	2011	2012
Banknotes and coins ¹	720.05	752.33	843.96	937.20	1,036.02	1,136.30
Transferable Deposits at Depository Corp.	279.85	288.90	330.59	365.24	378.28	461.96
Narrow money	999.90	1,041.22	1,174.55	1,302.44	1,414.30	1,598.26
Broad money ²	9,109	9,944	10,617	11,779	13,600	14,967

Source: Bank of Thailand

¹ Banknotes outside depository corporations and coins issued by central government

² Narrow money and Quasi-money (Other Deposits at Depository Corp.+Securities Other Than Shares)

	2007	2008	2009	2010	2011	2012
Balances held at central bank	51.5	58.5	48.2	78.2	59.3	88.7
Required reserves	408.2	426.7	425.9	457.8	488.5	655.6
Free reserves	921.2	1,382.2	1,908.3	2,110.7	2,004.5	2,489.4
Transferable deposits at other banks	6.7	5.0	3.7	6.7	7.9	6.5
Memorandum item:						
Institutions borrowing from central bank	75.8	19.2	14.9	10.0	0.0	124.7

Source: Bank of Thailand

Table 6: Indicators of the use of various cashless payment instruments

Volume of transactions (in thousands)

	2007	2008	2009	2010	2011 ^P	2012
Paper-based :	130,235	129,126	123,202	114,558	115,431	122,875
In-house cheque ¹	49,503	49,900	48,310	39,435	41,833	48,145
Interbank cheque	80,732	79,227	74,892	75,123	73,598	74,730
Electronic payment cards:	1,476,883	1,679,227	1,850,327	2,164,395	2,480,439	2,897,322
ATM card	592,653	555,826	556,613	542,707	561,136	609,473
for cash withdrawal	473,532	419,610	387,175	422,546	429,288	456,521
for other purposes ²	119,121	136,216	169,438	120,161	131,848	152,953
Debit card	538,288	761,142	895,708	1,085,356	1,231,241	1,405,617
for cash withdrawal	428,643	617,729	724,622	828,607	920,029	1,026,909
for purchasing purpose via EFTPOS	9,536	11,496	11,913	13,802	25,057	31,179
for other purposes ³	100,108	131,918	159,172	242,948	286,155	347,529
Credit card ⁴	270,300	284,305	294,999	314,873	339,865	369,920
for purchasing purpose	237,798	251,128	263,424	282,597	308,212	343,346
for other purposes ⁵	32,502	33,177	31,575	32,276	31,653	26,574
e-Money ⁶	75,642	77,954	103,007	221,459	348,198	512,311
Automated:	203,536	220,128	237,630	274,019	296,861	332,324
Direct credit ⁷	124,236	134,010	146,151	166,372	178,147	204,829
Direct debit ⁸	59,967	64,985	68,583	80,621	88,086	93,531
ITMX Bulk Payment	17,568	19,205	20,891	24,702	27,901	31,018
BAHTNET ⁹	1,766	1,929	2,005	2,323	2,728	2,946

Source: Bank of Thailand

¹ Some banks do not report in-house provincial and B/C cheque.² Data include purchasing goods and services, deposit and funds transfer.³ Data include purchasing goods and services via other channels, deposit and funds transfer.⁴ Data include bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand.⁵ Data include cash withdrawal, cash advance, deposit and funds transfer.⁶ Data exclude top-up cards⁷ Intra-bank pre-authorized direct credit⁸ Intra-bank pre-authorized direct debit⁹ Data include funds transfer, third party funds transfer and multilateral Funds Transfer.

