



# Market Infrastructure

Hong Kong's advanced financial market infrastructure was further strengthened in 2006 following a comprehensive review in 2005. The Renminbi Settlement System and the link between Malaysia's ringgit RTGS system and Hong Kong's US dollar RTGS system were launched. The Exchange Fund Bills and Notes programme was reviewed to refine and make it more attractive to market makers. The Treasury Markets Association had a productive inaugural year with the launch of the Spot USD/HKD fixing and the Renminbi Non-deliverable Interest Rate Swap.

## OBJECTIVES

One of the HKMA's policy objectives is to promote the development of a safe and efficient financial market infrastructure. This serves two inter-related purposes: helping to maintain financial and monetary stability and supporting Hong Kong's status as an international financial centre. Robust and effective clearing and settlement systems are important in nurturing the competitiveness of Hong Kong's financial sector. The HKMA pays particular attention to these systems for the safe and efficient transfer of funds and securities within Hong Kong and between Hong Kong and other financial centres, especially the Mainland. The comprehensive review of the financial infrastructure in 2005 paved the way for further developing Hong Kong into a regional payment and settlement hub.

## REVIEW OF 2006

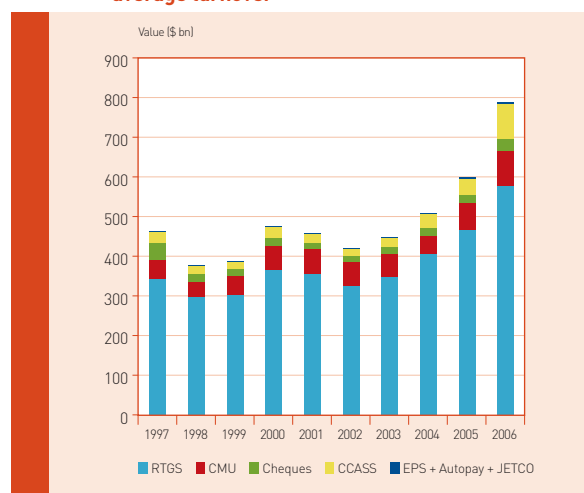
### Hong Kong dollar interbank payment system

The Hong Kong dollar Clearing House Automated Transfer System (CHATS), which operates on a real-time gross settlement (RTGS) basis, is responsible for clearing all the Hong Kong dollar interbank payments. It has a direct link with the Central Moneymarkets Unit (CMU, the debt securities clearing and settlement system operated by the HKMA) to provide both real-time and end-of-day delivery-versus-payment settlement for transactions involving securities lodged with the CMU. Hong Kong Interbank Clearing Limited (HKICL), the system operator of Hong Kong dollar CHATS, was established in 1995 and is owned equally by the HKMA and the Hong Kong Association of Banks. In 2006, HKICL

processed a daily average value of \$579 billion in Hong Kong dollar CHATS transactions (around 18,000 items). On 27 October the system registered a record turnover of \$1.37 trillion because of large initial public offering (IPO) activities.

In addition to settling large-value payments, Hong Kong dollar CHATS also handles daily bulk clearings for the money settlement of stock market transactions, cheques and auto-debit transactions, low-value bulk electronic payment items (EPS and auto-credit), and low-value ATM transfers (Chart 1). The system was expanded in October to process bulk settlement for credit card transactions, removing the settlement risk for payments between the card-issuing banks and the merchant-acquiring banks.

Chart 1. Hong Kong dollar payment system daily average turnover



During the year, banks made good use of their Exchange Fund Bills and Notes to obtain interest-free intraday liquidity through intraday repurchase agreements with the HKMA to settle their interbank payments more efficiently. On average, intraday repurchase transactions amounting to \$49 billion were carried out daily to facilitate payment flows, representing 49% of the \$99 billion of Exchange Fund paper held by banks in December 2006.

