Chapter 10

THE DEVELOPMENT OF E-PAYMENTS AND CHALLENGES IN THAILAND1

by

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Introduction

The use of electronic payments (e-payments) has expanded rapidly in recent years, thanks to technological innovation and falling costs in computing and telecommunications. The spread of e-payment usage vary unevenly between countries partly due to differences in factors such as quality of regulatory framework and readiness of telecommunication infrastructure. New payment services based on the Internet and mobile phones proliferate in the advanced economies. The use of e-payments in the marketplace for retail payments, including the Electronic Fund Transfer at Point-of-Sale (EFTPOS), E-banking, telephone banking, Internet banking, E-debit, and E-money, has become a common and well accepted practice in the advanced countries that have extensive and well developed telecommunication network and infrastructure. In the some of the emerging economies, on the other hand, the pace and development of e-payments appear to be less clear.

It has been widely argued that Thailand’s financial and infrastructure development has reached a point where e-commerce and e-payment systems are both technologically feasible, and are required for the country to remain globally

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competitive (Payment Systems Roadmap 2004, 2010). The emerging consensus is that it is increasingly necessary for Thailand to respond to a rapidly changing economic landscape by using the newly developed technologies to enable e-commerce in general, and e-payments in particular. The establishment of the new e-payment gateway in July 2005, called the Thailand National Inter-bank Transaction Management and Exchange (ITMX), is a promising start. The ITMX is viewed as a milestone in the development towards electronic-based payments in this country, reflecting a full recognition of the need to put in place a common infrastructure capable of attracting a critical mass of business to use the newly created platform to a high standard (Rungsun and Sayan, 2006).

The implementation of a new fee structure for payment services/products on March 6, 2006, is another good example of an attempt in using pricing policy to stimulate a greater use of e-payment instruments in place of the traditional forms of paper-based payment instruments, such as cheques and cash. To be discussed in fuller detail, the fees levied on certain types of e-payment instruments/services have been adjusted downward significantly as compared with paper-based payment instruments.

At the institutional level, the Bank of Thailand (BOT) has fostered changes in the legal and regulatory framework to promote reliance on e-payments by consumers and businesses for retail payments. The enactment of the Electronic Transactions Act, 2001 and the recent proposal of the “Royal Decree Regulating E-payment Business” can be seen as a reflection of this fact.

While the use of e-payments may raise the efficiency of electronic media as a means of making payments, leading to an overall improvement in the country’s economic efficiency, the potential benefits need to be weighed against the threats posed by the increasing use of e-payments on the performance of the core central banking functions. The threats, as claimed in many circles, such as those reported in Banque De France (2001) and Arnone and Bandiera (2004), are the effects of e-payment innovations on seigniorage, monetary policy and overall integrity of the payment systems. The framework of monetary policy management, as can be argued, appears to be affected by the recent surge in the use of e-money products. The challenges confronting central banks, therefore, are not only directed at the attainment of “efficiency” in the payment system, but also the attainment of “stability” in the payment and financial systems. In view of this, central banks have the responsibility to ensure the fulfillment of both “efficiency” and “stability” of the payment system.
This paper deals with the experience of Thailand in moving towards the greater use of e-payment products/services and the challenges of the BOT in striking a balance between “efficiency” and “safety” of the nation’s payment system. In particular, we would like to share the experience of the BOT with respect to the implications of e-payments on the core functions of the central bank as well as the use of diverse initiatives or strategies regarding e-payments. Although the main emphasis of the paper is on Thailand, some references to the case of certain SEACEN member countries will be made, where appropriate.

Essentially, the paper will address the following issues:

1. The extent of the development of e-payments in Thailand;
2. The relative importance and penetration of e-payments in selected countries;
3. Factors responsible for the promotion and/or hindrance of e-payment usage;
4. The BOT’s strategy for supporting e-payment development;
5. Implications of e-payment development on the central banking functions;
6. Challenge of the central bank in striking a balance between “efficiency” and “safety” in its management of the payment system.

Section 1 presents an overview of the e-payment developments in Thailand, with particular reference to the e-payment systems operated by the BOT and a successful case of an e-payment product in the form of ORFT (Online Retail Funds Transfer). It also highlights a few aspects of e-payment development in some SEACEN member countries. Section 2 analyses the implications of e-payment developments on the performance of the core functions of the central bank, especially issues related to the operation of monetary policy, the integrity of payment systems, and the stability of the financial system. It also discusses the strategies adopted by the BOT to help improve the effectiveness of risk management for e-payment products/services. Section 3 provides a detailed analysis of the diverse initiatives or strategies regarding e-payment, particularly


4. Conceptually speaking, the term “e-payments” refers to “large-value payments” and “small-value payments” or retail payments. However, following the agreement reached during the first workshop in August 2007 in Kuala Lumpur, the emphasis of this paper is therefore given to “retail payments”. Loosely speaking, “retail payments” refer to most of the non-cash payments made by consumers and businesses, including cheques, credit/debit cards, direct credit/debit, Internet bill payment, and new types of e-payment mechanisms, such as e-money (e-purse). It follows that, in the Thai context, this excludes large-value payments such as those made through BAHTNET.
with regard to the use of pricing initiatives, the setting up of a new payment-gateway service of ITMX, and the recent efforts to put in place new laws and regulations governing the e-payment business service. It also addresses the factors that contribute to the promotion of e-payments as well as the obstacles that tend to hamper future progress of e-payment innovations. We conclude, in Section 4, with a brief discussion of the expected challenges and problems, as well as the medium- and long-term plans regarding e-payments.

1. Overview of E-Payment Developments in Thailand

This section will first provide an overview of the current status of E-payment penetration in Thailand. At the risk of over-simplification, the term “e-payments” used here is defined to include (1) e-money, (2) other innovative payment procedures, and (3) electronic access to traditional payment instruments. It is worth noting in this connection that cross-country comparisons should be interpreted with great care, as the definition of e-money tends to vary greatly from country to country. For more details of this, see, for example, Fullenkamp and Nsouli (2004).

1.1 Existing E-payment Services Operated by the BOT

Like in many other countries, payment systems in Thailand have undergone significant changes over the last two decades. The changes include the move towards an increasing reliance on the use of newly developed technologies to enable both e-commerce and e-payments. The BOT has over the past decade introduced e-payment systems as the basis for financial transactions and financial settlements.

As one can see from Figure 1, the current e-payment systems in Thailand can be broadly grouped into two main categories: (i) core e-payment systems and (ii) other e-payment products. Basically, the core e-payment systems refer to the systems operated by the BOT. This is a reflection that the BOT has a major role to play as a service provider. The systems include, for instance, BAHTNET (Bank of Thailand Automated High-value Transfer Network), SMART (System for Managing Automated Retail Funds Transfer), and ECS.

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5. In Indonesia, for instance, ATM cards which are used for the purpose of cash withdrawals, not for payments for the purchase of goods and services, are often viewed as a type of e-payments. Likewise, the transaction volumes and values associated with this sort of ATM cards are incorporated into the definition of e-payment usage for Indonesia’s case. Such a practice does not seem to be the case for some SEACEN member countries, such as Malaysia and Thailand.
(Electronic Cheque Clearing System). For other e-payment products, they refer to the systems operating by the private sector, including credit/debit cards, direct credit/debit, ORFT (Online Retail Funds Transfer), Internet banking, telephone banking, and mobile banking.

As is commonly called, the BAHTNET is an electronic fund-transfer system that is designed primarily for handling large-value payments (inter-bank, third party) on real-time gross settlement (RTGS) basis. The nature and main features of this system are in large part similar to those systems of RENTAS, MEPS, BI-RTGS, and CBC-CIFS currently operated in Malaysia, Singapore, Indonesia, and Taiwan, to name but a few. For more detailed description and analysis related to the BAHTNET system, interested readers are to refer to the following documents: (i) Sayan Pariwat and Rungsun Hataiseree (2004), (ii) Sayan Pariwat and Rungsun Hataiseree (2003) and (iii) Sayan Pariwat and Rungsun Hataiseree (2002).

Figure 1 provides more detailed information with respect to the nature of e-payment system operated by the BOT as well as the year the respective system has been put into operation. As one can see from the figure, in the years 1995, 1996 and 1997, the BOT launched three major types of payment systems, namely, the BAHTNET, ECS and SMART systems. The primary objective is to accommodate the country’s economic expansion with more convenient, quick and safe payment systems. In particular, the BAHTNET system has been
specifically designed for handling large-value financial transactions on the RTGS (real-time gross settlement) basis. It should be noted that, effective 15 October 2007, the SMART system is no longer under the BOT’s operation. It has been transferred to operate under the National ITMX.

<table>
<thead>
<tr>
<th>Type of services</th>
<th>Major features</th>
<th>Period in operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• BAHTNET (Bank of Thailand Automated High-value Transfer Network)</td>
<td>A large-value electronic funds transfer system (Inter-bank, Third Party) with RTGS transactions</td>
<td>May 24, 1995</td>
</tr>
<tr>
<td>• ECS (Electronic Cheque Clearing System)</td>
<td>The system for electronic data presentment and clearing of inter-bank cheques in Bangkok and the metropolitan areas</td>
<td>July 16, 1996</td>
</tr>
<tr>
<td>• SMART (System for Managing Automated Retail funds Transfer)</td>
<td>A small-value inter-bank funds transfer system</td>
<td>January 16, 1997</td>
</tr>
<tr>
<td>• Provincial Cheque Clearing</td>
<td>The system for collecting inter-bank cheques within the province</td>
<td>September 15, 1997</td>
</tr>
<tr>
<td>• B/C (Bill for Collection)</td>
<td>The system for collecting inter-bank cheques across the provinces</td>
<td>February 14, 2003</td>
</tr>
</tbody>
</table>

Source: Compiled from database of BOT’s Payment Systems Department.

