

Settlement Systems of East Asian Economies

Commissioned by Ministry of Finance Japan

March 2004

Institute for International Monetary Affairs

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Foreword

In September 2003, we, Institute for International Monetary Affairs (IIMA), made a report, “Settlement Systems of East Asian Economies”.

The report was distributed at the meeting of the Working Group on Foreign Exchange Transactions and Settlement Issues, which was organized under the ASEAN plus three Ministry of Finance Process, Asian Bond Market Initiatives (ABMI) and was held on October 21-22, 2003 at Kuala Lumpur. At the meeting, this report attracted the attention of the participants since this kind of comprehensive research on settlement issues has not been available since the start of ABMI.

Among the participants of the Working Group on Foreign Exchange Transactions and Settlement Issues at the meeting, there was a sense of the need to develop a mutual understanding of the settlement systems of other economies within the region.

We contacted the officials and market participants whom we had contacted in our first research once again, as well as the officials of the Working Groups on Foreign Exchange Transactions and Settlement Issues. We tried to reflect the comments, suggestions, new statistics and other information provided by them.

This report also mentions recent developments such as the establishment of the CLS Bank, which is expected to minimize foreign exchange settlement risks. For details on this subject, please refer to Chapter 1 (Hong Kong, Singapore) and Chapter 3 (Korea) in the report.

We would like to thank all the officials and market participants that we contacted during our research. Without their cooperation, this report would not have been written. We would like to express our special thanks to the Hong Kong Monetary Authority, the Monetary Authority of Singapore, The Bank of Korea, Bank Negara Malaysia, Thailand Securities Depository Co. Ltd., Bank Indonesia, Bangko Sentral ng Pilipinas and the Ministry of Finance Social Republic of Vietnam, Bank of Japan and several individuals for their comments. We would like to add that IIMA is responsible for the accuracy of the information in this report.

We sincerely hope that this report will contribute to the mutual understanding of the economies in the region and to the further development of settlement systems in East Asia, which in turn should help the regional bond markets to develop further.

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March 2004
Institute for International Monetary Affairs

List of Abbreviation

Overall

ATS : Alternative Trading System
CCP : Central Counterparty
CLS : Continuous Linked Settlement
CPSS : Committee on Payment and Settlement Systems
CSD : Central Securities Depository
DVP : Delivery versus Payment
ECN : Electronic Communication Network
FIFO : First-in, First-out
FOP : Free of Payment
ICSD : International Central Securities Depository
IDB : Inter-Dealer Broker
IOSCO : International Organization of Securities Commissions
ISMA : International Securities Market Association
ISO : International Organization for Standardization
ISSA : International Securities Services Association
OTC : over-the-counter
PVP : Payment versus Payment
RTGS : Real-time Gross Settlement
SSS : Securities Settlement System
STP : Straight Through Processing
S.W.I.F.T. : Society for Worldwide Interbank Financial Telecommunication

Hong Kong

CCASS : Central Clearing and Settlement System
CDC : China Government Securities Depository Trust & Clearing Co. Ltd.
CEPA : Closer Economic Partnership Agreement
CHATS : Clearing House Automated Transfer System
CMU : Central Moneymarkets Unit
CNS : Continuous Netting Settlement
HKEx : Hong Kong Exchanges and Clearing Ltd.
HKICL : Hong Kong Interbank Clearing Limited
HKMA : Hong Kong Monetary Authority
HKSCC : Hong Kong Securities Clearing Company Ltd.
HSBC : Hong Kong and Shanghai Banking Corporation

Singapore

ACH : Automated Clearing House
BCS : Banking Computer Service Pte Ltd.

CDP : Central Depository (Pte) Ltd.
DBS : Development Bank of Singapore
DCSS : Debt Securities Clearing and Settlement System
IDAS : Institutional Delivery Affirmation System
MA S : Monetary Authority of Singapore
MEPS : MAS Electronic Payment System
MLA : Minimum Liquid Asset
NETS : Network for Electronic Transfers (Singapore) Pte Ltd.
OCBC : Oversea-Chinese Banking Corporation
SCHA : Singapore Clearing House Association
SGS : Singapore Government Securities
SGX : Singapore Exchange Ltd.
UOB : United Overseas Bank

China

BEPS : Bulk Entry Payment System
CDC : China Government Securities Depository Trust and Clearing Co Ltd
CNAPS : China National Advanced Payment System
CSRC : China Securities Regulatory Commission
EIS : Electronic Interbank System
HVPS : High Value Payment System
LCHS : Local Clearing House System
NCC : EIS National Clearing Center
NIS : National Interbank System
NPC : CNAPS National Processing Center
NSP : Not Settlement File Queue
PBOC : The People's Bank of China
QFII : Qualified Foreign Institutional Investor
SAPS : Settlement Account Processing System
SD&C : China Securities Depository and Clearing Corporation
SDPC : The State Development Planning Commission

Korea

BGS : Bank Giro System
BOK : The Bank of Korea
BOK-Wire : The Bank of Korea Financial Wire Network
CCS : Cheque Clearing System
FSC : Financial Supervisory Commission
INAS : The Institutional Affirmation & Settlement System
KFTC : The Korea Financial Telecommunications and Clearing Institute

KSD : Korea Securities Depository
KSE : Korea Stock Exchange
MSBs : BOK Monetary Stabilization Bonds
SAFE : Participants Terminal System
SSF : Settlement Stabilization Fund

Malaysia

ADA : Authorized Depository Agent
ADIs : Authorized Depository Institutions
BAFIA : Banking and Financial Institutions Act
BNM : Bank Negara Malaysia
CDS : Central Depository System
CMP : Capital Market Masterplan
CMSC : Capital Market Strategic Committee
FINNET : Financial Institutions Network
IBA : Islamic Banking Act
IFTS : Interbank Funds Transfer System
ISS : Institute Settlement Service
KLSE : Kuala Lumpur Stock Exchange
MCD : Malaysian Central Depository
MEPS : Malaysian Electronic Payment System Sdn Bhd.
NTCM : Non-Trading Clearing Member
PDS : Private Debt Securities
RENTAS : Real-Time Transfer of Funds and Securities
SC : Securities Commission
SCANS : The Securities Clearing Automated Network Services Sdn. Bhd.
SCORE : System on Computerised Order Routing and Execution
SPICK : Sistem Penjelasan Imej Cek Kebangsaan
SSTS : Scripless Securities Trading System
TCM : Trading Clearing Member

Thailand

AOM : Automated Order Matching
ASSET : Automated System for the Stock Exchange of Thailand
ATM : Automated Teller Machine
BAHTNET : Bank of Thailand Automated High-value Transfer Network
Thai BDC : Thai Bond Dealing Centre
BOT : Bank of Thailand
CAT : Communications Authority of Thailand
ECH : Electronic Clearing House

ECS : Electronic Check Clearing System
EDC : Electronic Data Capture
ILF : Intraday Liquidity Facility
MAI : Market for Alternative Investment
ORFT : Online Retail Funds Transfer
SEC : Securities and Exchange Commission
SET : Stock Exchange of Thailand
TBA : Thai Bankers' Association
TBDC : Thai Bond Dealing Centre
TGS : Thai Government Securities
TSD : Thailand Securities Depository Co., Ltd.

