PAYMENT SYSTEMS IN MALAYSIA

CONTENTS

List of abbreviations i
1. Institutional aspects 2
1.1 The legal and regulatory framework 2
1.2 Institutions providing payment services 3
1.2.1 Commercial banks 3
1.2.2 Finance companies 3
1.2.3 National Savings Bank 3
1.2.4 Credit and charge card companies 4
1.2.5 Other institutions 4
2. Payment methods 4
2.1 Cash payments 4
2.2 Non-cash payments 5
2.2.1 Cheques 5
2.2.2 Direct debit and credit transfers 7
2.2.3 Automated Teller Machines (ATM) 7
2.3 Payment Cards 7
2.3.1 Credit cards 7
2.3.2 Charge cards 8
2.3.3 Debit cards 8
2.3.4 Stored value cards/E-money 8
2.4 Other payment delivery channel 9
2.4.1 Payment Gateway for Internet transactions 9
2.4.2 Electronic banking 9
2.4.3 Internet banking 9
2.4.4 Electronic bill presentment and payment 10
2.4.5 Postal remittance services 10
3. Interbank settlement systems 10
3.1 RENTAS system 10
3.1.1 Ownership 10
3.1.2 Participation 11
3.1.3 Types of transactions 11
3.1.4 Operation of system 12
3.1.5 Settlement 12
3.1.6 Risks and risk management 13
3.1.7 Technical aspects 13
3.1.8 Pricing policies 13
3.1.9 Governance 13
3.2 Sistem Penjelasan Imej Cek Kebangsaan (SPICK) 14
3.2.1 Ownership 15

3.2.2 Participation 15
3.2.3 Types of transactions 15
3.2.4 Operation of the system 15
3.2.5 Settlement 16
3.2.6 Risks and risk management 16
3.2.7 Pricing policies 16
3.2.8 Governance 17
3.3 Interbank Giro (IBG) 17
4. Securities settlement systems 17
4.1 Scripless Securities Trading System (SSTS) 18
4.1.1 Rules 18
4.1.2 Issue, lodgement, custody, recording and transfer system for SSTS securities 18
4.1.3 Participants in SSTS securities 18
4.1.4 Operation of the system 19
4.1.5 Settlement procedures 19
4.1.6 Risk and risk management policies 19
4.2 Equities 19
4.2.1 Participants 19
4.2.2 Operation of the system 20
4.2.3 Settlement procedures 20
4.2.4 Fixed Delivery and Settlement System (FDSS) 20
4.2.5 Central Depository System (CDS) 21
4.2.6 Risk management 21
4.3 Financial derivatives market 21
5. Role of the central bank 21
5.1 Provision of settlement accounts and provision of payment systems 22
5.2 Operation of securities settlement systems 22
5.3 Oversight 22
5.4 Other roles 22
Statistical tables 25

List of abbreviations

AD	Authorized Depository
ADI	Authorized Depository Institutions
ATM	Automated Teller Machine
B2B	Business to Business
BAFIA	Banking and Financial Institutions Act 1989
BEA	Bills of Exchange Act 1949
BNM	Bank Negara Malaysia
BSN	National Savings Bank (Bank Simpanan Nasional)
CBA	Central Bank of Malaysia Act 1958
CD	Compact Disk
CDS	Central Depository System
CHS	Central Host System
COINS	Corporate Information Superhighway Systems
DVP	Delivery versus payment
EFTPOS	Electronic funds transfer at point of sales
FES	Front-End System
FDSS	Fixed Delivery and Settlement System
FSMP	Financial Sector Master Plan
GMPC	Government Multipurpose Card (officially known as MyKad)
IBA	Islamic Banking Act 1983
IFTS	Interbank Funds Transfer System
KLSE	Kuala Lumpur Stock Exchange
LOFSA	Labuan Offshore Financial Services Authority
MDCH	Malaysian Derivatives Clearing House Berhad
MEPS	Malaysian Electronic Payment System (1997) Sdn Bhd.
MICR	Magnetic Ink Character Recognition
MPC	The Multipurpose Card
MSC	The Multimedia Super Corridor
NPAC	National Payment Advisory Council
PMB	Pos Malaysia Berhad
PMPC	Payment Multipurpose Card
RENTAS	Real-Time Transfer of Funds and Securities
RTGS	Real-Time Gross Settlement System
SCANS	Securities Clearing and Settlement Systems
SCORE	System on Computerised Order Routing and Execution
SET	Secured Electronic Transaction
SIA	Securities Industry Act 1983
SPEEDS	Sistem Pemindahan Electronik untuk Dana dan Sekuriti
SPI	Skim Perbankan Islam
SPICK	Sistem Penjelasan Imej Cek Kebangsaan

SSL	Secured Socket Layer
SSTS	Scripless Securities Trading System

Overview

The Malaysian payment systems have evolved from currency notes and coins first issued in 1897 to an increasingly cashless and paperless payment systems of the digital era. The use of available banking technology has helped to significantly improve efficiency in the payment systems.

Bank Negara Malaysia (BNM), the Central Bank of Malaysia, owns and operates the image based cheque clearing system, known as Sistem Penjelasan Imej Cek Kebangsaan (SPICK), and the Real Time Gross Settlement (RTGS) system, Real Time Transfer of Funds and Securities (RENTAS). SPICK was implemented in November 1997 to provide efficient clearing of cheques, cashier orders, demand drafts and other retail paper-based instruments. RENTAS, which was implemented in July 1999, replaced the previous end-of-day net settlement system, Sistem Penjelasan Elektronik Dana dan Sekuriti (SPEEDS). It consists of two sub-systems, the Interbank Funds Transfer System (IFTS) and the Scripless Securities Trading System (SSTS).

A host of other proprietary systems owned and operated by financial institutions and other entities complements the systems in BNM. The proprietary systems are retail payment systems consisting of mainly credit and debit card systems, ATM networks, the giro system, stored value cards, and the securities and derivatives clearing and settlement systems namely the Securities Clearing Automated Network Services (SCANS) and the Malaysian Derivatives Clearing House (MDCH).

Currently, efforts are being made to reduce the use of cash and cheques in daily consumer spending due to the increasing convenience that can be accorded by non-cash or cheques handling and clearing. Efficient and convenient substitutes are card-based instruments such as credit cards, charge cards, debit cards and pre-paid cards as well as other electronic based payment method. The use of these instruments especially credit cards have increased significantly with the growing affluence and sophistication of consumers.

The Payment Multipurpose Card (PMPC), a Malaysian Multimedia Super Corridor flagship application officially launched in August 1996 is being introduced in the third quarter of 2002. Payment applications such as the ATM card, e-cash and e-pos will be combined onto a single chip-based card. The PMPC is an exciting progress that fulfils the requirements for convenience, efficiency and security – the hallmark of an efficient payment systems mode.

A sound regulatory framework exists to govern the payment systems in Malaysia. In the promotion of financial stability, the Central Bank Act 1958 (CBA) and the Banking and Financial Institutions Act 1989 (BAFIA) establishes the legal foundation for payment systems and funds transfer systems to be operated and approved by BNM. Similarly, in the equities market, a comprehensive and sound regulatory framework exist governing the Kuala Lumpur Stock Exchange (KLSE), and the Malaysian securities industry to maintain investors' confidence in a market which promotes fair and open price formations, provides for investor protection and ensures prompt and reliable information disclosure and dissemination. An order-driven market, trading on the KLSE was fully computerised in 1992 with the full implementation of the System on Computerised Order Routing and Execution (SCORE) automated trading system. The Central Depository System (CDS) implemented in 1993, is the central depository system of the KLSE.

1. Institutional aspects

1.1 The legal and regulatory framework

In Malaysia, there are several sets of legislation that constitute the legal and regulatory framework for the country's payment and settlement systems. The principal legislations are listed and described briefly below:

- The CBA, which established BNM, provides for BNM to assume the responsibility of issuing Malaysian currency and outlines the statutory requirements governing the issue. In addition, the CBA also authorizes BNM to operate clearing house facilities for the banking system. The development and the operation of the national cheque image clearing system, SPICK, by BNM was undertaken pursuant to this provision.