It should be noted in this connection that e-payment transactions through the BAHTNET system recorded the highest share, followed by ECS. As can be seen from Figure 3.1, the transaction value per day via BAHTNET and ECS accounted for around 431.2 billion and 102.3 billion baht in 2005, respectively. However, on the basis of transaction volume per day, financial transactions through the ECS, as shown in Figure 3.2, recorded the highest share when compared with other channels.
For a longer perspective, financial transactions via the BAHTNET system have, over the past decade or so, recorded the highest share when compared with some other types of the BOT’s payment services. As shown in Figure 4, the daily average value of transactions via the BAHTNET system accounted for around 78.7 percent of the total value of transactions through payment services channels operated by the BOT. Second in importance in this regard is the payment channel through ECS, accounting for about 18.7 percent.

1.2 Current Developments of Other E-payment Products

1.2.1 Distribution of Cashless Payment Instruments

Apart from the e-payment channels provided by the BOT, there have been significant increases in the use of other e-payment channels offered by commercial banks and non-banks. As one can see, the latter type of e-payment channels is often used for the purpose of small-value fund transfers or micro payments. Chief among these include (i) credit cards, (ii) debit cards, (iii) e-money, and (iv) payment channels related to the Internet and mobile phones. For Thailand’s case, as shown in Figure 5, the debit card (with the ATM withdrawer) has a leading share by payment instrument. It accounted for almost 39 percent of the total transactions of the cashless payments in 2006. Second in importance in this regard is the credit card, representing around 30 percent of the total. For example, in the case of Taiwan, the experience is similar. Judging from the penetration rates of non-cash payments in Taiwan, ATM cards recorded the highest share of around 46.5 percent in 2006, followed by credit cards of about 34.5 percent.
Noticeably, the share of debit card in terms of transaction volume of total cashless payments increased from around 32.7 percent in 2004 to nearly 39 percent in 2006. This rise in the debit card share appeared to be at the expense of certain types of payment instruments, especially paper cheques (reducing from 13.5 percent to 10 percent) and credit transfers (reducing from 15.5 percent to 14.6 percent). As will be discussed in greater detail in the subsequent sections, some of these new types of payment services, in particular ORFT, have experienced reasonably high growth rates over the past several years. This has, to some certain extent, contributed to a greater presence of e-payment in Thailand, when compared with some countries in the SEACEN region.

As the information in Figure 5 reveals, the usage of debit card (with ATM withdrawer) accounted for the largest share in terms of transaction volume. On the other hand, paper-based payment instruments, particularly cheques, have continued to take up the lion’s share in terms of transaction value in retail payments. The share of cheques accounted for around 80 percent in the total value of non-cash transactions over the years 2004-2006, while debit card gained around only 5 percent during the same period.\(^6\)

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6. This may in part reflect the fact that debit cards are often used for conducting transactions for small-value payments. Cheques, by contrast, are normally used by businesses for making larger-value payments. Personal cheques with quite small-value payments remain in very limited use in Thailand.
Looking at the aggregate data reported in Figure 5, one can make at least two interesting observations. While e-payments have continued to grow over the past several years, paper-based payment instruments, notably cheques, continue to dominate, taking up the largest share of nearly 80 percent of the total value of non-cash transactions over the period of 2004-2006. Most of the e-payment instruments were used for the purpose of making small-value fund transfers and/or micro payments.

Figure 5
Distribution of Cashless Payment in Thailand

Source: Calculated from the data base of BOT’s Payment System Department
It is useful at this point to provide some reference to the experiences of some countries in the SEACEN region. In the case of Malaysia, although e-payment usage is on the increase over the past few years, the mode of payment by cheque is still significant in non-cash retail payments. According to the information in Figure 6, e-payments in terms of transaction volume have jumped from around 44 percent of the total non-cash transactions in 2001 to about 77 percent in 2006. The increasing usage of e-payments was at the expense of cheques which recorded a sharp decline from around 56 percent to 23 percent over the corresponding period. However, the development is less clear when looking at the figures in terms of transaction value. The share of e-payments of the total non-cash transactions recorded a marginal increase from around two percent in 2001 to six percent in 2006. Accordingly, it is evident that cheque use still dominates the retail payments in Malaysia when judging in terms of the value of the transactions.

**Figure 6**

Share of Non-cash Retail Payments in Malaysia

*Source: Bank Negara Malaysia*
Looking at statistics in Figure 7, Korea is probably the only country in the SEACEN region with the prevalent use of e-payments. As figures show, e-payments have currently surpassed the use of cheques as the preferred means of making non-cash payments. In volume terms, the share of e-payment amounted to 80 percent, while that of paper-based instruments accounted for only 20 percent in 2006. Similar observations can be made when considering in value terms, although the pace of growth tended to be relatively less pronounced, when compared with the former case. At the risk of over-simplification, the degree of e-payment penetration in Korea is much higher than in other SEACEN member banks.

Figure 7
Percentage Share of E – Payments and Paper – Based Payment in Korea

Source: The Bank of Korea

A similar experience is encountered in the case of the United States. According to the Federal Reserve Study, it was found that, for the first time ever, the number of e-payments, including credit card, debit card, and automated clearing house (ACH) payments, has exceeded cheque payments since the year 2003 onwards. See, for example, Kohn (2006) for more detail on this.
1.2.2 Sharp Rise in Online Retail Fund Transfer (ORFT) Service

It is perhaps useful in this connection to shed some light on Thailand’s experience in the use of ORFT service via ATM networks. Basically, ORFT is a further development of the ATM system in which inter-bank retail funds transfer can be performed through an inter-bank network using the ATM platform. It is developed by the Thai Bankers’ Association (TBA) on advice of the BOT. ORFT, as a kind of e-banking activity, enables a customer of one commercial bank to make retail-level funds transfer to a transferee at another bank on an online basis.

Since the inception in 2000, ORFT has grown remarkably both in terms of volume and value. As one can see from Figure 8, the ORFT transaction volume in 2005 was 28 million transactions, increasing from the year 2004 by 46.8 percent. Total value was 187 billion baht in 2005, increasing from last year by 64.0 percent.

![Figure 8: Value and Volume of Transactions through ORFT Service](image)

Source: Calculated from the database of BOT’s Payment System Department.
More importantly, since December 2005, ORFT service has been enhanced to cover inter-bank funds transfer service via commercial banks’ counters. The customers can use this service at any branches of the participating banks all over the country. The maximum amount of funds transfer is capped at 50,000 baht per transaction. This service is easy, quick and safe because the transactions will be confirmed by sending banks, which will provide immediate effects on the funds- receiving accounts through the online real-time system.

Interestingly, the volume of ORFT transactions via commercial banks’ counters has grown more than ten-fold between December 2005 and May 2006. Specifically, the volume showed an increase from an approximate amount of 18,638 transactions in December 2005 to 202,908 transactions in May 2006. The new services seem to suit customers’ needs, as reflected in the substantial increase in the volume of transactions. From December 2006 onwards, the maximum amount per transaction has been extended from 50,000 baht to 100,000 baht.

A closer look at the data of ATM transactions also provides very interesting observations in relation to the ORFT service. As one can see from Figure 9, although more than 85 percent of ATM transactions were in the form of cash withdrawals, the ratio of retail-fund transfer via ATM machines has been on a
consistently upward trend, rising from around two percent in 2001 to nine percent in 2005. Such an increase in the ratio seems to suggest a possibility of higher electronic-fund transfer via ATM cards. It is important to point out in this connection that inter-bank fund transfer (Online Retail Fund Transfer-ORFT) has been viewed as the most important component of retail fund transfers via ATM networks. The remaining components are internal fund transfers and fund transfers for goods and service payment via ATM machines, including bill payments and filling of funds for prepaid cell phone systems.

There is a similar experience in the surge of the retail fund transfers in some other countries in the SEACEN region. In Malaysia, for instance, the volume of fund transfers through the Interbank Giro (IBG)\textsuperscript{8}, operated by the Malaysian Electronic Payment System (MEPs), has shown signs of rapid increase over the past several years. According to the Malaysia Country Report, the value per capita increased significantly from around RM 192.7 in 2000 to around RM 1,700.2 in 2006, reflecting a ten-fold increase during the mentioned period. Noticeably, the value of fund transfers via the IBG system was the second most important type of non-cash transaction, after cheques.

\section*{1.2.3 Nature Of E-money Usage in Thailand and in Selected SEACEN Countries}

Like in many other countries, banks are not the sole service providers of e-payment. In the case of Thailand, some non-banking institutions have recently been able to develop new methods of e-payment. As shown in Figure 10, there are six non-banks offering e-payment services to their clients. They are (i) True Money Co. Ltd, (ii) PaySbay Co. Ltd, (iii) Payment Solution Co. Ltd., (iv) Advance Mpay Co. Ltd., (v) Advance Magic Card Co. Ltd., and (vi) Thai Smartcard Co. Ltd. Four of them are network-based, while the remaining firms are card-based. It does not include the card payment services provided by certain types of non-banks, particularly VISA card, Master card, and the like.\textsuperscript{9}

\textsuperscript{8} There are three parties to the IBG system: remitting financial institutions, system operators of MEPs, and receiving financial institutions.

\textsuperscript{9} The term used here refers to certain type of private firms which are involved in the provision of payment services related to e-money business. Apart from the mentioned six non-bank firms, Siam Commercial Bank also takes part in providing e-money related services to its customers.
A number of products were gradually launched in the market by the above-mentioned companies in the past few years. One is “Smart Purse” by Thai Smart Card, which can be used for purchases and bill payments at 7-11 Convenience Stores and merchant stores participating as members. “OK Cash” card is another product launched by Payment Solution. It can be used for purchases and bill payments at merchant stores and food shops participating as members, and for fund transfer among smart cards issued by the company. Then there is e-money introduced by PaySbuy. It is a digital cash facility for storing cash on the computer of PaySbuy for fund transfers and bill payments via the Internet, such as payments for auctions, utility expenses, and downloads of ring-tones for cell phones, etc. For digital cash, customers can transfer funds from digital cash in the computer to bank accounts. Besides, there is also storage of money in the accounts of cell phone subscribers, such as “m-Pay service” by Advanced Info Service (AIS) Plc. “Money Service” by TRUE Money can be used for payment of utilities, as well as for bill payments at participating member stores, general stores, and some Internet shops.