Indonesia

BI : Bank Indonesia
BI-RTGS : Bank Indonesia RTGS
BAPEPAM : The Capital Markets Supervisory Agency
BEJ : Bersa Efek Jakarta
BES : Bersa Efek Surabaya
SBI : Sertificat Bank Indonesia
KSEI : PT Kustodian Sentral Efek Indonesia
KPEI : PT Kliring Perjaminan Efek Indonesia

The Philippines

ADAPS : Automated Debt Auction Processing System
BAP : Bankers Association of the Philippines
BSP : Bangko Sentral ng Pilipinas
BTr : Bureau of Treasury
CSA-ILF : Client Securities Account-Intraday Liquidity Facility
DoF : Department of Finance
EPCS : Electric Peso Clearing System
FIE : Fixed Income Exchange
GSED : Government Securities Eligible Dealer
ILF : Intraday Liquidity Facility
MIPS : Multi-transaction Interbank Payment System
NBQB : Non-Bank Financial Intermediaries Performing Quasi-Banking Institution
O/N RP : Overnight Repurchase Agreement
PCD : Philippine Central Depository
PCHC : Philippine Clearing House Corporation
PDDTS : Philippine Domestic Dollar Transaction System
PhilPaSS : Philippine Payment System

PSE : Philippine Stock Exchange
PDTC : Philippine Depository and Trust Corporation
RoSS : Registry of Scripless Securities
SCCP : Securities Clearing Corporation of the Philippines
SEC : Securities Exchange Commission

Vietnam

BIDV : Bank for Investment and Development
HVTS : High Value Transfer System
Incombank : Industrial and Commercial Bank of Vietnam
LVTS : Low Value Transfer System
NPSC : National Processing and Settlement Center
PPC : Provincial Payment Center
SSC : State Securities Commission
VNPT : Vietnam Posts and Telecommunications

Chapter 1: Payment Systems of Hong Kong and Singapore, and Cross-border Linkages

1. PAYMENT SYSTEMS OF HONG KONG

(1) Payment Systems

i. HK-Dollar RTGS System

The Hong Kong-dollar RTGS system, HKD CHATS (an automated clearing-house transfer system), was started in December 1996 to help reduce large-value funds settlement risks. Settlement by the HKD RTGS system is performed using banks' settlement accounts with the Hong Kong Monetary Authority (HKMA), which acts as a settlement organization. Although the system is run on the computer system of Hong Kong Interbank Clearing Limited (HKICL, a joint venture by the HKMA and the Hong Kong Association of Banks), as the owner and settlement organization of the system the HKMA monitors the flow of settlement funds and provides liquidity, and also to makes efforts to supervise and improve settlement-system facilities.

Although banks participating in this system are not given intra-day unsecured overdraft limits, they may ensure intra-day liquidity via intra-day repo transactions with the HKMA. Since Hong Kong's RTGS system is linked with the Central Moneymarkets Unit (CMU, a debt securities custody and settlement system) managed by the HKMA, its payment and securities settlement system are cooperative. Banks can obtain non-interest-bearing intra-day liquidity via intra-day repo transactions using Exchange Fund Bills and Notes¹ held with the CMU. Intra-day repo transactions that not have been repurchased before the end of business hours are rolled over as overnight transactions based on the Discount Window System (liquidity is provided by the HKMA, under the collateral of Exchange Fund Bills and Notes), as an interest-bearing transaction.

The daily average of the HKD RTGS payments in 2000 was 13,726 transactions, for HK\$365 billion. According to the HKMA, HKD RTGS payments registered a daily average of 13,621 transactions, or HK\$342 billion, for the first eleven months of 2003. As of the end of December 2002, the number of settlement accounts with the HKMA had reached 130.² According to large foreign banks in Hong Kong, the HKD RTGS system operates smoothly.

ii. USD RTGS System

a. Introduction of the USD Settlement System

Hong Kong started the USD RTGS system in August 2000, to efficiently settle US-dollar transactions in Asian time zones, and to enable PVP foreign exchange settlement linked with the HKD RTGS. In March 2000, HKMA appointed the Hong Kong and Shanghai Banking Corporation (HSBC) as a US-dollar settlement organization, in a 5-year consignment contract

¹ The issuance of exchange-fund bills was started in March 1990. The issuance of medium and long-term exchange-fund notes started with 2-year bonds, and a yield curve has formed.

² There were 134 at the end of December 2001. According to the HKMA, this reduction was mainly due to mergers and acquisitions between banks.

beginning in August 2000. Settlement of the USD RTGS system is performed through accounts with HSBC, and the system is operated by HKICL in the same manner as the HKD RTGS.

Initiation of the USD RTGS system was divided into three stages:

- At the first stage, DvP settlement of US-dollar-denominated securities (a basic portion of the USD RTGS system) started operations in August 2000. Since the RTGS system conducts real-time settlement during Hong Kong business hours (9:00 a.m. to 5:30 p.m.) instead of during New York's, more than 12 hours later, DvP settlement of US-dollar-denominated securities transactions traded on the Hong Kong Stock Exchange and futures markets became possible.
- At the second stage, PvP settlement of US-dollar and HK-dollar denominated foreign exchange transactions started in September 2000. Linkage of HKD CHATS (the HKD RTGS system) and USD CHATS (the USD RTGS system), made the Herstatt risks (i.e., funds settlement risks in different time zones) disappear. PvP settlement minimizes funds settlement risks arising from time zone differences. For USD/HKD forex transactions, the risk of having US dollars credited in New York more than 12 hours after paying HK dollars can be eliminated by PvP settlement.
- The third stage started operations in December 2000, beginning with an interface between the USD RTGS system and CMU. By making real-time DvP settlement of US-dollar securities held with the CMU possible, this interface has made settlement efficient and has reduced settlement risks. Using this interface, participants can conduct intra-day repo transactions using US-dollar-denominated securities held with the CMU, and can obtain liquidity in US dollars.

