# PAYMENT, CLEARING AND SETTLEMENT SYSTEMS IN MALAYSIA

*Malaysia*

**Contents**

## List of abbreviations

| | |
|---|---|
| ABM | Association of Banks in Malaysia |
| AKPK | Credit Counselling and Debt Management Agency |
| BNM | Bank Negara Malaysia |
| Bursa Clearing (D) | Bursa Malaysia Derivatives Clearing Sdn. Bhd. |
| Bursa Clearing (S) | Bursa Malaysia Securities Clearing Sdn. Bhd. |
| Bursa Depository | Bursa Malaysia Depository Sdn. Bhd. |
| Bursa Malaysia | Bursa Malaysia Berhad |
| Bursa Securities | Bursa Malaysia Securities Berhad |
| CDS | Central Depository System |
| CHS | Central Host System |
| CSD | Centralized Securities Depository |
| DCS | Derivatives Clearing & Settlement |
| DvP | Delivery versus Payment |
| eSPICK | National Electronic Cheque Information Clearing System |
| FAST | Fully Automated System for Issuing/Tendering |
| FMB | Financial Mediation Bureau |
| FPX | Financial Process Exchange |
| HKMA | Hong Kong Monetary Authority |
| IBG | Interbank GIRO |
| ICSD | International Centralized Securities Depository |
| IFTS | Interbank Fund Transfer System |
| MyClear | Malaysian Electronic Clearing Corporation Sdn. Bhd. |
| PKI | Public Key Infrastructure |
| PvP | Payment versus Payment |
| RENTAS | Real-time Electronic Transfer of Funds and Securities |
| SAN | Shared ATM Network |
| SC | Securities Commission |
| SSDS | Scripless Securities Depository System |

## Introduction

The payment and settlement systems in Malaysia have evolved significantly over the years, consistent with the needs of the economy. Driven by advances in information and communication technologies, the range of payment products and services in the market expanded in response to diverse market demands. Access to payment systems has broadened, offering greater efficiency and convenience to consumers and businesses.

While cash and cheques are still widely used in Malaysia, electronic payments (e-payments), particularly via the Internet banking channel have continued to increase in popularity. Bank Negara Malaysia (BNM) strongly advocates the migration to e-payments to improve the overall efficiency of the payment system and provide meaningful cost savings and efficiency to the entire economy. This aspiration is incorporated in the new Financial Sector Blueprint, which sets out the strategies and action plans to transform the Malaysian payment system into one that is highly efficient through more intensive use of e-payments.

# 1. Institutional aspects

## 1.1. The general institution framework

### 1.1.1. The legal and regulatory framework

Payment and settlement systems in Malaysia are governed by several sets of legislations. The principal legislations are briefly described below:

- The Payment Systems Act 2003 (PSA), which came into force on 1 November 2003, outlines the oversight regime for operators of payment systems and issuers of designated payment instruments[1]. The Act empowers BNM to designate:

  - a payment system as a designated payment system if such a system poses systemic risk or if the designation is necessary to protect the interest of the public; and
  - a payment instrument as a designated payment instrument if the instrument is widely used to make payments or it is necessary to protect the interest of the public or to maintain the integrity, efficiency and reliability of a payment instrument.

  Both operators of designated payment systems and issuers of designated payment instruments are required to implement adequate corporate governance and operational arrangements that ensure the safety and reliability of the systems and instruments.

  The Act also contains provisions on the finality and irrevocability of transactions sent through a designated payment system and netting arrangements in designated payment systems that are enforceable and binding on the participants. It is important that transactions sent through a designated payment system are protected from the potential application of the "zero-hour rule". This rule might result in payments made by a failed institution (being declared invalid) between midnight and the time of a winding-up order by a court. The "zero-hour rule", if not mitigated would create serious liquidity problems and pose systemic risk to the payment system. The Act provides that netting arrangements adopted by participants of a designated payment system and finality of payment and settlement instructions in a designated payment system prevail over insolvency laws.

- The Bills of Exchange Act 1949 (BEA) together with the Contracts Act 1950, lay down the legal framework for the use of cheques and other bills of exchange. The BEA was amended in 2007 to pave the way for the implementation of a cheque truncation system. A cheque is duly presented for payment if the image and the electronic payment information of the cheque are presented through an electronic means. The Act also empowers the Minister to make regulations in respect of any matters relating to cheque truncation.

In addition to the legislations mentioned above, guidelines were issued to promote the safety and soundness of the payment and settlement systems. These guidelines are as follows:

[1] Three payment instruments have been designated as designated payment instruments, namely electronic money, credit card and charge card

- Guidelines on Minimum Security Standards for Cheques issued in 2004 which specify the requirements relating to the security features of cheques, governance arrangements, fraud detection facilities and security management in cheque printing.
- Guidelines on E-money issued in 2008 outline the broad principles and minimum requirements to be observed by all e-money issuers. The Guidelines, amongst others, impose a purse limit of up to RM1,500 for large e-money schemes and up to RM200 for small e-money schemes. Issuers of large schemes are required to maintain minimum shareholders' funds of RM5 million. Issuers of both large and small schemes are required to establish adequate governance and operational arrangements to ensure the integrity of e-money schemes and open a trust account to deposit the funds collected in exchange for the e-money issued. The e-money regulatory framework is currently being reviewed.
- Guidelines on the Provision of Electronic Banking Services by Financial Institutions issued in 2010 outline the broad principles and minimum requirements to be observed and adopted by financial institutions in offering any form of electronic banking services. Amongst others, the guidelines require financial institutions to adopt multi-factor authentication in ensuring the safety of online access to account information and transaction functionality.
- Credit Card Guidelines issued in April 2011 outline measures that credit card issuers and acquirers should adopt to mitigate risks in credit card operations and combat credit card fraud. One of the measures is to consider implementing personal identification number (PIN) technology to complement the Europay-MasterCard-Visa (EMV) Chip infrastructure.

## 1.2. The role of BNM

### 1.2.1. General responsibilities

The principal objects are to promote monetary and financial stability that is conducive to sustainable growth of the Malaysian economy. The primary functions of BNM as set out in the Central Bank of Malaysia Act 2009 (CBA) are as follows:

- formulate and conduct monetary policy in Malaysia;
- issue currency in Malaysia;
- regulate and supervise financial institutions which are subject to the laws enforced by BNM;
- provide oversight over money and foreign exchange markets;
- exercise oversight over payment systems;
- promote a sound, progressive and inclusive financial system;
- hold and manage the foreign reserves of Malaysia;
- promote an exchange rate regime consistent with the fundamentals of the economy; and
- act as financial adviser, banker and financial agent to the Government.

### 1.2.2. Role in payment system

1.2.2.1. Payment system oversight

BNM's mandate to exercise oversight over the payment systems in Malaysia is explicitly provided in the CBA while specific powers to oversee the payment systems are derived from the PSA. In performing its oversight role, BNM pursues the objectives of ensuring the safety and efficiency of the payment systems and safeguarding public interest. Banking institutions, non-bank players operating payment systems and issuing payment instruments are governed by the PSA.