![Figure 10: Some Features of Six Non-bank Corporations](image)

<table>
<thead>
<tr>
<th>Company name</th>
<th>Card Based</th>
<th>Network Based</th>
<th>Date for license applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thai smart card Co., Ltd.</td>
<td>✅</td>
<td></td>
<td>May 2005</td>
</tr>
<tr>
<td>Advance magic card Co., Ltd.</td>
<td>✅</td>
<td></td>
<td>June 2005</td>
</tr>
<tr>
<td>Payment Solution Co., Ltd.</td>
<td></td>
<td>✅</td>
<td>June 2005</td>
</tr>
<tr>
<td>Advance mPay Co., Ltd.</td>
<td></td>
<td>✅</td>
<td>June 2005</td>
</tr>
<tr>
<td>PaySbuy Co., Ltd.</td>
<td></td>
<td>✅</td>
<td>July 2005</td>
</tr>
<tr>
<td>True money Co., Ltd.</td>
<td>✅</td>
<td>✅</td>
<td>August 2005</td>
</tr>
</tbody>
</table>
As of December 2006, the total value of e-money transactions by these six firms accounted for nearly 57,000 million baht. Around 90 percent of the transactions were in the form of filling funds for use in prepaid mobile phone systems, while transactions for purchase of goods and services are still negligible. This seems to suggest that the day of e-money usage as a substitute for cash has not yet not arrive. Indeed, the outlook for e-money-related businesses appears highly uncertain. As reported elsewhere, e-money transactions in both volume and value terms experienced substantially negative growth rates in the range of 26 to 34 percent in the year 2007, when compared with those in 2006.

However, it should be noted that in some SEACEN member countries the issuers of e-money are solely commercial banks. In Malaysia, for example, the issuance of e-money was traditionally the exclusive preserve of banks. Apparently this is no longer the case since 2006, with a change in policy towards the new types of e-money. As one can see, non-banking institutions in Malaysia are now permitted to conduct the e-money-related business. In particular, Bank Negara Malaysia gave is approval for the launching of four e-payment facilities by non-bank firms in 2006. As mentioned elsewhere, these newly introduced e-money services provide consumers with additional payment methods for purchases on the Internet and the convenience of using mobile phones for payments.

At this stage, two of the most widely used e-money (e-purse) products in Malaysia are (1) “Touch ‘n Go” and (2) “MEPS Cash”. The first type of e-purse is in the form of card-based e-money, and can be used to make payments for toll fare, parking, and transport fare in Malaysia. The latter is a national card-based e-Purse/e-Money application, available in both Bankcard and MyKad (a government multi-purpose card issued by the National Registration Department). MEPS Cash was launched in 2002. The transactions of these two types of e-purse have recorded significant increase (rapid growth) over the past five years. Judging from the volume of transactions per capita, it can be clearly seen that E-purse came first among certain types of payment instruments, including, in particular, cheques, credit card, charge card, debit card, interbank GIRO, internet banking, mobile banking. The figure for E-purse in 2006 was about 16.0 units, followed by credit card and cheques of 7.8 and 7 units, respectively.

Like Thailand, e-money in ROC (Taiwan) can be issued by both commercial banks and non-bank private firms. The e-money in this country is loosely defined as “Multipurpose Stored Value Card” (MSVC) for making general micro-payments, which can be divided into card-based and network-based products.
Up to now, there have been three pilot e-money schemes offering e-money-related businesses. The first among these is “FISCash System” (card-based). The IC Card enables cardholders to purchase at contracted stores, make phone calls, and pay gas bills, to name but a few. The second scheme is “Mondex-Taiwan System” (card-based). The card system enables cardholders to pay taxi fares, buy lotto tickets, and make purchases at convenience stores. The last one is “E-SUN e-Coin System” (network-based). This e-Coin system was launched in February 2003 to provide customers with an online payment instrument, enabling customers to make micro-payments for on-line shopping purpose and for customers without having a real account with E-SUN Bank.

In a similar vein, the issuance of e-money in Indonesia is carried out by both commercial banks and non-banking institutions. Currently, there are four e-money operators authorised by Bank Indonesia. Two of them are commercial banks, while the remaining are non-bank private firms. At present, the non-banking institutions, as issuers of e-money, are dominated by telecommunication companies. This development is consistent with the situation in many other countries, such as ROC (Taiwan) and Korea. In part the well-established infrastructure and technology readiness in these countries have been widely accepted as critical factors contributing to the successful development of e-money-related activities. Broadly speaking, the type of e-money issued by the telecommunication companies is server-based e-money product, with using cellular telephone as a means for making payments. According to the statistics of Bank Indonesia, the number of prepaid cards amounted to around 126,211 cards, with the value of transactions being recorded at about IDR 591,356,572 as of September.

1.2.4 The Life Cycle of Non-cash E-payment Products

It is perhaps useful at this point to share some preliminary observations from a comparative study of the life cycle of non-cash e-payment instruments in Thailand, Taiwan, and Norway. The study was carried out by applying the “S-Curve” which was previously applied in the context of bank payment services in Norway.10 Figure 11 shows how the life cycle of each type of retail payment instruments and services has developed over the course of the years. Conceptually speaking, the products and services proceed through the life cycle phase from their introduction through the subsequent phases of public acceptance, growth, and, eventually, maturity.

10. For more detailed account on this, see, for example, Gresvik and Owre (2003).
As displayed in Figure 11, ATM cards and EFTPOS tend to be the most widespread e-payment tools in ROC (Taiwan), while Internet banking, ACH (Automated Clearing House) and mobile banking, relatively new types of e-payment mechanisms, have shown sign of continual increase. The latter types of payment products grew at a relatively higher rate, compared to other e-payment mechanisms, such as e-money and E-bill, which appear to be at the early stage of development. Noticeably, in Taiwan’s context, paper-based products, such as cheques, have experienced a declining trend over the past several years.

In Thailand, certain types of e-banking activities encountered explosive growth. This is particularly evident in the case of ORFT. The exceptionally high growth of ORFT tends to suggest that the major characteristics of this sort of e-payment product are able to satisfy the common need of users. As alluded to in Figure 8, the value of retail-fund transfers through the ORFT system tended to be negligible, around 3.2 billion baht in 2002. However, the value of the transactions surged to about 41.1 billion baht in 2006, increasing around fourteen-fold when compared with the figure in 2002. Additionally, certain types of payment cards, in particular credit and debit cards, have experienced remarkably high growth rates in the recent years. On average, as can be seen from Figure 12, a card user made about 13 transactions per year using payment cards in 2006, a slight increase when compared with the card usage in 2004 and 2005.

Nonetheless, unlike in ROC (Taiwan) and Norway, the traditional paper-based payment instrument, the cheque, remains deeply embedded in the Thai payment system. As shown in Figures 5, 11, and 12, cheque usage accounted for nearly 80 percent of the total value of non-cash payments in Thailand. But, while cheque usage remains at an extremely high level in terms of value, its share is trending downward in terms of volume. As one can see, the share of cheques in volume terms has recorded a continuous decline over the past years, dropping dramatically from around 41.2 percent in 2001 to 13.5 percent in 2004, and to 10.0 percent in 2006.

A closer look at Figure 11 suggests that the degree of e-money usage has not yet shown any prominent development when compared with some certain types of e-payment products. As one can see, the growth rate of the value of transactions for e-money products tended to be relatively lower than those of credit card, debit card, and Internet banking. Nonetheless, at the risk of oversimplification, the development of e-payments in ROC (Taiwan) and Thailand appear to be more progressive as compared to most of the SEACEN member countries participating in this research project, especially Indonesia, Vietnam, the Philippines, to name but a few.
In Norway, in contrast to Thailand and ROC (Taiwan), most of the e-payments instruments or products are widely used in retail payments and for a longer period of time. As one can see from the Figure 11, PC/Internet Giros and EFTPOS are the e-payments instruments that are in widespread use in retail payments in Norway. The EFTPOS, for example, has passed from the “growth phase” to the “saturation phase”. The use of cheques, on the other hand, is on the “declining phase”. Unlike in Thailand and Taiwan, there has been a sharp drop in use of cheques in Norway over the past few years, reflecting the growing substitution of cheques by e-payments.

It should be noted that the most popular payment services tend to be found in the “saturation phase”. In this phase, as has been argued by Gresvik and Owre (2003), the services are used by “everyone”. In this stage, the users are familiar with the use of the services, and the technology is no longer a cause for concern. The quality of the services is stable and satisfactory, and some of the services may have surplus capacity. The service providers tend to rely less on the use of marketing incentives, and depend increasingly on price competition. At the same time, they tend to focus on the costs of providing such services. Most of the popular payment services may have remained in this phase for some time.
Figure 11
Location of Payment Service in the Life Cycle:
The Case of Thailand, ROC (Taiwan) and Norway

a) Thailand’s case

b) ROC (Taiwan’s) case

c) Norway’s case

Note: Figures for Norway and ROC (Taiwan) are respectively based on Gresvik and Owre (2003) and Change (2007), while those of Thailand are the author’s estimates.
1.3 International Comparison of E-payment Penetration

It can be seen From Figure 13 that Thailand is ahead of Malaysia and Indonesia in its peer-group category on e-payment usage. Using e-payment per person as a benchmark for cross-country comparison, the average e-payment usage per person for Thailand is approximately 11 transactions per person per year. This usage figure is relatively higher than the corresponding figures in some of the ASEAN countries.\(^{(11)}\)

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\(^{(11)}\) In the recent study of international comparison of e-payment penetration, the authors have resorted to a variety of indicators in the measurement of the degree of e-payment usage among 13 countries in the sample groups. These include, for instance, (i) the ratio of card payments relative to GDP, (ii) mobile penetration (iii) degree of Internet usage, to name but a few. For a more detailed account on the subject of e-payment penetration, please see the recent paper by Rungsun Hataiseree and Jittra Boonsiri (2006).
It is perhaps interesting to point out that similar conclusions can be made when certain types of benchmarks are used for making such cross-country comparison. From Figure 14, using “value of card payments relative to GDP,” the figure was about seven percent for Thailand, which is relatively higher than certain countries in the ASEAN region.
Using some indicators of e-payment penetration at the micro-level for cross-country comparison, we can conclude with a similar finding, as with the use of macro-level indicators. Applying “mobile phone penetration” and “Internet usage” as benchmarks, Thailand still performed reasonably well when compared with some of the ASEAN countries, except Malaysia and Singapore (Figure 15).