Following these three stages, a settlement mechanism for US-dollar checks has begun operations. For corporations and individuals holding accounts in US dollars with banks in Hong Kong, the linkage of clearing and settlement services with the USD RTGS system has reduced the settlement duration of US-dollar checks from approximately two weeks to two days.³

b. Providing Liquidity to Settlement Systems

To obtain liquidity in the USD RTGS system, participating banks can establish non-interest-bearing intra-day overdraft limits from HSBC. Limits and collateral are determined in individual negotiations between banks and HSBC. It is also possible to conduct intra-day repo transactions using US-dollar-denominated securities.

According to foreign banks in Hong Kong, the overdraft limits are appropriately set and easy to use, and the USD RTGS system operates smoothly, but some say that since the limits are small and collateral conditions make fund-efficiency poor, use of overdraft limits remains within small-value retail areas. Usability differs depending upon the limits set for individual banks by HSBC. Overdraft is allowed unsecured up to fixed amounts, beyond which securities and margin money have been collected as collateral.

c. Performance of the Settlement System

According to the HKMA, there were 64 direct-participation banks and 148 indirect-participation banks (which performed settlement through direct-participation banks' accounts) in the USD RTGS system as of the end of December 2002. Of the indirectly participating banks, 100 are overseas.⁴

³ HKMA says the daily average of US-dollar check clearing in June 2002 exceeded 1,000 items.

The daily average of settlements in September 2000 (right after the start of the systems) was 1,800 items, for US\$1.8 billion. By the fourth quarter of 2000, this had increased to 2,100–2,400 items, for US\$3 billion. Of the daily average number of transactions in the fourth quarter of 2000, 20–30, equivalent to US\$0.8–1.8 billion in amount, were settled on a PvP basis. According to HKMA, the daily average of settlements in 2003 has increased to over 3,900 transactions, for US\$5 billion, among which there were 50-60 PvP-settlement transactions, for US\$1.8 billion.

d. Outlook for the US-dollar Settlement System

HKMA believes that overseas banks have become seriously interested in gaining direct or indirect membership in the USD RTGS system. Based on the prospect that transactions in US dollars will diversify in the region, with USD RTGS used as an accompanying funds-payment system, HKMA intends to actively promote them, while also making efforts to improve the systems.

According to some foreign banks in Hong Kong, settlement in Hong Kong is limited to small-amount transactions at the request of customers. For this reason, US-dollar transactions are overwhelmingly settled in New York. The dispersal of settlement (such as to Hong Kong) leads to an inefficiency of funds, and complicates clerical operations for settlement. International corporations have a tendency to focus settlement in the currencies of their home countries, and with HSBC (a non-American bank where US dollars are settled) there are US-dollar funds availability risks in the event of an emergency, as well as HSBC's own credit risks.

The fees for using HSBC's settlement systems are not as high as in New York, considering that settlement risks may be reduced by quickening settlement by using Hong Kong in place of in New York. Some say that funds settlement through the USD RTGS system and HK-dollar-US-dollar PvP settlement in Hong Kong will increase in the future.

iii. Euro RTGS System

a. Introduction Schedule for the Euro Settlement System

In July 2002, the HKMA decided upon the introduction of a Euro RTGS system in Hong Kong, and after appointing the Standard Chartered Bank as a settlement organization, signed an agreement. According to HKMA, since the HKD RTGS system has worked well, and the USD RTGS system has also shown a certain degree of performance in a short period, research on the needs of banks in Hong Kong has led HKMA to believe that the feasibility of introducing Euro RTGS was high. There is also enthusiasm about pioneering a regional euro-settlement center in Asia. As with the USD RTGS system, private commercial banks were appointed as settlement organizations. This was not only due to traditions in Hong Kong, but also in line with international practices and recommendations by BIS.

The system has started operations on April 28, 2003. Linking it to the USD RTGS system will enable PvP settlement of foreign exchange transactions in US dollars and euros. Linkage with the CMU will also enable DvP settlement of securities in euros. Settlement facilities for euro-denominated checks is not currently being considered, but it will be possible to add such facilities if sufficient demand can be expected. As with the HKD RTGS and USD RTGS,

⁴ At the end of 2001, there were 65 direct-participation banks and 115 indirect-participation banks (74 of which were overseas). In December 2002 the number of indirect-participation banks increased, especially those from overseas.

system management is to be handled by HKICL, while development and operations are being discussed with the Standard Chartered Bank, which is a settlement organization. The role of HKMA is to oversee system design and operation, and to help the system meet advanced international standards.

b. Possibility of Participating in the Euro Settlement System

Foreign banks which use the USD RTGS system say they are now considering whether to participate in the Euro RTGS system. They have been cautious, however, since transactions in US dollars are overwhelmingly large in number, while transactions in euros are few, and it is unknown whether they are worth the costs. They believe that costs cannot be disregarded because the need for euro-denominated transactions will be low. For usage charges in the settlement system they have negotiated with Standard Chartered Bank.

Considerations of the euro settlement system's future are expected to focus on the credit risks of private banks that will become euro-settlement organizations, and the availability risks of their euro funds.

iv. Plans for a Yen RTGS System

On the creation of a Yen RTGS system, HKMA has researched the needs of banks, and believes that feasibility is high. HKMA believes that the mere one-hour time difference will put a Yen RTGS system in competition with settlement services in Japan, but is continuing to study its introduction.

v. Plans for Linking PvP Settlement Systems

Since starting the USD RTGS system in Hong Kong, by linking it with local currency settlement systems in neighboring countries, Hong Kong has asked that they obtain the capability to conduct PvP settlement between local currencies and US dollars in Asian time zones. It has also approached the Bank of Thailand about a system linkage, to achieve PvP settlement in baht and US dollars.

About approaching neighboring countries, HKMA says that they have converted their policy to giving priority to adapting PvP-based systems in Hong Kong to a SWIFT basis, and are now studying this. HKMA believes that even a system with international standards should link with other countries' systems.

Hong Kong regulatory authorities have planned to obtain the status of a payment center, for the purpose of transferring funds in multiple currencies in East Asia. They also appear to have made efforts to improve RTGS systems in currencies other than HK dollars, and to have continued to encourage PvP settlement linkages with neighboring countries.

Although the CLS⁵ system for curtailing funds settlement risks started in September 2002, HKMA says it is expected that in 2004 HK dollars will also be included as an eligible currency.

⁵ Continuous Linked Settlement is a process for making simultaneous settlement of foreign exchange transactions denominated in different currencies possible, and a PvP-based global settlement system for eliminating Herstatt risks arising from time-zone differences in cross-border transactions, via real-time settlement. CLS services will be offered by CLS banks. To begin foreign exchange transactions, these banks intend to establish new global infrastructures to conduct multiple-currency settlement. Those whose head offices are in New York are under the supervision of the Federal Bank of New York. CLS banks started services in September 2002, making it possible to concurrently settle transactions in seven major countries' currencies, and are scheduled to gradually add applicable currencies (such as the Singapore dollar) in the future.