### US dollar CHATS

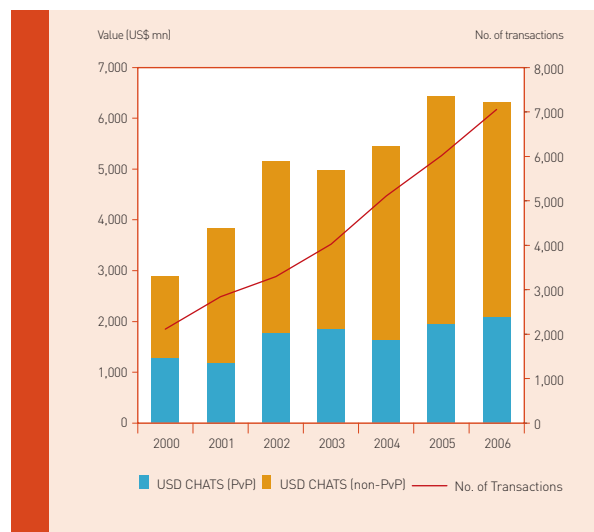
US dollar CHATS has been operating efficiently since its launch in 2000. The Hongkong and Shanghai Banking Corporation is the settlement institution, with HKICL as system operator. At the end of 2006, the system had 68 direct and 154 indirect participants, including 110 indirect participants from outside Hong Kong. On average, the system handled more than 7,000 transactions a day in

2006 with a total value of US\$6.3 billion (Chart 2). Because of large IPO-related payments, the turnover of the US dollar CHATS reached a record high of US\$22.4 billion on 31 October. In addition, an average of more than 6,000 US dollar cheques with a total value of US\$180 million were processed daily.

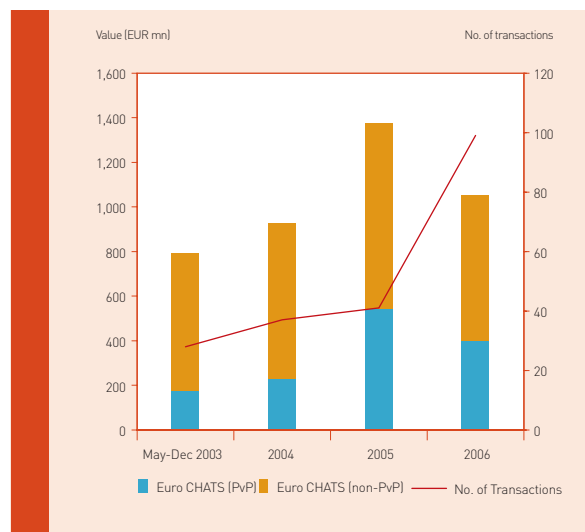
### Euro CHATS

Euro CHATS was launched in 2003. The settlement institution is Standard Chartered Bank (Hong Kong) Limited, with HKICL as system operator. At the end of 2006, there were 25 direct and 22 indirect participants, including 11 indirect participants from outside Hong Kong. In 2006, the system handled on average 99 transactions a day with a total value of over €1 billion (Chart 3).

**Chart 2. US dollar clearing system daily average turnover**



**Chart 3. Euro clearing system daily average turnover**



### Payment links with the Mainland

In response to the increasing demand for cross-border payment services, the HKMA has been working closely with Mainland authorities to establish cross-border payment links. The development of these links is shown in Chart 4. Their use has risen gradually with the increasing economic integration between Hong Kong and the Mainland. The average daily turnover of cross-border payments handled by the various system links was over \$1 billion in 2006.

The RTGS system links with Shenzhen and Guangdong handled more than 19,000 transactions during the year, with a total value equivalent to over \$200 billion. Cross-border payments in Hong Kong dollars and US dollars between banks in Hong Kong and their counterparts in Shenzhen and Guangdong are settled effectively and safely through the system.

