The Payment and Settlement Systems

A well-functioning payment system is crucial for the efficient operation of the financial markets and in maintaining financial stability. Given its importance, the promotion of a secure, safe and efficient payment system is one of the main pillars of the Bank in addition to maintaining monetary and financial stability.

The Payment Systems Act 2003 (PSA) recognises the Bank as the sole authority responsible for the oversight of payment systems in the country. The objective of the Act is to ensure the safety and efficiency of the payment systems infrastructure, and to safeguard public interest. In discharging its responsibilities under the Act, the Bank performs three roles, namely, as the operator and overseer of the payment systems, and facilitator in the development of payment system services.

The thrust of the Bank's policies and initiatives in payment systems focused on strengthening further its oversight function and improving payment efficiency.

In 2006, the thrust of the Bank's policies and initiatives in payment systems focused on strengthening further its oversight function in fortifying payment system stability and confidence, enhancing safety and reducing risks in the payment systems. In addition, efforts were also directed towards improving payment efficiency via increased competition and greater use of electronic means of payments.

MANAGING PAYMENT SYSTEM STABILITY AND CONFIDENCE

As the sole authority responsible for the oversight of payment systems in the country, the Bank has the responsibility for the stability and confidence of the payment and settlement systems operating in the country. Central to this oversight responsibility from the stability perspective is to ensure the continued reliability of the major payment systems and to sustain public confidence and trust in the retail payment systems and payment instruments. Measures undertaken by the Bank in discharging its responsibilities included an assessment of systemically important payment systems (SIPS) against internationally recognised standards and strengthening of its oversight function over remittance operators, designated payment instrument issuers and clearing houses which do not fall under the purview of the PSA.

Benchmarking against CPSS-IOSCO Recommendations

In 2006, the Bank carried out a self-assessment of the Scripless Securities Trading System (SSTS) operated by the Bank based on the Recommendations of the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of the International Organisation of Securities Commissions (IOSCO) for Securities Settlement Systems.

The SSTS constitutes an important infrastructure to support the activities and development of the bond market. It provides depository, clearing and settlement services for all unlisted ringgit public and private debt securities issued in Malaysia. As at end-2006, a total of 1,883 primary public and private debt securities valued at RM443 billion were deposited and RM2.2 trillion were settled through the system. In view of the significant value that passes through the SSTS and the critical role it plays in supporting capital market initiatives in Malaysia, it is crucial that the operation of the SSTS conforms to the CPSS-IOSCO Recommendations. A summary of the CPSS-IOSCO "Recommendations for Securities Settlement Systems" and the Bank's observance of the Recommendations is provided in the following box.

The self-assessment concluded that the SSTS module of the Real-time Electronic Transfer of Funds and Securities (RENTAS) system achieved a high degree of observance of the Recommendations that are applicable to the system. Two of the Recommendations relating to

The CPSS-IOSCO Recommendations for Securities Settlement Systems
(The Bank's level of observance is indicated in parenthesis)

Legal risk

1. ***Legal framework (fully observed)***
   Securities settlement systems should have a well-founded, clear and transparent legal basis in the relevant jurisdictions.

Pre-settlement risk

2. ***Trade confirmation (fully observed)***
   Confirmation of trades between direct market participants should occur as soon as possible after trade execution, but no later than trade date (T+0). Where confirmation of trades by indirect market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.
3. ***Settlement cycles (fully observed)***
   Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be evaluated.
4. ***Central counterparties (CCPs) (not applicable as it does not act as a central counterparty)***
   The benefits and costs of a CCP should be evaluated. Where such a mechanism is introduced, the CCP should rigorously control the risks it assumes.
5. ***Securities lending (fully observed)***
   Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.

Settlement risk

6. ***Central securities depositories (CSDs) (fully observed)***
   Securities should be immobilised or dematerialised and transferred by book entry in CSDs to the greatest extent possible.
7. ***Delivery versus Payment (DvP) (fully observed)***
   CSDs should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves DvP.
8. ***Timing of settlement finality (fully observed)***
   Final settlement should occur no later than the end of the settlement day. Intraday or real-time finality should be provided where necessary to reduce risks.
9. ***CSD risk controls to address participants' failures to settle (broadly observed as there was no evaluation and clear procedure to address the possibility of multiple failures scenario. However, issues related to failure to settle transactions are governed under the Rules on SSTS)***
   CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems, should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest payment obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.
10. ***Cash settlement assets (fully observed)***
    Assets used to settle the ultimate payment obligations arising from securities transactions

should carry little or no credit or liquidity risk. If central bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of the cash settlement agent whose assets are used for that purpose.

Operational risk

11. Operational reliability (fully observed)

Sources of operational risk arising in the clearing and settlement process should be identified and minimised through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and backup facilities should be established to allow for timely recovery of operations and completion of the settlement process.

Custody risk

12. Protection of customers' securities (fully observed)

Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.

Other issues

13. Governance (fully observed)

Governance arrangements for CSDs and CCPs should be designed to fulfill public interest requirements and to promote the objectives of owners and users.

14. Access (broadly observed as eligibility criteria to be a RENTAS member are not made public but provided upon request)

CSDs and CCPs should have objective and publicly disclosed criteria for participation that permit fair and open access.

15. Efficiency (fully observed)

While maintaining safe and secure operations, securities settlement systems should be cost-effective in meeting the requirements of users.

16. Communication procedures and standards (fully observed)

Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.