(2) Securities Settlement Systems

i. Central Moneymarkets Unit

a. Settlement System for Bond Trading

The Central Moneymarkets Unit (CMU) is a Central Securities Depository (CSD) in Hong Kong, for such public-sector securities as Exchange Fund Bills and Notes and public corporation bonds, and for other private-sector debt securities. HKMA owns and manages CMU. CMU was established in March 1990, to electronically settle Exchange Fund Bills and Notes in HK dollars issued by the HKMA. In December 1993 it started handling other HK-dollar-denominated bonds, and started linkages with international clearing organizations, such as Euroclear and Clearstream (then called Cedel). In January 1996 services expanded to bonds other than those denominated in HK-dollars, and in December 1996 CMU interfaced with the HKD RTGS system.

Linking with the HKD RTGS system has allowed the CMU system to provide real-time and end-of-day DvP services to its members. In December 2000 an interface with the USD RTGS system allowed the CMU system to provide DvP service for US-dollar-denominated bonds, and to curtail settlement risks. This interface has also enabled automatic intra-day repo transactions by RTGS system participants.

Although CMU is owned and managed by HKMA, software maintenance and computer processing are handled by HKICL, under a service agreement with HKMA.

As of the end of December 2002, there were two types of qualifications for CMU membership. CMU is composed of 176 members who possess and settle private-sector debt securities and conduct settlement transactions, and 157 recognized dealers (29 of whom are appointed as market-makers) who are entitled to trade Exchange Fund Bills and Notes.

Daily average turnover in 2002 was HK\$23 billion, of which 99.3 percent were on a DvP settlement basis. The outstanding securities with the CMU at that time were composed of HK\$125 billion in Exchange Fund Bills and Notes, and HK\$217.3 billion and US\$1.8 billion in other (mainly private-sector) bonds.

All bonds to be settled in the CMU are those traded on a de-materialized basis, and which have no certificates or have been immobilized. The transfer of bonds is performed using a computerized book-entry system.

The settlement cycle is T+2, but that related to over-the-counter transactions can be shortened to T+0. Since CMU is not a central counterparty in trading securities, it does not assure settlement. If a buyer has insufficient funds or a seller has insufficient securities, transaction settlement will fail, and be automatically cancelled when the CMU system closes. Accordingly, CMU does not assume credit risks to its members. Bank members can obtain intra-day liquidity through automatic intra-day repo transactions with the settlement organization in the payment system.

b. Enhancement of New CMU Services

HKMA is addressing the enhancement of services newly offered by CMU. In December 2002 HKMA started settlement services for US Treasury securities and custody, by which investors in Hong Kong and Asia can clear US Treasury securities in Hong Kong's time zone via CMU. HKMA has appointed Citibank as a custodian, to perform custody of US Treasury

securities on behalf of CMU. Accordingly, HKMA has made a linkage between the Fedwire Book-Entry Securities Transfer System (a settlement system for treasury securities, operated by the Federal Reserve Bank of New York) and CMU, although indirectly via Citibank.

By using the existing CMU-USD RTGS system linkage, and through members' accounts held with CMU, investors have become able to conduct real-time DvP settlement. By quickening DvP settlement of US Treasury securities from New York's time zone to Hong Kong's time zone, and by shortening the settlement cycle, settlement efficiency and reduction of Asian market participants' settlement risks have been achieved.⁶

By linking the Euro RTGS system scheduled to operate in April 2003 with CMU, HKMA is expected to also achieve DvP settlement of Euro-denominated securities.

HKMA will not take action after verifying whether business needs in each field are high, and seems to have a policy of establishing system infrastructures in preparation for future needs.

c. Addressing Straight-through Processing

In October 2002 HKMA announced that it had granted BondsInHongKong (BIHK)⁷ a license for a system interface with CMU. This was for the purpose of promoting the development of a straight-through processing (STP) infrastructure that fully automates the trading process, from trade execution to final settlement, for OTC securities settlement via CMU. HKMA says that STP will make the settlement process more efficient, will reduce trading costs to market participants, and will be useful for the development of Hong Kong's securities market. But since the end of July 2003, the trading platform has been suspended.

ii. Central Clearing and Settlement System

a. Settlement System for Stock Transactions

The Central Clearing and Settlement System (CCASS) is managed by Hong Kong Securities Clearing Company Limited (HKSCC), under the control of Hong Kong Exchanges and Clearing Limited (HKEx). It is a CSD for securities listed on the Stock Exchange of Hong Kong (SEHK), such as ordinary shares, preference shares, and Exchange Fund Notes. Only securities listed on SEHK may be subject to CCASS settlement.

Interfaces between HKICL's Real Time Gross Settlement and CCASS were established in May 1998, enabling real-time DvP settlement of HK-dollar-denominated stocks through settlement instructions. In August 2000, real-time DvP facilities were expanded to stocks traded in US dollars.

b. Exchange Trading

Exchange trading is conducted through the Automatic Matching System (AMS), which is

⁶ Custodians appointed by CMU are required to hold the CMU's securities separate from their own holdings. Therefore, even if a custodian goes bankrupt, it does not affect the entitlement of the securities held by the CMU.

⁷ A subsidiary company of BondsInAsia (BIA), conducting dealing of HK-dollar-denominated bonds. Stockholders include HSBC, Citibank, Deutsche Bank, BNP Paribas, Credit Suisse First Boston, Hang Seng Bank, Barclays Bank, Bank of America, and JP Morgan. Its trading platform has been suspended since the end of July 2003, and is now in members' voluntary liquidation.

directly interfaced with CCASS, to which all exchange trade details are submitted for automated settlement. The latest version, AMS/3, began in October 2000 and also supports foreign-currency-denominated securities transactions. Traded securities include HK-dollar and US-dollar denominated securities. Securities to be settled through CCASS are immobilized, and settlement will be effected by book entry, i.e., shares are moved from the stock account of the delivering participant to those of the receiving participant via debit and credit entries. The stock settlement fee for exchange trades is 0.002 percent of their gross value with a minimum fee of HK\$2 and a maximum fee of HK\$100 per trade. Matching of exchange trades is performed at T+0, and CCASS's settlement is at T+2.

c. Continuous Netting Settlement System

Stock exchange transactions are either settled through the Continuous Net Settlement (CNS) process, or as isolated trades (if both counterparty participants choose to settle directly with each other, such transactions will be isolated from the CNS process). Overdue and unsettled securities positions are carried over in sequence on the following business day, when they will be netted against any reverse position arising on that day (i.e., cross-day netting). The cross-day netting exercise will repeat as long as there are reverse positions arising on the current day to net against overdue position carried forward from the previous business day. In the CNS, HKSCC (a central counterparty) guarantees settlement to both sell and buy brokers. Transactions settled through CNS are continuously performed on a DvP basis, whereby funds settlement takes place at HKICL's CHATS after HKSCC sends settlement instructions (based on which netting is performed) to the designated banks.