BNM is empowered to prohibit the operation of any payment system if it is against public interest, or the operation of such system is detrimental to the reliable, safe, efficient and smooth operation of the country's payment systems. Its oversight activities are directed towards ensuring the reliability of major payment and settlement systems and mitigating of possible risks within the systems. These activities include collection of payment system information, both on-site and off-site surveillance and validation of self-assessments by operators of systemically important payment systems against internationally accepted Core Principles for Systematically Important Payment Systems (CPSIPS) set by the Bank for International Settlements (BIS).

1.2.2.2. Operator role and provision of settlement services

BNM owns the Real-time Electronic Transfer of Funds and Securities (RENTAS) System, Malaysia's large value payment system, which provides settlement of payment obligations among banks and other approved institutions on a real-time gross settlement basis. Settlement accounts are maintained at BNM.

In line with international best practices and the BIS recommendations in Core Principle X, which outlines that payment systems' governance arrangements should be effective, accountable and transparent, BNM reviewed its organisational structure for the operations and oversight of the RENTAS system. Following the review, Malaysian Electronic Clearing Corporation Sdn. Bhd. (MyClear), a wholly-owned subsidiary of BNM, was established to operate RENTAS and the National Electronic Cheque Information Clearing System (eSPICK) and to implement initiatives that would accelerate the migration to e-payments. The operator's role previously undertaken by BNM was transferred to MyClear in January 2009.

1.2.2.3. Developmental/Facilitator role

BNM also plays an important role in the development of the payment system. BNM actively participates in initiatives to improve the payment infrastructure in particular, initiatives to accelerate the country's migration to e-payments. BNM also works closely with the payment industry and various stakeholder groups to increase the adoption of e-payments in various economic sectors.

### 1.2.3. Cooperative oversight with other institutions

BNM and the Securities Commission (SC) entered into a Memorandum of Understanding (MoU), which established a framework of cooperation between the two agencies for the performance of their regulatory responsibilities over any system that facilitates the transfer, clearing or settlement of securities. The MoU spells out mechanisms to facilitate cooperation and information exchange to attain the common objectives of both agencies.

BNM also has a cooperative oversight arrangement with the Hong Kong Monetary Authority (HKMA) to oversee the Payment versus Payment (PvP) link between RENTAS and the USD CHATS. The link facilitates simultaneous settlement of Ringgit in Malaysia and US dollars in Hong Kong during Malaysian business hours. The arrangement was based on principles of confidentiality and reciprocity of information exchange between BNM and the HKMA whereby both agencies established points of contact and procedures for the oversight activities. The cooperative arrangement also includes business continuity plans for the PvP and Delivery versus Payment (DvP) links.

## 1.3. The role of private and public sector bodies

### 1.3.1. Payment services providers

1.3.1.1. Banking Institutions

Commercial banks form the largest group of financial institutions in the country. As at end-2010, the number of banking institutions and channels are as shown in the following table:

Table 1

**Number of banking institutions and banking channels as at end-2010**

| **Banking institutions** | | **No. of institution** |
|---|---|---|
| Commercial Banks | Domestic | 9 |
| | Foreign | 14 |
| Islamic Banks[2] | Domestic | 11 |
| | Foreign | 6 |
| **Banking channels** | | **No. of units** |
| Branches | | 4,108 |
| Automated Teller Machine (ATM) | | 9,436 |
| Cash and cheque deposit machines (CDM) | | 7,026 |

1.3.1.2. Development Financial Institutions (DFIs)

DFIs are specialised financial institutions established with a social mandate and funded by the Government for the purpose of developing and promoting targeted strategic sectors of the economy. Amongst its objectives, these institutions aim to promote industrialization, particularly in the high-technology industries, export-oriented industries, infrastructure development and highly capital-intensive investments and the agriculture sectors. The DFIs serve as niche providers of capital financing for projects which require medium to long-term financing in the industrial, manufacturing, services and agriculture sectors. Currently, there are six DFIs, of which, three offer payment services to

[2] Islamic bank refers to a company which is licensed under the Islamic Banking Act 1983 to carry on Islamic banking business. Islamic banking business means banking business, the operations of which do not involve any element which is not approved by the Religion of Islam. The main principles of Islamic banking are the prohibition of interest (usury) in all transactions, the undertaking of business and trade activities must be on the basis of fair and legitimate profit and the prohibition of monopoly and hoarding. By doing so, Islamic banks will safeguard the Islamic communities and societies from activities that are forbidden in Islam.

consumers, including Internet banking, online bill payments, credit and debit cards, phone banking and ATM services. DFIs have 1,444 ATMs and 288 CDMs nationwide.

1.3.1.3. Other non-banking Institutions

These institutions are issuers of e-money, charge and credit cards and operators of payment systems such as international money transfer, card network, payment gateway and third party acquirer. As at end-2010, there were 60 non-bank institutions, which are mainly e-money issuers and payment system operators.

Pos Malaysia Berhad (PMB), the exclusive postal services provider in Malaysia also offer payment and fund transfer services such as remittances and payment for utilities, assessment and road tax. The services offered by PMB, other than remittance, are not under the purview of BNM.

### 1.3.2. Malaysian Electronic Clearing Corporation Sdn. Bhd. (MyClear)

MyClear, a wholly-owned subsidiary of BNM, was established in October 2008 to operate the RENTAS and eSPICK systems, and to spearhead the migration to e-payments agenda of BNM. The establishment of MyClear allows BNM to focus on oversight responsibilities of RENTAS and eSPICK, thereby facilitating effective surveillance, independent assessment, evaluation and monitoring of the different types of risks on the major payment systems.

### 1.3.3. Malaysian Electronic Payment System Sdn. Bhd. (MEPS)

MEPS, a payment consortium owned by the domestic financial institutions was incorporated in 1997 to promote the sharing of infrastructure and resources amongst its shareholders. MEPS owns and operates the Shared ATM Network (SAN) switch which enables participating banks' customers to access their accounts from any of the participating banks' ATMs. The SAN has 20 member financial institutions which include institutions other than its shareholders.

### 1.3.4. Securities Commission (SC)

SC is a statutory body entrusted with the responsibility of regulating and developing the capital markets. Established in 1993 under the Securities Commission Act 1993, it supervises and monitors the activities of market institutions and regulates all institutions licensed under the Capital Markets and Services Act 2007 (CMSA).

### 1.3.5. Association of Banks in Malaysia (ABM)

ABM was formed in November 1973 with the objective of promoting orderly and ethical banking practices through cooperation with BNM and other relevant bodies. All 23 commercial banks are members of ABM.

### 1.3.6. Credit Counselling and Debt Management Agency (AKPK)

AKPK, which was established in April 2006, provides free credit counselling, debt management services and financial education to educate and assist individuals to take control of their financial responsibilities. The Agency intends to create a financially sound household sector by making available practical financial advice to individuals and potential borrowers. AKPK also facilitates debt restructuring and helping individuals to manage their financial obligations and consequently helps minimising incidents of non-performing loans within the banking industry. Services offered include identifying financial options available for individuals, tailoring financial solution, providing education on the proper use of credit, money management skills and tips on credit responsibility and debt management. Currently, AKPK operates in 10 states in the country.