17. Transparency (the Bank has not conducted the self-assessment)

CSDs and CCPs should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using the CSD or CCP services.

18. Regulation and oversight (fully observed)

Securities settlement systems should be subject to transparent and effective regulation and oversight. Central banks and securities regulators should cooperate with each other and with other relevant authorities.

19. Risks in cross-border links (not applicable as it does not handle cross-border transactions)

CSDs that establish links to settle cross-border trades should design and operate such links to reduce effectively the risks associated with cross-border settlements.

central counterparties and cross-border links are not applicable to RENTAS as it currently does not act as a central counterparty nor does it handle cross-border transactions.

Reinforcing Oversight

In May 2005, the Bank for International Settlements (BIS) published a report, "Central Bank Oversight of Payment and Settlement Systems", which sets out principles for the oversight of both domestic and cross-border payment systems. For domestic payment systems, the report recommends, amongst others, that central banks should have both the authority and the capacity to carry out oversight. While the authority of the Bank for its oversight function is drawn from the PSA, the Bank is also the operator of SIPS, namely, RENTAS (the real time gross settlement system) and SPICK (the national image cheque clearing system). To reinforce its oversight responsibilities and to conform with the BIS Recommendations, the Bank is currently reviewing the organisational responsibility with respect to the oversight of the SIPS with a view to segregating it from the operational responsibility.

Integral to the exercise of strengthening its oversight function are the resources and human capital required in carrying out the surveillance and oversight of the payment systems. In this respect, the Bank has recently realigned its resources to provide for greater focus and more effective surveillance framework to ensure the safety and soundness of the payment systems. With the realignment, the micro and macro perspectives of overseeing the industry and the individual players are segregated and carried out by two different departments. While the identification of emerging trends and potential vulnerabilities related to payment systems and the players would reside with one department, the formulation of policies and strategies to enhance and promote the safety and efficiency of the nation's payment systems is with a separate department.

Oversight Over Remittance Operators and Designated Payment Instrument Issuers

With the growing importance and significance of remittance flows, in particular remittances abroad by foreign workers in the country and the objective to increase access to formal remittance channels, the Bank extended its regulatory oversight to cover non-bank remittance operators. The PSA will also be amended to enhance oversight provisions for the Bank to carry out its responsibility in ensuring the safety, efficiency and soundness of remittance services. In addition, the Bank also formulated a set of prudential requirements for remittance operators, which amongst others, include minimum shareholders' funds, daily transaction limit, transparency on service levels, management of customers' account and, 'fit and proper' criteria for shareholders and directors. In addition, remittance operators are also subjected to the Anti-Money Laundering and Counter Financing of Terrorism (AML/CFT) guidelines issued by the Bank which are in line with the Financial Action Task Force (FATF) Recommendations.

In line with efforts to migrate the country to electronic payments, the Bank is encouraging the introduction of innovative products and services including electronic money. While the development of electronic money in Malaysia is still in its infancy, the Bank is formulating a regulatory framework on electronic money to minimise risks associated with electronic money business to safeguard users' interest and instill confidence in its use. The prudential measures will include amongst others, maintenance of minimum shareholders' funds, introduction of purse limits, management of float balance, establishment of adequate governance and operational arrangements to ensure the integrity of electronic money schemes. The proposed electronic money regulation was circulated to the industry for comments in August 2006 and the Bank is currently finalising the regulation taking into consideration the industry's feedback and latest market developments. The electronic money regulation will come into effect before end-2007.

Oversight Over Other Clearing Houses

While the clearing houses recognised under the Securities Industry Act 1993 and approved under the Futures Industry Act 1993 are currently regulated and supervised by the Securities

Commission and excluded from the definition of payment system under the PSA, the safety and stability of the clearing houses could become a source of systemic risk. In this regard, the Bank and the Securities Commission will enter into a Memorandum of Understanding to outline the specific aspects of the co-operation, consultation and information exchange between the two regulators, to ensure their respective mandates are achieved.

MANAGING PAYMENT SYSTEM RISKS

Another focus of the Bank continues to be in the area of enhancing the safety of the payment systems and minimising systemic risks, in particular, the large value interbank payment system.

Focus continues to be in the area of enhancing the safety of the payment systems and minimising systemic risks.

Foreign Exchange Settlement Risk

In November 2006, the Bank, in collaboration with the Hong Kong Monetary Authority, successfully implemented the Payment versus Payment (PvP) infrastructure for settling interbank ringgit-US dollar trade transactions. In such transactions, the risk arises when the party settling the ringgit it sold, may not receive the US dollar it bought. To mitigate such risk, a direct link between RENTAS in Malaysia for the settlement of ringgit and the USD CHATS system in Hong Kong for the settlement of the US dollar, was established to enable the simultaneous settlement of ringgit in Malaysia and US dollar in Hong Kong during Malaysian business hours.

The establishment of the PvP settlement mechanism was the result of a survey conducted by the Bank in late 2004 on foreign exchange (FX) settlement practices in Malaysia. The main objective of the survey was to assess the progress achieved by Malaysian banking institutions in managing FX settlement risk.

From the survey, it was noted that US dollar was the single largest currency for FX settlement in Malaysia, representing about 73.8% of the total payment flows. In terms of currency pairs, FX transactions involving ringgit and US dollar represented about 70% of total FX trades in Malaysia. Prior to the establishment of the link, banking institutions absorbed the settlement risk as they had to deliver ringgit in Malaysia during Malaysian time before they could receive the US dollar in New York during New York time. As ringgit is not an eligible currency to be settled through the Continuous Link Settlement (CLS) system, the Bank embarked on the development of the PvP infrastructure to mitigate the settlement risk for the ringgit and US dollar FX transactions.