Table 7: Indicators of the use of various cashless payment instruments						
Value of transactions (billion baht)						
	2007	2008	2009	2010	2011 ^p	2012
Paper-based:	55,637	62,147	56,066	51,698	56,169	64,832
In-house cheque ¹	23,099	25,061	22,473	17,918	20,363	25,989
Interbank cheque	32,537	37,086	33,593	33,780	35,806	38,843
Electronic payment cards:	6,659	7,928	8,467	9,871	11,496	13,620
ATM card	2,607	2,645	2,643	2,508	2,677	2,871
for cash withdrawal via ATM	1,840	1,634	1,498	1,721	1,804	2,016
for other purposes ²	767	1,011	1,145	787	873	855
Debit card	3,205	4,354	4,876	6,294	7,620	9,324
for cash withdrawal via ATM	1,971	2,738	3,095	3,670	4,275	4,972
for purchasing purpose via EFTPOS	19	24	24	30	81	94
for other purposes ³	1,216	1,592	1,757	2,593	3,264	4,258
Credit card ⁴	839	921	937	1,052	1,174	1,389
for purchasing purpose	636	711	737	845	964	1,157
for other purposes ⁵	203	210	200	207	211	232
e-Money ⁶	8.7	8.4	10.5	17.7	24.7	35.4
Automated :	190,210	286,191	498,861	665,846	780,284	666,637
Direct credit ⁷	5,351	6,044	6,698	8,121	10,163	12,028
Direct debit ⁸	1,699	1,847	1,676	2,021	3,014	3,719
ITMX Bulk Payment	793	828	868	1,081	1,393	1,771
BAHTNET ⁹	182,368	277,472	489,619	654,623	765,714	649,119

Source: Bank of Thailand

¹ Some banks do not report in-house provincial and B/C cheque.

² Data include purchasing goods and services, deposit and funds transfer.

³ Data include purchasing goods and services via other channels, deposit and funds transfer.

⁴ Data include bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand.

⁵ Data include cash withdrawal, cash advance, deposit and funds transfer.

⁶ Data exclude top-up cards

⁷ Intra-bank pre-authorized direct credit

⁸ Intra-bank pre-authorized direct debit

⁹ Data include funds transfer, third party funds transfer and multilateral Funds Transfer.

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

	2007	2008	2009	2010	2011	2012
Notes and coins	878,331	993,148	1,095,159	1,187,828	1,346,437	1,401,796
Notes:	842,624	954,484	1,054,484	1,144,480	1,299,484	1,350,932
500,000 baht	117	117	117	116	117	118
1,000 baht	628,175	701,711	774,058	889,617	1,028,838	1,102,770
500 baht	98,497	119,283	140,972	113,746	119,826	128,217
100 baht	82,435	97,484	98,605	98,235	108,220	121,358
60 baht	1,157	1,161	1,163	1,166	1,173	1,175
80 baht	0	0	0	0	0	149
50 baht	7,819	9,377	13,062	12,799	9,599	13,194
20 baht	20,741	21,674	22,835	25,134	28,045	28,840
10 baht	3,357	3,351	3,346	3,342	3,340	3,336
5 baht	196	196	196	195	196	196
1 baht	121	121	121	121	121	121
50 satang	9	9	9	9	9	9
Coins:	35,707	38,664	40,675	43,348	46,953	50,864

Source: Bank of Thailand

Table 9: Institutional infrastructure

	2007	2008	2009	2010	2011	2012
Central Bank						
Number of Institutions	1	1	1	1	1	1
Number of Branches	3	3	3	3	3	3
Number of Accounts ¹	287	260	226	231	231	241
Value of Accounts (million baht) ¹	151,137	159,678	250,262	422,059	353,916	381,223
Thai Commercial Banks						
Number of Institutions	18	18	17	17	16	16
Number of Branches	5,070	5,477	5,791	5,961	6,183	6,391
Number of Accounts	73,108,528	75,259,745	76,078,336	79,073,950	77,588,699	81,344,121
Value of Accounts (million baht)	5,843,995	6,535,094	6,557,653	6,886,058	7,367,485	9,540,114
Specialized Financial Institutions						
Number of Institutions	6	6	6	6	6	6
Number of Branches	1,768	1,796	1,853	2,002	2,240	2,425
Number of Accounts	36,651,097	42,713,869	41,618,537	37,838,856	37,366,503	48,233,488
Value of Accounts (million baht)	1,341,482	1,809,653	2,175,906	2,435,471	2,249,904	3,199,296
Foreign Bank Branches						
Number of Institutions	16	16	15	15	15	15
Number of Branches	16	16	15	15	18	19
Number of Accounts	219,789	90,115	89,866	92,402	96,165	86,556
Value of Accounts (million baht)	673,490	507,009	466,418	511,604	623,338	679,790