- The BAFIA, which essentially provides for the licensing and regulating of institutions carrying out banking, finance company, merchant banking, discount houses and money-broking businesses, also contains legal provision pertaining to payment systems. The BAFIA requires any person who intends to operate an electronic funds transfer system to obtain approval of BNM. Recognizing the growing importance of credit cards business in Malaysia, the BAFIA also stipulates that any person who intends to operate a credit token business, which is defined to include credit cards, to obtain the approval of BNM.

- The Bills of Exchange Act 1949 (BEA) deals with the usage of paper based cheques and other bills of exchange. The BEA, together with the Contract Act 1950 provides a comprehensive legal provision on the usage of bills of exchange. The BEA was amended in 1998 in line with the technological innovations and developments to allow for presentment of cheques through a document image processing system introduced by the SPICK system.

- To further promote the efficiency and security of payment systems in the country, BNM had also issued several Guidelines relating to payment systems. The Guideline on "Know Your Customer Policy" issued in December 1993 highlighted the need for the banking institutions to have a comprehensive knowledge of the transaction profile of their customers to prevent banking institutions from being used as vehicles for money laundering. In March 2000, BNM issued the Guideline on Minimum Security Standards for ATM Machines to enhance the security features of the ATM cards and systems to be complied with by the banking institutions. BNM had also in June 2000 issued a set of minimum guidelines on the Provision of Internet Banking Services by licensed banking institutions.

- BNM administers the Exchange Control Act 1953 which, amongst others, addresses cross border payments and payments between residents and non-residents.

The importance of payment systems is also reflected in BNM's Financial Sector Masterplan (FSMP) published in March 2001. The purpose of the FSMP is to set out the plan to chart future direction of the financial system over the next ten years that will ensure its continued effectiveness, competitiveness and resilience. The FSMP incorporates three recommendations that emphasize the need for an efficient and reliable payment systems to enhance the integrity of the financial system. Recognising the increasing importance of payment systems and the rapid developments in the financial systems, BNM had also

established a National Payments Advisory Council to provide input on issues relating to payment systems.

1.2 Institutions providing payment services

Traditionally, the banking institutions are the main provider of payment systems services in Malaysia. While this function is still important to the banking institutions, the advancement of information technology has facilitated the emergence of non-banking sectors, particularly the telecommunication companies, in providing payment services.

1.2.1 Commercial banks

Commercial banks form the largest group of financial institutions in the country. As at end of September 2001, there were twelve domestic commercial banking institutions and 14 foreign owned banks with a total of 1,719 bank branches. With the completion of the bank merger exercise, the number of domestic commercial banks has been consolidated into 10 banking groups. The banking institutions provide payment services via their own proprietary network, and through their clearing accounts with BNM to effect interbank funds transfer or third party payments.

Together with the Islamic banking institutions, the commercial banks offer ATM services through 3,355 machines located on and off branches. A number of them are credit and/or debit card issuers that offer electronic funds transfers at point of sale (EFTPOS) terminals. The introduction of Internet banking in Malaysia in 2000 saw a total of six commercial banks providing Internet banking services that facilitate online banking for account enquiries, transfer of funds between accounts, loan repayments, and online bill payments to various utility companies and municipalities. In addition, commercial banks also provide the Interbank Giro system to facilitate large volume interbank funds transfer.

In Malaysia, only commercial banks and Islamic banking institutions are allowed to offer demand deposit accounts that provide checking facility. Consequently, both commercial banks and Islamic banking institutions are the participants of the SPICK cheque clearing system.

1.2.2 Finance companies

Finance companies are the second largest group of deposit-taking institutions. There were 19 finance companies and a total of 599 branch offices as at end September 2001. The finance companies provide payment services through the ATM network and the Interbank Giro. As a group, finance companies have a total of 606 ATM machines as at end September 2001.

1.2.3 National Savings Bank

The National Savings Bank or Bank Simpanan Nasional (BSN) was established in 1974 to promote and mobilise private savings, especially of small savers in the lower income groups and those in the rural areas. As at end of 2000, the BSN has 427 branches nationwide with a network of 610 ATMs. Besides providing financial services such as extending loans and accepting deposits, BSN also provides payment services through its own proprietary ATM network, credit cards, and pre-arranged crediting of salaries and debiting of public utility charges.

1.2.4 Credit and charge card companies

In Malaysia, credit card companies do not issue their cards directly to the cardholders. Instead, their cards are issued by commercial banks, finance companies and the BSN through licensing arrangements. There are 19 credit card issuers in the country. Unlike the credit card companies, charge card companies like American Express and Diners Club International issue their card directly to the cardholders. In addition to these international charge cards schemes, there are several domestic companies issuing charge cards in Malaysia.

1.2.5 Other institutions

Malaysian Electronic Payment System (1997) Sdn. Bhd. (MEPS)

MEPS is a payment consortium owned by domestic banking institutions to provide the retail electronic clearing and settlement system for participating institutions. The objective for the formation of this consortium was to avoid duplication of investment or resources by individual banks in undertaking payment systems related projects. By pooling their resources, the banking institutions are able to provide a common platform for product innovation reaching out to a larger customer base. Since its inception, MEPS has implemented several payment systems related projects including the integrated ATM network for the domestic banking institutions, the PMPC, a payment gateway to support Internet transactions, Interbank Giro and the MEPS Cash e-money scheme.

Postal Services

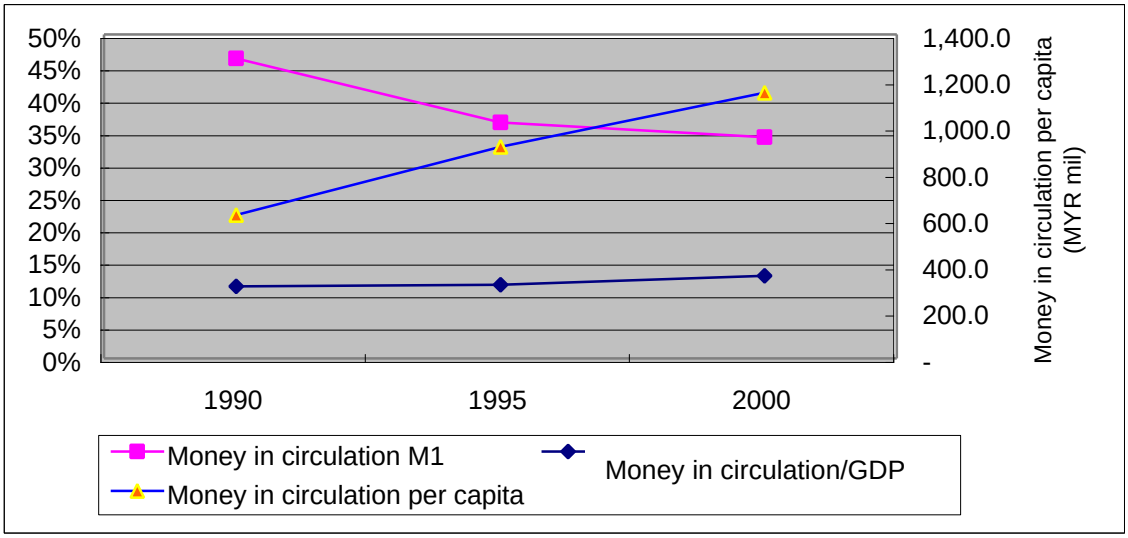
Pos Malaysia Berhad (PMB) is Malaysia's main agency providing postal services. In addition, PMB offers remittance services to fulfil customers' needs for a cheap, convenient, efficient, safe and reliable remittance service. The services offered by PMB are not under the purview of BNM.

2. Payment methods

2.1 Cash payments

In Malaysia, BNM has the sole right to issue notes and coins as provided under the CBA. Currently, BNM issues notes in five denominations, as follows; MYR1, MYR5, MYR10 MYR50 and MYR100. Coins are also issued in five denominations, as follows: 1 sen, 5 sen, 10 sen, 20 sen, and 50 sen. The value of notes and coins in circulation as at end of year 2000 totalled MYR26.7 billion (USD7.0 billion) with notes accounting for 94.3% of the total value. Notes and coins in circulation represent 34.1% of M1 monetary aggregate. Chart 2.1 shows that the ratio of money in circulation to M1 has declined over the past 10 years. However, the ratios of money in circulation over the GDP and GDP per capita have increased over the same period reflecting the increase in the money in circulation in excess of the increase in the GDP and population growth in Malaysia. In the first nine months of 2001, cash withdrawals via ATMs totalled 141.5 million transactions with an average withdrawal amount of MYR450 (USD118.4) per transaction.