HKSCC upgraded CCASS to CCASS/3 in December 2002. CCASS/3 is an advanced system with an infrastructure in place to achieve STP according to future international standards.

d. Relationship with the CMU

CCASS maintains an account with CMU in order to facilitate its participants' settlement of such debt securities as Exchange Fund Notes. According to both HKMA and HKEx, there is no plan to merge CMU and CCASS into a single CSD. According to HKMA, CMU members hope that clearing and settlement of equities for OTC trades can be performed using CMU. Although CMU systems can satisfactorily handle the clearing and settlement of equities for OTC trades, there is no plan for it doing so because the business case is not so strong.

HKMA has expanded the CMU network for cross-border linkage, and HKEx is currently linked with Depository Trust & Clearing Company (DTCC) in the USA. HKEx has a policy of promoting cooperation with overseas securities exchanges, including those in China, and focuses on linkages which add real value to their participants.

(3) Enhancement of Linkages with China

i. Closer Economic Relationship with China

Hong Kong has performed custom clearance and immigration control separately from Mainland China, even after its return in 1997, and has remained an independent WTO member even after China gained membership. By the time China's domestic markets become open to the world, following the China's liberalization after entry to the WTO, Hong Kong aims to have closer relationships with China in service industries (including financial trading), ahead of other

countries, and to ensure its advantage as an international financial center.

a. Free-trade Agreement Plans with China

Since acquiring transactions with China and cooperating with Hua Nan industries group are considered indispensable to Hong Kong's development, in November 2001 Tung Chee-hwa, the chief executive of the Hong Kong Special Administrative Region, submitted a proposal for a free-trade agreement (FTA). After that, Hong Kong began discussions with China on concluding a closer economic partnership arrangement (CEPA), a step beyond a free-trade agreement. It has aimed at concluding an agreement by June 2003, and has made efforts to revise China-Hong Kong's immigration procedures.⁸ According to the regional authorities, CEPA negotiations are divided into three sections: merchandise trades, service trades (such as banking), and investments. It is estimated that negotiations will develop gradually.

b. Closer Financial Relationships with China

For securities trading, Chinese corporations have actively listed on the Hong Kong stock exchange, and at the end of December 2002 a record high of 117 companies issued stocks. US\$2.6 billion of funds raised by the Bank of China (Hong Kong), listed on the Hong Kong market in July 2002, was the largest funding amount in Asia (excluding Japan in 2002).

For foreign exchange transactions, three of the four largest state-owned banks—Bank of China, Construction Bank of China, Industrial and Commercial Bank of China—in 2001 shifted exchange operations to Hong Kong, and have actively performed US-dollar and HK-dollar denominated trading there.

To acquire overseas investments by Chinese domestic investors, in March 2002 the president of the People's Bank of China suggested the creation of a qualified domestic institutional investors scheme (QDII), to approve investment to overseas stock exchanges including Hong Kong, which has been studied. On March 12, 2003, the newly-appointed president of the People's Bank of China also suggested that QDII be created within 2003. Officials of China's regulatory authorities indicated the possibility that QDII will be included in the CEPA with Hong Kong.

According to the Hong Kong authorities and foreign banks, before approving direct investment to international markets, China may use the Hong Kong market (where the infrastructure has been maintained) as a test case. If external investment to other markets is permitted after testing QDII in the Hong Kong market, there will be an advantage that control can be conducted according to results.

To promote the flow of funds to Mainland China, in December 2002 a qualified foreign institutional investors scheme (QFII) was introduced. A scheme for opening A shares investment in RMB (which had been limited to domestic investors) to some overseas investors including Hong Kong, was also started. In January 2003 the People's Bank of China announced that they had approved QFII trustee business for handling A shares in RMB for nine commercial banks, including three foreign banks.⁹

⁸ For example, since January 27, 2003, the immigration counter connecting Hong Kong and Shenzhen has been open 24 hours a day.

⁹ The three foreign banks are HongKong and Shanghai Banking Corporation, Citibank, and Standard Chartered Bank, and the six domestic banks are Bank of China, Industrial and Commercial Bank of China, Construction Bank of China and Agricultural Bank of China (four state-owned banks), Bank of Communications in Shanghai, and China Merchants Bank in Shenzhen.

c. Plans for Accepting RMB-denominated Deposits in Hong Kong

In March 2002 the People's Bank of China said that it will set a course of action for approving acceptance of RMB-denominated deposits in Hong Kong. By some assessments, the unofficial circulation of RMB notes in Hong Kong is already nearly US\$10 billion, and will increase due to the rise in tourists from Mainland China. The RMB-deposits plan is to be limited to Hong Kong residents, deposit limits appear to have been set, and while its short-term effects will be limited, there will be positive medium and long-term effects in Hong Kong. Sensitive to foreign exchange controls, Chinese authorities seem to wish to avoid the creation of an offshore market in RMB in Hong Kong, but since it will bring great benefits to financial institutions in Hong Kong, RMB-denominated operations may become an important strategically business for Hong Kong.

In November 2003 Hong Kong Monetary Authority (HKMA) announced that they agreed with the People's Bank of China (PBoC) to provide clearing arrangements for banks in Hong Kong to conduct personal renminbi (RMB) business on a trial basis.¹⁰ In late February 2004, banks in Hong Kong started the offer of renminbi deposits and currency exchange services. According to the survey by HKMA to 14 banks, at the close of business on March 3, the total amount of renminbi deposits outstanding was approaching RMB1.5 billion. Although the Chinese authorities' approval of RMB deposits to banks in Hong Kong is for the purpose of verifying the flow of RMB, Hong Kong also intends to establish a RMB settlement system by improving infrastructures by the time Mainland China eliminates capital regulations. Further progress is expected in the future.

ii. Promotion of Settlement Infrastructure Linkage with China

Upgrading of the infrastructure for funds and securities settlement in the Hong Kong market has progressed further than in Mainland China and ASEAN countries, giving Hong Kong a dominant position. As one way of forging closer economic relationships with China, the Hong Kong authorities have actively promoted funds and securities settlement-system linkage with China.

a. Payment System Linkage with China

Two-way linkage of HK-dollar-denominated check settlement has been started. One-way clearing and settling of HK-dollar-denominated checks presented in Guangdong Province, to be paid by banks located in Hong Kong, was started in January 1998. Two-way bilateral linkage started in September 2002, based on an agreement between HKMA and the People's Bank of China's Guangzhou Branch. HK-dollar-denominated checks presented in Hong Kong, to be paid by banks located in Guangdong Province, can now also be cleared and settled.