The cross-border two-way joint cheque clearing facilities cleared around 459,000 Hong Kong dollar and US dollar cheques, with a value equivalent to \$37 billion in 2006. The facilities shortened the clearing time for cheques drawn on banks in Hong Kong which were presented in Shenzhen and Guangdong, and vice versa. Since March,

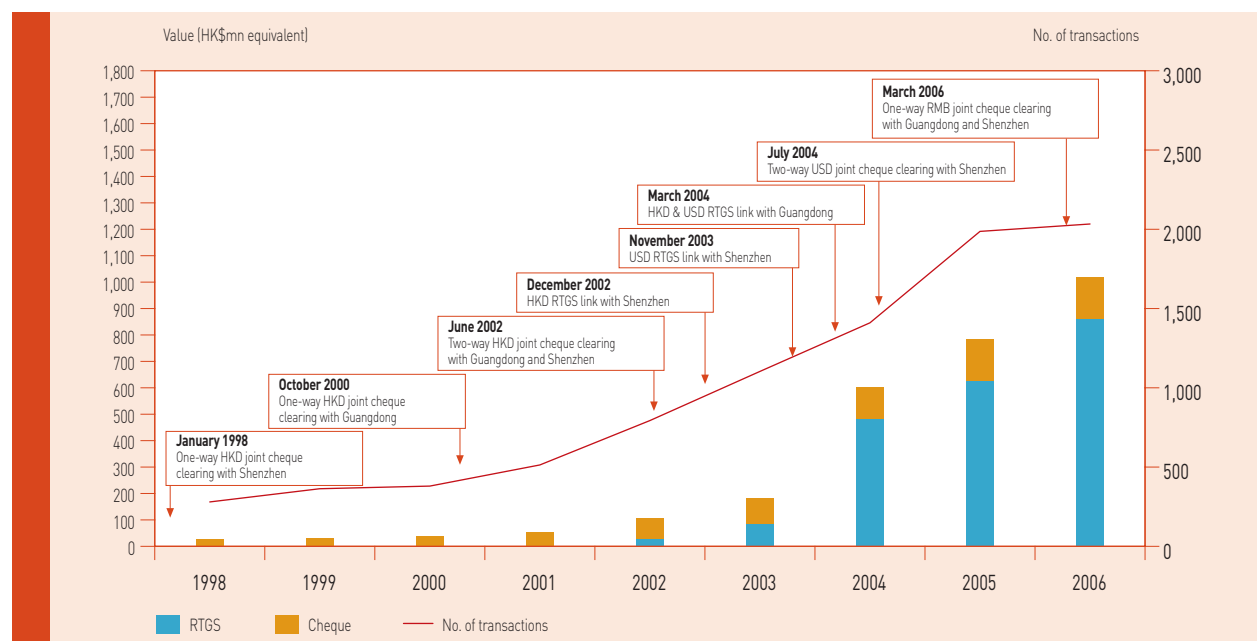
the joint cheque-clearing facilities have been expanded to cover renminbi cheques drawn on banks in Hong Kong and presented to banks in Shenzhen and Guangdong for consumer spending.

### Debt settlement systems

The CMU provides an efficient, one-stop clearing, settlement and depository service for both Hong Kong dollar and other international debt securities. Since its establishment in 1990, the CMU has developed links with many regional and international central securities depositories. Through these links, overseas investors can hold and settle securities lodged with the CMU efficiently. It also helps Hong Kong investors to hold and settle foreign securities held with regional and international central securities depositories.

In 2006, the CMU processed a daily average of \$36 billion (148 transactions) in secondary market transactions. Among the debt securities lodged with the CMU at the end of the year, the outstanding amount of Exchange Fund Bills and Notes was \$131.8 billion and the amount of other securities was equivalent to \$265.3 billion.

Chart 4. Daily average turnover of cross-broder links



## Financial infrastructure review

The HKMA completed a comprehensive review of the financial infrastructure of Hong Kong in 2005. The purpose of the review was to develop a safe and efficient multi-currency, multi-dimensional clearing and settlement platform in Hong Kong and help turn Hong Kong into a regional payment and settlement hub. In 2006, the HKMA made encouraging progress in implementing the recommendations of the review.

### Projects completed

**CMU Bond Price Bulletin** – this is a web-based platform ([www.cmu.org.hk](http://www.cmu.org.hk)) providing retail investors with easily accessible information on bonds and indicative prices quoted by individual financial institutions. Launched in January 2006, the Bulletin helps promote retail investors' participation in the secondary market. At the end of 2006, indicative prices of about 160 bonds quoted by 11 financial institutions were available on the Bulletin.