Chart 1: Money in Circulation over M1, GDP and Per Capita



Similar to other developing countries, cash is the most commonly used payment instrument for retail payments in Malaysia. Its usage covers all types of payments made between consumers, businesses and the Government. Typical cash payments include utility bills, transportation fares, purchases of groceries, shopping and others. Despite the emergence of other non-paper based payments mechanism, such as electronic payment methods, it is envisaged that cash will continue to be a major retail payment instrument in Malaysia in the near future.

Nevertheless, with the increasing usage of electronic fund transfers through the Internet banking, interbank GIRO, and the national roll-out of the Government's MyKad[1], it is anticipated that there would be a gradual shift from cash to electronic money for retail payments.

2.2 Non-cash payments

2.2.1 Cheques

Apart from cash, cheques are also commonly used payment instruments for retail payments, particularly amongst the business community. All Ringgit denominated cheques are cleared through the SPICK cheque clearing houses that are located at three regions in Malaysia. For the year 2000, a total of 164.8 million cheques, valued at MYR1,076 billion (USD283.2 billion), were cleared through the three automatic clearing houses, compared to 153.9 million cheques, valued at MYR1,007 billion (USD265.0 billion) in 1999.

In view of the importance of cheques as a payment method, BNM, with the co-operation of the banking industry, has undertaken a two-pronged strategy to improve the efficiency of the use of cheques as a payment instrument:

[1] Government Multipurpose Card (GMPC) or officially known as MyKad, is a smart card based multi-application ID card for the Malaysian citizen. Currently, it serves as an ID card, a driving license and as an immigration card to facilitate speedy entry/exit from the immigration points. It also includes ATM and MEPS Cash. GMPC is one of the Multimedia Super Corridor's flagship applications.

i. Improved the cheque clearing process by reducing the day-hold for cheque clearing. The implementation of a cheque clearing and imaging system at the Central, Southern and Northern regions have largely reduced the number of day-holds to two days for the SPICK areas; and

ii. Clamping down the incidence of returned cheques due to insufficient funds.

In 1988, BNM established a Cheque Information Bureau to address the problem of bad cheques being issued by account-holders. The Bureau's objective is to instil discipline among the banking public in the use of cheques as a mode of payment.

The salient features of the Bureau's guidelines on bad cheques are:

i. Issuance of a bad cheque refers to a cheque issued by an account-holder which is dishonored by the drawee bank due to:
   - *Insufficient funds in the account; or*
   - *"Effects not cleared"; or*
   - *Account closed for reasons other than blacklisted.*

ii. Each occurrence of a bad cheque drawn from the same account will be treated as a bad cheque incident.

iii. Issuance of three bad cheques from the same account within 12 months from the date of the first incident constitutes a bad cheque offence.

iv. Bad cheque offenders will be subjected to a global closure of accounts, i.e. the account-holder's current account with all commercial banks will be closed. As such, the account-holder cannot operate any checking facility during the prohibition period.

A current account-holder who has been blacklisted will be given a clean record if no further bad cheque offenses are committed during the probation period. Any offence after the probation period will be considered as the first offence. However, further bad cheque offences committed during the probation period will be considered as committing subsequent level of bad cheque offences.

Table 1 provides the details of blacklisting, prohibition period and the probation period for bad cheque offences.

Table 1: Treatment of Bad Cheque Offenders

Blacklisting	**Prohibition Period**	**Global Closure**	**Probation Period**
First level	6 months	Yes	2 years
Second level	12 months	Yes	2 years
Third level	12 months	Yes	3 years
Fourth and subsequent level	24 months	Yes	3 years

2.2.2 Direct debit and credit transfers

Direct debit transfers are mainly used to effect recurring payments such as utility bills, insurance premiums and loan repayments. As such, individual transaction amounts are normally of small value.

The usage of the credit transfer facility is popular amongst corporations and Government agencies for purposes of making scheduled payments to various parties. Typical transaction using the credit transfer system is the payment of salaries.

2.2.3 Automated Teller Machines (ATM)

Most of the banking institutions in Malaysia own proprietary ATM networks. To further improve their customer services, domestic banking institutions have established three ATM switches, which were linked to each other in 1997 with MEPS as the merged entity. MEPS consolidates and operates the switching, clearing and settlement operations of the networks. With the merger of these ATM networks, Malaysia had moved to a more cost efficient use of resources by operating a single, integrated ATM network for the banking institutions. With the MEPS shared ATM network, the public is able to access their bank accounts and conduct transactions, such as cash withdrawals and balance enquiries, at any ATM machines nationwide within the MEPS network. Currently, foreign banks are not members of MEPS ATM network. All domestic commercial banks, finance companies and Islamic banks in Malaysia are linked to the MEPS shared ATM network, with a total card in circulation of more than 9.3 million as of the year-end 2000. As part of the recommendations for the banking sector in the FSMP, incumbent foreign banks will be allowed to operate their own ATM network in the near future.

Besides cash withdrawals, ATMs also provide an expanded range of services, such as bill payments, funds transfer between accounts and payment for shares subscription at initial public offerings. In recent years, the number of ATMs in operations has increased from 2,632 units in 1995 to 3,961 units in September 2001.

2.3 Payment cards

2.3.1 Credit cards

Credit card or “use now pay later” payment mechanism is the most popular card based payment instrument used in Malaysia and its usage has been increasing in recent years. Only institutions with prior approval from the BNM are allowed to issue credit cards in Malaysia. Currently, there are 19 institutions issuing mostly Visa and MasterCard credit cards. Recently, the American Express has issued its credit card brand through banking institutions.

In Malaysia, credit card issuers are subject to the guidelines on credit card operations issued by BNM, which among others, include the following requirements:

(i) The minimum age for the principal card holder shall be 21 years old;
(ii) Minimum income requirement of MYR1,500 (USD395) per month or MYR18,000 (USD4,736.8) per annum;
(iii) Minimum monthly repayment of 5% of the outstanding balance; and
(iv) The maximum finance charge shall be 1.5% per month or 18% per annum.

The credit card industry is expanding rapidly in Malaysia. While credit cards provide cash advance facility, most Malaysian credit card holders use credit cards for payment purposes, which represent 85% of the total credit card transactions. By the year-end 2000, there were approximately 2.8 million credit cards in circulation and the transactions valued at MYR16.4 billion (USD4.3 billion).

2.3.2 Charge cards

Charge card is another form of payment mechanism frequently used in Malaysia. Typically, charge cards are issued by non-banking institutions that do not provide a line of credit . It enables the cardholders to make purchases, but does not offer revolving credit and as such, cardholders need to settle in full the amount due at the end of a specific period. The main charge card companies in Malaysia are American Express and Diners Club. In addition, there are few domestic card operators issuing charge cards for payment of specific services offered by the operating company.

While the BNM does not regulate charge card operations, operators of charge cards are required to obtain prior acknowledgement to operate such schemes. As of year-end 2000, there were approximately 236,000 charge cards in circulation with transactions valued at MYR1.9 billion (USD0.5 billion).

2.3.3 Debit cards

The usage of debit cards is gaining popularity in Malaysia with banking institutions issuing both domestic debit cards and international brand debit cards, such as Visa Electron and MasterCard Maestro. As a step forward to improve the operational efficiency of the domestic debit card system and promote the usage of debit cards in Malaysia, MEPS has set up a domestic debit card switching network that enables universal usage of domestic debit cards at all debit card merchants. As of year-end 2000, about 630,000 debit cards transactions, valued at more than MYR90 million (USD23.7 million) were conducted.

2.3.4 Stored value cards/E-money

In Malaysia, the development of electronic money products started in the 1980s with the introduction of the single purpose telephone card. The development in information technology has promoted the emergence of several types of single purpose electronic money schemes. In 1997, MEPS and the banking institutions jointly undertook to develop a multipurpose stored value card using smart card technology, i.e. MEPS Cash.

The banking institutions and the system operators are now planning to roll out the MEPS Cash application beyond the city of Kuala Lumpur. Aside from being introduced as a stand-alone card, the MEPS Cash will also be issued as an application in the normal bank card known as the PMPC and MyKad. In addition to MEPS Cash, the transportation and telecommunication sector has also introduced their respective stored value cards for convenience of payments at toll plazas and telephone booths. Rangkaian Segar Sdn. Bhd. introduced the Touch N Go card for transportation purposes while Telekom Malaysia Berhad and other telephony companies have introduced telephone cards. Other utility providers are also intending to issue their respective stored value cards.