![Figure 15 Connectivity across countries](image)

**Figure 15 Connectivity across countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>Mobile</th>
<th>Internet use</th>
<th>PC use</th>
<th>Host</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>10.8%</td>
<td>50.5%</td>
<td>94%</td>
<td>98%</td>
<td>88%</td>
</tr>
<tr>
<td>Singapore</td>
<td>12.4%</td>
<td>57.6%</td>
<td>91%</td>
<td>94%</td>
<td>91%</td>
</tr>
<tr>
<td>Korea</td>
<td>13.6%</td>
<td>54%</td>
<td>91%</td>
<td>93%</td>
<td>89%</td>
</tr>
<tr>
<td>Japan</td>
<td>17.8%</td>
<td>54%</td>
<td>91%</td>
<td>92%</td>
<td>88%</td>
</tr>
<tr>
<td>Finland</td>
<td>22.1%</td>
<td>72%</td>
<td>94%</td>
<td>95%</td>
<td>91%</td>
</tr>
<tr>
<td>Denmark</td>
<td>36.8%</td>
<td>65%</td>
<td>95%</td>
<td>96%</td>
<td>93%</td>
</tr>
<tr>
<td>Germany</td>
<td>48%</td>
<td>86%</td>
<td>96%</td>
<td>96%</td>
<td>93%</td>
</tr>
<tr>
<td>UK</td>
<td>42.9%</td>
<td>60%</td>
<td>93%</td>
<td>93%</td>
<td>91%</td>
</tr>
<tr>
<td>USA</td>
<td>61.3%</td>
<td>61%</td>
<td>93%</td>
<td>94%</td>
<td>92%</td>
</tr>
<tr>
<td>Australia</td>
<td>37.7%</td>
<td>69%</td>
<td>93%</td>
<td>93%</td>
<td>91%</td>
</tr>
<tr>
<td>Thailand</td>
<td>43%</td>
<td>69%</td>
<td>93%</td>
<td>93%</td>
<td>91%</td>
</tr>
</tbody>
</table>

Note: Connectivity refers to the spread of new e-payment related services. Source: Calculated from Payment System Department database (BIS, ECB Blue book, Central Bank’s reports)

2. Some Reflections on the Impact of E-payment on Central Banking Functions

2.1 Impact of E-payments on the Operation of Monetary Policy

In this section, we investigate the effect of the development of e-payments on monetary policy management and financial system stability. As has been reported elsewhere (see for example, Banque De France [2001] and Arnone and Bandiera [2004]), some forms of e-payments may create some impact on the demand for central banks’ reserves and reserve requirements, thus causing the ability of central banks to influence short-term interest rate to be in doubt.
Apart from this, closer attention needs to be directed at the growing use of credit and debit cards in making retail payments. Such types of e-payment instruments, it can be argued, tend to be close substitutes for bank notes. It appears that the widespread use of certain types of e-payment instruments would speed up the velocity of narrow money, substituting the use of physical cash and, thus, influencing the central bank’s monetary policy decision-making in the short term.

In view of this, the monetary authorities have to keep closer tabs on the development of the accessed products of e-payments, such as those related to e-money, like EFTPOS, E-banking, E-cheques, and on the development of card-based e-payment products, such as credit and debit cards. Care needs to be taken to determine whether the increased use of these types of e-payment products would speed up the monetary transmission mechanism through the prospective increase in the velocity of money and money multiplier. Additional attention is required to gauge whether the increased usage of such e-payment products would cause the local financial system to become more sensitive to systematic contagion during the period of an out-break of a financial crisis.

In Thailand’s case, the preliminary evidence tends to suggest that the impact of e-payments on the operation of monetary policy has not yet created any serious concern on the part of the Thai monetary authority. This is partly because of the relative insignificance of e-money transactions in the money supply. As one can see from Figure 15, the percentage of e-money of the total supply of money (M1) accounted for less than one percent in 2006. It is important to note that the share of e-money appears to be much lower when the definition of e-money used refers only to the type of e-money activities that are exclusively used for “multi-purpose transactions”. As revealed in the Payment Systems Report (2006), the value of e-payments using the latter type of e-money definition, which excludes figures on top-up cards, is reported to be in the approximate value of 5,530 million baht in 2006.
Figure 16
Likely Impact of E-payment on Central Bank Functions:
Thailand’s Preliminary Evidence

<table>
<thead>
<tr>
<th>Likely Impact</th>
<th>Some Supporting Evidences</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Effectiveness of Monetary Policy</td>
<td>• No significant impact</td>
</tr>
<tr>
<td></td>
<td>• The current level of e-money use does not seem to pose a threat to the stability of the financial system.</td>
</tr>
<tr>
<td>• Overall Integrity of the Payment System</td>
<td>• On Macro Level:</td>
</tr>
<tr>
<td></td>
<td>• Less than 1 percent of e-money in relation to M1.</td>
</tr>
<tr>
<td></td>
<td>• No real evidence indicating a shift of the velocity of money</td>
</tr>
<tr>
<td></td>
<td>• On Micro Level:</td>
</tr>
<tr>
<td></td>
<td>• More than 90 percent of e-money was used in the form of topping up funds for mobile phone usage.</td>
</tr>
<tr>
<td></td>
<td>• Negligible proportion has been used for transaction purpose to pay for the purchase of goods and services.</td>
</tr>
<tr>
<td></td>
<td>• Lack of extensive use of some forms of cash substitution products, such as debit cards, e-purse</td>
</tr>
<tr>
<td></td>
<td>• No real concern</td>
</tr>
<tr>
<td></td>
<td>• Continue monitoring the impact of e-money on safety and efficiency of the payment system;</td>
</tr>
<tr>
<td></td>
<td>• Putting in place the requirement for the maintenance of the 100 percent float for e-money issuers at commercial banks.</td>
</tr>
</tbody>
</table>

As with many countries in the SEACEN region, the progress of the development of e-money in Thailand is slow. As pointed out in Section 1, e-money-related businesses are at their initial stage in most SEACEN member countries, particularly when compared with their development in the advanced economies. Indeed, some of the service providers of e-money find it increasingly difficult to cope with the relatively high fixed-cost of investment in light of the relatively slow growth in the demand for this sort of product/service.

As mentioned elsewhere, there appears to be no strong evidence to indicate that e-money would displace bank notes or the settlement services that are offered by central banks in the foreseeable future. In the Thai context, the pace of e-money businesses appears to be far from reaching critical mass. As pointed out in Section 1, there are currently six non-banks offering the e-money services.
Most of them started their operations either in 2005 or 2006, and their actual operation has shown that some of these firms are far from being successful. Indeed, some of them are expected to withdraw from the market place. A more detailed account of this can be read from the recent Annual Report of the Payment System Department.

More interestingly, as will be discussed in further detail in Section 3.1, consumers and businesses in Thailand have not yet perceived that e-money in the form of e-purse or stored value cards (SVCs) can compete perfectly with traditional currency for making payments for small transactions. From the users’ standpoint, e-money is just only a partial substitute for currency. In their view, there are still substantial differences between bank notes and coins and e-cash. As often claimed, e-cash can be used for very small payments, does not grant anonymity to the parties involved, and bears a higher risk for the holder than central bank notes, since the issuers are not risk-free.

Under these circumstances, the threat of e-money usage on the conduct and implementation of monetary policy tends to pose no real concern for the Thai monetary authorities, especially with respect to the control of the targeted policy rates, e.g. the 1-day repurchase rate. The experience is similar in those countries where the e-payment penetration is relatively advanced. As pointed out in Freeman (2000), central banks would continue to influence the very short-term rate of interest, even in the situation where bank notes or the settlement services that are offered by the central banks have been fully replaced by e-money.

Similar arguments are encountered in a recent paper by Arnone and Bandiera (2004). In their view, central banks can still retain control over short-term interest rates, as long as settlement takes place on the books of the central bank. Settlement of this kind, as it can be argued, would give rise to a positive demand for central bank money. Under these circumstances, the central bank can exert influence on the whole structure of interest rates by varying the interest rate on these overnight balances. By doing so, the central bank can exert influence on aggregate spending, the level of prices, and real variables. Additionally, as is claimed, financial institutions will have to consider the risks inherent in their liquidity positions and their ability to minimise settlement balances by buying

---

12. The rate was adjusted downward from 3.50 percent to 3.25 percent since 18 July 2007 onwards.
13. Apart from this, Freeman (2000) notes that e-money is unlikely to reach critical-mass usage and hence would have limited impact on the ability of central banks to influence interest rates. Also, many central banks have already placed less emphasis on monetary aggregates as indicators in the conduct of monetary policy.
or selling funds in the interbank market, given the rewards and punishment structure set by the central bank.

In light of the discussion, it appears there is no evidence to indicate the real impact of the stored-value e-money on the conduct of monetary policy at this stage. However, the situation may be significantly different with the issuance of e-money by non-bank private firms. In this case, the pace of e-money development may have adverse implications on the conduct and implementation of monetary policy, especially in the situation where the floating fund is not maintained at the commercial banks. This is partly because the e-money usage may potentially cause a reduction in the bank’s deposit, thus affecting the total supply of money. In view of this, the monetary authorities may have to take into account the development of e-money products in the management of monetary policy in the period ahead.