**RTGS Liquidity Optimiser** – launched in January 2006, this new device enhances the efficiency of the RTGS system by settling interbank payments multilaterally every 30 minutes. Each of the transactions settled is still on a "gross" or "deal-by-deal" basis. The Optimiser helps reduce the intraday liquidity needs of the banks and clear payment instructions in the payment queues.

A mechanism for **Simultaneously Processing DvP and Collateralisation** of Exchange Fund Bills and Notes, established in January 2006, allows Exchange Fund Bills and Notes bought by a bank to be used as security for sale and repurchase agreements with the HKMA to obtain intraday liquidity to settle the bank's RTGS payments. This makes it easier for banks to manage their liquidity needs.

**Renminbi Settlement System (RSS)** – the RSS was launched in March 2006 to cater for the settlement

needs arising from expanded renminbi business in Hong Kong. The RSS can be quickly developed into a full RTGS system to support further expansion of renminbi business in Hong Kong. In 2006, the RSS handled 138 transactions a day on average with a total value of RMB38 million yuan.

**Bulk settlement for credit card transactions** – the service was launched in October 2006 to allow Hong Kong dollar credit card transactions to be settled between card-issuing banks and merchant-acquiring banks in bulk-settlement runs operated by HKICL. The arrangement mitigates settlement risk among the banks, making settlement more efficient. Credit card companies including VISA International, MasterCard International and China UnionPay have joined the arrangement.

**Cross-Currency CHATS Optimiser** – introduced in October, the Optimiser helps banks manage their liquidity during times of heavy fund flows such as during large IPOs. A bank can borrow Hong Kong dollars from a receiving bank of an IPO through a Hong Kong dollar/US dollar swap and, with the help of the Optimiser, use the Hong Kong dollars to settle its Hong Kong dollar cheques. The application monies of IPOs can therefore be recycled back to the market more efficiently, ensuring the smooth operation of the IPOs.

**The link between Malaysia's ringgit RTGS system and Hong Kong's US dollar CHATS** – the link was launched in November 2006. It helps eliminate settlement risk among Malaysian banks in foreign exchange transactions involving the US dollar and Malaysian ringgit by ensuring the simultaneous delivery of ringgits in Malaysia and US dollars in Hong Kong. It is the first cross-border PVP link established in Asia. The link has been operating smoothly since its launch and has proved popular with participating banks.

### **Projects in progress**

**Migration to SWIFTNet** – this large-scale project will replace the existing proprietary platform of the various RTGS systems and the CMU with an open platform to improve compatibility with other clearing and settlement systems and facilitate system links, making it easier for overseas banks to use the RTGS systems in Hong Kong. This is an important project to help develop Hong Kong into a regional payment and settlement hub. The migration is expected to take place in 2008.

**Cross-border correspondent banking** – Many international banks are direct participants in the US dollar CHATS in Hong Kong. These banks have their own networks of correspondent banks in the region. As part of the strategy to develop Hong Kong into a regional payment hub, the HKMA is trying to use the US dollar CHATS to pool these networks of correspondent banks and encourage them to settle their commercial payments through Hong Kong. Modifications to the systems to facilitate this are scheduled for completion by the third quarter of 2007.

### **Business development**

In addition to the system development projects, the financial infrastructure review identified the need to link Hong Kong's RTGS systems and the CMU with other clearing and settlement systems in the region, and to promote greater use of the clearing and settlement systems in Hong Kong. As a result, the HKMA has established a comprehensive marketing programme to pursue these objectives through seminars and visits to

potential users in the Asia Pacific region. In 2006, over 160 marketing calls were made.

#### **Promoting links with other Asian economies** –

extensive links with the clearing and settlement systems of other economies help develop Hong Kong into a payment and settlement hub for the region. Building on the success of the PvP link with Malaysia, the HKMA is exploring opportunities with other Asian economies to establish cross-border links with their clearing and settlement systems. For instance, the HKMA hosted a central securities depository workshop in March to explore how the central securities depositories in the region could use the US dollar CHATS in Hong Kong for their US dollar settlement. The workshop was attended by over 20 representatives from central securities depositories in the region. It helped establish contacts with other central banks and system operators in the region and develop system links.