Besides eliminating the settlement risk for ringgit and US dollar FX transactions, the PvP link also provides other benefits. Participating banks are now able to enjoy improved liquidity management as they can now utilise the US dollar much earlier during the day. The infrastructure now presents an avenue for US dollar denominated securities issued in Malaysia to be traded and settled on a DvP basis, eliminating the settlement risk for the trading of such US dollar securities in Malaysia.

As at end-2006, a total of 16 banking institutions participated in the RENTAS-USD CHATS link and four more banking institutions are expected to participate in the system in 2007. During the first one and a half months of its implementation, 44% of the total ringgit-US dollar FX trades, and 85.7% of ringgit-US dollar transactions between the participating banks were settled through the system. The FX transactions between the participating banks that were not settled through the system were mainly value-today transactions that were executed on the settlement day.

Operational Risk and Business Continuity Planning

Efforts to mitigate operational risk and business continuity planning are critical in ensuring the resilience of payment systems, in particular for SIPS. Operational vulnerabilities can exacerbate various risks in payment systems, which may lead to disruptions and affect the stability of the financial markets and undermine public confidence. The emphasis of attention is, therefore, on operational robustness, security and contingency planning for the SIPS and other major payment systems. The Bank accords high priority on business continuity planning to ensure uninterrupted availability of the payment systems through its Disaster Recovery Centre (DRC) for RENTAS and SPICK operations. Scheduled monthly live runs are conducted from the DRC for both systems. The live runs test the Bank's DRC state of readiness in times of crisis. Market players are also required to take a proactive approach in ensuring that their respective off-site disaster recovery sites are also in a state of readiness at any time to address any unexpected disruptions. In this regard, the RENTAS Participation and Operation Rules were amended requiring RENTAS participants to ensure that their RENTAS systems are operationalised within one and a half hours after the activation of the disaster recovery procedures. In addition, RENTAS participants are required to conduct live runs for their off-site DRC sites at least four times a year. As there were no major disruptions or breakdown in the RENTAS or SPICK systems during the year, it was not required to activate the Business Continuity Plan (BCP).

On the retail payments sector, Malaysian Electronic Payment System (1997) Sdn. Bhd. (MEPS) implemented its BCP by successfully conducting disaster recovery exercises for three of its core services, namely, the Shared ATM Network, e-Debit and Interbank GIRO (IBG). The primary objective was to test the efficiency and robustness of its disaster recovery infrastructure and procedures. The exercise also served to familiarise the MEPS Disaster Recovery team, financial institutions and related service providers with the disaster recovery process. The exercise was conducted as a live run with full activation of the disaster recovery procedures including network connectivity with financial institutions and processing of live data for the three core services.

Internet Banking Risk Mitigation

Internet banking services are currently provided by 16 banking institutions. Such services provide convenience and affordable accessibility to banking services especially in making funds transfer, bill and loan payments, reloading of mobile prepaid airtime, account balance enquiry, foreign telegraphic transfer, online share application service for initial public offering on Bursa Malaysia and other facilities.

The rising trend of phishing email and short messaging system scams as well as the latest Internet banking fraud known as 'script editing' have tested the level of security of the Internet banking services in the country. Collaborative efforts were initiated by the Internet Banking Task Force to address Internet banking fraud and to instill public confidence in Internet banking services. Overall, Internet banking security has not been breached but the cases generally involved consumers being deceived to disclose their username and personal identification number (PIN) or password. Thus, efforts to stem the fraud were focused on educating Internet banking consumers on security precautions via articles published in the media and alerts posted on Internet banking websites. The Internet Banking Task Force was set up in 2004. Its members comprise the banking institutions that offer Internet banking services, the Malaysian Cyber Security Agency (a national body established to address ICT security issues), the Malaysian Communications and Multimedia Commission, the Royal Malaysia Police, Bank Negara Malaysia and TM Net Sdn. Bhd.

To further strengthen the safety of Internet banking services, all banking institutions offering Internet banking services are required to implement two-factor authentication for Internet banking transactions. The second authentication factor is to complement the username and PIN or password (which is the first factor authentication) by way of using an additional authentication tool such as transaction authorisation code (TAC), digital certificate, smart card or USB token, or a customer's own biometric characteristic such as fingerprint or retinal pattern. The second authentication factor is required for high-risk transactions such as registering new payees or beneficiaries, third party funds transfer, payment to unregistered parties, prepaid airtime reloads, bill payments and changing confidential information like correspondence address and contact numbers. As of end-December 2006, most banks have complied with the two-factor authentication requirement.

Payment Cards Risk Mitigation

In line with the objective to ensure continued public confidence in using payment cards, particularly credit and debit cards, the Bank and the industry players have collaborated in a number of areas to mitigate the risk of fraud and strengthen the security standards of payment instruments. As part of this collaborative effort, the Malaysian Risk Management Task Force (MRMTF), whose members include the credit and charge card schemes and their issuers and acquirers, the Royal Malaysia Police and Bank Negara Malaysia, was established. The MRMTF is continuously promoting co-operation amongst the players to combat credit card fraud as well as to increase the awareness of credit card fraud activities. The MRMTF holds monthly meetings to update and discuss issues relating to credit card fraud and also to identify pre-emptive measures to combat such fraud.