2.2 Impact of E-payment on the Overall Integrity of Payment System

As alluded to above, the evidence so far shows that e-payments, in the forms of the accessed products of e-payments and the card-based e-payments, appear to have no significant impact on the conduct of monetary policy in Thailand. Given the growing volume of e-payment transactions over the past several years, as shown in Section 1, there is growing recognition among the Thai authorities about the potential risks of e-payment on financial system stability. Certain e-payment systems/services may carry potential risks due to the nature of their business model. Examples in this regard include the operational risks reflected in the failures of some non-bank institutions. The risks involved in the growth e-payment transactions may have an adverse impact on the entire financial system. This seems to be particularly so in the cases where the necessary regulatory measures and/or framework are not properly put in place.

As mentioned in Section 1, non-bank firms are allowed to offer new payment methods/instruments in the form of e-money. On one hand, this practice can be seen as a positive sign from the vantage point of encouraging competition and innovation. On the other hand, it may raise potential risks to the payment system. In view of this, the BOT, as a regulator, needs to put in place a regulatory regime that can address the potential risks. As is widely agreed, commercial banks and non-bank firms, as operators of these new types of e-payment products, face risks engaging in e-payment business. Among these risks are credit risk (credit default), liquidity risk (liquidity shortage), legal risk (legal uncertainty), and operational risk (system breakdown). The nature of these risks, as it can
be argued, tends to be somewhat difference when compared with the risks faced by market participants in the large-value e-payment system such as BAHTNET.14

In response to the potential risks associated with e-payments, legislation was enacted to provide a legal framework to govern the conduct of the players in the e-payment business. Chief among these is the “Electronic Transactions Act of 2001” and the recent proposal of the “Royal Decree Regulating E-payment Business”. At the same time, the BOT has attempted to put in place a regulatory framework to support e-payment usage and foster “public trust”, especially with regard to the introduction of e-transaction law and e-documented law.

The BOT is well placed to monitor the development of e-payment activities. This is mainly due to its ability to collect data and compile statistics on e-payment transactions. Since the 2006, data on numerous kinds of e-payments have been publicly reported. It is now possible to have data on bill payments at bank counter, the use of e-money, the use of mobile banking, the use of internet banking, to name but a few.15

From a regulatory perspective, the BOT is in a position to put in place the regulatory measures aimed at containing the adverse effects from a growing use of e-payments. If the situation warrants, the BOT would consider introducing some of the following measures. These include, for instance, (1) enlarging the coverage of reserve requirement to include e-money, (2) introducing 100 percent float; and (3) setting ceiling on certain types of e-payment transactions.

The present framework for compliance with the legal reserve requirement has not yet included non-bank issuers of e-money in the calculation of legal reserve requirement. In case where the overall framework of monetary policy

14. As pointed out in the paper by Rungsun and Sayan (2002), the risk involved in the payments system can be broadly classified into 6 major categories: (i) credit risk, (ii) liquidity risk, (iii) systemic risk, (iv) FX settlement risk, (v) legal risk, and (vi) operational risk. The BOT, with the aim to support the smooth functioning of high-value fund transfers via BAHTNET, has initiated several policy measures to help reduce various types of risks involved, in particular, credit risk and/or systemic risk from the payment and settlement process. Of particular importance are: (i) the pricing incentive scheme to encourage an early transfer of funds, (ii) the so-called 30:70 percent measure, (iii) the high-value cheque migration, (iv) the use of credit balance from cheque clearing.

15. For more detailed account of this, see, for instance, (i) Rungsun Hataiseree and Jittra Boonsiri (2006), (ii) Rungsun Hataiseree, Don Nakornthab, and Jittra Boonsiri (2007), and (iii) Payment Systems Annual Report of the BOT.
management is affected by the recent surge in the use of e-money products, the monetary authorities have many options to mitigate the potential risks associated with such e-money activities. Among the options include the enlargement of the coverage for the ongoing components of the legal reserve requirements. Similar policy decision can be made for the case of the accessed products of e-payments, such as EFTPOS, E-banking.\textsuperscript{16}

The evidence so far has shown that e-money and other forms of e-payment services/products do not appear to pose any real threat to financial system stability. Nevertheless, like many other central banks in the SEACEN region, the BOT finds it necessary to formulate a regulatory framework on e-money. The basic aim is to minimise the risks associated with e-money-related business to safeguard users’ interest and instill confidence in its use. Example of the measures include: (i) management of float balance, (ii) management of fee charge, (iii) management of dispute resolution, (iv) management of data confidentiality, (v) introduction of IT security and control, and (vi) establishment of adequate governance and operational arrangements to ensure the integrity of the e-money facility.

As a regulatory requirement, a “float”, defined as the value stored in advance by prospective customers of service providers for e-money-related businesses, is required to be kept as deposits at the commercial bank’s account in full amount. It is also stipulated that this amount of funds has to be kept separately from other accounts. As part of the measures to safeguard the system from the associated risks, the BOT has stipulated that the “float” has to be reserved for the exclusive use of customers only.

It is not surprising that no evidence has turned up indicating any adverse impact of e-payment development on the core functions of the BOT, especially with regard to the operation of monetary policy and financial system stability. Though the development and effect of e-payments may vary differ from country to country, the conclusions drawn by the Bank of Thailand, based on the available evidence, is consistent with the experience of the other central banks in the SEACEN region. This can clearly be seen from the Country Reports of the central banks participating in this SEACEN project.

\textsuperscript{16}. It should be noted that some of these measures have been applied to some countries in the SEACEN region. As pointed out elsewhere, the Bank of Indonesia, for instance, has put in place the ceiling on certain types of e-payment transactions. For more detail, see Country Paper of Bank Indonesia.
3. Responding to New Payment Challenges Regarding E-Payments

The BOT has initiated numerous policy responses in relation to e-payment development over the past several years. The primary aim of these initiatives is to encourage greater use of e-payment by the market participants. The measures taken include:

- Growing reliance on the use of pricing policy to encourage greater use of e-payment;
- Conducting survey on payment choice by consumers and businesses;
- Setting up the New Payment Gateway Services of ITMX;
- Facilitating and fostering changes in legal and regulatory framework.

![Figure 17: BOT’s Strategy for Supporting E-payment Developments](image)
3.1 Growing Reliance on the Use of Pricing Policy

Like the central banks in many other countries, the BOT has over the past several years resorted to the use of pricing policy to stimulate increased use of e-payment products in place of paper-based payment instruments in the retail markets. A good example of this is the introduction of a new fee structure for different types of payment products, effective on March 6, 2006. Apart from using it as a means to promote greater use of electronic payment systems, the setting up of this new fee payment structure is also intended to reflect the actual costs of providing the payment services by commercial banks.\textsuperscript{17}

\begin{figure}
\begin{center}
\begin{tabular}{|c|c|c|}
\hline
Payment service & Old structure fees & New structure fees \\
\hline
Cheque & 5 baht per cheque (inclusive of 3 baht stamp duty, service charge 2 baht) & 15 baht per cheque (inclusive of 3 baht stamp duty, service charge 12 baht) \\
\hline
Provincial cheque (B/C) & 20 baht per cheque (for each 10,000 baht, minimum fee is 10 baht) & 10 baht per cheque (for each 10,000 baht, minimum fee is 10 baht) \\
\hline
ATM (On-line Retail Funds Transfer) & 35 baht per transaction (for <30,000 baht) & 25 baht per transaction (for <10,000 baht) \\
& & 35 baht per transaction (for > 10,000 to 30,000 baht) \\
\hline
SMART credit (Your bank credit transfer) & 10 baht per transaction (for <500,000 baht) & 12 baht per transaction (for <100,000 baht) \\
& & 40 baht per transaction (for >100,000 to 500,000 baht) \\
& & 100 baht per transaction (for >500,000 to 2,000,000 baht) \\
\hline
\end{tabular}
\end{center}
\caption{New structure fees on payment service/product}
\end{figure}

As one can see from Figure 18, the fees on paper-based payment instruments have been adjusted upward to induce a shift towards a greater use of substitution payment instruments, such as e-payment products. For instance, fees levied on cheques were raised from 5 baht to 15 baht, reflecting an increase of around 200 percent, while fees on e-payment products, such as ORFT, were adjusted downward from 35 baht to 25 baht for transactions worth less than 10,000 baht.\textsuperscript{18}

\textsuperscript{17} The BOT has approved a guideline for payment fees setting among commercial banks to reflect actual costs of services, and promote greater use of electronic media, with reduction in use of cheque and cash usage. The new payment fee structure among commercial banks has been in place since March 2006. The use of fee structure has, in fact, been successful in many countries, moving the whole economy to increasingly rely on electronic payment systems.

\textsuperscript{18} It should be noted that these new fees are the ceiling rates to be charged from the customers by commercial banks. In practice, each bank still retains the right to accordingly set out its rates deemed to be appropriated.
Although it is too early to conclude the impact of price changes, the preliminary
data obtained thus far point to a favorable response by businesses and individuals
to the price changes.

It is worth pointing out that price is only one of several factors determining
consumer choice in using different types of payment instruments. According to
a recent survey by the Payment Systems Department of the BOT, it is found
that more than 85 percent of respondents from the business sector still prefer
cheque as a payment instrument of choice. This is mainly because businesses
perceive the cheque as the most convenient method of making payment to their
trading partners. Apart from this, they also view that a cheque can provide
documentary evidence in the event something goes wrong in the payment process.

The experience is similar to a large extent in the U.S. According to the
recent survey by CHIPS (the Clearing House Interbank Payments System) and
Fedwire, more than 80 percent of the volume of all corporate payments is still
made with cheques in spite of the fact that most companies use both cheques
and wire transfers.19 This finding points to the need to be more cautious in the
use of pricing policy alone in the changing of consumer choice.