2.4 Other payment delivery channel

Bank branches are still the major delivery channels used by the banking institutions in Malaysia to deliver banking services to their customers. Rapid development in information technology has enabled the banking institutions to expand their delivery channels through remote channels. Some of these delivery channels include the following:

2.4.1 Payment Gateway for Internet transactions

MEPS had developed an Internet payment gateway in 1999 with the main objective of establishing a monitoring mechanism for e-commerce activities in Malaysia.

The implementation of the Payment Gateway is an integral component of the electronic commerce infrastructure not only in Malaysia but also worldwide. The global inter-operability of this system allows any consumer, who complies with the Secured Electronic Transaction (SET) and other accepted Internet secured channels, to buy from Malaysian merchants from around the world. With the introduction of the Payment Gateway, e-commerce transactions over the Internet and other open computer networks are now more secure in Malaysia.

MEPS and the banks provide SET and MOSET (which enable both SET and SSL[2] transactions) facilities to be accepted by merchants. The payment gateway also accepts purely SSL transactions from merchants and the public. Therefore, all participating Malaysian banks and locally incorporated foreign banks can accept SET and SSL transactions using the credit card for payment over the Internet.

2.4.2 Electronic banking

Banking institutions in Malaysia provide electronic banking in one form or another. This includes telephone banking, desktop banking, mobile banking and home banking. Desktop banking and telephone banking are commonly used in electronic distribution channels. However, the level of utilisation and concentration of these technologies depends on the respective business strategies of the banking institutions.

2.4.3 Internet banking

Effective June 1, 2000, domestic banking institutions were allowed to provide a full range of Internet banking facilities, subject to compliance with the guidelines on Internet banking issued by BNM. Typically, the services offered by the banking institutions through their Internet banking facilities are account balance summary, request for account statements, funds transfer between own accounts or third party accounts, payments facilities and cheque book request services.

There are three main types of Internet banking services in Malaysia, namely, informative, communicative and transactive. To foster orderly development of Internet banking services, BNM issued the Guidelines on Internet Banking in June 2000 outlining the several requirements, such as security requirements, bank's senior management involvements in Internet banking and clear terms and conditions of service.

[2] SSL – Secure Socket Layer and SET are two security protocols for payment over the Internet.

2.4.4 Electronic bill presentment and payment

An electronic bill presentment and payment system is a system that facilitates customers to view and pay their bills (e.g. utilities, rates) electronically via the Internet. Depending on the system architecture, credit card and direct debit are the most preferred payment method. Regardless of the nature of the Internet sites, most of the systems are linked to the banking system.

2.4.5 Postal remittance services

Pos Malaysia Berhad (PMB) is the nation's main agency providing postal services. In line with the economic growth in Malaysia, PMB has further upgraded the remittance services to fulfil customer's needs for a cheap, convenient, efficient, safe and reliable remittance service. The types of remittance services that are being offered by PMB include the following:

- *Domestic money order*
- *Express money order*
- *International money order*
- *Trade charge money order*
- *Postal order*

3. Interbank settlement systems

Introduction

There are two major interbank settlement systems in Malaysia, namely the RENTAS and the SPICK systems. The RENTAS system was developed to handle large- value interbank funds transfer and scripless securities transactions, while the SPICK system caters for the clearing and settlement of cheques among the participating commercial banks.

In addition to the these settlement systems operated by BNM, the banking institutions has implemented an Interbank Giro system to cater for smaller value interbank and third party funds transfer. In 2000, a total of 1.5 million interbank funds transfers valued at MYR11.4 trillion (USD3.0 trillion) were transacted through the RENTAS system. At the same time, a total of more than 52,000 transfers of scripless securities valued at MYR421.0 billion (USD110.8 billion) were also conducted via the system.

3.1 RENTAS system

The RENTAS system was implemented in July 1999 by BNM to reduce interbank settlement risk in an environment of increasing economic activity. Prior to the implementation of RENTAS, settlements for interbank funds transfer were conducted in an end-of-day net settlement system known as SPEEDS. Under the previous system, the total settlement exposure would only be made known at the end-of-day.

3.1.1 Ownership

BNM developed, owns and operates the RENTAS system. This is similar to the approach chosen by many other countries, as it is a systemically important payment system . The

system is managed by the Payment Systems Department of BNM, which is also responsible for the oversight of payment systems in the country.

3.1.2 Participation

All financial institutions licensed under the BAFIA, Islamic Banking Act 1983 (IBA) or any other institutions approved by BNM may become members of the RENTAS system. Accordingly, there are two types of memberships, banking institutions, which offer conventional banking and those that operate the Islamic banking scheme. The former has 53 members, including BNM, whilst the latter has 36 members. All members are direct members.

Table 2: Breakdown of the RENTAS's Participants as at Year- End 2000

Types of institution	Conventional banking	Islamic banking
Commercial banks	25	15
Finance companies	9	7
Merchant banks	10	3
Discount houses	7	7
Islamic banks	-	2
Others	2	2
Total	**53**	**36**

3.1.3 Types of transactions

There are essentially two types of transactions handled by the RENTAS system. They are the IFTS and the SSTS. The IFTS effects, processes and settles the transfer of high value Ringgit interbank funds with BNM and among the participating member institutions. The SSTS, on the other hand, effects, processes and settles scripless securities (such as Government securities, BNM papers, Cagamas bonds and unlisted private debt securities) on a Delivery Versus Payment (DVP) basis.

Being a high-value payment systems, the RENTAS system is used for interbank funds transfer, cash withdrawals by financial institutions from BNM, adjustment of statutory deposits, settlement of vostro accounts, money market and foreign exchange settlements and transactions on behalf of the Government and its agencies.

There are no lower and upper limits for the transfer of funds between members. However, for third party payments (originating from a non-RENTAS member or beneficiary), the value of such transactions shall not be less than MYR50,000 (USD13,158). This limit does not apply for payments to and from BNM involving the accounts of the Government.

3.1.4 Operation of system

The RENTAS IFTS is an on-line electronic interbank funds transfer communications network, which permits on-line processing of same day credit and debit transfers of funds in Ringgit, via the Central Host System (CHS) at the BNM, between participating member institutions and BNM, provided there is sufficient funds in the sending banks' accounts.
The RENTAS daily operation hours are as follows:

	Monday-Friday (hrs)	Saturday (hrs)
RENTAS Start time	8:00	8:00
Intraday Credit Cutoff Warning	16:00	11:00
Intraday Credit Cutoff	16:30	11:30
RENTAS Cutoff	18:00	13:00

BNM, under its discretion, may vary, amend or extend any of the above cut-off times. In exceptional cases, BNM may also consider the extension of the cut-off times at the request of a member.

3.1.5 Settlement

Under the RENTAS system, all transactions are processed and settled on a real-time basis through a book-entry mechanism. As each interbank credit and debit transfer is sent and received by member institutions, their account records in the CHS for interbank funds transfer will be credited or debited accordingly, depending on the availability of funds in the remitter's account. The net clearing balances from cheque clearings are also incorporated into the CHS transaction file. However, the updating or settlement is only affected on the next working day.

Several types of settlement accounts are maintained in the RENTAS system, including, the conventional or Islamic banking scheme current account, the statutory reserve account, and the vostro account. These accounts can be updated and inquired on a real-time basis and are managed by the individual banking institutions.

The RENTAS system which has straight-through processing capability process, transfer and settle interbank funds and scripless securities transactions simultaneously in real-time . The transfers are effected on a gross basis (i.e. without netting debits against credits) and provide finality (i.e. payee banks are able to receive funds with certainty for individual transfers). The settlement for SSTS transactions will be effected on the settlement date as follow:

(i) Same day value trades:

Mon-Fri: Deals transacted before 15:00 must be settled by 17:30 on the same day.

Saturday: Deals transacted before 11:00 must be settled by 12:00 on the same day.

(ii) Standard/Tom/Forward value dates:

Mon-Fri: All settlement by 11:00 on the value date.

Saturday: Saturdays are not a value date for such transaction.