Prior to the full implementation of the Europay-MasterCard-Visa (EMV) standard for credit cards, Malaysia had received negative media attention for credit card fraud. With the completion of the industry wide EMV chip migration at the end of 2005, Malaysia has significantly reduced skimming or counterfeit card fraud and improved its image internationally in terms of mitigating counterfeit card fraud. Since the implementation of the chip infrastructure, credit card fraud has declined substantially from RM69.9 million in 2004 to RM18.3 million in 2006. Complementing the EMV chip migration exercise and to promote a safer credit card environment, credit card institutions have also completed their data line encryption exercise in 2006 to ensure that credit card information transmitted over telecommunication lines are protected against 'wire-tapping' fraud.

Although there has been a significant reduction of counterfeit card fraud in the country due to the EMV implementation, other types of credit card fraud have surfaced. These include the usage of lost and stolen cards, card-not-present fraudulent transactions via mail/telephone order and Internet, and forged credit card applications. Measures therefore continue to be developed to tackle these fraud risks to preserve the confidence of consumers, tourists and retailers in the usage and acceptance of credit cards in the country. The Bank will be issuing a revised set of guidelines on managing fraud and risks on card operations in 2007. These guidelines will set new minimum requirements for preventive, detective, corrective and containment measures that should be undertaken by card institutions to mitigate all types of risks and fraud in card operations.

ENHANCING COMPETITION AND INCREASING PAYMENT EFFICIENCY

Payment system efficiency is characterised by several factors which include competition in price and quality of payment services, wider access to usage and variation of payment products and services, and the level of expediency in clearing and settlement of payments. The Bank's collaboration with the industry continued in 2006, with greater concerted efforts to facilitate enhancements to and the introduction of payment efficiency in the retail and wholesale payment systems via increased competition and innovation.

Greater concerted efforts in enhancing payment efficiency in the retail and wholesale payment systems.

New Entrants and Innovative Products in the Card Sector

The entry of non-bank credit card issuers would increase competition in an already competitive market. During the year, in providing greater consumer benefits, credit card issuers have rolled out several co-branded cards with their business alliances and new attractive range of benefits and privileges, such as free for life credit cards, cash rebates, free over limit fee, lower cash advance fee, zero-interest installment plan, flexi-pay scheme and 0% balance transfer.

Despite the stiff competition, credit card issuers are prudent and have undertaken the necessary credit assessments prior to issuing their cards. Almost 60% of the total value of credit card transactions were paid in full in 2006 while the remaining balances were rolled over. The Bank continues to closely monitor the situation to ensure that the intensified competition for market share amongst the issuers does not lead to consumer over-indebtedness and deterioration in asset quality. Assessment on asset quality of credit cards is discussed in Chapter 2 on Risk Assessment of the Financial System.

Following the upgrading of the credit card infrastructure to EMV chip card technology, the credit card schemes, namely, Visa International and MasterCard Worldwide, have rolled out their contactless credit cards, Visa Wave and MasterCard Paypass, in February 2005 and February 2006 respectively. The contactless credit cards combine contact EMV chip cards with contactless technology. Leveraging on the security and robustness of the EMV chip card and contactless technology, these cards do not require customers' signature and remove the need to physically swipe or insert the card into a card reader. Payments are made using radio frequency, much like the 'Tap and Go' cards used in mass transit system, hence providing consumers a simple, fast, secure and convenient way to make payment. These contactless credit cards are suitable for cash-based retail environment with low-ticket items but high-volume transactions such as fast food outlets, supermarkets and petrol stations. To date, eight credit card issuers have offered the contactless credit cards, which can be used at more than 7,000 merchant outlets in the country. As a security measure, a limit is placed on the purchase transactions using these cards, currently set at RM110. The contactless credit card has escalated the country's EMV chip migration process to the next level by offering consumers innovative products while at the same time allowing issuers to leverage on their investments in EMV chip technology.

Another innovation introduced during the year is the mobile phone-based contactless payment which combines contactless credit card technology and Near Field Communication (NFC), a short-range wireless connectivity technology based on a contactless chip embedded in mobile phones. Following the launch of the Visa Wave, a pilot was launched in April 2006 by Visa International to make payments using mobile phones at over 2,600 Visa Wave merchant outlets throughout the country. Malaysia is the first country in the world to launch Visa Wave contactless chip card technology and the Mobile Visa Wave Payment pilot.

A new charge card issuer, a foreign Islamic bank, was granted approval to issue Islamic charge cards during the year, which would provide consumers an additional choice as there was only one Islamic charge card issuer in the market previously.

Promoting Electronic Money and Improving Remittance Services

Following the policy change to allow more potential electronic money issuers to enter the market which was traditionally confined to banks, four new electronic money schemes were approved during the year. These newly introduced electronic money schemes provide consumers with additional payment methods for purchases on the Internet and the convenience of using mobile phones for payments. One of the schemes, which was launched in May 2006, enables the subscriber's mobile phone to be used to receive money and make payments to anyone who has a mobile phone. Subscribers can use this mode to make payments at over 9,500 participating merchants and do not have to pay any additional fees but instead stand to enjoy a cash rebate of up to 0.65%. Payments that are facilitated through this mobile payment facility include payment of utility bills and parking fees, mobile content, wallpapers, games and prepaid airtime reload apart from person-to-person transfers. The scheme enables the merchants particularly the utility and telecommunication companies, to improve operational efficiency through reduction in cash management and less number of customers visiting their outlets or branches. It also provides consumers the convenience and flexibility to make payments anytime and anywhere using their mobile phones.