### 1.3.7. Financial Mediation Bureau (FMB)

FMB was established in 2004, as a non-profit organization with the objective to provide an alternate dispute resolution channel which is independent, convenient and efficient. FMB services are free. As at end-2010, FMB has a total of 106 members comprising institutions supervised by BNM, which include non-bank credit and charge card issuers.

# 2. Payment media

## 2.1. Cash payments

Cash remains a significant payment method in the economy, particularly for small-value payments. This is substantiated by the increasing trend of cash in circulation (CIC) per capita from RM1,249.30 in 2006 to RM1,687.90 in 2010 and the increase in CIC-to-GDP from 5.8% to 6.2% over the same period. Nonetheless, the average value of cash withdrawals at the ATM, which is one of the proxies used to indicate the role of cash, remained relatively constant in the range of RM460 to RM470 in the past five years.

## 2.2. Non-cash payments

### 2.2.1. Payment instrument

2.2.1.1. Cheques

While cheques remain a popular payment mode in Malaysia, its importance has steadily declined. Its share of non-cash retail payments in terms of value has reduced from 77% as at end- 2006 to 59% as at end-2010. More than 80% of the cheques cleared are valued RM5,000 and below. The percentage of cheques issued by individuals over total number of cheques cleared has been declining, indicating that some cheque payments made by individuals have been replaced with payment cards and Internet banking. All Ringgit denominated cheques are cleared through the national cheque clearing systems, eSPICK. eSPICK cleared 206.7 million cheques amounting to RM1.8 trillion in 2010 compared to 201.2 million cheques amounting to RM1.4 trillion in 2006

2.2.1.2. Credit cards

Credit card is the most popular form of payment card, accounting for 29.0% of total card payments or 294.9 million transactions amounting to RM79.8 billion in 2010. Its popularity is attributed to its long and recognisable presence in the country. There are more than 8.5 million credit cards in circulation and more than 0.2 million merchants accepting credit card payment at nearly 180,600 POS terminals nationwide. There are 24 credit card issuers, of which four are non-banking institutions. Qualified non-banking institutions have been allowed to issue credit cards since 2005 when the credit card policy was liberalised. Most global credit card brands are available in Malaysia including American Express, Diners, JCB, MasterCard and Visa. Combined contactless[3] and contact credit cards or combi card were first introduced in Malaysia in 2005. These cards can be used at over 4,000 locations nationwide. Credit cards issued in Malaysia are in compliance with the Europay-MasterCard-Visa (EMV) chip card standard and credit card information transmitted over telecommunication lines are encrypted. The successful migration to the EMV standard in 2005, led to a significant reduction in the counterfeit card fraud losses. As a result, credit card fraud declined substantially from RM63 million in 2004 to RM5.9 million in 2006 and subsequently to RM2.3 million in 2010. These losses were mainly attributed to the fraudulent use of counterfeited Malaysian cards in countries that have yet to adopt the EMV standard.

[3] Cards that do not require customer's signature and need not be swiped or inserted into the card reader. As a security measure, a limit is placed on the purchase transactions using these cards.

Credit card finance charges are capped at 18% per annum and a tiered-pricing structure is adopted to promote prudent financial management and inculcate good financial discipline among credit cardholders. Cardholders with good repayment discipline enjoy lower finance charge rates – capped at 15% for Tier-1 and 17% for Tier-2.[4] There is an annual Government service tax of RM50 and RM25 for principal and supplementary cards, respectively.

2.2.1.3. Charge cards

Charge cards are not so popular in Malaysia with only 5 million transactions amounting to RM5.2 billion recorded in 2010. There are seven charge cards issuers under the Visa, MasterCard, American Express and Diners Club brands with only about 181,000 charge cards in circulation and 125,946 merchants accepting charge card payments at about 180,600 POS terminals nationwide. Most of the charge cards issued in Malaysia are in compliance with the EMV chip card standard. In view that charge cards are often associated with prestige, the fees are generally higher than credit cards. This is compensated by the differences in terms of benefits, with charge cards generally offering more privileges. The service or late payment charges imposed by the conventional charge card issuers range between 36% to 42% per annum. Charge cards are also subject to the annual Government service tax.

2.2.1.4. Debit cards

There are two types of debit cards in Malaysia, i.e. the PIN-based domestic debit card known as e-Debit and signature-based debit card under the international brands (scheme debit card). The e-Debit card is the ATM card issued by the domestic banks and development financial institutions. The use of e-Debit card at terminals deployed by different acquirers has been facilitated by MEPS since 2002. As at end-2010, there were 26.3 million cards in circulation with the e-Debit functionality, which are accepted by 86,590 merchants nationwide. Malaysian banking institutions started to issue the MasterCard and Visa debit card in 2003. As at end-2010, there were 9.5 million scheme debit cards in circulation, of which, 5.4 million were combo cards, i.e. cards with both e-Debit and scheme debit applications.

Some banks have introduced 'cash out facility', which allows cardholders to obtain cash at participating merchants when making purchases using debit cards. The facility introduced in 2007 offers convenience to consumers, as they do not have to withdraw cash at the bank branches or ATMs. Merchants could also benefit from the reduced cash handling and its related cost.

While the amount paid using debit cards is small relative to other payment cards, it is fast gaining popularity especially in the retail sector and for fuel purchases. There were 18.4 million debit card transactions amounting to RM4.7 billion recorded in 2010 as compared to 4.2 million transactions valued at RM650 million in 2006.

[4] Under tiered pricing structure, cardholders are categorized under three tiers:
Tier 1 – settle amount due promptly for 12 consecutive months;
Tier 2 – settle amount due promptly for 10 months in a 12 months cycle; and
Tier 3 – others.

2.2.1.5. E-money

E-money can be card-based or network-based. There are two card-based schemes that are available in Malaysia; the MEPS Cash and Touch 'n Go. MEPS Cash can be used for making payments in the retail sector while the latter can be used for toll payments, transit fare and parking charges apart from retail purchases. The bulk of the e-money transactions are mainly payments in the transportation sector.

Network-based schemes in Malaysia are accessible via the Internet or mobile phones. These schemes are mainly issued by non-banking institutions and used for purchases of digital contents (e.g. online games), remittances and online purchases of products and services.

E-money accounted for more than 50% of the total volume of non-cash retail payment transactions or 699.3 million transactions amounting to RM2.7 billion as at end-2010. However, as e-money transactions are basically small in value, it accounted for only 6.4% of the total amount of card payments in 2010.

## 2.2.2. Payment channels

2.2.2.1. Internet banking

Internet banking services has become a popular channel for subscribers to perform online services such as funds transfer, loan and bill payments, remittances, placement of fixed deposits, online share trading and mobile prepaid reloads. Internet banking services is also available to corporate customers. As at end-2010, there were 27 financial institutions offering the service to individual subscribers while 18 financial institutions offer to corporate subscribers with 758 million Internet banking transactions amounting to RM1.1 trillion recorded in 2010.