3.1.6 Risks and risk management

The RENTAS system has become the most common means of addressing and controlling the risks associated with large-value payments in developed financial markets. The RENTAS system substantially reduces interbank settlement and systemic risks and eliminates counterparty settlement risk as it provides DVP for electronic book-entry securities transaction. In this system, the time lag that allows settlement failures to occur due to credit and settlement risks is eliminated. RENTAS also improves market transparency. As settlements are done bilaterally, it is possible to identify markets players and monitor unusual developments.

To ensure that settlement is effected by member participants, BNM provides a collateralized intraday credit facility to members who are short of funds. The credit facility is extended during the day without interest and is to be settled by the borrowing institution before a specific time at the end of the day. Participation in the system is subject to the approval of BNM. Since RENTAS is a real-time gross settlement system, BNM as well as RENTAS members are not directly exposed to monetary risks in the electronic payments system, as the system has incorporated several checks and balances to reduce such risks.

As RENTAS is a critical system, BNM has set-up contingency arrangements and a Disaster Recovery Centre (DRC) to enable processing to resume in the event of a breakdown at BNM's head office. Testing is conducted regularly at the DRC. All participants have also been advised to have a back-up site.

3.1.7 Technical aspects

BNM uses the Corporate Information Superhighway Systems (COINS), a wide area network provided by a local communication network provider, to connect its RENTAS CHS with the Front-End Systems (FES) of the members.

Various security measures have been put in place to ensure the security of the RENTAS system, including point-to-point secure connection, the use of personal ID and password and digital signature authentication. BNM's contingency site is always in a "hot standby" mode, with continuous transfer of data from the prime site to enable processing to continue in the event of break- down. Business continuity arrangements that include a "minimum level of service" are also enforced to ensure that the critical payments in the country are not disrupted.

3.1.8 Pricing policies

Participants of the RENTAS system are subjected to an annual fee of MYR5,000 (USD1,315.8) per member. In terms of transaction charges, BNM, as the operator of the system, charges MYR2.50 (USD0.65) per single IFTS transaction, MYR2.00 (USD0.53) for a central host enquiry, MYR2.00 for an administrative message, a MYR100.00 (USD26.4) cancellation fee for an aborted new stock issue and MYR150.00 (USD39.5) for the issuance or replacement of a smartcard. In addition, the participants also bear all connection cost, and cost for communication and security arrangement used by them.

3.1.9 Governance

The RENTAS system is governed by the RENTAS Participation Rules and RENTAS Members Rules, which were formulated by BNM and the commercial banks respectively.

The rules were formulated after a comprehensive consultation process undertaken with all stakeholders. However, BNM reserves the right to vary, amend, add or revoke any of the provisions in these Rules.

In the event of a dispute between members of the RENTAS system, BNM does not have any duty to determine the legality, validity or enforceability of any transaction under the RENTAS system. BNM will be entitled to regard all transactions executed under the RENTAS system as legal, valid and enforceable to ensure that the settlement is not disrupted. However, any dispute can be heard and resolved at an arbitration committee formed by the Association of Banks in Malaysia.

3.2 Sistem Penjelasan Imej Cek Kebangsaan (SPICK)

Introduction

The cheque clearing system in Malaysia has evolved over time, in line with the economic and technological development of the country. At present, there are two cheque-clearing methods in Malaysia, the SPICK and manual cheque clearing. The SPICK system which was implemented in phase, beginning from November 1997, handles about 90% of the total cheques cleared in Malaysia while the remaining are processed manually. The introduction of SPICK was part of BNM's continuous effort to reduce the day-holds for cheques clearing. With the introduction of the SPICK system, the day-holds for cheque clearing has been reduced to two days for local cheques (i.e. issued and deposited within the same SPICK area) and three days for inter SPICK areas.

Currently, the SPICK system has been implemented in three regions in West Malaysia. The clearing house covering the Central region is located at Kuala Lumpur, which covers the city itself, the states of Selangor, Negeri Sembilan, Malacca, Perak and Pahang; the Northern region located at Pulau Pinang for the states of Kedah, Penang and Perlis; and the Southern region at Johor Bahru is for the state of Johore. In non-SPICK areas of Kelantan, Terengganu, Sabah and Sarawak cheque clearing is conducted on a manual basis. Map of Malaysia is shown in Chart 2.

Chart 2: Map of Malaysia



The SPICK system is a combination of the automated cheque clearing system with the image of inward cheques for purposes of verification of signatures by the paying banks. Data on the inward cheques (the MICR line) are transmitted to the paying banks, followed by images of the cheques in compact disc (CD). The system provides benefit to the commercial banks as they are able to process and verify cheques based on the data and CDs received, without having to use the physical cheques.

3.2.1 Ownership

Similar to RENTAS system, BNM developed, owns and operates the SPICK system. The manual cheques clearing centers in the non-SPICK areas are set up and operated by the commercial banks themselves.

3.2.2 Participation

All the commercial banks and Islamic banks in Malaysia that provide a checking facility to their customers are participants of the SPICK system. There are currently, twelve domestic commercial banking institutions, including two Islamic banks and 14 locally incorporated foreign banks that provide checking services in Malaysia.

3.2.3 Types of transactions

Besides the normal cheques, SPICK also processes other clearing items such as bankers' acceptances, cashier's orders, demand drafts, interest warrants, pension warrants and drawing vouchers.

3.2.4 Operation of the system

The cheque clearing process is conducted at the clearing house located at BNM. Generally, there is only a slight difference in the clearing time between the three SPICK centres. All the centres adopt the same operational flows as implemented in the SPICK central region. The operational flows of the SPICK central region are as follows:

Reception/Set-up

Cheques from various banks in the SPICK area are delivered to the SPICK reception before 18:00 in a sealed envelope with an attached PIS (Pay in Slip). A copy of the PIS is returned to the bank(s). The sealed envelope is then delivered to another section of SPICK called 'Set-up'.

Set-up

The sealed envelope will be opened and the cheques, which are bundled, are processed. Each bundle will have a batch ticket. The batch ticket is used to credit the collecting bank(s) with the total amount of the bundle, whereas the cheques facilitate the debit entries for each paying bank. Each bundle will be inspected for its MICR code, cheque arrangement and batch ticket before the bundle is placed into a tray to be sent for processing. Cheques sent for processing would be in a group of four trays. The cheques are sent to another section of SPICK called 'UT Machine' for processing.

i. *UT Machine (On-Line)*

Cheques received are placed into the input tray of the processing machine. MICR data will be captured as well as the image of the cheques. Items or cheques that are not readable by the machine will be rejected . These rejected items will be sent to another section called 'Reject/Balancing' section for manual processing and data input.

ii. *Reject/Balancing*

Non-readable items/cheques are sent to the manual input section. The section is responsible for ensuring that each credit amount of batch ticket tallies with the debit amount of each cheque sent. At the end of the day, the section is responsible for ensuring that the total credit amount of batch tickets tallies with the total debit amounts of cheques sent for clearing before the next process is executed.

Computer Room

Data processing is done and the data is sent to commercial banks via the FINET (Financial Institution Network) line. The CDs and physical cheques are sent at a later stage.

iii. *UT Machine (Off-Line)*

After the on-line processing is completed, the UT Machine section will sort the cheques electronically according to the banks. The sorted cheques will be sent to the Reception/Set-up section for out delivery to commercial banks for verifications.

3.2.5 Settlement

The clearing of cheques among the participating banking institutions is conducted at the end of the day, which enables the clearinghouse to determine the net position, for settlement purposes, of the individual member banks. The actual settlement of the cheque clearing amount is effected via the RENTAS system by 9:00 on the following business day by crediting or debiting the current accounts, of the banking institutions, maintained with BNM. The unpaid items, i.e. cheques returned due to insufficient funds or any other reasons would be settled by 15:30 on the second business day.

3.2.6 Risks and risk management

Cheques are an important payment mode for consumers and play a major role in payment systems and the economy as a whole. To address any operational risk that would cause a failure in the SPICK system , BNM has set up a contingency site on a "hot standby" mode, with continuous transfer of data from the prime site, so that in the event of a breakdown, processing can resume within a few hours. Business continuity arrangements that include a 'minimum level of service" are enforced. In addition, there are legally enforceable system rules and regulations that all participants are subject to.