Improved convenience and accessibility is also provided to the public on remittance services following the relaxation of the remittance access policy. There are now three non-banking institutions offering remittance services and two more will commence offering their services in early 2007. Two of these non-banking institutions are locally incorporated foreign companies that offer remittance services targeting foreign workers from their respective countries. The remittance services offered by the locally incorporated remittance companies have proven to be popular amongst the foreign workers as they are managed or manned by personnel from the same country as the foreign workers thus eliminating the cultural or language barriers. In addition, the availability of the services beyond banking hours as well as during weekends coupled with the large network of agents from whom the beneficiaries could collect funds in the corresponding countries, provide a significant increase in convenience. The fees are transparent to the sender as fees are established at the point of entry and paid by the sender. In 2006, the total value of outward remittances from the country amounted to RM7.1 billion (an increase of 10.9% in 2006 compared with RM6.4 billion in 2005), of which RM6.3 billion was made through the banking institutions where the bulk of the remittances were made to Indonesia, India, the Philippines, Bangladesh and Vietnam. The remaining RM0.8 billion was made via the non-banking institutions' channels.

In line with the policy to allow banking institutions to appoint non-bank agents to make their remittance services more accessible to the public by leveraging on the non-bank agents' network, a circular was issued in May 2006 outlining the requirements for the appointment. Following this, approval was granted to a bank to appoint a telecommunication company as its remittance agent.

Enhancing the ATM Network and Leveraging on the Cash and Cheque Deposit Machines to Provide Greater Convenience to the Public

During the year, the Bank supported the initiative by MEPS to enhance the domestic shared ATM network to enable the public to make funds transfer to their own accounts or to another person's account in another bank. The service, which was launched in November 2006, enables the member banks to improve operational efficiency through reduction in visits to bank branches and to leverage on their ATM networks to provide a more cost-effective channel for domestic interbank funds transfer on a real-time basis. The initiative allows the banks to offer multi-channel banking and be more service-oriented. Two member banks with over 2,000 ATMs have started to offer the services while the majority of the remaining member banks and development financial institutions will be participating in 2007. With the participation of all member banks and development financial institutions, the public would be able to make interbank funds transfer using their ATM cards at over 5,900 ATMs. The domestic banks' shared ATM channel would be enhanced further to provide for a greater range of functionalities and services in the domestic market in the future. This includes bill payments and credit card repayment services.

On a separate initiative, and as part of the efforts to enhance the ATM functionality as an e-payment access point, three financial institutions have introduced bill payments via the ATM and Cash Deposit Machine (CDM), which are installed with barcode readers. The initiative facilitates consumers to make payments for utilities (water, telephone and electricity), satellite television and local council bills conveniently by scanning the bills' barcode at over 1,000 ATMs and CDMs nationwide. In 2006, the service recorded 405,732 transactions valued at RM162.3 million.

The other enhancement on ATM functionality during the year was the introduction of an IBG funds transfer service to third parties via the ATM by a bank. The service requires users to go through a one-time registration process and it can accommodate up to 10 beneficiaries. Another initiative undertaken by some banks in enhancing consumer convenience is the provision of hire purchase loan repayment facility at Cash and Cheque Deposit Machines.

In expanding the usage of ATM cards regionally, MEPS has established links with three of its counterparts in the region, namely, PT Artajasa Pembayaran Elektronis in Indonesia in July 2005, Network for Electronic Transfers (Singapore) Pte. Ltd. in Singapore in March 2006 and National ITMX Co. Ltd. in Thailand in October 2006, to facilitate cross-border cash withdrawals. The facility allows Malaysian ATM cardholders travelling to these countries to withdraw cash at the participating banks' ATMs and likewise, their ATM cardholders at the participating Malaysian banks' ATMs at lower transaction fees compared to the current facility using international networks. To access this facility, Malaysian ATM cardholders will need to activate the facility at bank counters, via the ATM or call centre. The regional ATM services had recorded 6,989 withdrawals valued at RM3.1 million at the Malaysian ATMs since its launch. Over the course of 2007, efforts would continue to be taken by MEPS to recruit the remaining member banks to participate in the links as well as form new links with other shared ATM network providers in the region. Bank Negara Malaysia and the Central Banks of these three countries have supported the ATM cross-border link initiative and have encouraged a common broad framework and standards to be formulated to promote transparency and facilitate future links. The cross-border service would be expanded to balance inquiry and funds transfer later this year, and MEPS is considering other new collaboration such as regional e-Debit or Electronic Fund Transfer at Point-of-Sale (EFTPOS), which would facilitate the acceptance of e-Debit in the member countries.

Four locally-incorporated foreign banks had teamed up and established a new shared ATM network known as HOUSe, an acronym representing the first letter of each founding bank's name, with the last letter 'e' representing electronic channel. The network, which is open to all locally-incorporated foreign banks, was launched in July 2006. Its establishment is in line with the recommendation in the Financial Sector Masterplan to allow incumbent foreign banks to set up an alternative shared ATM network to provide greater customer convenience and competition in the payment system. ATM cardholders of the four banks can make cash withdrawals and balance inquiries at the banks' combined 300 ATMs nationwide. Interbank funds transfer capability would be added to its offerings in the future.