2.2.2.2. Mobile banking and payments

The use of mobile banking for financial transactions increased in 2010 whilst transactions of enquiries in nature have declined, indicating growing confidence of the public in using the mobile channel for their banking transactions. There were 0.9 million mobile banking subscribers as at end-2010 and individuals mainly use the channel for mobile prepaid top-ups, whilst corporates make payments to their suppliers. The mobile banking services leverages on mobile technologies such as Short Messaging Service (SMS), wireless application protocol (WAP) and JAVA client. As at end-2010, 11 financial institutions offer mobile banking services to individual subscribers and two financial institutions offer it to the corporate subscribers.

Mobile payment which was first introduced in 2005, provides subscribers with the convenience of making payments for purchases of goods and services such as prepaid airtime reloads, mobile content, movie tickets and utility bills. The service also allows subscribers to conduct local and foreign remittances. The most common technology platform used is the SMS. Payments are made either through direct debit, credit card or e-money accounts. Mobile payment services are offered by six non-banking institutions, independently or through the collaboration with financial institutions. In 2010, 4.9 million mobile payment transactions valued at RM529.6 million were recorded as compared to only 0.3 million transactions amounting to RM13.4 million in 2006.

2.2.2.3. Automated Teller Machine (ATM)

Apart from cash withdrawals, ATMs are also used for payments and funds transfer transactions. Currently, the services offered include bill payments, electronic share application, reloading of mobile prepaid airtime and e-money, credit card and loan repayment, individual income tax payment and purchases of air tickets. In 2010, 38.8 million ATM transactions were made valued at RM31.3 billion. The use of ATM for payment and funds transfer transactions is still negligible as it only represents about 7% of the total number of ATM transactions in 2010.

## 2.2.3. Payment systems

2.2.3.1. Interbank GIRO (IBG)

IBG is a credit transfer system designed to handle a high volume of low value interbank payments. The system, launched in October 2000 provides the electronic platform for payments to be credited into the beneficiaries' accounts, thereby eliminating the need for cash and cheques to be used for interbank fund transfers. In 2010, some 49.8 million IBG transactions were processed amounting to RM126.9 billion.

2.2.3.2. Financial Process Exchange (FPX)

FPX, launched in October 2004 is an Internet-based multi-bank payment platform that leverages on the Internet banking services of banking institutions to offer online payment for electronic commerce transactions. An Internet banking customer of a participating member bank can make purchases online through the Internet banking account via the FPX platform. In 2010, the FPX processed about 0.5 million transactions amounting to RM309.9 million.

2.2.3.3. Direct Debit

Direct Debit is an interbank collection service for regular and recurring payments enabling automated collection directly from bank accounts of subscribers of participating banks. These payments include insurance premium, utility bills, education loans repayment and loan installment payment. There were about 0.5 million of direct debit transactions amounting to RM3.8 billion in 2010.

2.2.3.4. Shared ATM Network (SAN)

MEPS

MEPS SAN is a network switch operated by MEPS, which enables bank customers to access their accounts from any of the participating banks' ATMs. The MEPS SAN has been operating 24 hours since 2008. Besides cash withdrawals, which represent 37% of the total transaction volume, MEPS' SAN facilitates interbank funds transfer and payment services. MEPS has established links with its counterparts in Indonesia, Singapore, Thailand, the People's Republic of China and South Korea to allow Malaysian ATM cardholders of member banks travelling to these countries to withdraw cash at the participating banks' ATMs, and vice versa. In 2010, there were about 245,000 cash withdrawals in Malaysia, amounting to RM194 million.

HOUSe

HOUSe which is owned by HSBC, OCBC, UOB and Standard Chartered Bank, facilitates interbank cash withdrawals and balance enquiries among its member banks. In 2010, there were about 261,000 cash withdrawals valued at RM170.1 million.

## 2.3. Recent developments

### 2.3.1. Mobile banking and payments ecosystem

BNM led the establishment of a mobile banking and payments ecosystem with the support from key stakeholders namely the Ministry of Finance (MOF), Malaysia Administrative Modernisation and Management Planning Unit (MAMPU), Malaysian Communications and Multimedia Commission (MCMC), MyClear, mobile network operators (MNOs) and banks. The mobile platform which is open to all banks and MNOs is centrally hosted and operated by MyClear. Besides promoting cost-effective deployment, the centrally hosted platform allows banks to have shorter time-to-market and MNOs to have wider outreach to potential customers across participating banks. Three major banks and two major MNOs have participated in the platform since November 2011 on a pilot basis. More banks and MNOs are expected to come onboard in 2012.

### 2.3.2. Acquisition of MEPS' retail payment systems by MyClear

MyClear acquired the major retail payment systems from MEPS to elevate the country's payments system to a higher level of efficiency and accelerate the migration to e-payments in an integrated manner. The acquired systems are the IBG, FPX, direct debit, domestic PIN-based debit card and the mobile banking and payment services platform. The acquisition of the systems will complement the three existing systems currently operated by MyClear, which are the RENTAS, eSPICK and Fully Automated System for Issuing/Tendering (FAST) and will further enhance MyClear's role in driving the migration to e-payments agenda.

# 3. Payment and settlement system

## 3.1. Large-value payments system

### 3.1.1. Real-time gross settlement system - RENTAS system

The RENTAS system was implemented in July 1999 to replace Sistem Pemindahan Elektonik untuk Dana dan Sekuriti (SPEEDS), an end-of-day net settlement system. RENTAS was implemented to reduce interbank settlement risk in an environment of increased economic activities. With RENTAS, participants would know their settlement exposure on a gross and real-time basis instead of at end-of-day.

3.1.1.1. Institutional framework

The RENTAS system is owned by BNM. Since 1 January 2009, MyClear has undertaken the responsibility of developing and operating the system. MyClear is also responsible for enhancing the system to ensure that it operates efficiently and with minimal disruption. The Board of Directors of MyClear is responsible for the governance and management of the business as well as to ensure the financial health of the company. The Board determines strategies and policies of the company such as access, pricing, risk management and security. For policies that have implications on BNM's monetary operations or BNM's role as a liquidity provider, approval from BNM is required. Member participants are required to adhere to a set of rules and procedures including dispute resolution guidelines issued by MyClear. This is governed by a confirmation of Participation Agreement executed by each participant prior to joining RENTAS.

3.1.1.2. Participation

In 2011, the access policy of the RENTAS system was revised to improve operational efficiencies and to reduce settlement risk in the financial system by allowing major financial market participants to have direct access to RENTAS. Prior to the review, only financial institutions licensed under the Banking and Financial Institutions Act 1989 (BAFIA), Islamic Banking Act 1983 (IBA) or any other institutions approved by BNM may become members of the system. The revised access criteria, which allow more entities to become RENTAS members, are as follows:

- Financial Institutions (FIs) regulated by BNM and institutions under BNM's purview;
- Investment banks co-regulated by BNM and the SC;
- Central banks/monetary authorities and qualified foreign licensed institutions;
- International Centralized Securities Depository (ICSD) and National Centralized Securities Depository (CSD);
- Qualified domestic entities that provide payment and clearing services (clearing houses); and
- Qualified institutions whose admission will promote the development of the Malaysian financial markets.