Like in many other countries, the structuring of service fees is part of an
overall package in marketing the use of different types of payment instruments.
For Thailand’s case, the implementation of the new fee structure was seen as
a means of promoting reliance on the use of e-payment instruments. However,
the surveyed results seem to provide little support for this claim.

Against the increasing trend in the use of e-payments, the usage of paper-
based payment instruments has shown signs of declining. This is particularly
so for cheques, which recorded a reduction of around three percent in the first
ten months of this year as compared with the same period of last year. The
increase in the cheque processing fees from 5 to 15 baht in early March this
year has been viewed as a major factor contributing to the decline in the use
of cheques. Such a reduction in cheque usage is in line with our “National E-
Payment Strategy,” which aims to reduce paper-based payment instruments in
Thailand’s payment system.

3.2 Conducting Survey on Payment Choice by Consumers and Businesses

It is useful from the policy makers’ point of view to identify the main trends in the payment choices of consumers and businesses. At least, it would reveal valuable information on the factors influencing the use of different payment instruments (cash and non-cash) in the retail payment sector at a micro-level. The BOT made its first attempt in 2006 to carry out a survey on the payment methods and transaction value among groups of businesses. The survey was conducted during the forth quarter of 2006. It comprised direct interviews with the senior staff and/or executives of the companies taking part in the project. The survey covers seven groups of businesses: (i) Insurance, (ii) Media, (iii) Retail, (iv) Public Transportation, (v) Education, (vi) Financial Market Transaction, and (vii) Government. This survey is probably the first of its kind in which Thai businesses were asked to indicate the views on the pro-and-cons of paying in cash, by debit card, e-purse and credit card in specific POS (Point-of-Sale) situations.20

The results of the survey, as summarised in Figure 19, provide some useful findings on the behavior of businesses in making payments. First, is the prevalent use of paper cheques and cash by most of the business groups in making payments. In the insurance industry, for example, paper-based payment instruments are dominant, both in terms of incoming and outgoing payments. More than 90 percent of incoming payments were paper-based payment instruments. Of this amount, around 80 percent was in the form of cash, while the remaining 18 percent was by cheque. The same finding could be observed for the outgoing expenses of the industry. A closer look at the figures of the other business groups yields similar conclusions as in the insurance industry, though the pattern between cash and cheque between may vary.

20. The second survey is planned to be carried out in 2008. The coverage of the second survey includes the following six sectors: (i) Leasing, (ii) Public Utilities, (iii) Health Care, (iv) Manufacturing, (v) Agriculture, and (vi) Cash Management.
The finding that the mode of payment by cash is most preferred in the retail sector is not totally surprising. As pointed out in many circles (see, for example, Sayan and Rungsun [2003], Taylor [2006]), the persistent reliance on cash as a means of payment can be explained by its unique qualities which, in combination, need to be surpassed by other types of payment instruments. These include, (i) convenience, (ii) liquidity, (iii) protection of privacy, (iv) legal tender, (v) payment finality, (vi) confidence and acceptance. It is a common practice in the restaurant business in Thailand for most entrepreneurs to deal in cash. As is widely practiced, payment on cash terms is subject to a relatively higher discount of 10 percent, whereas the discount is five percent for payments by credit cards. Such a business practice tends to highlight the importance of “liquidity” as perceived by business sector.

Second, there is some evidence to indicate that some forms of e-payment products/services, particularly Pre-authorised Direct Credit, are used extensively in certain sectors (e.g. retail sector). From the surveyed data, there is increasing evidence to show that a variety of companies’ expenses are made via SMART. Although salary payments continue to be the prime item for payments through SMART, other expense items, like rents and reimbursement for hospital claims, are increasingly paid out through this channel. It is important to point out that most of businesses under review tended to show that credit transfer via the SMART system is increasingly a popular payment mode by far for salary payments.

![Figure 19](image_url)

**Some Reflections on Payment Choice by Businesses in Thailand**

<table>
<thead>
<tr>
<th>Business type</th>
<th>Incoming payments</th>
<th>Outgoing expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cheque e-payment</td>
<td>cash</td>
</tr>
<tr>
<td>Insurance</td>
<td>18% 2-3%</td>
<td>80%</td>
</tr>
<tr>
<td>Media</td>
<td>90% 9%</td>
<td>1%</td>
</tr>
<tr>
<td>Retail</td>
<td>30% 70%</td>
<td>30%</td>
</tr>
<tr>
<td>Transportation</td>
<td>15% 5%</td>
<td>80%</td>
</tr>
<tr>
<td>Education</td>
<td>Mainly cash</td>
<td>Mainly cheque</td>
</tr>
</tbody>
</table>

Source: BOT survey on payment choices by businesses in Thailand. Note: Figures provided here should be viewed as an indicative.
Third, as claimed by most of the surveyed businesses, both the price and non-price factors have been cited as attributing to the low degree of substitution of paper-based payments by e-payment instruments. The most cited non-price factors are (i) lack of acceptance in the use of e-receipts or e-documents as legal evidence by the relevant government agencies, such as the Revenue Department, (ii) low degree of inter-operability, especially it cannot be cross-used among the service providers, (iii) low degree of common standards on technology and security, (iv) relatively well-established legal framework for the use of cheques, (v) security concern, especially those related to the frauds problem, (vi) network instability.

The above-mentioned factors are often cited as hindrances to the usage of e-payments. The relatively lower cost of using cash and cheques has often been cited as one of the major factors attributing to a higher use of paper-based payments instruments. The relatively cheaper processing fees for cheques in relation to e-fees are viewed as the price factor contributing to the lower use of e-payments. This is the rationale for the upward adjustment in the processing fees for cheques, as indicated in Figure 16. As has been claimed in many circles, the recent introduction of new fee payment structure may have provided an unclear signal for certain groups of people, for example, as in the upward adjustment of the fees for using the SMART system from 10 baht to 12 baht for transaction amount less than 100,000 baht.

Fourth, cash usage is prominent in some certain sectors, such as public transportation and education. Although cash is the most traditional means of discharging an obligation, the surveyed results show that the businesses offer their customers the option of paying by other means other than by cash. Indeed, the finding that payment by cash is still predominant in retail payments by consumers seems to be consistent with the overall macro-picture of the country. As one can see, the cash usage in relation to GDP in Thailand was in the range of 8.16 to 9.22 percent in the years 2000-2006\(^2\), compared with three to four percent for the advanced economies. As pointed out in Rungsun and Sayan (2005), the extent of cash usage in Thailand is relatively high, compared particularly with certain countries in the advanced economies. The relatively high cash-to-GDP ratio and extensive withdrawals from ATMs can be seen as

\(^2\) The ratio of cash-to-GDP dropped significantly to 8.35 percent in 2006, compared with 9.00 percent to 9.22 percent during the years 2002-2004. While such a decline may suggest a positive outlook with regard to the strategic move towards the reduction of cash usage, as advocated in the Payment Systems Roadmap 2010, it may be premature to draw any clear conclusion of any change of preference in the choice of payment methods by consumers and businesses.
the evidence of high usage of cash. This suggests that, like many other countries, cash remains an important payment instrument in Thailand.

However, one should be very careful when comparing the extent of cash usage among countries participating in the SEACEN research project. Cambodia, for instance, is widely recognised as a cash-based economy, yet the cash-to-GDP ratio of Cambodia was reported to be only around three to four percent. This tended to be much lower when compared with the figures of other SEACEN member countries, including Thailand, Korea, and ROC (Taiwan), to name but a few. Nonetheless, a closer look at the figure of Cambodia’s cash-to-GDP ratio reveals that the statistics of cash usage does not include payments by US dollar. The US dollar is in widespread use in making daily payments in Cambodia. According to the estimates of the National Bank of Cambodia, the use of US dollar in making daily payments comprise more than 85 percent of the total cash in circulation.

Fifth, there appears to be no symmetry in the payment pattern with regard to incoming payments and outgoing expenditure among the business sectors under review. One can see this clearly in Figure 19. The public transportation sector, for instance, receives more than 80 percent of its revenue in cash, while, for payments, about 50 percent its outgoing expenditure are paid by cheques and another 50 percent by e-payments. This reflects in part that the public transportation sector manages their fund to fit to the overall framework of the fund management.22

3.3 Setting up the New Payment Gateway Services (Thailand National ITMX)

It has been widely accepted that the establishment of an efficient payment infrastructure would contribute significantly towards a more efficient payment system. This would, in turn, benefit the country’s economic development and improve its economic performance. The idea of setting up of an e-payment gateway has received increasing attention from the BOT’s policy makers, who are responsible for the implementation and conduct of payment-system policy, as well as from the leading players in Thailand’s payment industries.

22. The view along this line has been shared by Dr. A. G. Karunasena, Executive Director of The SEACEN Centre, during the Workshop conducted by the SEACEN Centre in Kuala Lumpur on December 13-14, 2007. As pointed out by Dr. Karunasena, similar observations made about the public transportation in Thailand can be made in the case of the “Octopus Card” in Hong Kong.
Although the e-payment systems developed by the BOT, covered in Section 2, have been viewed as important gateways in inter-bank transactions, the Payment Systems Committee (PSC) has found it necessary to further develop the e-payment platforms to fully serve all the activities relating to e-commerce, making sure that the payment system complies with the BIS Core Principles.23 The establishment of the Inter-bank Transaction Management and Exchange (ITMX) is viewed as a promising starting point. Indeed, the establishment of the ITMX can be viewed as an attempt on the part of the Thai authorities to move away from taking a “direct operational role” to performing a newly designated role as regulators of the country’s payment systems. It is rather clear that some forms of payment services will no longer be under the direct operation by the BOT in the foreseeable future. This is particularly so for the SMART system which has been transferred and operated by the ITMX since October 2007.