#### **Promoting the use of Hong Kong's clearing and settlement platform** –

marketing calls were made to and seminars held in a number of Asian economies, including Indonesia, Malaysia and Taiwan, to promote the use of Hong Kong's multi-currency clearing and settlement platform. In addition, the HKMA organised jointly with the People's Bank of China two seminars in Beijing and Shanghai in June to encourage Mainland financial institutions to use Hong Kong's platform to settle the foreign currency legs of foreign exchange transactions. A number of banks on the Mainland have started to settle the US dollar legs of their foreign exchange transactions in Hong Kong.

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## Oversight of clearing and settlement systems

### *Oversight of designated systems*

The Clearing and Settlement Systems Ordinance (CSSO), which came into force in November 2004, empowers the Monetary Authority to designate and oversee clearing and settlement systems that are material to the monetary or financial stability of Hong Kong, or to the functioning of Hong Kong as an international financial centre. The purpose of the CSSO is to promote the general safety and efficiency of designated systems including the Central Moneymarkets Unit, Hong Kong dollar CHATS, US dollar CHATS, Euro CHATS and the Continuous Linked Settlement (CLS) System. Except for the CLS System, the HKMA oversees the designated systems through off-site reviews and continuous monitoring, on-site examinations and meetings with management. In 2006, all designated systems were found to be in compliance with the safety and efficiency requirements under the CSSO.

Designated systems are encouraged to comply with international best practices. In 2006, the HKMA conducted an assessment of Euro CHATS against the internationally-recognised standards provided by the Core Principles for Systemically Important Payment Systems<sup>1</sup>. The assessment, which was published to promote transparency, concluded that Euro CHATS generally observed the Core Principles.

### *Co-operative oversight arrangements*

In a globalised economy, clearing and settlement systems have become increasingly inter-dependent, leading to the establishment of co-operative oversight arrangements.

The CLS System, a designated system in Hong Kong, is operated by CLS Bank, which is primarily regulated by its home supervisor, the US Federal Reserve. The HKMA and other central banks (including the US Fed) participate in the international co-operative oversight arrangement of the CLS System.

Following the establishment in November of the US dollar/ringgit PvP link between the US dollar CHATS in Hong Kong and RENTAS in Malaysia, the HKMA and Bank Negara Malaysia established a co-operative oversight arrangement for the PvP link in December. Under the arrangement, an information sharing mechanism was set up through which the two parties alert each other about issues that may affect the smooth operation of the link.

The central banks of the G10 countries agreed that SWIFT, an important global message carrier for payment systems incorporated in Belgium, should be subject to co-operative oversight by central banks, with the National Bank of Belgium as the lead overseer. As the CMU accepts SWIFT messages and all the local designated systems will migrate to the SWIFTNet platform in 2008, the HKMA has an interest in the oversight of the system. In 2006, the HKMA monitored the development of SWIFT's oversight framework and was involved in related discussions with other central banks and bilateral meetings with the National Bank of Belgium.

### *Independent tribunal and committee*

An independent Clearing and Settlement Systems Appeals Tribunal was established under the CSSO to hear appeals by any party aggrieved by a decision of the Monetary Authority on designation and related matters. There has been no appeal since the establishment of the Tribunal.

<sup>1</sup> The Core Principles were developed by the Committee on Payment and Settlement Systems of the Bank for International Settlements in 2001.

An independent Process Review Committee was established in December 2004 to review processes and procedures adopted by the HKMA in applying standards set under the CSSO to systems in which the HKMA has a legal or beneficial interest. An Internal Operating Manual setting out the procedures for evaluating the designated systems' compliance with the oversight standards was revised in 2006 based on the HKMA's first-year oversight experience, and was endorsed by the Committee. The Committee uses the procedures in the Manual as the benchmark to assess whether the HKMA has applied the same set of procedures to all designated systems. Quarterly reports and management reports summarising the HKMA's oversight activities, were submitted to the Committee.