Table 2

**Breakdown of the RENTAS's participants as at end-2010**

| **Types of institution** | **No. of participants** |
|---|---|
| BNM | 1 |
| Commercial Banks | 23 |
| Islamic Banks | 17 |
| Investment Banks | 15 |
| Development Financial Institutions | 5 |
| Others[1] | 4 |
| **TOTAL** | **65** |

[1]National Mortgage Corporation, Employees Provident Fund, Abrar Discount and MEPS

3.1.1.3. Types of transactions

Being a high-value payment system, the RENTAS system is used for interbank funds transfer, adjustment of statutory deposits, settlement of BNM domestic market operations, cheque and retail clearing, vostro accounts, money market and foreign exchange settlements and transactions on behalf of the government agencies. The main components of RENTAS are as follows:

Interbank Fund Transfer System (IFTS)

The IFTS effects, processes and settles the transfer of high value Ringgit interbank funds with BNM and among the participating member institutions. Netted payment obligations arising from cheque clearing and other retail clearing systems namely the IBG, e-Debit, FPX, Direct Debit and SAN are also settled in RENTAS on a batch basis.

Scripless Securities Depository System (SSDS)

The SSDS effects, processes and settles unlisted scripless securities (such as Government securities, BNM papers, Cagamas bonds and unlisted private debt securities) on DvP and free-of-payment basis. The SSDS was previously known as Scripless Securities Transfer System.

3.1.1.4. Operation of the system and settlement procedures

The RENTAS daily operation hours are as follows:

Table 3

**RENTAS daily operation hours**

| Scheduled Time | Actions |
|---|---|
| 8.00 a.m. | RENTAS start time |
| 8.30 a.m. | Start time for PvP Link to USD CHATS |
| 8.45 a.m. | eSPICK normal clearing settlement |
| 11.00 a.m. | Cut-off time for all repayments of maturities, and forward value dated transactions (including PvP / DvP settlement) |
| 11.30 a.m. | Settlement for SAN and e-Debit clearing |
| 3.30 p.m. | Cut-off time to send PvP payment instructions to participants' bankers in Hong Kong |
| 4.00 p.m. | Intraday credit cut-off warning |
| | Cut-off time for paying participants to initiate third party transaction and PvP transaction (MYR Leg) |
| | Settlement for IBG, FPX and Direct Debit clearing |
| 4.30 p.m. | Intraday credit cut-off. No borrowing from collateral account |
| 5.00 p.m. | Cut-off warning for PvP Link to USD CHATS |
| 5.30 p.m. | Cut-off time for PvP Link to USD CHATS |
| | Cut-off time for the repayment of intraday money market deal |
| 6.00 p.m. | RENTAS cut-off time |

The RENTAS system, which has straight-through processing capability, processes, transfers and settles interbank funds and scripless securities transactions simultaneously on real-time basis. All transactions are processed and settled through a book-entry mechanism. As each interbank credit and debit transfer is sent and received by member institutions, their account records in the Central Host System (CHS) for interbank funds transfer will be credited or debited accordingly, depending on the availability of funds in the payer's account. The transfers are effected on a gross basis and are considered final and irrevocable once effected.

3.1.1.5. Risks and risk management

Settlement risk

The RENTAS system is a real-time gross settlement system. While settlement risk is minimized via the earlier finality provided by the continuous settlement throughout the operating hours of the system, foreign exchange settlement risk had to be mitigated.

In November 2006, BNM established a PvP link between the RENTAS system in Malaysia and USD CHATS system in Hong Kong as an effort to mitigate foreign exchange settlement risk. As the USD remained the most significant currency for foreign exchange settlement in the country, the risk of disruption would be substantial if not properly mitigated. With the implementation of the link, the settlement of MYR/USD trades is conducted on a PvP basis during Malaysian business hours (Hong Kong shares the same time zone with Malaysia). The transfers are done simultaneously whereby the MYR leg of a foreign exchange trade is settled through the RENTAS system in Malaysia while the USD leg is settled simultaneously through the USD CHATS system in Hong Kong. Leveraging on the existing PvP link, BNM introduced DvP in 2007 to mitigate the settlement risk of US dollar bonds issued and traded in Malaysia by ensuring simultaneous delivery of US dollars in Hong Kong and US dollar bonds in Malaysia.

Liquidity risk

To ensure that settlement is effected continuously on a timely basis by member participants, BNM provides collateralised intraday credit facility to eligible members. The credit facility is extended during the day without interest and settled by the borrowing institution before 6.00 p.m. This minimises the incidence of payment gridlock, thus maintaining a smooth flow of payments within the RENTAS system.

Operational risk

The RENTAS system is designed and operated to meet an appropriately high standard of availability and resilience. Following the events of 11 September 2001, and a series of major incidents and disruptions around the world (including terrorist attacks, natural disasters and power outages), increased emphasis was placed on strengthening business continuity measures for RENTAS. Guided by Core Principle VII of the CPSIPS on ensuring a high degree of security, operational reliability and establishing contingency arrangements for timely completion of daily processing, high priority was accorded on business continuity management to ensure the resilience and uninterrupted availability of the critical payment systems. Appropriate business continuity plans that envisaged a variety of scenarios, recovery and resumption objectives and procedures for effective crisis and communication management were put in place. Regular reviews and testing, including live runs, both on an industry-wide and stand-alone basis, were conducted to ensure the effectiveness of each and every aspect contained in the business continuity plans. In addition, BNM introduced a second level back-up facility to RENTAS members which may be activated in the event that both the production and disaster recovery centre sites of the RENTAS members are down.

System reliability and security control

MyClear uses a private wide area network provided by a local network provider to connect its RENTAS CHS with the Front-End Systems (FES) of its members. The RENTAS CHS server was upgraded in 2004 and 2011 to support the increased volume of RENTAS transactions.

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. RENTAS has a ‘hot backup’ where all transactions in the production environment are mirrored to the backup site on a real-time basis. Hence, there will be no loss of transaction data should a disaster happen at the primary site. The RENTAS System Participation and Operation Rules were amended in 2011 requiring members to ensure that RENTAS systems are operationalised within one hour after activation of the disaster recovery procedures. Members are also required to conduct live runs of off-site disaster recovery centre sites at least six times a year, of which two of these exercises involve connecting to MyClear's recovery site.

The Public Key Infrastructure (PKI) technology has been employed by BNM since 1999 to ensure the confidentiality and non-repudiation of RENTAS transactions and to control access to the system. In 2008, BNM replaced the existing PKI technology with a new system where RENTAS members would obtain digital certificates from the licensed public certification authorities in the country. The implementation of the new security system contributes towards reducing new security threats and risks, thereby effectively maintaining the confidentiality, data integrity, authenticity and non-repudiation of daily RENTAS transactions.

3.1.1.6. Pricing policies

Participants of the RENTAS system are subjected to annual membership and transaction fees. Details of the fees and charges imposed by MyClear are disclosed in the Operational Procedures for RENTAS.