Cheque Truncation and Conversion System

In enhancing efficiency in cheque processing, the Bank is in the process of implementing a cheque truncation and conversion system (CTCS) to transform the current cheque clearing system into an electronic transfer of cheque information. This is in tandem with the Bank's objective to promote greater usage of e-payments. The objectives of CTCS are to implement a paperless cheque clearing process, achieve a common day-hold throughout the nation, increase the efficiency of the clearing and settlement process and facilitate an electronic fund transfer mechanism for cheques.

The CTCS will enable the clearing of cheques either through processing of their images and data (truncation) or data only (conversion). The introduction of the system is targeted at reducing transportation and labour costs and efforts associated with the physical handling of cheques. The clearing cycle will be shortened and funds will be made available earlier whilst expediting payments. It is envisaged that the system will also improve customer service levels and mitigate cheque fraud risks. The CTCS will leverage on the current imaging infrastructure that is already in place and will provide opportunities for banking institutions to streamline their back office operations to reap cost savings from further automating their cheque processing and clearing operations.

The CTCS project is scheduled to be implemented by the first half of 2008, initially in Kuala Lumpur and the neighbouring towns and extended thereafter in phases to the rest of the country in late 2008.

Roadmap for Migration to Electronic Payments

While Malaysia has made considerable progress in building and improving the payment system infrastructure, further work is needed to facilitate more widespread adoption of electronic payments and thus, accelerate the transition from paper-based systems to electronic payments. With the necessary payment infrastructure in place, supported by the effectiveness of the financial sector as an efficient mobiliser of savings as reflected in Malaysia's high deposit-to-gross domestic product (GDP) of 192.4% as at the end of 2006, the next stage is for Malaysia to migrate at a faster pace to electronic payments. New and bold steps are required in accelerating the migration to quicken the pace for the country to realise the potential of productivity enhancements and cost savings from electronic payments. The progression of payment system to the digital ecosystem on a nationwide basis requires commitment from all stakeholders to make the migration to electronic payments as a national agenda, a reality.

New and bold steps to accelerate the migration to quicken the pace for the country to realise productivity enhancements and cost savings.

To drive this agenda forward, the Bank has initiated the formulation of an electronic payments roadmap that provides a high level strategic direction for the country to migrate to electronic payments. The roadmap aims to channel and coordinate industry efforts into making migration to electronic payments as a national agenda, and would identify the objectives, underlying building blocks and lay the key implementation milestones up to 2010. The main focus and priority of the Bank is to create a conducive environment to foster the orderly transition to electronic payments.

The Bank has shared the roadmap with the National Payments Advisory Council (NPAC) members. The NPAC, which was established in May 2001, acts as a reference and advisory body whilst providing market input on matters relating to the payment systems in the country. The NPAC is chaired by the Governor and is represented by associations of financial institutions, related Government agencies, the Securities Commission, MEPS and two foreign central banks. Following the deliberation with NPAC members, the Bank would subsequently through a consultative process with the industry and other stakeholders, finalise the roadmap.

Working in Partnership with the Government Sector

Following the encouraging feedback from the Payment Systems Forum and Exhibition in November 2005, the Bank organised a Government sector workshop in July 2006 to provide a platform for more detailed discussions on the features of the various electronic payment services offered by the payments industry and to facilitate sharing of experiences on the efficiency gained by corporate users in adopting electronic payments. The workshop was participated by 80 officers from 20 different Government departments.

The Government is a critical stakeholder in the national agenda to migrate to electronic payments as it can be the catalyst for the uptake of electronic payments. In this regard, the Government has demonstrated a strong commitment to adopt electronic payments because of the potential efficiency gains it offers. This is also in line with plans to enhance the effectiveness of the public delivery system. In this respect, the Government, together with the Bank and the industry, will work together to accelerate the migration to electronic payments. One of the ongoing initiatives is the adoption of the Financial Process Exchange (FPX) as the payment gateway for the Malaysian Government portal, myGovernment.

Understanding the Cost of Payments

The Bank has initiated a payment cost study with several banks to better understand the cost of producing different payment methods and the pricing mechanism adopted. The study is based on both fixed and variable cost and price data for 2005. The study is to facilitate the proposal to move towards a direct-pricing framework that relates to the cost of producing the different payment methods as well as transparency in pricing. Learning from the experiences of Norway and Sweden, transparent and cost-based pricing is a powerful tool to foster the migration of users to electronic payments, which are less costly to produce and provide the opportunity to reap economies of scale. As users' choice is sensitive to price, by giving the right price signals to users, they would be able to see the economic incentives and switch from the more expensive payment methods to cheaper alternatives. This would in turn encourage investment in and the offering of more cost efficient payment services, thereby resulting in cost savings and efficiency gains for the nation as a whole.

Trends in Migration to Electronic Payment

The cash in circulation (CIC)-to-GDP ratio, which is the commonly used proxy to assess the role of cash in the economy, has been on a declining trend from 6.6% in 2002 to 6.1% in 2006. However, CIC per capita has increased from RM974.3 in 2002 to RM1,246.5 in 2006 and the average value of ATM withdrawals has increased from RM401 in 2002 to RM460 in 2006. While the decline in CIC-to-GDP ratio indicates a declining role of cash in the economy, cash remains a highly popular form of payment in Malaysia.