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23. The PSC was established in 2001 to coordinate on policy matters concerning the payment system and deliberate issues bearing on national monetary policy. The PSC also required the local financial institutions to nominate experts to serve as representatives in the committee, which, in turn, signaled the start of concerted effort to engineer uniform payment systems to enhance efficiency and effectiveness of the payment system.
As presented in Figure 20, the ITMX would provide e-payment services to businesses, individuals, and local and international banks using IT infrastructure, so that they could transact business using e-payment systems and mobile phones. The services to be available in the ITMX system would include ATM, SMART Credit, SMART Debit, Direct Credit, Direct Debit, ORFT via ATM, inter-bank counter funds transfer service via ATM, and services via e-channels, such as the Internet and mobile phones.24

Specifically, the setting up of national ITMX is intended to serve multiple purposes. For one thing, it is intended to facilitate the conduct of business and electronic payment transactions in accordance with the framework and policies of the BOT and the supervision of the Bank’s Payment System Committee. For another, it will serve as a switching centre for business and payment transactions, both business-to-business and business-to-customers. Apart from these, the ITMX will allow easy electronic transfer of funds by business. It will instill confidence among companies in the private sector wanting to conduct business over the network. It is expected that Thailand will be in a better position to provide consumers and businesses with high quality services when the ITMX commences full operation in the period around late 2008.

More importantly, the setting up of the national ITMX has paved the way for the ease of regional fund transfers among the countries in the ASEAN region. Over the past several years, with the continued support from the BOT, the ITMX has been working in collaboration with the switching networks in the three member countries of Indonesia, Malaysia, and Singapore, to set up an ATM regional linkage that facilitates cross-border ATM withdrawal arrangements. As one can see from Figure 21, the ITMX has already set up the ATM link with its counterparts in Malaysia (MEPS) since 15 October last year. For the linkages with the remaining countries, it is expected to be completed soon. As envisaged, the ATM regional linkage will offer convenient services to consumers and corporations among the ASEAN member countries. The first phase of the ATM regional linkage will become more useful to consumers and corporations in the region in the near future when it enlarges its coverage to provide for inter-bank fund transfers.

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24. Essentially, the payment system is required to operate with high efficiency and offer convenience, swiftness and safety. The cost of operating the system is to be maintained at an appropriate level, reducing the duplication of investments among member banks. In addition, it will promote the expansion of electronic commerce in the country, in accordance with a key policy requirement of the PSC. It will greatly facilitate consumers in using the payment services of banks all over the country, 24 hours a day, when the company is fully operational in late 2008. The National ITMX Co., Ltd. was registered in July 2005, and has presently completed the selection of the solution vendors for inter-bank fund transfers and payment services.
3.4 Facilitating and Fostering Changes in Legal and Regulatory Framework

Although there are laws and regulations empowering the BOT to function as a regulator and to handle the problems arising from the country’s payment systems, there is no explicit legislation on payment and settlement systems in Thailand. The areas of payment and settlement systems are governed by separate pieces of legislation and regulations. The principal legislation governing the country’s payment and settlement systems are summarised as follows:

(1) *The Bank of Thailand Act of 1942*, enacts the role of the central bank in the payment system and its issuance of regulations and guidelines for the operation of payment services;

(2) *The Commercial Banking Act of 1962*, empowers the BOT to directly supervise Thai commercial banks and local foreign bank branches;

(3) *The Currency Act of 1958*, concerns currency operation;

(4) *The Civil and Commercial Code*, covers other financial papers that are used as means of payments (the Law relating to legal instruments, contracts, and obligations);

(5) *The Securities and Exchange Act of 1992*, provides for the supervision the primary and secondary markets of the country’s capital market;

(6) *The Electronic Transactions Act of 2001*, accords legal recognition to electronic data message;

<table>
<thead>
<tr>
<th>ATM Regional Linkage</th>
<th>Country</th>
<th>No. of Banks</th>
<th>Date in Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITMX – MEPS</td>
<td>Thailand</td>
<td>7</td>
<td>15 October 2006</td>
</tr>
<tr>
<td></td>
<td>Malaysia</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>ITMX – NETS</td>
<td>Thailand</td>
<td>-</td>
<td>Under discussion</td>
</tr>
<tr>
<td></td>
<td>Singapore</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>ITMX – Artajasa</td>
<td>Thailand</td>
<td>-</td>
<td>Under discussion</td>
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<tr>
<td></td>
<td>Indonesia</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Figure 21
Cross Border ATM Linkages with ITMX
(7) The Bankruptcy Act of 1940, governs the entire areas of insolvency and bankruptcy;

(8) Consumer Protection Law.

The lack of a comprehensive law relating to the payment system means that payment transactions fall under the Civil and Commercial Code. However, the BOT and other concerned government agencies are well aware of the rapid pace of development in ICT, and hence the need to ensure the adequacy of legal framework to cater the rapid advance of ICT development.

The following are the recent developments in the legal framework for payment and settlement systems in Thailand:

(1) Amendment to the BOT Act, empowering the BOT to regulate and support the establishment of clearing and settlement systems across financial institutions and/or payment systems. However, this approach may take a very long time, pending approval by the parliament.

(2) The draft of the Financial Institution Act, being currently under the BOT board review. The act empowers the BOT to propose a royal decree to regulate businesses that are engaged in deposit-taking from the public, credit extension, or other financial businesses. This Act will be another legislation covering the payment and settlement systems.

(3) The enactment of subsidiary laws, royal decree, rules and regulations derived from the Electronic Transactions Act. This may empower the BOT to spread its authority to oversee the operations of private payment systems, particularly payment services operated by non-bank firms. The decree is still under the consideration. If the BOT proposes regulation on oversight of the payment systems, electronic money, or new means of making payments, it is required to propose a Royal Decree under Section 32 of the Electronic Transactions Act 2001.

As pointed out in the previous sections, although the pace of e-payment usage in Thailand has not been dramatic, the evidence tends to suggest a gradual upward trend in the use of e-payments in the near future. It is likely that not only commercial banks will be participating in offering a variety of services in the retail payment markets, but also non-banking institutions have shown increasing interest in providing competitive services for consumers and businesses. Under this changing retail-payment landscape, it appears that the
existing legal and regulatory framework has not kept pace with the new environment.

As a regulator and catalyst of the country’s payment system, the BOT has found it increasingly difficult to handle such a changing retail-payment landscape. Enormous efforts have been taken to foster the introduction of new law governing the payment system. Reflecting this, steps have initiated to formalise the acceptance of e-receipts by market participants, along with the push towards the promulgation of the Royal Decree Regulating E-payment Service Business. At present, the law is in the process of enactment by the Cabinet and is expected to be legislated in 2008. It is envisaged that the BOT will be in a better position to play a leading role in promoting the development and usage of e-payment with the passage of this law.

As mentioned earlier, in Thailand, e-money can be issued by either banks or non-bank firms. However, they are regulated under different laws. The regulation of e-money issued by banks falls under Section 9 of the Commercial Banking Act B.E. 2505. As for e-money issued by non-banks, the issuers are subject to compliance with the Ministry of Finance Notification, which came into force on October 4, 2004. (Ministerial Notification, Ministry of Finance: Business for which Permissions must be obtained according to Clause 5 of Announcement of the Notification Executive Council No.58 dated October 4, 2004).

The evidence appears to show that the countries in SEACEN region have diverse experience with respect to the nature and evolution of their legislation on payment and settlement systems. As one can see, certain countries in the SEACEN region have already put in place explicit legislation on payment and settlement systems. Malaysia, for instance, has enacted the Payment System Act (PSA) in 2003. This legislation empowers Bank Negara Malaysia (BNM) to establish a comprehensive regulatory oversight framework to govern the rapidly changing payment landscape. The law also recognises BNM as the sole authority responsible for the oversight of the payment system in Malaysia. This is to ensure the safety and efficiency of the payment system infrastructure and to safeguard public interest.

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25. E-payment businesses covered in this law are defined to include (i) Credit Card Network service, (ii) EDC service, (iii) Transaction Switching service for payment in one system, (iv) E-money, (v) Clearing service, (vi) Settlement service, (vii) Transaction Switching service for payment in several systems (viii) Payment service via new devices (such as mobile phone, the Internet), (ix) Counter services.
4. Concluding Remarks and Future Direction of E-payments

There has been an increasing use of e-payments in Thailand over the past decade or so, as reflected in part in the substantial increase in the value and volume of financial transactions via the payment system of the BOT. As indicated, the e-payment services operated by the BOT have displayed significant upward trends over the past decade, particularly the usage of the BAHTNET and SMART systems. The volume of transactions through the BAHTNET and SMART systems have increased nearly three-fold and seven-fold, respectively, over the period 2000-2006. The usage of other e-payment channels offered by commercial banks and non-banks also saw significant increase, as can be seen in usage of ORFT, apart from the growing popularity of the more “traditional” e-payment types. In terms of transaction volume, the traditional e-payments, including debit cards, credit cards, and credit transfers, are increasingly emerging to become important components of the Thai payment systems over the past several years. The share of debit cards and credit cards alone accounted for nearly 70 percent of the total volume of non-cash payments in 2006.

Evidences so far tend to suggest that e-payment development in Thailand has shown a promising development, although the pace of the development has yet to quicken. As pointed out in the paper, the BOT has made initiatives to develop the e-payment infrastructure to promote and facilitate the smooth functioning of the entire payment and financial systems of the country. Of particular importance are the establishment of the national ITMX and the promulgation of the Electronic Transaction Act of 2001.

In concurrence to the development of e-payment system, the BOT seeks to encourage the expansion of the use of e-payment products for making retail payments. The sharp rise in the usage of ORFT, a development reflected by a more than ten-fold increase in its volume of transactions over the past seven years, points to the success of ORFT. The contributory factors behind its success are: convenience, service meeting consumers’ needs, and relatively low costs for providing the service.

The preliminary evidence indicates that consumers and businesses give major weights to some “non-price” factors in their selection of payment instruments. One of the findings of the business survey indicates that concern over the legal acceptance of e-receipt and e-document has resulted in the delayed acceptance of some forms of e-payments, especially those related to fund transfers via SMART service. It follows one should be careful not to place too
much emphasis in the application of “pricing factor” alone to shift the preference of consumers and businesses towards the greater use of e-payment products.