Sources: Bank of Thailand

¹ Data exclude regional offices

Table 10: Payment instructions handled by selected interbank settlement systems						
Volume of transactions (in thousands)						
	2007	2008	2009	2010	2011	2012
Paper-based:	80,732	79,227	74,892	75,123	73,598	74,730
ECS	59,026	57,833	53,926	53,864	52,116	53,162
Provincial Cheques	15,056	14,666	14,353	14,533	14,775	14,800
B/C ¹	6,649	6,728	6,613	6,726	6,707	6,768
Automated:	75,300	100,181	99,110	116,482	130,554	150,962
BAHTNET ²	1,766	1,929	2,005	2,323	2,728	2,946
ITMX Bulk Payment	17,568	19,205	20,891	24,702	27,901	31,018
ORFT-ATM (Online Retail Funds Transfer)	55,966	79,047	76,214	89,456	99,926	116,997

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

¹ Inter-provincial cheques exchanged at the Electronic Clearing House.

² Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

Table 11: Payment instructions handled by selected inter-bank settlement systems						
Value of transactions (billion baht)						
	2007	2008	2009	2010	2011	2012
Paper-based:	32,537	37,086	33,593	33,780	35,806	38,843
ECS	29,524	33,912	30,473	30,247	31,861	34,548
Provincial Cheques	2,667	2,798	2,761	3,137	3,508	3,811
B/C ¹	346	376	359	396	437	484
Automated:	183,509	278,778	490,940	656,253	767,749	651,660
BAHTNET ²	182,368	277,472	489,619	654,623	765,714	649,119
ITMX Bulk Payment	793	828	868	1,081	1,393	1,771
ORFT-ATM (Online Retail Funds Transfer)	349	478	453	549	642	771

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

¹ Inter-provincial cheques exchanged at the Electronic Clearing House.

² Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

Table 12: Securities transfer instructions handled by securities settlement systems						
Volume of transactions (in millions)						
	2007	2008	2009	2010	2011	2012
Bond registry system:						
Equity securities	-	-	-	-	-	-
Government securities	0.01	0.01	0.01	0.01	0.01	0.01
Book-entry system:						
Equity securities	2.36	2.41	2.46	2.83	2.66	3.09
Government securities	0.05	0.09	0.09	0.13	0.14	0.18

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)						
	2007	2008	2009	2010	2011	2012
Bond registry system:						
Equity securities	-	-	-	-	-	-
Government securities	23	33	42	20	22	28
Book-entry system:						
Equity securities	713.6	625.8	539.0	816.0	1029.0	839
Government securities	27,002	58,647	51,071	66,817	80,469	82,954

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

Table 14: Number of participants in selected payment and settlement systems						
	2007	2008	2009	2010	2011	2012
BAHTNET	67	69	65	66	64	65
ECS	40	40	38	38	38	36
Provincial Cheque Clearing	22	23	21	22	22	21
B/C ¹	39	39	37	37	37	35
ITMX Bulk Payment (SMART)	33	33	33	33	32	32
Bond registry system:						
Equity securities	-	-	-	-	-	-
Government securities	296,867	308,188	633,708	529,237	341,968	283,597
Book-entry system:						
Equity securities and	77	91	88	89	89	86

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

¹ Inter-provincial cheques exchanged at the Electronic Clearing House.