Over the recent five years, total non-cash retail payment transactions have increased significantly from 350.3 million to 868.9 million. The payment mode shifted from cheques to more electronic payments over the same period. In 2001, cheques dominated total non-cash retail payments at 56%. Today, cheques account for only 23.2% of total non-cash retail payments. This suggests that while cheques continue to be important, they have been replaced to a certain extent by more efficient electronic alternatives. Since 2002, the number of cheques issued per current account has steadily fallen from 72 to 66. The fall in cheque usage and the growth in the share of electronic payment may be attributed to the adoption of electronic payments in the Government sector, where the volume of cheques issued has fallen by 56.4% since 2004 and the use of electronic payments increased by 43.6% in the same period. However, in terms of transaction value, cheques still account for a significant portion of non-cash retail transactions and there was only a slight drop in its share of the wallet, from 98.1% in 2001 to 93.7% in 2006.

The volume of electronic payments has increased by 34.1% annually. Among the various types of electronic payments, payment cards experienced the biggest growth in terms

Table 4.1
Cash Holdings and Non-Cash Transactions

	2002	2003	2004	2005	2006
CIC per capita (RM)	974.3	1,030.9	1,106.6	1,144.0	1,246.5
CIC-to-GDP (%)	6.6	6.6	6.4	6.1	6.1
Number of non-cash transactions per capita	17	22	26	30	33

Chart 4.1a
Share of Non-Cash Retail Payments by Volume

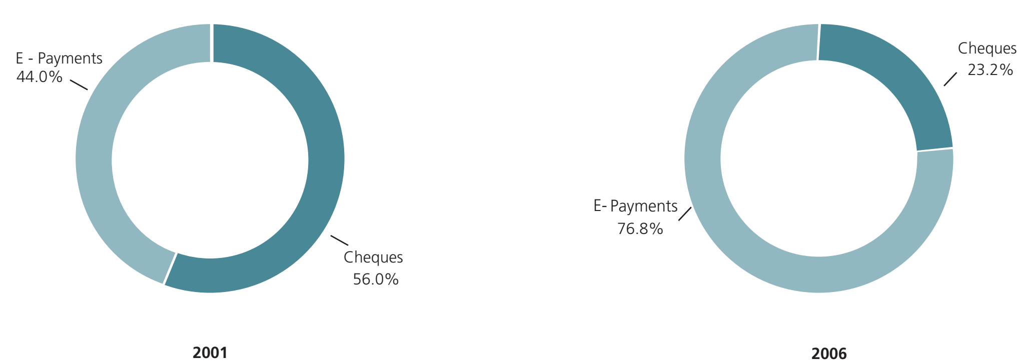

Chart 4.1b
Share of Non-Cash Retail Payments by Value

of numbers, with electronic money leading the way, followed by credit card. On average, every person made around 24 transactions per year using payment cards in 2006 as compared to 6 in 2001. Electronic money is gaining popularity with consumers as it represents half of the volume of non-cash transactions today. However, its use continues to remain mainly in the mass transit sector. The volume and value of credit card transactions have increased by 13.2% and 16.4% respectively in 2006. While its share of total non-cash transactions has declined from 40.7% in 2001 to 24.0% in 2006 in terms of volume, credit cards have experienced growth in the average transaction value from RM141 in 2001 to RM228 in 2006. Meanwhile, the use of charge cards continues to decline, representing only 0.7% of non-cash transactions in 2006. Debit cards are starting to gain some progress in the payments arena where their usage has grown at a rate of 28.6% and 33.3% in terms of volume and value respectively in 2006.

Recent years have seen an encouraging growth in the number and value for newer electronic payment channels such as the IBG, Internet banking and mobile banking.

- IBG recorded an average annual growth of 172.3% and 111.5% in terms of volume and value respectively over the last five years. Its share of the total number of non-cash retail payments has increased from 0.04% in 2001 to 2.2%, amounting to RM45.8 billion in 2006. This growth is partly attributed to the Government sector using IBG in place of cheques to effect payments.
- Internet banking has been recording an average annual increase of 74.2% and 93.7% in terms of volume and value respectively since 2001. It is popularly used for salary and bill payments, third party and

Chart 4.2a
Trend of Non-Cash Retail Payments by Volume

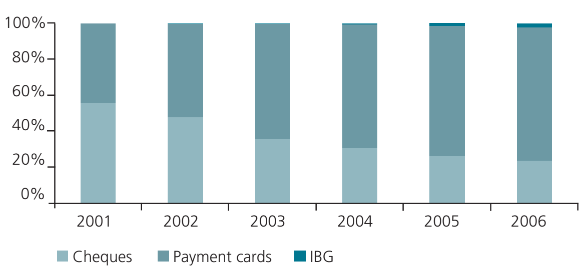

Chart 4.2b
Trend of Non-Cash Retail Payments by Value

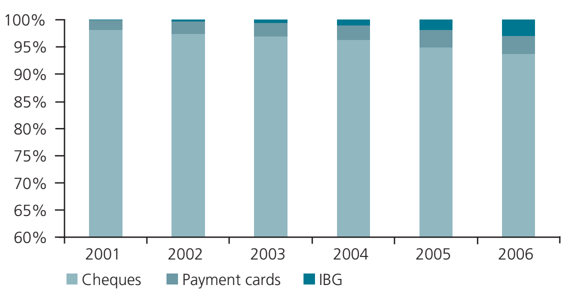

Chart 4.3
Internet Banking Growth and Penetration

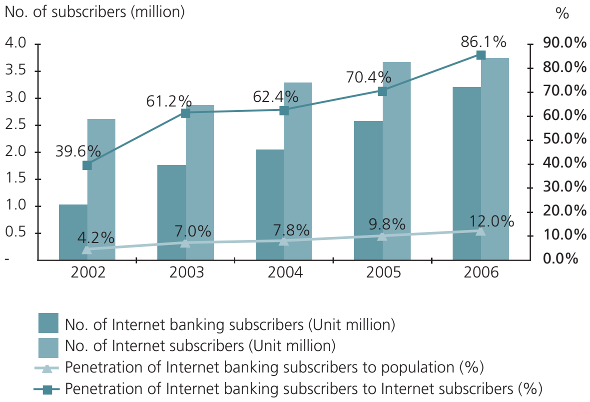

Table 4.2
Electronic Payment Growth (2001-2006)