## 3.2. Retail payment systems

## 3.2.1. Cheque Clearing System - eSPICK

eSPICK was implemented throughout the nation in July 2009. eSPICK is an image-based cheque clearing system where the cheque image and the data of the magnetic ink character recognition (MICR) code line data are captured and transmitted electronically to facilitate clearing. With cheque truncation, cheques are scanned by the collecting banks before the images, including the cheque information, are sent electronically to the eSPICK system for clearing.

3.2.1.1. Institutional framework

The eSPICK system is owned and operated by MyClear. The policies and procedures of eSPICK are determined by MyClear. eSPICK participants are required to execute a Confirmation of Participation Agreement which constitutes a binding contract between them and the operator.

3.2.1.2. Participation

The membership of eSPICK is currently open to:

- BNM;
- Institutions offering checking facilities, i.e. commercial banks and Islamic banks; and
- DFIs and investment banks.

Table 4

**eSPICK members as at end-2010**

| Type of Institution | Number of Participants |
|---|---|
| BNM | 1 |
| Commercial Banks | 23 |
| Islamic Banks | 17 |
| DFIs | 2 |
| Investment Banks | 2 |
| **Total** | **45** |

3.2.1.3. Types of transaction

Besides cheques, eSPICK also processes other payment items such as bankers' acceptance, cashier's order, demand draft, interest warrant, pension warrant and drawing voucher. The system also provides express cheque clearing service facility, where funds are made available on the same day.

3.2.1.4. Operation of the system

Under eSPICK, all cheques deposited at the collecting banks before the cut-off time set by the bank, generally at 4.00 p.m., are collected, scanned and converted into digital mode by the collecting banks. The images of the cheques and the data in the MICR code line are sent electronically by the collecting banks to MyClear for clearing, which will then be made available to the issuing banks for verification. Submission of cheque images and information takes place between 8.30 a.m. to 9.00 p.m. on business days while issuing banks have until 1.00 p.m. of the next day (T+1) to confirm the status of the cheques. The processed physical cheques are retained by the respective collecting banks for safekeeping.

The payee's account is debited on the same day the cheque is cleared to set aside the funds for settlement early in the morning of the next business day. eSPICK would determine the net position of each and every member bank for settlement purposes. The funds will only be made available once the final status of the cheque has been confirmed by the paying bank, i.e. after 1.30 p.m. on the next business day.

3.2.1.5 Settlement

eSPICK only provides cheque clearing services. The settlement for cheque clearing among the participating members is conducted via the RENTAS system. The settlement of the net clearing position is effected by 8.45 a.m. on the next business day by crediting or debiting the current account of the respective banking institutions maintained with BNM.

The settlement for express cheque clearing service would be performed on a near real-time basis (for immediate settlement) or at 3.00 p.m. of the same day (for deferred settlement), depending on the nature of cheque clearing chosen by the customer. As for unpaid items, i.e. cheques returned due to insufficient funds or any other reasons, they would be settled by 3.00 p.m. of the next business day.

3.2.1.6 Risks and risk management

In managing the operational risk that could cause a failure to the eSPICK system, MyClear set up a "hot standby" mode recovery site with continuous transfer of image and data from the primary site. The system disaster recovery arrangements are tested periodically. Their business continuity plan is subjected to improvement from time to time.

3.2.1.7 Pricing policies

MyClear introduced different tiers of charges depending on the time the cheques' image and information are submitted by the banks. The charges ranged from RM0.02 to RM0.50 per cheque.

### 3.2.2. Interbank GIRO (IBG)

IBG facilitate payments of up to RM500,000 per transaction. It provides the electronic platform for payments to be credited into the beneficiaries' accounts at any of the participating banks. In 2010, the IBG system was enhanced to allow users to enjoy same-day funds availability if the transaction is effected before noon. Settlement report is sent to all participating banks by 2.30 p.m. and banks have to undertake settlement by 4.00 p.m.

### 3.2.3. Financial Process Exchange (FPX)

FPX has two types of transactions namely Business-to-Customer (B2C) and Business-to-Business (B2B) transactions. The transaction limit for B2C Model is fixed at RM30,000 per transaction, while the limit for B2B Model is fixed at RM1,000,000 per transaction. However, the participating banks may impose a lower limit.

The real-time payment transactions are initiated by buyer from buyer's web browser via FPX to buyer's bank Internet banking for authorization. Settlement report is sent to the participating banks by 3.30 p.m. and banks have until 4 p.m. to settle the amount. As at end-2010, there were 12 banking institutions participating in the system.

### 3.2.4. Direct Debit

Direct debit is a file-based batch transaction processing system. It supports bulk collection of transactions via an interbank direct debit instruction by supplier or customers. There is no limit on the value of the transaction and the settlement process is similar to FPX.

### 3.2.5. Shared ATM Network (SAN)

MEPS' SAN is a network switch which enables bank customers to access their accounts from any of the 21 participating banks' ATMs. The maximum cash withdrawal and funds transfer daily limit is set by the respective issuer bank. The SAN only processes not-on-us[5] cash withdrawal transactions whereby the acquirer bank will route these transactions to MEPS. Subsequently, these transactions would then be rerouted to the issuer bank for authorization. The settlement report will be made available to all participating banks by 9.00 a.m. on the next working day and banks have until 12.00 p.m. to settle the amount.

[5] Cash withdrawal transaction where the ATM card (issuer bank) and the ATM owner (acquirer bank) are separate entities.

# 4. Systems for post-trade processing, clearing and securities settlement

## 4.1. General overview

The three main providers of post-trade services in Malaysia are BNM, Bursa Malaysia Securities Clearing Sdn. Bhd. (Bursa Clearing (S)) and Bursa Malaysia Derivatives Clearing Sdn. Bhd. (Bursa Clearing (D)).

- RENTAS is a real-time gross settlement system for inter-bank funds transfer, a securities (bonds) settlement system and a scripless securities depository for all unlisted debt instruments. RENTAS is owned by BNM and operated by MyClear.
- Bursa Clearing (S) provides clearing and settlement services for the settlement of listed securities (bonds and equities).
- Bursa Clearing (D) provides clearing and settlement services for futures and options.

## 4.2. Post-trade processing systems[6]

The Institutional Settlement Services (ISS) system is an optional facility which is available for indirect market participants to settle directly with Bursa Clearing (S). The ISS instructions must be confirmed by 5.00 p.m. on T+2 at the latest to Bursa Clearing (S).

### 4.2.1. Institutional framework

Bursa Clearing (S) is the approved securities clearing house pursuant to Section 38(4) of the CMSA and provides clearing and settlement facilities for settlement of securities transactions. Bursa Clearing (S) is governed by the Rules of Bursa Clearing (S) with regard to its operations, admission requirements and the ongoing obligations of its clearing members. Bursa Clearing (S) is also subject to the Rules of Bursa Malaysia Depository Sdn. Bhd. (Bursa Depository), wherever applicable. In addition, there is an operational procedure(s) in relation to services or facilities of Bursa Clearing (S) containing the practices, procedures and requirements relating to the operations and functions of such services or facilities.