The Committee held two meetings in 2006, reviewing four quarterly reports and 22 accompanying oversight activities management reports of the designated systems. The Committee concluded that it was not aware of any cases where the HKMA had not duly followed the internal operational procedures, or where the HKMA had not been procedurally fair in carrying out its oversight activities. Under its terms of reference, the Committee submitted its annual reports, which are available on the HKMA's website, to the Financial Secretary.

### **Informal oversight of retail payment systems**

Compared with large-value interbank payment systems, the retail payment systems generally carry little, if any, systemic risks and, at this stage, the HKMA considers they are not systemically significant enough to be designated under the CSSO. However, the HKMA encourages the retail payment industry to adopt a self-regulatory approach by issuing codes of practice to promote their safety and efficiency.

In August 2005, the HKMA endorsed the Code of Practice for Multi-purpose Stored Value Card Operation issued by Octopus Cards Limited (OCL), the system's operator. Since then, the HKMA has monitored OCL's compliance with the Code, and OCL completed its first self assessment in 2006.

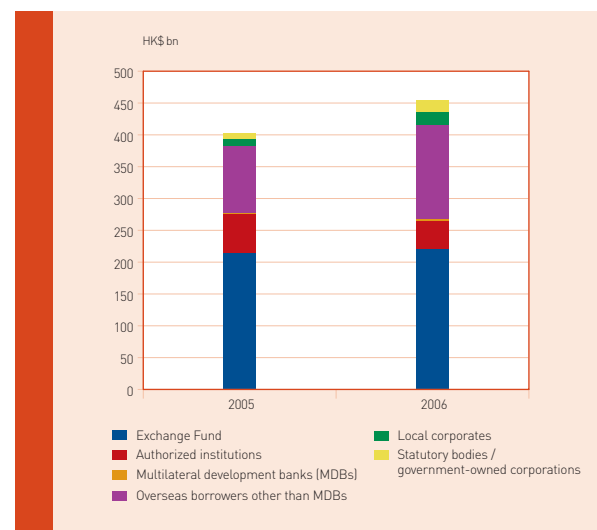
In December, a Code of Practice for Payment Card Scheme Operators was drawn up and issued by eight credit and debit card scheme operators with the support of the HKMA. The Code, which became effective on 1 January 2007, sets out the principles covering operational reliability, data and network security, and the efficiency and transparency of payment card operations in Hong Kong. The HKMA will monitor the operators' compliance with the Code.

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### **Debt market development**

Gross issuance of Hong Kong dollar debt rose further in 2006 and reached \$454 billion for the year, compared with \$402 billion in 2005 (Chart 5). Overseas borrowers, other than multilateral development banks (MDBs), were the second most active issuers in the primary market after the Exchange Fund, issuing \$147 billion of debt in 2006, an increase of 39% from the previous year. Gross issuance by authorized institutions, however, decreased by 28% to \$45 billion, probably reflecting ample liquidity in the banking system and reduced need for the banks to raise funds in the debt market.

**Chart 5. New issues of Hong Kong dollar debt instruments**





The value of outstanding Hong Kong dollar debt rose to \$748 billion at the end of 2006 from \$664 billion in 2005, a 13% increase (Chart 6). Overseas borrowers, other than the MDBs, were the largest group of borrowers in the local debt market with outstanding debt amounting to \$332 billion. The outstanding debt issued by authorized institutions decreased by 4% to \$147 billion at the end of 2006.