3.2.7 Pricing policies

In the SPICK system, BNM charges the banking institutions MYR0.06 (USD0.016) per inward clearing item, MYR1.00 (USD0.26) per unpaid item, and MYR0.05 (USD0.013) per

image for each physical cheque that is processed and stored in the CD ROM, subject to a minimum charge of MYR50 (USD13.2). A MYR2.00 (USD0.53) charge is imposed on each rejected item.

3.2.8 Governance

The BEA is the main legislation governing cheques. The BEA was amended in 1997 to incorporate a provision on cheque imaging to recognise the presentation of a cheque for payment through a document image processing system to facilitate the implementation of the SPICK system. The operation of SPICK is also governed by the SPICK User Manual.

3.3 Interbank Giro (IBG)

The IBG system was implemented in October 2000 to enable payment transactions to be carried out between different bank accounts electronically. IBG is an interbank fund transfer system designed to handle a high volume of low value interbank payments. The main objective of the IBG system is to efficiently debit one bank account and credit another. The system will generate the transaction onto an electronic media for payment and collection through the IBG system. This will reduce the time needed to credit the amount to a consumer's account, especially to an outstation account.

The IBG system facilitates third party payment between the participating banking institutions for any amount. It includes standing instructions for loan repayment, payment of insurance premiums, salaries, income tax payment, Employees Provident Fund contributions and other 'over the counter' transactions. Currently, only the domestic banking institutions are allowed to participate in the IBG system, which has a total of 12 participants. As part of BNM's plans to increase efficiency and competition in the payment systems, locally incorporated foreign banking institutions would be allowed to participate in the IBG system from mid-2002. As at end October 2001, more than 100,000 transactions with a total value of MYR880 million (USD231.6 million) had been carried out through the IBG system.

The parties involved in the IBG system are the originating financial institutions, the system operator (i.e. MEPS) and the receiving financial institutions. The originating financial institution receives payment instructions from the originators or customers and forwards those instructions to MEPS. MEPS would then distribute those entries to the appropriate receiving financial institutions, and perform the settlement function for the respective financial institutions. Upon receiving the entries from MEPS, the receiving financial institutions would make the necessary posting to the accounts of the ultimate receivers/beneficiaries.

4. Securities settlement systems

Introduction

The capital market in Malaysia comprises of the Government securities market, the equity market, private debt securities market and the financial futures and derivatives markets. The settlement systems for transactions traded in the various markets vary from one to another.

4.1 Scripless Securities Trading System (SSTS)

The SSTS, which is part of the RENTAS system, is an on-line book entry system to effect and to record the trading of Government securities, Treasury bills, Cagamas Berhad (National Mortgage Corporation) papers, unlisted private debt securities and Bank Negara Certificates and Bills. The system, apart from facilitating the electronic settlement of deals on a DVP basis, also eliminates completely the dangers of loss, theft and destruction of scrips and enhances the ability of the system to handle a larger volume of transactions.

4.1.1 Rules

The RENTAS Participation Rules formulated by the BNM governs the operations of the SSTS. Participants must also comply with "The Code of Conduct and Market Practices for Malaysian Scripless Securities Market under the Real-Time Electronic Transfer of Funds and Securities (RENTAS) System" guidelines issued by BNM.

4.1.2 Issue, lodgement, custody, recording and transfer system for SSTS securities

With the SSTS, a new system for the issue, lodgement, custody, recording and transfer of securities was introduced so that the holders could, in effect, hold and trade securities in a scripless form. The securities issued are in the form of Master Certificates and lodged by the issuer (i.e. the Government and Corporate companies) directly with BNM as the Authorized Depository (AD) for safe custody.

BNM will hold the Master Certificate on behalf of all the holders and their scripless securities account for the purpose of trading and transfers. BNM as the AD has designated Principal Dealers (dealers who underwrite the auctions of the securities which are sold on auction basis) and Approved Dealers (these dealers can only bid for the securities through the Principal Dealers) to act as Authorized Depository Institutions (ADIs).

BNM will not record the holdings and transactions of scripless securities by non-members of SSTS. Instead, the function of recording the holdings and transactions of non-SSTS members will be undertaken by the ADIs, which will maintain a separate account for each of the holder who is their customer. In accordance with the law and the code issued by BNM, securities held in custody on behalf of customers must be segregated from those securities held in the ADIs own securities account.

ADIs act only as agents in respect of the securities held in their aggregate customers' accounts maintained with the SSTS, and have no beneficial interest in the securities held in these accounts.

4.1.3 Participants in SSTS securities

Under the Securities Industry Act 1983 (SIA), dealers in securities are divided into two broad categories, namely, dealers who are licensed under the SIA and dealers who are exempted from the provisions of the SIA by being authorized by BNM to participate in the inter-bank money market. The exempt dealers include the commercial banks, merchant banks, finance companies, discount houses and Cagamas Berhad. Participants in the Malaysian Securities market, who do not participate in the interbank money market, are not eligible to become RENTAS members and to directly undertake trade in the SSTS transactions.

The non-exempt dealers are those finance companies, which have not been allowed by BNM to participate in the inter-bank money market. These non-exempt dealers cannot undertake trades for third parties, since they have not been licensed under the SIA, nor exempted from its provisions. Under the SIA, they cannot trade for their own account in the SSTS, unless they deal through a Principal Dealer or an Approved Dealer who is a RENTAS member.

4.1.4 Operation of the system

The SSTS system connects the securities dealers by linking up computer systems located in their offices to BNM's CHS. The CHS will accept, validate and acknowledge securities transactions sent from a participating member institution (the sending party) and then transmit the transaction to another member institution (the receiving party) connected to the securities system.

The seller of the securities is always the party to initiate a transaction by sending an "Unconfirmed Sales/Transfer Advice" to the buyer via the SSTS. The buyer will verify the details on the advice and has the option to confirm the transaction or to reject it if the details do not correspond with what has been agreed upon. Only upon confirmation from the buyer will the transaction be posted to the sellers and buyers respective securities and cash accounts maintained with the system.

4.1.5 Settlement procedures

A sale/purchase of securities from one securities account to another involves a book entry and intra-day settlement of funds in the cash settlement account maintained with BNM. The RENTAS system is thus, a DVP system, i.e. securities and funds settle gross throughout the day.

4.1.6 Risk and risk management policies

When an error or omission is discovered after the transaction has been entered into the system and accepted by the buyer, it can only be cancelled with the mutual agreement of the buyer and the seller. The advice to cancel a transaction should contain a reference to the earlier transaction, which is to be cancelled. In the event that a dispute cannot be resolved between the two parties concerned, the matter shall be referred to the Joint Standing Committee of the Forex Association of Malaysia for a final decision. The costs, if any, shall be borne equally by the two parties involved.

4.2 Equities

The secondary market trading of stocks and shares and listed private debt securities are carried out almost entirely in the KLSE, and to a lesser extent in the Bumiputra Stock Exchange.

4.2.1 Participants

The business of dealing in securities in Malaysia is carried out by stock broking companies, which are referred to as Member Companies of the KLSE and these totalled 64 at the end of 2000. Several laws and regulations govern the companies, primarily the:

- Securities Commission Act 1993

- Securities Industry Act 1983
- Securities Industry (Central Depositories) Act 1991
- Companies Act 1965
- Rules and Regulations of the KLSE

4.2.2 Operation of the system

Trading on the KLSE prior to 1989 was based on an open outcry system to match and execute orders. In 1989, a semi-automated trading system known as SCORE (System on Computerized Order Routing and Execution) was introduced and this was fully automated by November 1992 to allow for speedier matching of orders. Investors place orders through stock-broking firms, which in turn routed the orders to the SCORE system.

4.2.3 Settlement procedures

Previously, settlement was mainly paper-based with the physical delivery of the scrips by both investors and stockbrokers. However, several measures have been introduced over the years to enhance the settlement and delivery processes. In March 1984, the KLSE established a clearing house, the Securities Clearing Automated Network Services Sdn. Bhd. (SCANS), to ensure a more efficient settlement system. To reduce the physical delivery of shares between the broking firms and the clearing house, a "daily netting" system was introduced in January 1990 to effectively net, on the date of contract, all outstanding sales and purchases of stock transacted on the same day.

A Fixed Delivery and Settlement System (FDSS) was also implemented in February 1990 to develop a more organized system of scrip movements and enhance the management of cash flow among the stock broking firms. In 1992, the KLSE undertook the development of a CDS. The CDS is a scripless trading system in which scrips are immobilized and transactions are effected through a computerized book-entry clearing system.