Previously, due to the need to possess foreign currency as a measure against RMB depreciation, and currently, due to the settlement needs of tourists and traders, the circulation of HK dollars has prevailed in Guangdong Province. According to HKMA, from June 2001 to May 2002, 135,000 checks for a total of HK\$13.2 billion were cleared and settled. Check settlement takes two business days to complete.

According to HKMA it is possible for Chinese banks to access the HKD RTGS system in Hong Kong, using an indirect link via the People's Bank of China (Shenzhen). It is expected that in the future, the funds-settlement services of the HKD RTGS system will be actively promoted to China, and that HK-dollar fund settlement links will be improved.

¹⁰ The trial basis RMB business will include 4 areas; Deposit-taking, Exchange, Remittances and Renminbi Cards

Although not yet available, the Hong Kong authorities plan to link the USD RTGS system and Mainland China's funds-settlement system, which will help Hong Kong become a place to settle US-dollar-denominated foreign exchange for Mainland China.

Expected to start in April 2003, if the Euro RTGS system functions properly, it is expected that (as for euro-denominated fund settlement) settlement linkage with China will be promoted.

b. Securities Settlement System Linkage with China

In January 2002, HKMA and China Government Securities Depository Trust & Clearing Co. Ltd. (CDC) concluded a basic agreement that CMU will be linked with CDC's Government Securities Book-Entry System (GSBS). Although this is a one-way linkage where the Chinese side opens an account with the CMU, Chinese financial institutions will be able to hold securities and settle them on a DvP basis via those accounts.

A two-way bilateral linkage between Hong Kong and Euroclear started in November 2002, and in January 2003 a two-way linkage between Hong Kong and Clearstream was also started. Chinese financial institutions will be able to hold and settle international securities in Euroclear and Clearstream, via accounts held with CMU. Based on this, the Hong Kong authorities plan to make Hong Kong a place for holding and settling Mainland China's securities.

(4) Cross-border Linkage with International CSDs

HKMA has actively promoted linkages among CMU (a CSD in Hong Kong), international CSDs (such as Euroclear and Clearstream), and other CSDs in Asia.

Promotion of cross-border linkages is for the purpose of improving securities-market infrastructures in the region, smoothly conducting settlement of cross-border securities trading, and reducing settlement risks. HKMA also plans to secure a position as a securities settlement hub in Asia.

i. Bilateral Linkages with International CSDs

In December 1994 HKMA formed a one-way linkage between CMU and international CSDs, such as Euroclear and Cedel (later Clearstream), through which customers of Euroclear and Cedel could settle securities at CMU. A two-way link was formed with Euroclear in November 2002, and with Clearstream in January 2003.

According to HKMA, in three months after beginning the two-way linkage between CMU and Euroclear (to February 2003), peak settlement each day was US\$200 million. Although the two-way link with Clearstream has just started, peak settlement amount per day in January and February 2003 was US\$200 million, which is an increase over the US\$1 million just after it started.

ii. Bilateral Linkages with Regional CSDs

In the Asia-Pacific region, a one-way linkages of the CMU with RITS and Austraclear (Australian CSDs) were started in December 1997. According to HKMA, this linkage was one-way because there were few needs from Australia to Hong Kong, even though there are immigrants from Hong Kong to Australia, and even though there is portfolio investment from Hong Kong. There were few payment results.

A two-way linkage with New Zealand's CSD was started in April 1998, and in September

1999 one was formed with South Korea's CSD, although neither has had appreciable payment results.

Although the settlement results of cross-border linkages were not high, the Hong Kong authorities stress that settlement risks will be reduced, and that the base of investors and domestic bond markets will expand, by not only maintaining an infrastructure to smoothly conduct cross-border bond holding and settlement in Hong Kong and overseas, but also introducing DvP settlement into cross-border bond trading. Even if there is currently little demand, there is nonetheless a positive attitude and a decisive policy toward preparing for the future.

iii. Relationships with Global Custodians

Cross-border securities holding and settlement services are also performed by global custodians, which include major foreign banks. The limited results of cross-border securities custody and settlement using the CMU may arise from the fact that these types of services are also performed by global custodians.

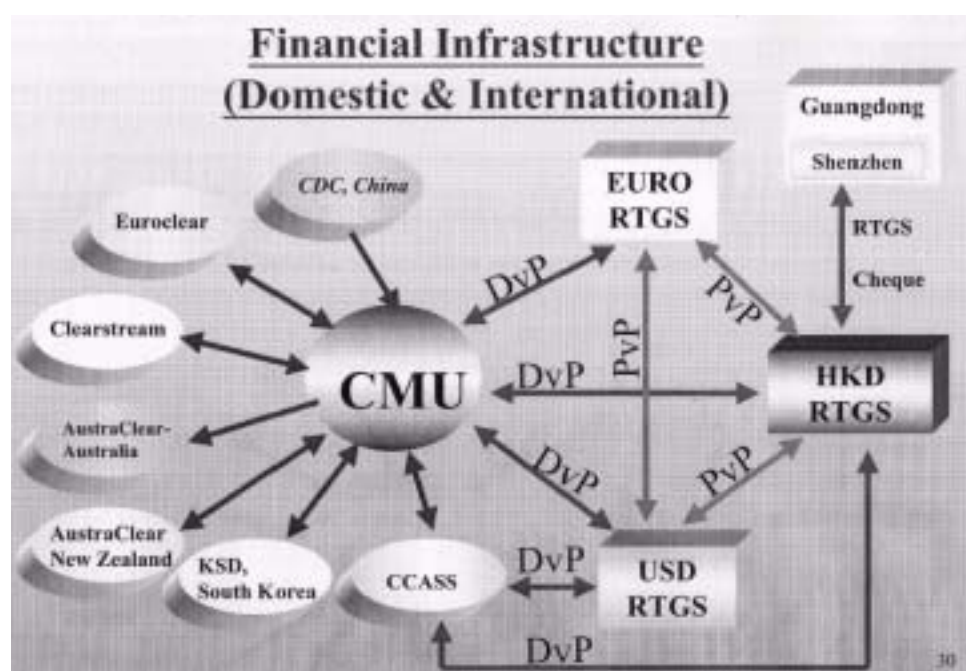
According to HKMA, large investors do not regard CMU as competitive with global custodians, because they provide a wide variety of services to investors, with cross-border settlement only part of the services they provide. CMU's cross-border settlement facilities have nonetheless had an effect in preventing rises in the settlement fees collected from customers by global custodians.

iv. Comparison with Singapore

There is a difference between Singapore and Hong Kong. While cross-border linkages have been undertaken by HKMA's CMU, in Singapore it is the Singapore Exchange's (SGX) Central Depository that has primarily been the driver of cross-border linkage initiatives at the commercial level, with the Monetary Authority of Singapore playing a strong, supportive role. HKMA regards such links as an investment for the future, even if demand is not currently high, and has a clear policy of continuing to actively promote CSD linkages. Hong Kong has been ahead Singapore in the results of linkages with CSD.