Table 15: Number of ATMs ¹						
	2007	2008	2009	2010	2011	2012
Total	25,943	34,796	39,454	44,468	47,759	52,242
Bangkok	9,883	12,624	13,586	14,639	15,099	16,195
Central	8,818	11,871	13,951	15,669	16,658	17,643
Northeast	2,491	3,673	4,370	5,314	6,091	7,128
North	2,274	3,230	3,707	4,304	4,760	5,474
South	2,477	3,398	3,840	4,542	5,151	5,802

Source: Bank of Thailand

¹ Automated Teller Machines and Cash Deposit Machines



Table 16: Number of EFTPOS terminals ¹						
	2007	2008	2009	2010	2011	2012
Total	213,675	246,563	227,283	258,248	267,168	264,236

Source: Bank of Thailand

¹ Data include commercial banks and some credit card companies

Table 17: Number of electronic payment cards ¹						
	2007	2008	2009	2010	2011	2012
Total	57,929,150	61,798,358	67,631,419	72,627,280	77,818,347	83,966,632
Credit card ²	12,003,369	12,971,694	13,489,422	14,187,815	15,328,291	16,870,025
ATM card	22,632,173	22,560,305	23,438,658	24,308,945	23,756,810	24,108,467
Debit card	23,293,608	26,266,359	30,703,339	34,130,520	38,733,246	42,988,140

Source: Bank of Thailand

¹ Data exclude e-Money

² Data include non-bank.

Table 18: Sources of payment revenues of Thai commercial banks (million baht)						
	2007	2008	2009	2010	2011	2012
Total	39,858	44,720	49,568	55,324	60,362	68,670
Credit card	11,202	12,934	13,451	15,562	19,868	24,049
ATM card and e-banking	10,710	12,430	16,539	18,477	20,903	22,475
Money transfer and collection	12,977	14,310	15,148	16,516	14,466	16,875
Securities custodian	820	856	815	958	1,138	1,263
Cheque-related fee	2,269	2,365	2,128	2,164	2,098	2,172
Letter of credit	1,880	1,825	1,487	1,647	1,889	1,836

Source: Bank of Thailand

Table 19: Sources of payment revenues of foreign bank branches (million baht)						
	2007	2008	2009	2010	2011	2012
Total	3,146	2,990	3,977	4,425	5,047	4,860
Credit card	1,083	1,218	2,356	2,564	2,945	2,649
ATM card and e-banking	59	57	46	47	49	50
Money transfer and collection	772	919	874	913	1,025	1,148
Securities custodian	753	611	577	650	726	727
Cheque-related fee	239	19	15	129	130	128
Letter of credit	240	166	109	122	171	158

Source: Bank of Thailand

Table 20: Daily averages of BOT payment services. Volume of transactions (transactions)

	2007	2008	2009	2010	2011	2012
BAHTNET ¹	7,206	7,716	8,251	9,600	11,180	12,025
ECS	240,924	231,334	221,919	222,578	213,591	216,990
Provincial Cheque Clearing	61,453	58,663	59,065	60,053	60,553	60,406
B/C ²	27,141	26,911	27,216	27,795	27,486	27,625
ITMX Bulk Payment	71,704	76,819	85,972	102,074	114,346	126,606

Source: Bank of Thailand

¹ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

² Inter-provincial cheques exchanged at the Electronic Clearing House.

Table 21: Daily averages of BOT payment services. Value of transactions (billion baht)

	2007	2008	2009	2010	2011	2012
BAHTNET ¹	744	1,110	2,015	2,705	3,138	2,649
ECS	121	136	125	125	131	141
Provincial Cheque Clearing	10.9	11.2	11.4	13.0	14.4	15.6
B/C ²	1.4	1.5	1.5	1.6	1.8	2.0
ITMX Bulk Payment	3.2	3.3	3.6	4.5	5.7	7.2

Source: Bank of Thailand

¹ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

² Inter-provincial cheques exchanged at the Electronic Clearing House.

Table 22: Peak day figures of BOT payment services. Volume of transactions (transactions)

	2007	2008	2009	2010	2011	2012
BAHTNET ¹	11,488	11,969	12,898	18,542	18,581	19,303
ECS	514,286	495,463	473,362	547,686	515,908	477,396
Provincial Cheque Clearing	129,731	115,119	111,561	131,468	127,070	125,127
B/C ²	120,434	125,038	122,138	122,979	125,934	125,189
ITMX Bulk Payment	322,497	361,746	314,828	350,156	359,198	417,015

Source: Bank of Thailand

¹ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer

² Inter-provincial cheques exchanged at the Electronic Clearing House.