Payment method	Transaction volume (%)	Transaction value (%)
Debit card	30.2	52.7
Credit card	7.9	18.8
Charge card	-11.4	4.3
E-purse	54.9	49.2
IBG	172.3	111.5
FPX[1]	2,542.6	76.7
Internet banking	74.2	93.7

[1] Refers to growth in 2006 as compared to 2005 in view that the FPX was introduced in October 2004

own account funds transfer and payment of credit card balances.

- Mobile banking subscriber base has increased by 93.3% from the previous year, accounting for 1.3% of mobile phone subscribers as at end-2006. This service is mainly utilised for account enquiries, prepaid reload and bill payments.

The FPX which was introduced in October 2004 has yet to gain wide acceptance. However, it is expected to increase in usage with the participation of five banks in 2007.

Thus far, the switch to electronic payments has been gradual but is expected to gain momentum in the future. This will be driven by advances in technology, greater focus by the payment industry, the increased collaboration of all stakeholders in overcoming the barriers towards the adoption of electronic payments and the increased preferences for more cost-effective payment services.

EXTERNAL RELATIONS

The Bank continued to participate actively in regional fora, particularly in the EMEAP (Executives' Meeting of East Asia-Pacific Central Banks) Working Group on Payment and Settlement System to enhance the safety and efficiency of the national payment and settlement systems in the region. With increased regional trade and economic co-operation, central banks in the region have enhanced regional collaboration in promoting the development of safe and efficient cross-border payment systems. Systemically important payment and settlement systems with a cross-border reach can be major conduits by which shocks can be transmitted across international financial systems and markets. Hence, a safe and efficient payment and settlement system infrastructure is a key requirement in maintaining and promoting financial stability and the development of financial markets across the region.

Strengthening Regional Collaboration

In 2006, the EMEAP Payment and Settlement Systems Working Group shared experiences on issues of common interest and explored opportunities for mutual guidance and assistance. The two meetings held in Kuala Lumpur and Sydney facilitated an ample discussion of the results of self-assessments against the CPSS-IOSCO "Recommendations for Securities Settlement Systems" shared by members and the oversight activities carried out by members in relation to retail payment systems. In addition, the meetings also provided a platform for the Working Group to discuss and have a better understanding of the risk management arrangements and oversight framework on global infrastructure systems, such as SWIFT (Society for Worldwide Interbank Financial Telecommunication) and the CLS Bank, that play a critical role in the international payment system infrastructure. Given the high dependency of the financial institutions in the region on these international infrastructure, and owing to the systemic importance of these systems to the stability of the payment systems in the region, oversight of these international infrastructure is crucial. Collaborating as a group would lend the EMEAP countries a greater voice in the oversight of these international infrastructure. In this regard, since 2005, the Working Group and the National Bank of Belgium (NBB) had been working towards putting in place an arrangement which would allow NBB to share information on its oversight of SWIFT with the Working Group. NBB is the lead overseer of SWIFT.

Recognising the considerable benefits that accrue from this regional collaborative initiative, the member central banks were in agreement that greater regional co-operation constitutes an important step towards achieving greater economic prosperity in Asia. The central banks agreed that the activities of the Working Group be expanded and focused on strengthening regional co-operation in the area of payment and settlement systems. In this regard, a roadmap would be drawn up to effectively support the pursuit of this objective and reap the gains from closer economic and trade ties in the region.

MOVING FORWARD

A major focus of the Bank in the next few years would be to accelerate the migration to electronic payments and act as a catalyst in enabling electronic payments to deliver its full potential benefits. In this respect, the Bank will play a more active and leading role in making further progress towards the migration to electronic payments in line with the electronic payments roadmap. To successfully move forward, concerted efforts would be made to work collaboratively with other stakeholders to remove unnecessary roadblocks that would affect its success and to improve efficiencies across the payment industry. The Bank's work on improving price transparency under its payment cost study would facilitate this process. To a certain extent, the success of electronic payments as a more cost effective alternative is dependent on how attractive the payment services are being priced to both merchants and consumers. Equally important to spur the migration to electronic payments is to generate greater awareness of the benefits and potential of electronic payments and build public confidence in electronic payment systems. Part of the Bank's mission is to develop an integrated awareness and educational programme with the industry to encourage the use of electronic payments.

Regulatory framework will promote the development of efficient and innovative payment services while maintaining the overall stability and integrity of the payment system.

In ensuring the success of the agenda, it is crucial for the Bank to continue to review the regulatory framework in order to promote the development of efficient and innovative payment services while maintaining the overall stability and integrity of the payment system. It is also recognised that with rapid technology advancement, the emergence of new payment instruments and channels may create new risks. The Bank will therefore continuously strengthen the way in which oversight is conducted and will engage with the industry to monitor new developments and issues.