The Hong Kong authorities are confident that they have contributed to reducing investors' settlement risks in the Hong Kong time zone, by promoting linkages with CSD and providing new services in the securities settlement systems, and have clear plans to become a settlement hub for securities trading in Asia.

Figure 1: Hong Kong's Cross-border Linkages and DvP/PvP



Source: HKMA.

Note:

- **Start Dates of Cross-border Linkages:** China: 2003/2Q (scheduled); Euroclear: Nov. 2002; Clearstream: Jan. 2003; Australia: Dec. 1997; New Zealand: Apr. 1998; South Korea: Sep. 1999; Guangdong (checks): Sep. 2002.
- **Start Dates of DvP Operations:** CMU-EURO RTGS: 2003/2Q (scheduled); CMU-HKD RTGS: May 1998; CMU-USD RTGS: Dec. 2000; CCASS-HKD RTGS: May 1998; CCASS-USD RTGS: Aug. 2000.
- **Start Dates of PvP Operations:** EURO-HKD: 2003/2Q (scheduled); Euro-USD: 2003/2Q (scheduled); HKD-USD: Sep. 2000.

2. PAYMENT SYSTEMS OF SINGAPORE

(1) Payment Systems

i. Payment System Types

Singapore's payment systems are operated by three major organizations.

- Large-value inter-bank payments are performed through the MAS Electronic Payment System (MEPS), which is owned and operated by the Monetary Authority of Singapore (MAS).
- There are three systems for small inter-bank payments, all provided by the Automated Clearing House (ACH) managed by the Singapore Clearing House Association (SCHA), handling Singapore-dollar check clearing, US-dollar check clearing, and inter-bank Giro. ACH's operation has been consigned to Banking Computer Services Pte Ltd. (BCS).
- Retail payment systems, such as regional banks' ATM networks, POS, the debit card network and others, is operated by the Network for Electronic Transfers (Singapore) Pte Ltd. (NETS). NETS's shareholders are Development Bank of Singapore (DBS), Overseas-Chinese Banking Corporation (OCBC), and United Overseas Bank (UOB).

With effect from 12 July 2003, all banks in Singapore that clear SGD and local USD cheques have implemented an online image-based check clearing system called the Check Truncation System (CTS). With CTS, cheques are scanned when deposited and its electronic image, instead of the physical check, will be transmitted throughout the entire clearing cycle.

The final settlement of Singapore-dollar checks and inter-bank Giro is performed on a multilateral deferred same-day net settlement basis¹¹ through banks' accounts in MEPS. ACH transmits the settlement figures to MEPS using a direct interface at a fixed time at the end of each business day.

The final settlement of US-dollar checks is performed on the next business day, and the final balance is settled through participating banks' accounts at Citibank N.A., which is the settlement agent for the US-dollar check clearing system. Citibank is notified of each participating bank's settlement amount by the ACH at a fixed time during each business day.

The systems operated by NETS are settled through participants' accounts at DBS, an agent organization for settlement. For settlement on a deferred same-day basis, NETS notifies DBS of multilateral net settlement amounts.

ii. Singapore-dollar RTGS System

MEPS is an RTGS system developed for Singapore-dollar (SGD) large-value inter-bank funds transfers and settlement of Singapore Government Securities (SGS).¹² All banks and regulated non-banks of systemic importance are eligible to participate in MEPS. Transfers of funds and SGS are performed via settlement accounts in MEPS. There are 71 direct participating banks at the moment. As of the end of 2002, the average daily settlement was 7,355 by volume, amounting to a daily average value of S\$36 billion.

MEPS participants do not pay any admission or subscription fees. Transactions are charged at S\$1.25 per message, payable by the party initiating the MEPS message.

To minimize settlement risks, banks may use funds in excess of their intra-day reserve account balances to make payments. In addition, an end-of-day liquidity facility is provided to banks in the form of SGS overnight repurchase agreements with an interest rate of 2 percent above the 1-month SGD SIBOR. On a system level, MAS may, where necessary, extend intraday credit through primary dealer banks to resolve payment gridlocks.

The system has not experienced any outages since it began operations in July 1998.

iii. PvP Settlement and CLS System

Singapore felt that business would be marginal for a Singapore facility like Hong Kong's HK\$/US\$ PvP system. Instead, it pursued the strategy of linking to the globally endorsed CLS system, enabling it immediate access to PvP for the world's major currencies.

The CLS system for reducing settlement risks started operations in September 2002, and handles seven major currencies (yen, US dollars, euros, UK pounds, Swiss francs, Canadian dollars, and Australian dollars). CLS has been successful in settling these currencies for the past one year, reaching an average daily volume of 80,000 trades with gross value of US\$1 trillion.

¹¹ Net settlement between counterparties performed after a predetermined time is called "deferred net settlement." Same-day settlement performed after a predetermined time is called "deferred same-day net settlement."

¹² MAS issues SGSs as an agent of the Singapore government. SGSs include 3-month to 15-year securities, and are divided into short-term treasury bills and long-term government bonds. Three-month and 1-year T-bills are benchmark issues, and 2-, 5-, 7-, 10-, and 15-year terms are benchmark bonds issues.

The Singapore dollar has been included as an eligible currency in September 2003, making PVP settlement possible between the Singapore dollar and the other CLS-eligible currencies.

According to MAS, three local banks in Singapore (DBS, OCBC, and UOB) became members of the CLS settlement system in December 2002, and have since then settled their forex transactions through.

iv. Payment and Settlement Systems (Finality and Netting) Act 2002

The Payment and Settlement Systems (Finality and Netting) Act was enacted in December 2002. This act protects designated payment and settlement systems from the application of laws (such as insolvency laws) that may threaten the finality and irrevocability of transactions. This act also upholds the validity of netting arrangements in the event of the insolvency of a participant in a designated system.