### 4.2.2. Participation

There are two categories of Clearing Participants namely Trading Clearing Participants (TCPs) and Non-Trading Clearing Participants (NTCP). TCPs are the stockbroking companies, and also Participating Organisations (POs) of the Exchange. NTCPs are Authorised Direct Members (ADMs) of Bursa Depository that includes financial institutions and resident custodian banks. There are a total of 35 TCPs and 9 NTCPs as at end-2010.

[6] Source: Bursa Malaysia Berhad

### 4.2.3. Types of transactions

Bursa Clearing (S) clears and settles all trades executed on Bursa Malaysia Securities Berhad (Bursa Securities). These include ordinary and preference shares, debentures/debenture stocks, loan stocks, Exchange Traded Fund, rights, warrants, call warrants, property trusts and closed end funds.

### 4.2.4. Operation of the system

Trades are settled on a T+3 settlement cycle, where securities are settled on a gross basis while cash is settled on a net basis. Seller of the securities needs to ensure that there are securities in the selling Central Depository System (CDS) account by T+2. Bursa Clearing (S) will perform the settlement process under batch processing and the securities are credited to the buying investors account by T+3, 9.00 a.m.

Bursa Clearing (S) will receive the necessary payments from the buying Clearing Participants latest by 10.00 a.m. on T+3 and will remit the payment for On Market Transaction (OMT) to the selling Clearing Participants by T+3 at 10.00 a.m. while Direct Business Transaction (DBT), the timing is T+3 at 11.00 a.m.

### 4.2.5. Risk management

Bursa Malaysia Berhad (Bursa Malaysia), the Malaysian Stock Exchange, stipulates the entry criteria for its TCPs and NTCPs to ensure that it only admits strong and reliable entities as its participants. TCPs are required to have sufficient financial resources and robust operational capacities to meet their obligations as clearing participants upon admission and on a continuous basis. Capital Adequacy Requirements (CAR) are also imposed on TCPs. CAR is a risk-based computation where the capital requirements of TCPs are computed based on the TCPs' risk assessment and business capacities. The said requirements will increase in tandem with expansion in business activities.

A compensation fund is established to protect investors from monetary loss due to defalcation, business misconduct or fraudulent/misuse of monies or other property by a director, officer, employee or representative of a PO, or because of an insolvency of a PO.

Bursa Clearing (S) established a Clearing Guarantee Fund (CGF) in September 2006. CGF is a pool of assets, mainly cash and bank guarantees, established to deal with potentially large credit and/or liquidity risks that may arise through the default of its TCPs on any settlement day. CGF is a necessity to ensure stability in the securities market as Bursa Clearing (S) would require financial resources to deal with counterparty credit risk and liquidity risk following a default by any of the TCPs.

Bursa Malaysia carries out routine and ad-hoc inspections on TCPs to ensure compliance with all applicable rules and regulations. In this regard, on-site inspections are carried out to examine the business conduct and financial positions of the participants.

### 4.2.6. Pricing

The following are the clearing fees charged by Bursa Clearing (S):-

- OMT – 0.03% of contract value subject to a maximum of MYR1,000 per contract.
- DBT – 0.03% of contract value subject to a minimum of MYR10 and maximum of MYR1,000 per contract.

## 4.3. Central counterparties and clearing systems

### 4.3.1. Bursa Malaysia Securities Clearing Sdn. Bhd. [Bursa Clearing (S)]

The details of the institutional framework, participation criteria, types of transactions, operation of the system, risk management and pricing are described in Section 4.2.1., 4.2.2., 4.2.3., 4.2.4, 4.2.5. and 4.2.6., respectively.

4.3.1.1. Links to other systems

Bursa Clearing (S) and Bursa Depository share the same platform on clearing & settlement and securities movement. Currently, there are no cross border links.

4.3.1.2. Major ongoing and future projects

Bursa Clearing (S) is currently developing the Central Matching Facility (CMF) system to facilitate the matching of trade and settlement details for institutional trades between the TCPs and the NTCPs. It will provide a more effective and faster matching of trade and settlement details for institutional trades to achieve greater operational efficiency.

### 4.3.2. Bursa Malaysia Derivatives Clearing Sdn. Bhd. [Bursa Clearing (D)]

4.3.2.1. Institutional framework

CMSA and the Securities Commission Act 1993 (SCA) govern clearing and settlement of transactions in securities effected in Malaysia. The clearing and settlement system operator in Malaysia for the derivatives market is governed by the rules of Bursa Clearing (D).

4.3.2.2. Participation

Bursa Clearing (D) rules lay down the financial and operational standards for clearing participants. All Clearing Participants must maintain adequate back office system, staff and procedures that ensure orderly and expeditious accounting of their dealings in derivatives. There are 21 Clearing Participants, which consists of 19 General Clearing Participants (GCPs) and 2 Direct Clearing Participant (DCPs) as at end-2010.

For GCP:

- Each GCP must lodge a Security Deposit of at least RM1 million in the form of cash and/or Approved Collateral;
- Each GCP must at all times maintain its Adjusted Net Capital at the higher of:

- RM500,000; or
- 10% or such other percentage as may from time to time be determined by the Clearing House of the total amount paid by the Clearing Participant to the Clearing House and any third party including any other clearing house organisation in respect of margins (Rule 208A).

As with DCP, Rule 208B of the Bursa Clearing (D) states that each DCP must at all times:-

- maintain Net Tangible Assets of not less than RM5 million, or a corporate guarantee of not less than RM5 million; or
- lodge Direct Clearing Participant Deposit of at least RM1 million in the form of cash and/or Approved Collateral in accordance with Rules 206B

Additionally, both DCP and GCP are required to contribute RM1 million each to the clearing funds.

4.3.2.3. Types of transactions

The instruments covered include futures and options that are traded on Bursa Malaysia Derivatives Bhd.

4.3.2.4. Operation of the system

All open positions are settled-to-market at the end of the trading day. Any shortages of funds are required to be paid to Bursa Clearing (D) before the next trading session begins on the following day. Likewise, all mark-to-market gain will be credited into broker’s account during the end-of-day processing.

However, for certain futures i.e. Crude Palm Oil Futures (FCPO) and Crude Palm Kernel Oil Futures (FPKO), when the client opts for physical settlement, the sellers will deliver the Negotiable Storage of Receipt (NSR) which indicates the availability of FCPO or FPKO to Bursa Clearing (D). Upon receipt of payment from the buyers, Bursa Clearing (D) will then release the NSR to the buyer.

For derivatives clearing, funds are settled on a net basis between the clearing house and its clearing participants. Bursa Clearing (D) uses four clearing and settlement banks which are commercial banks to diversify its risks. There is also a plan to establish a link with the RENTAS system for derivatives settlement by 2013.