Table 23: Peak day figures of BOT payment services. Value of transactions (billion baht)

	2007	2008	2009	2010	2011	2012
BAHTNET ¹	1,236.6	1,820.6	2,829.3	4,193.3	5,002.9	3,597.3
ECS	247.4	296.3	252.4	292.8	259.1	268.2
Provincial Cheque Clearing	20.3	20.9	19.1	22.6	23.3	25.7
B/C ²	4.9	5.7	5.3	5.9	6.5	6.8
ITMX Bulk Payment (SMART)	14.6	15.0	16.8	15.7	19.2	28.8

Source: Bank of Thailand

¹ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

² Inter-provincial cheques exchanged at the Electronic Clearing House.



Table 24: Use of credit cards and debit cards via EFTPOS ¹ (Monthly average per card, baht)						
	2007	2008	2009	2010	2011	2012
Credit card	3,331	3,395	3,462	3,766	4,022	4,611
Debit card	73	75	65	74	174	181

Source: Bank of Thailand

¹ Domestic and oversea spending of Thai credit cards and Thai debit cards via EFTPOS. Data exclude Specialized Financial Institutions

Table 25: Cash withdrawal via ATM (Monthly average per card, baht) ¹						
	2007	2008	2009	2010	2011	2012
ATM card	7,018	6,696	6,459	6,767	7,711	8,265
Debit card	7,051	8,752	8,618	9,165	9,531	10,186

Source: Bank of Thailand

¹ Data exclude Specialized Financial Institutions

Table 26: Use of mobile banking						
	2007	2008	2009	2010	2011	2012
No. of agreements	168,434	232,758	257,677	519,450	706,439	864,312
Volume of transactions	228,578	4,670,377	11,107,223	15,884,571	19,941,530	36,285,076
Value of transactions (million baht)	112	25,218	63,363	109,816	186,511	439,960

Source: Bank of Thailand

Table 27: Use of internet banking						
	2007	2008	2009	2010	2011	2012
No. of agreements	3,135,502	4,009,907	3,165,663	4,822,947	5,626,233	6,645,161
Volume of transactions ¹	21,220,469	31,375,931	49,368,820	60,793,740	83,841,394	125,276,726
Value of transactions (billion baht)	4,896.5	5,073.0	5,692.6	7,891.7	8,779.7	14,112.1

Source: Bank of Thailand

¹ Enquiry transactions were excluded.

Table 28: Use of ORFT interbank retail funds transfer (Online Retail Funds Transfer: ORFT) Volume of transactions (in thousands)						
	2007	2008	2009	2010	2011	2012
Total ORFT	61,234	87,225	84,265	98,618	109,936	150,440
ATM	55,966	79,047	76,214	89,456	99,926	116,997
Counter	5,267	8,177	8,051	9,162	10,010	10,273
Internet banking ¹	nav.	nav.	6,656	10,941	15,342	23,169

Source: Bank of Thailand

¹ Data collected since 2009.

**Table 29: Use of ORFT (Online Retail Funds Transfer)
Value of Transactions (billion baht)**

	2007	2008	2009	2010	2011	2012
Total ORFT	427	606	648	832	1,014	1,250
ATM	349	478	453	549	642	771
Counter	78	128	130	172	213	227
Internet banking ¹	nav.	nav.	64	111	159	252

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

¹ Data collected since 2009.

Table 30: Bill payment at bank counters. Volume of transactions (in thousands)

	2007	2008	2009	2010	2011	2012
Total bill payment	72,372	77,309	84,352	81,700	83,201	87,257
Cash	69,135	74,011	80,884	77,839	79,419	83,165
Cheque	1,791	1,829	1,564	1,629	1,646	1,650
Others	1,446	1,468	1,905	2,231	2,136	2,442

Source: Bank of Thailand

Table 31: Bill payment at non-bank counters. Volume of transactions (in thousands)

	2007	2008	2009	2010	2011	2012
Total bill payment	nav.	nav.	nav.	182,354	200,452	235,894
Cash	nav.	nav.	nav.	179,088	196,846	231,597
Cheque	nav.	nav.	nav.	277	298	351
Others	nav.	nav.	nav.	2,989	3,308	3,946