Corporate and individual investors are required to open securities accounts with the 64 appointed Authorized Depository Agents (stock broking firms) or the Authorized Direct Members, made up of the banking institutions, Government institutional investors, insurance companies, unit trusts and other institutional investors which participate in the CDS. All main board and second board counters were prescribed into the CDS by the end of 1996.

Brokers settle net amounts of stock and money through SCANS, which will perform multilateral netting of contracts and notify market participants of the net amounts they owe one another. Payment of net amounts is effected through commercial banks, where all members of SCANS maintain accounts, with physical or book-entry delivery of the securities. Settlement of interbank payments is at the end-of-day on a net settlement basis through the RENTAS system.

4.2.4 Fixed Delivery and Settlement System (FDSS)

To facilitate trade settlement, the FDSS rules will apply whether or not a company's shares have been prescribed into the CDS. Delivery of securities and settlement of payment for contracts are done on a 'ready basis'.

If the selling client fails to deliver to the broker by the due date, and consequently, the broker is unable to deliver to SCANS by the due date, the KLSE will institute automatic buying-in against the broker concerned on the market day following the due date to SCANS.

4.2.5 Central Depository System (CDS)

Under the CDS, the FDSS as described in the preceding section will continue to apply except that delivery is replaced by book-entry. Trade settlement in the CDS does not refer to cash settlement. The CDS account will show the quantities of shares and not the values. Quantities of shares in the CDS accounts will be credited and debited as a result of buy or sell trades. Settlement on the KLSE is conducted on T+3 basis effective from December 2000.

4.2.6 Risk management

The KLSE, being a self-regulatory body, stipulates the entry criteria for membership of the exchange as well as listing. It also established a compensation fund to provide recourse to investors and stockbrokers in the event of insolvency of a member company. The KLSE had also introduced a computerized surveillance system in 1994 to enhance its market surveillance system.

4.3 Financial derivatives market

In recent years, rapid developments have occurred in the regulatory framework of the Malaysian capital markets. One of the major developments was the merger of the Kuala Lumpur Options and Futures Exchange and the Commodity and Monetary Exchange of Malaysia to form the Malaysian Derivatives Exchange Berhad (MDEX) on June 11, 2001.

Similar to the equity market, the clearing and settlement for derivatives transactions are not conducted by the RENTAS system operated by BNM. This function is performed by the Malaysian Derivatives Clearing House Berhad (MDCH). Its primary function is to ensure that financial obligations under the future contracts entered into on the derivatives exchange are performed in a timely manner. It acts as the counterparty to these contracts, and assumes and manages the credit risk of its clearing members. Currently, MDCH clears stock index futures and options, interest rate futures and palm oil futures.

There are four classes of MDEX membership namely, the trading, local, associates and trading permit holders members. However, the membership for MDCH is limited to trading members only. Other MDEX participants clear their trades through any of the clearing members. In principle, MDCH will clear all trades conducted by its trading members while the eventual settlement will be conducted through the appointed clearing banks.

5. Role of the central bank

BNM, as the Central Bank of Malaysia, is responsible for the regulation and supervision of the banking system, with the exception of the offshore banks operating in the Labuan International Offshore Financial Centre that come under the purview of the Labuan Offshore Financial Services Authority (LOFSA). The banking system performs an important role in the economy, as well as playing a vital role in the payment systems. BNM plays a critical role in developing and providing quality clearing, settlement and payment services as well as

undertaking system design and development of systemically important payment systems. Initiatives are taken to promote and support a sound and progressive financial sector.

The roles of BNM with respect to payment systems are provided in the CBA and the BAFIA. The CBA lays out the function of BNM, including its responsibility in payment related matters, such as to act as a banker to the Government, to issue currency and to provide a clearing house for the banking institutions. The BAFIA provides specific powers to BNM with respect to regulating certain types of payment systems and payment mechanisms in Malaysia.

5.1 Provision of settlement accounts and provision of payment systems

As stated in Section 3.1 and 3.2, BNM develops, owns and operates both the RENTAS and SPICK systems. Participants in these systems must maintain a settlement account at BNM to facilitate the clearing and settlement process. Transactions from other payment methods such as credit, debit and charge card systems, ATM networks, the Interbank Giro system, stored value cards and the clearing of securities and derivatives are settled through multilateral netting between participants, where the final settlement is conducted through an appointed settlement bank.

5.2 Operation of securities settlement systems

Through RENTAS, BNM provides the system for the transfer and settlement of unlisted securities. Details of the system are given in Section 4.1. However, BNM is neither involved in nor regulates the clearing and settlement for the equity, derivative and commodity markets, which are undertaken by SCANS and MDCH respectively. Capital market activities in Malaysia are regulated by the Securities Commission. An explanation of the clearing and settlement of securities is provided in Sections 4.2 and 4.3 respectively.

5.3 Oversight

BNM performs its oversight functions as part of its overall responsibility for regulating and supervising the banking system. This function is conducted through various means including on and off-site supervision and issuance of guidelines and regulations. Payment systems oversight is essential as a reliable and efficient payment system contributes to the stability of the financial system and the economy. It is also needed to safeguard the transmission channel for the implementation of monetary policy objectives. The oversight of payment systems covers not only the licensed banking institutions under the BAFIA and IBA, but also the payment systems facilities provided by non-banking institutions. Specifically, BAFIA states that the operation of credit token business (e.g. credit card) and electronic fund transfer systems would require the prior approval of BNM. This is to ensure that such systems are operated in a manner that is not detrimental to the participants and provide a minimum level of customer protection.

5.4 Other roles

To meet its objectives of price stability in an environment of growth and development, BNM has at its disposal a broad array of instruments that are directed at affecting the availability and cost of money and credit through the impact on banking institutions' reserves and credit.

These instruments consist primarily of open market operations, variations in the statutory reserve requirement and variations of minimum liquidity requirements. The payment system

is the conduit for the implementation of the above measures and policies. The Central Bank also has an important role in maintaining financial stability and that banking institutions perform their intermediation function.

In addition, BNM also plays an important role in promoting innovation, efficiency and stability in the country's payment systems. The availability of a secure, efficient and reliable payment system is important in ensuring the efficient implementation and transmission of monetary policy objectives and in maintaining public confidence in the domestic financial system.

In promoting innovation in the payment systems, BNM was involved in the coordination of the implementation of the national multipurpose smart card project. The Malaysian Government is the first government in the world to implement a national strategy for a multi-application smart card. The Multipurpose Card (MPC) Flagship Application is one of the MSC Flagship Applications[3] that seeks to develop a single common platform for a MPC enabling the Government and private application providers to implement smart card solutions.

Two types of cards are being issued under this project. MyKad, issued by the Government, contains critical Government applications such as the national identity, immigration particulars, driving license, and medical information, as well as payment applications, namely the MEPS Cash and ATM applications. The second smart card, the PMPC, incorporates the ATM, debit and MEPS Cash applications and is to be individually issued and branded by banking institutions.

To promote the development of e-commerce among the business enterprises, BNM has formulated a model for an Internet based financial exchange for the business-to-business (B2B) community. The exchange, once implemented, will allow the participants to trade and execute payments via the Internet and facilitate end-to-end solutions for their businesses.

To assist BNM in performing its function relating to payment systems more effectively, BNM has established the National Payments Advisory Council (NPAC). It is supported by the Payment Systems Policy Working Group, which is an internal consultative body that discusses policy issues concerning payment systems. The members of the Payment Systems Policy Working Group are the Heads of various Departments in BNM, which are in one way or another related to payment systems. The NPAC acts as a formal external consultative body to BNM in matters relating to payment systems. Its members are senior representatives of relevant Government agencies, the Securities Commission, Association of Banks in Malaysia, Association of Finance Companies of Malaysia, Association of Merchant Banks in Malaysia, Association of General Insurance of Malaysia, MEPS, and a representative from the Bank of Japan, as well as a representative from the Hong Kong Monetary Authority.

[3] The other MSC Flagship applications are the Electronic Government, Telehealth, Smart Schools, R & D Clusters, Borderless Marketing Centres and World-Wide Manufacturing Webs. The Multimedia Super Corridor (MSC) is an innovation by the Malaysian Government incorporating both advanced physical infrastructure and policies to lead Malaysia's foray into the Information Age.