4.3.2.5. Risk management

Bursa Clearing (D) acts as a central counterparty for Bursa Malaysia Derivatives and operates a guaranteed settlement system through a novation and netting process. To ensure robustness of the system, several risk management measures were put in place:

- Credit exposures of Clearing Participants (CPs) are collaterised with margin collateral;
- Mark to Market (MTM) is performed at the end of every business day and settlement of any MTM losses is due on the next business day before the market opens;
- The clearing fund which serves as default fund, is stress-tested on a daily basis to ensure its adequacy in the event of a failure by the participant with the single largest obligation;
- CPs have to comply with Adjusted Net Capital requirements at all times; and
- Chapter 10 of Bursa Clearing (D) rules prescribes the default actions by Clearing House in the event of a CP's default. Subdivision 6 of Part II of the CMSA, particularly section 43 of the CMSA, provides for the default action by Clearing House to take precedence over Law of Insolvency.

4.3.2.6. Pricing

| **Product** | **Exchange Fee (RM) per contract** | **Clearing Fee (RM) per contract** |
|---|---|---|
| KLCI Futures (FKLI) | 4.00 | 1.00 |
| FCPO | 2.00 | 1.00 |
| 3 Month Kuala Lumpur Interbank Offered Rate Interest Rate Futures (FKB3) | 0.50 | 0.50 |
| 3-Year Malaysian Government Securities Futures (FMG3), 5-Year Malaysian Government Securities Futures (FMG5) and 10-Year Malaysian Government Securities Futures (FMGA) | 0.50 | 0.50 |

4.3.2.7. Links to other systems

The Derivatives Clearing & Settlement (DCS) system is connected to the CME Globex trading system which is maintained by the Chicago Mercantile Exchange in Chicago, USA. All trades done on Globex will be transmitted online and on a real-time basis to DCS. The DCS will then transmit trade and clearing information to Clearing Participants' respective back office systems. The DCS system has been replaced with a new system on 27 February 2012. All clearing and settlement for derivatives contracts are now executed via the new system.

## 4.4. Securities Settlement Systems

Securities traded in Malaysia consist mainly of Government securities, equities, private debt securities and financial futures and derivatives. The settlement systems for the different securities traded differ from one to another.

### 4.4.1. Scripless Securities Depository System (SSDS)

SSDS, which is part of the RENTAS system, is an on-line book entry system that effects and records the settlement of issued and traded securities in RENTAS i.e. Government securities, BNM papers and unlisted corporate bonds (private debt securities). Apart from facilitating the electronic settlement of deals on a DvP basis, the system also dematerialised scripts and consequently reduces the risk associated with having to use paper certificates (e.g. delay, loss, theft), while enhancing the overall efficiency and competitiveness in the capital market.

4.4.1.1.Institutional framework

SSDS is owned by BNM and operated by MyClear. The details of the ownership are described in Section 3.1.1.1.

4.4.1.2. Participation

The details of the access criteria and membership are described in Section 3.1.1.2.

4.4.1.3. Types of transactions

In SSDS, settlement of securities transactions is done on DvP basis, that is, both scripless securities and funds are effected on a trade-by-trade basis, with final (unconditional) transfer of the securities from the seller to the buyer (delivery) occurring as the final transfer of the funds from the buyer to the seller (payment).

4.4.1.4. Operation of the system and settlement procedures

SSDS connects security dealers via system networking, in which the FES, which is installed at securities dealers' computer system, links up to CHS at MyClear. The CHS will accept, validate and acknowledge securities transactions sent from a participating member institution (the sending party) and transmit the transaction to another member institution (the receiving party) connected to the securities system.

The seller of the securities would initiate the transaction by sending an "Unconfirmed Sales/ Transfer Advice" to the buyer via the SSDS. The buyer will verify the details on the advice and has the option to confirm the transaction or 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 seller's and buyer's respective securities and cash accounts maintained with the system.

A sale/purchase of securities from one securities account to another involves a book-entry mechanism and an intra-day settlement of funds in the cash settlement account maintained with BNM. The RENTAS system is a DvP system as it settles securities and funds simultaneously in real-time, on a gross basis throughout the operating hours. The updating or settlement for SSDS transactions will be effected on the settlement date as follows:

Table 6

**SSDS transactions settlement**

| | Trading Hours | Settlement Deadlines |
|---|---|---|
| Same day value | 9.00 a.m. – 3.00 p.m. | by 5.30 p.m. on T |
| Tomorrow value | 9.00 a.m. – 4.30 p.m. | by 11.00 a.m. on T+1 |
| Standard value | 9.00 a.m. – 4.30 p.m. | by 11.00 a.m. on T+2 |
| Forward value | 9.00 a.m. – 4.30 p.m. | by 11.00 a.m. on value date |

4.4.1.5. Risks and risk management

As the SSDS operates on a DvP basis, buyers and sellers are not exposed to settlement risk. Likewise, US dollar denominated securities issued in Malaysia are traded and settled on a DvP basis leveraging on the RENTAS-USD CHATS Link.

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. If the dispute cannot be resolved amicably between RENTAS members, it may be referred to the Arbitration Committee. The decision of the Arbitration Committee is final and binding on all parties concerned.

## 4.4.2. Equities

The secondary market trading of stocks, shares and quoted debt securities are carried out entirely in Bursa Malaysia. An equities trading, Bursa Securities, was established to handle and monitor equities market activities.

4.4.2.1. Participants

The business of dealing in equities is carried out by POs of Bursa Securities. The primary laws and regulations governing the business activities of POs are SCA, CMSA, Securities Industry (Central Depositories) Act 1991, Companies Act 1965 and the Rules of Bursa Securities.

All licensed and registered POs are allowed to deal in securities for their clients and/or proprietary positions. Traders are employed by POs to take and execute orders. They are also required to be licensed under CMSA and registered with Bursa Securities.

4.4.2.2. Trading

On 9 November 2009, Bursa Malaysia introduced the Direct Market Access (DMA) (i.e. a ‘zero-touch electronic trading’ solution which enables investors to route orders directly to the Exchange for immediate execution) for the equities market to enhance trading efficiency and accessibility for market participants.

4.4.2.3. Settlement

Details of the settlement are described in Section 4.2.4.

If the selling client fails to deliver to the PO on the due date, and consequently, the PO, having sold the securities, is unable to deliver to Bursa Clearing (S) on the due date, Bursa Securities will institute an automatic buying-in against the PO concerned without notice on T+3. If the buying-in cannot be successfully done on the first market day due to inactive trading of such securities or some other reasons, the buying-in exercise shall be continued until the required quantity of the said securities are fulfilled. Delivery of securities on buying-in transaction shall be effected by way of book entry on the date of the buying-in contract itself. Payment of securities shall be effected on first market day following the date of the buying-in contract.

4.4.2.4. Risk management

The details of the risk management are described in Section 4.2.5.

## 4.5. Use of the securities infrastructure by the central bank

BNM provides collateralised, interest-free intraday credit facility to eligible participants to facilitate timely settlement and minimise potential gridlock due to insufficient liquidity in RENTAS. BNM also provides a lending facility via repurchase agreements or collateralised loans against eligible collaterals to meet temporary liquidity needs for interbank institutions and a deposit facility for interbank institutions to place overnight excess funds with BNM. Such funds and securities transfers are effected in RENTAS.