### Exchange Fund Bills and Notes programme

The HKMA completed a review of the EFBN programme in 2006. A number of recommendations aimed at improving market efficiency were identified:

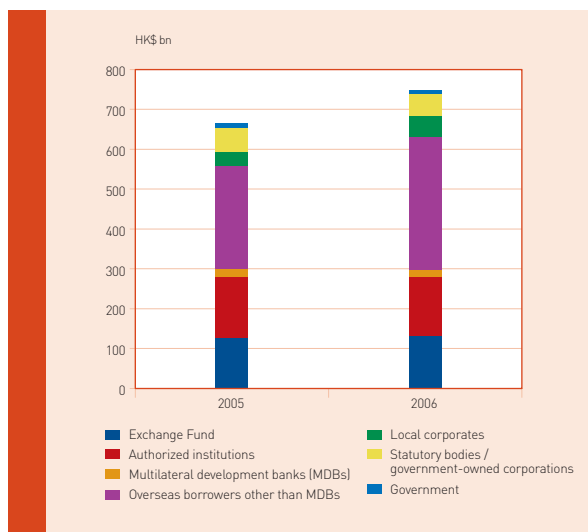
- (1) refining the market-making system for EFBNs by providing incentives to encourage market makers to trade EFBNs more actively. The incentives include publishing league tables of the active market makers, inviting only the more active ones to participate in tenders and exploring the adoption of single-price auctions to replace the existing multiple-price auctions;
- (2) extending the benchmark EFN yield curve to beyond 10 years by issuing longer-dated paper;

- (3) streamlining the issuance programme by re-opening more existing EFN issues to increase the size of benchmark issues and improve liquidity in the secondary market of these issues; and
- (4) introducing an electronic trading platform to facilitate trading and increase the transparency of prices and transactions.

The first set of league tables, ranking market makers according to their turnover in EFBs and EFNs between June and November 2006, was released in December. The other recommendations are being implemented.

As part of the review, the HKMA also reconsidered the three-year rule introduced in September 1998, which requested the MDBs to confine their issuance of Hong Kong dollar denominated bonds to tenors of three years or longer to help maintain monetary stability during the Asian financial crisis. With the introduction of the seven technical measures in 1998 and the three refinements to the Linked Exchange Rate system in 2005, the HKMA is now better equipped to deal with potential speculative attacks on the Hong Kong dollar. Lifting of the three-year rule is therefore unlikely to pose a serious threat to

**Chart 6. Outstanding amount of Hong Kong dollar debt instruments**



monetary stability. Following a review by the Currency Board Sub-Committee, the three-year rule was withdrawn on 9 October 2006. The MDBs may now issue Hong Kong dollar debts of short maturities and this will help develop the local debt market.

Apart from implementing the recommendations of the debt market review, the HKMA continued in 2006 to improve the credibility of the benchmark Hong Kong dollar yield curve to promote market development and facilitate the pricing of private and public-sector debt issues. In particular, the re-balancing of the maturity distribution of the EFBNs continued with more longer-end notes being issued. Reflecting this, the share of EFBNs with remaining maturity of more than three years increased to 19% in 2006 from 16% in 2005 (Table 1). To promote retail participation in the debt market, the HKMA made four retail issues of EFNs in 2006. The issues were well received by the public and \$785 million of two-year EFNs were issued, compared with \$500 million in 2005.

**Table 1. Outstanding issues of Exchange Fund Bills and Notes**

	2005	2006
(in millions of Hong Kong dollars)		
Exchange Fund Bills (by original maturity)		
91 days	36,209	<b>36,288</b>
182 days	16,900	<b>16,900</b>
364 days	16,900	<b>16,900</b>
Sub-total	70,009	<b>70,088</b>
Exchange Fund Notes (by remaining tenor)		
1 year or below	12,600	<b>14,400</b>
Over 1 year and up to 3 years	23,400	<b>22,600</b>
Over 3 years and up to 5 years	10,600	<b>14,000</b>
Over 5 years and up to 7 years	6,800	<b>6,800</b>
Over 7 years	3,300	<b>3,900</b>
Sub-total	56,700	<b>61,700</b>
Total	126,709	<b>131,788</b>

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## Treasury Markets Association (TMA)

The Association, chaired by the HKMA's Deputy Chief Executive, Mr Y K Choi, completed its first full year of operation since its establishment in November 2005. The HKMA continued to provide strategic support to the TMA, working with it to achieve its objective of developing Hong Kong as the hub for treasury market business in the region. Encouraging results were achieved during 2006:

- **Membership:** over 2,000 individual and 74 institutional members from virtually all sectors of the Hong Kong treasury markets had joined the TMA by the end of the year.
- **Qualifications:** the TMA developed two new certificates, the Treasury Markets Certificate and the Treasury Markets (Debt Securities) Certificate in collaboration with the Hong Kong Institute of Bankers and the University of Science and Technology respectively. The two certificate programmes, designed to equip new entrants with essential treasury markets knowledge, serve as an admission requirement for TMA members.
- **On-the-job training:** over 30 seminars, workshops, and talks were organised as continuing education opportunities for both individual members and the staff of institutional members to increase the knowledge and professionalism of market practitioners.
- **New market instruments:** the TMA worked closely with market participants to launch new products and services to facilitate market development. In response to market demand, the TMA launched the spot USD/HKD fixing in April as a benchmark for market exchange rates of US dollars against Hong Kong dollars. The Association also developed the Renminbi Non-deliverable Interest Rate Swap in August to help corporations and financial institutions outside the Mainland to manage their renminbi interest rate exposure.

- Raising the profile of the Hong Kong treasury markets:** to maintain Hong Kong's position as the hub for regional treasury activities, the TMA maintained close contacts with overseas counterparts by taking part in key international industry and market forums. In view of the rapid growth of the Mainland treasury markets and increasing integration of the Mainland and the Hong Kong economies, the TMA put considerable effort into promoting Hong Kong's treasury markets to its Mainland counterparts and financial institutions.

## PLANS FOR 2007 AND BEYOND

One of the priorities in 2007 is to implement the remaining recommendations identified in the financial infrastructure review to build a safe and efficient multi-currency, multi-dimensional clearing and settlement platform, and facilitate the development of Hong Kong into a regional payment and settlement hub. The HKMA will monitor the progress of the SWIFTNet migration and the cross-border correspondent banking projects closely to ensure that they can be completed on schedule. The HKMA will continue to ensure the safe and efficient operation of the RTGS systems and the CMU, which are instrumental to maintaining the stability and integrity of the monetary and financial systems in Hong Kong.

As part of the effort to develop Hong Kong into a regional payment and settlement hub, the HKMA will explore opportunities to link Hong Kong's clearing and settlement systems with their counterparts in the region. Marketing efforts to promote the use of Hong Kong's clearing and settlement platform and cross-border correspondent banking services by banks in the region and on the Mainland will continue.

Following the State Council's approval for the issuance of renminbi bonds in Hong Kong by Mainland financial institutions, the HKMA will move ahead to upgrade the Renminbi Settlement System to cope with the settlement needs arising from the new business.

As the overseer of designated systems under the CSSO, the HKMA will continue to be involved in promoting the safety and efficiency of these systems. Following the assessment of Euro CHATS against the Core Principles in 2006, the HKMA will perform the same assessment on the Hong Kong dollar CHATS and US dollar CHATS in 2007.

Amendments to the clearing house rules are expected to be completed by early 2007 to extend the coverage of Hong Kong dollar CHATS and US dollar CHATS to include small-value interbank payment items such as paper cheques. This will bring all types of interbank payments under the statutory oversight regime of the HKMA.

A self-regulatory approach for retail payment systems has been implemented through the successful launch of two Codes of Practice covering multi-purpose stored value cards, and credit and debit cards. The HKMA will continue to monitor the operators' self-compliance with their Codes.

The HKMA will continue to monitor the developments in the payment industry in Hong Kong and participate in international forums to keep abreast of global trends in the oversight of payment systems, and make improvements where necessary.

On the development of the debt market, the priority is to implement the recommendations arising from the review of the EFBN market. The HKMA also plans to further study other issues relating to the development of the local debt market. These include the investor base and issuer base of the market, regulation and taxation, and market microstructure, such as the trading mechanism and the price discovery process.

The HKMA will also work closely with the TMA to develop Hong Kong's treasury markets, further improve the professionalism of market professionals, establish market practices consistent with international standards, launch new products and services to meet emerging market demands, and promote Hong Kong's treasury markets to the Mainland.