STATISTICAL TABLES

Malaysia

Table 1

Basic statistical data

	1996	1997	1998	1999	2000 [1]
Population (millions) [2]	21.17	21.67	22.18	22.71	23.26
GDP at current prices (MYR millions)	253,733	281,795	284,243	330,340	340,705
GDP per capita	11,986	13,006	12,815	14,545	14,645
Exchange rate vis-à-vis USD: [3]					
year-end	*2.53*	*3.89*	*3.80*	*3.80*	*3.80*
average	*2.52*	*2.81*	*3.92*	*3.80*	*3.80*

[1] Preliminary.

[2] Mid-year population.

[3] The ringgit was pegged at MYR3.80=USD1 on the September 2, 1998.

Table 2

Settlement media used by non-banks

(end of year)

MYR billions

	1996	1997	1998	1999	2000
Banknotes and coins on issue	19.03	21.43	18.25	24.78	22.26
Transferable deposits [1]	41.55	41.93	35.89	48.67	55.96
Other	0	0	0	0	0
Narrow money supply (M1)	60.59	63.37	54.13	73.45	78.22
Memorandum items:					
Broad money supply [2]	329.71	390.81	401.46	434.59	456.50
Transferable deposits in foreign currencies	1.82	4.13	5.34	6.91	9.79
Outstanding value on e-money schemes of which:					
on card-based products [3]	*0*	*0*	*0*	*neg.*	*neg.*
on network-based products	*0*	*0*	*0*	*0*	*0*

[1] Demand deposits maintained by non-banking institutions.

[2] Broad money (M3) = Transaction balances + broad quasi-money.
Transaction balances = currency in circulation + demand deposits.
Quasi-money = Demand deposit + fixed deposits + Negotiable instruments of deposits + Repos + Foreign deposits.

[3] MEPS Cash introduced on September 1, 1999.

Table 3

Settlement media used by banks

(end of year)

MYR billions

	1996	1997	1998	1999	2000
Transferable balances held at central bank of which:	45.64	61.74	18.20	21.67	19.32
required reserves [1]	*43.18*	*57.18*	*15.15*	*14.48*	*14.05*
free reserves	*2.46*	*4.55*	*3.04*	*7.19*	*5.27*
Transferable deposits held at other banks	3.94	27.80	2.51	2.13	1.62
Memorandum item:					
Institutions' borrowing from central bank [2]	0	0	0	0	0

[1] The statutory required reserve was reduced to 10% in February 1998, 8% in July 1998 and 4 % in September 1998. Beginning January 1999, some banking institutions migrated to the New Liquidity Framework. Since January 1, 2001, all banking institutions have moved to the New Liquidity Framework.

[2] Intra-day credit facility used for RENTAS settlement. The credit facility has to be settled before end of the business day.

Table 4

Institutional framework

(end of 2000)

Categories	Number of institutions	Number of branches	Number of accounts	Value of accounts (MYR millions)
Central bank	1	5	186	58,153
Banking institutions				
commercial banks [1]	*33*	*1,880*	*nav.*	*362,994*
finance companies	*19*	*933*	*nav.*	*82,649*
merchant banks	*12*	*22*	*nav.*	*24,764*
Postal institution	0	0	nap.	nap.
National Savings Bank	1	436	8,905,000	10,386
Total	**66**	**3,276**	**nap.**	**538,946**
of which:				
virtual institutions	*0*	*0*	*0*	*0*
Branches of foreign banks [2]	0	0	nap.	nap.

[1] Comprising of domestic banks, locally incorporated foreign banks and Islamic banking institutions.

[2] Branches of foreign banks are required to be locally incorporated.

Table 5

Payment instructions handled by selected interbank settlement systems: volume of transactions

thousands

	1996	1997	1998	1999	2000
Retail system [1]	96,800	104,920	105,480	153,914	164,779
Large-value system [2]	2,029.31	2,390.37	1,947.32	1,400.09	1,440.59
Other systems					
ATM network [3]	nav.	nav.	nav.	nav.	146,066.3
Interbank Giro [4]	nap.	nap.	nap.	nap.	9.94

[1] Retail system - SPICK.

[2] Large-value systems - RENTAS.

[3] Withdrawals only.

[4] Interbank Giro was implemented in October 2000.

Table 6

Payment instructions handled by selected interbank settlement systems: value of transactions

MYR billions

	1996	1997	1998	1999	2000
Retail system [1]	859.90	907.70	953.90	1,007.35	1,076.04
Large-value system [2]	15,138.89	23,069.25	17,663.81	12,100.65	11,383.00
Other systems					
ATM network [3]	nav.	nav.	nav.	nav.	61.96
Interbank Giro [4]	nap.	nap.	nap.	nap.	0.06

[1] Retail system - SPICK.

[2] Large-value systems - RENTAS.

[3] Withdrawals only.

[4] Interbank Giro was implemented in October 2000.

Table 7

Indicators of use of various cashless payment instruments: volume of transactions

millions

Instruments	1996	1997	1998	1999	2000
Cheques	96.10	104.80	133.20	154.10	164.80
Payments by debit card	nav.	nav.	nav.	nav.	0.63
Payments by credit card [1]	nav.	nav.	nav.	nav.	67.23
Credit transfers	nav.	nav.	nav.	nav.	nav.
Direct debits	nav.	nav.	nav.	nav.	nav.
Other types of instruments [2]	nap.	nap.	nap.	nap.	neg.
Total	**nav.**	**nav.**	**nav.**	**nav.**	**nav.**

[1] Also includes charge cards.

[2] Interbank Giro services implemented in October 2001.

Table 8

Indicators of use of various cashless payment instruments: value of transactions

MYR billions

Instruments	1996	1997	1998	1999	2000
Cheques	1,109.9	1,304.7	954.1	1,041.9	1,076.0
Payments by debit card	nav.	nav.	nav.	nav.	0.09
Payments by credit card [1]	11.52	14.40	12.68	13.61	18.32
Credit transfers	nav.	nav.	nav.	nav.	nav.
Direct debits	nav.	nav.	nav.	nav.	nav.
Other types of instruments [2]	nav.	nav.	nav.	nav.	0.08
Total	**nav.**	**nav.**	**nav.**	**nav.**	**nav.**

[1] Also includes charge cards.

[2] Interbank Giro services implemented in October 2000.

Table 9

Transfer instructions handled by securities settlement systems: volume of transactions

millions

	1996	1997	1998	1999	2000
Government bond settlement system	nav.	nav.	nav.	nav.	nav.
Corporate bond settlement system	nav.	nav.	nav.	nav.	nav.
Total [1]	**0.04**	**0.04**	**0.04**	**0.06**	**0.05**
Equity settlement system [2]	nav.	nav.	nav.	nav.	2,353.76
Other settlement systems [3]	0.62	0.94	1.15	0.85	0.72

[1] Figures covers both public and private sectors.

[2] Securities Clearing Automated Network Services (SCANS).

[3] Malaysian Derivatives Clearing House which handles the clearing for derivatives transactions.

Table 10

Transfer instructions handled by securities settlement systems: value of transactions

MYR billions

	1996	1997	1998	1999	2000
Government bond settlement system	nav.	nav.	nav.	nav.	nav.
Corporate bond settlement system	nav.	nav.	nav.	nav.	nav.
Total [1]	**257.82**	**352.13**	**414.67**	**236.60**	**421.00**
Equity settlement system [2]	463.26	408.56	117.24	196.63	244.06
Other settlement systems	nav.	nav.	nav.	nav.	nav.

[1] Figures covers both public and private sectors.

[2] Securities Clearing Automated Network Services (SCANS). Based on transaction value.

Table 11

Number of participants in securities settlement systems

	1996	1997	1998	1999	2000
Number of participants in securities settlement systems of which:					
SSTS [1]	97	77	70	65	66
Financial institutions	*88*	*77*	*70*	*65*	*65*
Others	*9*	*0*	*0*	*0*	*1*
SCANS [2]	60	60	64	75	74
Trading Clearing Members	*60*	*60*	*64*	*63*	*61*
Non-Trading Clearing Members	*nap.*	*nap.*	*nap.*	*12*	*13*
MDCH [3]	nav.	nav.	nav.	nav.	29

[1] Scripless Securities Trading System.
[2] Securities Clearing Automated Network Services Sdn Bhd.
[3] Malaysian Derivatives Clearing House Bhd.