Source: Bank of Thailand

Table 32: Bill payment at bank counters. Value of transactions (billion baht)

	2007	2008	2009	2010	2011	2012
Total bill payment	5,069	5,093	4,714	5,285	5,593	5,843
Cash	1,362	1,586	1,688	1,848	2,049	2,124
Cheque	2,129	2,584	1,934	2,110	2,616	2,610
Others	1,578	923	1,092	1,326	928	1,109

Source: Bank of Thailand

Table 33: Bill payment at non-bank counters. Value of transactions (billion baht)

	2007	2008	2009	2010	2011	2012
Total bill payment	nav.	nav.	nav.	448	511	607
Cash	nav.	nav.	nav.	444	507	600
Cheque	nav.	nav.	nav.	2	2	2
Others	nav.	nav.	nav.	3	3	4

Source: Bank of Thailand



	2007	2008	2009	2010	2011	2012
No. of cards/accounts	3,689,484	5,477,324	7,667,215	11,483,751	13,804,253	20,209,560
Volume of transactions	75,642,216	77,953,841	103,007,328	221,458,769	348,197,980	512,311,428
Value of transactions (million baht)	8,660.9	8,383.1	10,549.0	17,742.9	24,732.8	35,369.6

Source: Bank of Thailand

¹ Data exclude top-up cards.

	2007	2008	2009	2010	2011	2012
Total fraud	620	519	793	186	150	179
Payment channels ²	389	315	561	44	34	51
Payment instruments ³	231	204	232	142	116	128

Source: Bank of Thailand

¹ Data collect from commercial banks, some Specialized Financial Institutions and some credit card companies

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

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

VIII

Notes of statistical tables

สัญลักษณ์ที่ใช้ในตาราง	ความหมาย
"-"	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 in-house and interbank cheques and is compiled from all commercial banks as well as Specialized Financial Institutions.
- Data on volume of credit card transactions includes bank card, affinity cards, non-bank cards/affinity cards, and foreign credit cards used in Thailand.
- Data on credit card spending includes information on non-bank credit cards.
- Data on e-Money excludes pre-paid card for mobile phones.
- Direct credit refers to pre-authorized in-house direct credit funds transfers.
- Direct debit refers to pre-authorized in-house direct debit funds transfers
- BAHTNET data consists of data relating to interbank funds transfers, third-party funds transfers and multilateral funds transfers.
- Table 9 - Excludes data on the number of accounts and outstanding amounts held by Bank of Thailand's regional offices
- Tables 10-11 - Data on bills for collection (B/C) refers only to bills for collection delivered to the Electronic Clearing House in Bangkok

	- BAHTNET data includes data relating to interbank funds transfers, third-party funds transfers and multilateral funds transfers
Table 12-13	- Equity securities settlements are processed via scripless book-entry system only
Table 15	- Include ATMs and CDMs
Table 16	- Data on the number of EFTPOS terminals since 2006 represents information consolidated from commercial banks and some credit card companies
Table 17	- Data on the number of credit cards includes non-bank credit cards
Tables 22-23	- Data on bills for collection (B/C) refers only to bills for collection delivered to the Electronic Clearing House in Bangkok
Table 24	- Average monthly spending via EFTPOS within and outside Thailand of domestically issued debit and credit cards
Table 26	- Excluding enquiry transactions
Table 34	- Electronic money data does not include data on top up of mobile cards
Table 35	- Data collected from commercial banks and some credit card companies

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Enquiries can be addressed to:

Payment Systems Analysis Team, Payment Systems Policy Department,
Bank of Thailand

Telephone: 0-2356-7068, 0-2356-7782, 0-2356-7299 or Facsimile: 0-2282-7717

E-mail: PaymentSystemsAnalysisTeam@bot.or.th



Pursuing Sustainable Economic Well-Being



Bank of Thailand

273 Samsen Rd., Phanakhon, Bangkok 10200 Thailand

Website: www.bot.or.th