The impact of e-payment on the operation of monetary policy has not yet produced any issue of serious concern to the Thai monetary authority. This is partly because, in value terms, the volume of e-money transactions is relatively small when compared with the money supply. Likewise, the negative impact of growing e-payment usage on the conduct and implementation of monetary policy has yet to be felt.

It is also found that the impact of e-payment has not yet posed any apparent threat to the stability of the country’s financial system. However, given the potential risk involved, the Thai monetary authorities take the approach to keep track of the developments in the application of new innovations in e-payment instruments/products, and to formulate regulatory framework to ensure the safety and efficiency of the payment system. The experience of other the central banks in the SEACEN region is similar to the case of Thailand, though the pace of policy response may differ, reflecting in part differences among the countries’ e-payment developments and extent of e-payment penetration. As documented in the Country Reports, e-payments have not yet posed any real threat in influencing short-term interest rates for the monetary authorities in these countries.

The experience has shown that the use of pricing policy alone may not be sufficient in encouraging greater adoption of e-payment products. This is mainly because consumers and businesses tend to give relatively higher weights to certain types of “non-price” factors, including, in particular, legal acceptance of e-receipt and e-document as proof of payment and the difficulties involved in the use of new e-payment products. From the standpoint of service providers, the move towards the wider use of the more cost-effective electronic payment products or services, may have become feasible, if the provision or introduction of e-payment products/services has a high potential to reach critical mass.

The results of the survey show that while the use of paper-based payment instruments, cash and cheque, have been affected by the growing use of electronic alternatives, the volume and value of cash usage have continued unabated. The survey provided insights into the payment habits and perceptions of cash and its alternatives in the various sectors businesses. The survey results showed that the decision-making in the various business sectors concerning payment choices is quite complex. Potentially, the results of the survey tend to highlight several
“non-price” factors that contribute to the unpopularity of e-payment instruments, especially factors related to uncertainty over security, standards, and compatibility.

The preliminary evidence suggests that the recent introduction of the payment gateway service of National ITMX appears to be a major driver in increasing the usage of e-payment products. Looking at the prospects over the short- and long-term horizon, it is likely that this type of gateway service would, to some degree, result in the overall reduction of the operating costs of the participating banks in offering e-payment services. This would, in turn, help increase the overall efficiency of the country’s payment system. It also suggests that the upcoming promulgation of the Royal Decree Regulating E-payment Service Business, apart from the existing of Electronic Transaction Act of 2001, would contribute in enhancing the confidence of the market participants towards a greater use of e-payment products/services.

It is perhaps useful to briefly discuss the plausible factors affecting the future direction of e-payments. As illustrated in Figure 22, the factors affecting the future direction of e-payments can be grouped under the following six headings.

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**Figure 22**

*Factors Affecting Future Directions of E-Payments*

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The first concerns the BOT’s strategy to advance e-payments. Like many central banks in the region, especially Bank of Korea and Bank Negara Malaysia, the BOT is involved in efforts to migrate the country to e-payments, which at present is in the fancy stage, as compared to the advanced economies. The Bank has recently initiated a number of projects to provide an environment conducive for fostering the orderly transition to e-payments. As reflected in the Payment Systems Roadmap 2010, the Bank has established plans to encourage the increased use of e-payments by the major market participants, including individual customers, businesses and government agencies. Further efforts are under way to channel and coordinate industry efforts to migrate to e-payments.

The second concerns the BOT’s strategic move towards the reduction of cash and cheque usage in the near future. The BOT has approved a guideline for the imposition of payment fees by commercial banks to reflect the actual costs of providing the services, and to promote greater use of electronic media with reduction in the usage of cheque and cash. The new fee payment structure has been in place since March 2006. The use of fee structure has, in fact, been successful in many countries, moving the whole economy to increasingly rely on electronic payment systems. Whether this will be a success story for Thailand is open to debate. The evidence reported in Section 3.2 indicates that pricing factor alone may have limited influence in conditioning the public’s choice unless it is bolstered, or at least supported, by the requisite non-price factors. Apart from the approved fee structure, it remains to be seen whether, and to what extent, the setting up of Thailand National ITMX would contribute to a future reduction in the usage of cash and cheques.

It is important to note, however, that one should not ignore the entrenched cultural pattern when judging the potential pace of acceptance of future payment methods or the realisation of the intended effects of new payments technologies. The experience of many countries has shown that it typically takes years to shift the public’s payment preference/habits from the use of the traditional paper-based instruments to the new forms of e-payment instruments in making payments. For example, in the case of the United Stated, it took at least a quarter of a century for e-payment instruments/services (e.g. debit and credit payment cards) to surpass paper-based payment instruments.26 This tends to suggest that

26. This happened for the first time in the year 2003. According to the Federal Reserve Board (2004), the share of paper-based payment instruments (cash, consumer cheques, commercial cheques, official cheques, traveler cheques, and money orders) declined from around 85 percent of the total non-cash payments in 1979 to 78 percent in 1995. The share further declined to 58 percent in 2000 and 45 percent in 2003. The share of e-payments, by contrast, recorded rising trends over the same period. It increased from 15 percent of the total non-cash payments in 1979 to 22 percent in 1995. It increased further to 42 percent in 2000 and 55 percent in 2003.
greater efforts need to be carried out to achieve the successful reduction of cash and cheque usage in the country.

**The third is related to the public’s payment habits.** As indicated by the survey results, there are several non-price factors contributing to the unpopularity of electronic payment instruments. As discussed in Section 3, most businesses continue to prefer paper-based payment instruments to e-payments. Within many business sectors, cheques and cash are the predominant modes in incoming income and outgoing expenses. Thus, it may not be quite so easy for the authorities to change the payment habits and/or behaviour of consumers. In addition, merchants might not be willing to use e-payments for fear of increased service charges. Apart from these, there are additional concerns regarding system inter-operability, IT security, to name but a few. The application of pricing policy alone to encourage the shift towards the increased use of e-payment may not be adequate unless concerted actions are taken to overcome the reservations of users in relation to the non-price factors.

It is worth pointing out that other central banks have also encountered similar experiences as the BOT. As documented in the paper by Chang (2007), the inducement of changes in the public’s payment habits towards greater use of e-payments are considered as challenging tasks in ROC (Taiwan). According to Chang, the process takes a long time for it to achieve the desired effect. For one thing, consumers who are familiar with the use of the traditional payment media, e.g. cash and cheques, may not find it easy to change their habits and switch over to e-payments. For another, merchants who prefer to transact in cash may not be willing to accept e-money for fear of the accompanying service charges. For instance, in the restaurant trade in Thailand, it is a widespread practice for restaurants to give discounts to their customers. Customers receive a higher discount rate paying by cash as compared to payment by cheque.

**The fourth concerns the pack of changes in the country’s legal and regulatory framework related to the payment system.** A sound legal and regulatory framework is vital to support the growing use of e-payment and e-money. The lack of specific laws pertaining to e-payment and e-money has raised the implicit costs to all participants. Like many central banks, the BOT and other concerned government agencies are well aware of the rapid developments in ICT and in e-payments. The financial authorities in Thailand have over the course of the past few years strengthened the laws and regulatory framework governing e-payments. This is to ensure that the legal framework stands ready to cater for the growing proliferation of e-payment channels and instruments.
The recent proposal of the Royal Decree Regulating E-payment Business is a good reflection for this. According to this decree, any person who intends to provide e-payment services, which include e-money, will be subject to prior notification, regulation, or licence. This law is pending parliamentary approval. The enactment of the law will not only strengthen the oversight power of the authorities, but it will also promote reliance on e-payments and consumers’ confidence. The lack of a law governing the use of e-receipts and e-documents has resulted in the slow adoption of e-payments by the market participants. Plans are afoot for the BOT, working with the Revenue Department,27 to encourage wider acceptance of e-receipts.

It should be pointed out in this connection that the upcoming promulgation of the Bank of Thailand Act of 2008 would additionally empower the Thai authorities to exert significant influence over the pace and development of e-payments in the country. Under this new law, the traditional consultative mechanisms under the so-called “Payment System Committee” (PSC) will be legally formalised. It is expected that the BOT, through the PSC, would be in better position to lay down the necessary measures/guidelines to regulate and coordinate the development of e-payments, and ensure that certain “attractive” or “desirable” features of e-payments are embedded in the e-payment applications.

The fifth is related to the safety concern of market participants. As in the countries in the SEACEN region, the issue of safety in the usage of e-payments is a major concern among the market participants in the e-payment-related businesses. In the minds of consumers, e-money-related activities are transacted through a cybernetic system which is fraught with challenges arising from internal and external threats. The challenges include counterfeiting, tampering, hacker attacks, theft or leakage of personal data, notably, bank account number and PIN.

The sixth aspect deals with challenges of creating net benefits for the use of or introduction of prospective e-payment products. To address the barriers hindering the use of e-payments, the BOT recently initiated a series of strategic action plans to help create a conducive environment to foster the increased use of e-payments. The major aims of the BOT’s three-year plan for the years 2007-2009 are to: (i) encourage a greater use of e-payments by the government and

27. For reference, see “The Electronic Signatures in Electronic Commerce Law”. The law, issued on 14 November 2001, aims to confer legal validity to electronic documents, and endow electronic media equal legal status with paper-based media.
business sectors; (ii) gain wider acceptance of e-payment usage among rate-
payers as the e-payment receipt is legally recognised as evidence of payment
by the Revenue Department; (iii) put in place the system for inter-bank bulk
payments (debit transfers); and (iv) strengthen the standard of information
exchange for bulk payments. As the plan involves the active participation of the
various sectors, ranging from commercial banks, industrial body, consumers,
businesses, government agencies, it may take some time before the goal becomes
a reality.
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