The Payment and Settlement Systems (Finality and Netting) Act authorizes MAS to designate payment and settlement systems, with the consequence that these systems will be exempt from certain laws. In determining whether to designate a system, MAS will take into account a range of factors, especially the systemic risks associated with that payment system. According to MAS, countries like Australia, the United States, Canada, and many European countries have also enacted similar legislation to address such payment system risks. The designation of the CLS system (a global system for foreign exchange settlement) under this act has also facilitated the participation of Singaporean banks in the CLS system, as well as the inclusion of the Singapore dollar as a CLS settlement currency.

(2) Securities Settlement System

MAS owns and operates the MEPS-SGS settlement system, which provides clearing, settlement, and depository functions for the SGS market. The Central Depository (Pte) Ltd. (CDP), a wholly-owned subsidiary of the Singapore Exchange Ltd. (SGX), operates the clearing and settlement systems, and also functions as the depository for equities and debt securities.

i. SGS Settlement System

MAS' MEPS-SGS system is used for the DvP settlement of SGS. SGS are scripless, so the transfer of titles is performed entirely by electronic book-entry across the accounts of the securities holders in MEPS-SGS.

MEPS' participants hold two accounts in the MEPS-SGS sub-system: an SGS-MLA account that maintains an SGS balance to satisfy Minimum Liquid Asset (MLA) obligations,¹³ and an SGS-Free account that is used for trading. Banks may only sell SGS held in SGS-Free accounts. SGS holdings in excess of the MLA requirements may be transferred from the SGS-MLA account to the SGS-Free account.

When the seller of SGS has insufficient securities for delivery, the transaction is kept in a

¹³ Banks are required to maintain a minimum cash balance (MCB), on an average basis, of 3 percent of bank deposits in their MAS accounts. The average must be held over a 14-day period, during which time it is permitted to fluctuate between 2 and 4 percent. Any balance with the MAS in excess of the MCB requirement may be used to count against the MLA.

queue in MEPS until there is enough SGS in the seller's SGS-Free account. When sufficient SGS are available in the seller's SGS-Free account, they will be earmarked for the buyer, and a payment instruction will be forwarded to MEPS.

If a buyer bank does not have funds sufficient for the purchase of SGS, the payment will be kept in a queue in MEPS. When funds become sufficient, the buyer's RTGS account is debited, and the seller's RTGS account is credited. Notification is submitted to the MEPS-SGS subsystem, and the securities are delivered to the seller instantaneously and irrevocably. The settlement cycle is T+1.

According to MAS, the daily average transaction volume in the MEPS-SGS system in 2002 was 188 and the daily average value was S\$2.68 billion in 2002.

In 2000 there was a review to study the feasibility of transferring the settlement of SGS settlement from MEPS to CDP, as a first step towards establishing a single, consolidated settlement entity. This review concluded that it was not immediately obvious that the proposal to transfer SGS settlement from MEPS to CDP was the most efficient way of proceeding. Banks' advantages tended to lie with MEPS because of its RTGS, and for MAS, MEPS facilitates the monitoring of banks' compliance with the minimum liquidity asset requirements. In addition, the settlement cycle for SGS transactions is T+1, while that for equities transactions is T+3. The recommendation was therefore to re-consider the proposal when there is a stronger case for transferring or outsourcing SGS settlement and custody functions.

ii. Depository for Singapore's Securities Markets

CDP operates the depository for the Singapore securities markets. Both equities and debt securities not issued by the Singapore government are immobilized at CDP. Market participants may choose to open an account directly with CDP to custodise their securities holdings, or they may hold an account through a depository agent. Settlement of securities transactions are effected through book-entry transfers of securities in CDP.

iii. Settlement System for Private and Public Corporation Bonds

CDP operates the Debt Securities Clearing and Settlement System (DCSS), for the settlement of transactions in Singapore-dollar-denominated private and public corporation bonds. CDP does not function as a central counterparty for the clearing and settlement of transactions in debt securities.

The settlement of transactions in bonds is possible on both DvP and FOP (free-of-payment) bases, although market participants usually opt for DvP settlement. Funds payments are performed through MEPS, and book-entry of securities takes place in CDP's system. All trades are settled on a gross basis. A linkage between DCSS and MEPS allows settlement on a real-time DvP basis, with the settlement period determined by market participants. For FOP settlement, market participants submit instructions through DCSS for the book-entry transfer of securities, while separately arranging for funds payment.

According to CDP, DCSS's settlements in January 2003 amounted to 506 items, for S\$756 million.

iv. Stock Settlement System

CDP also performs the clearing and settlement function for trades executed on the market operated by the Singapore Exchange Securities Trading Ltd. (SGX-ST). Once a trade is

matched on SGX-ST, through novation CDP becomes the counterparty to each side of the transaction, guaranteeing settlement to the respective brokers. Such trades are settled on a T+3 settlement cycle. The average daily turnover of all securities traded on the SGX-ST was S\$423 million in 2002. CDP charges a clearing fee of 0.05 percent of the value of each contract, with a cap of S\$200 (since December 1, 2001).

An investor may choose to settle an exchange trade through CDP's enhanced DVP system. Under this system, CDP acts as the counterparty to the investor for every transaction affirmed in the Institutional Delivery and Affirmation System (IDAS). CDP's guarantee under this system is supported by undertakings and bank guarantees by approved settlement agents. The majority of institutional trades are settled through this system.

v. Addressing STP

SGX began an initiative to bring the Singapore securities market to a STP environment, from trade execution to final settlement. According to SGX, STP would make back-office processing more efficient, thereby reducing participants' costs.

To create the STP system, SGX will establish an open communications hub, and will introduce common communications protocols and standards for transmitting information. Using this open hub, communication and matching of settlement instructions between participants can be automated. This hub is called the Central Pre-Matching utility (CPM). To connect with CPM, participants require an interface called the Participants Access Module (PAM).

In the first phase of the STP project, SGX hired a consultant to design the technical infrastructure. This project is now in its second phase, and the CPM will be established based on the specifications developed at the first phase. It is expected that the second phase will take approximately two more years.

According to SGX, the CPM has the advantage of becoming a communication hub for trade settlement between domestic and overseas participants. The CPM will be designed to connect with other global STP utilities that may be established.

(3) Settlement System's Cross-border Linkage

i. Plans for Retail Settlement Linkage

NETS has expanded its retail electronic settlement network to neighboring ASEAN countries, and has planned to make the regional retail payment system cashless.

According to NETS, a license agreement to operate its products and systems has been concluded with Philippines, South Korea, and Thailand. It is said that the start of operations on a commercial basis is to be determined by each country, and it is anticipated that at least one will begin the service soon.

Letters of intent to form POS linkage and develop ATM-network compatibility have been signed with Malaysian and Indonesian networks respectively. In August 2002, an agreement between NETS and Malaysia's Malaysian Electronic Payment System (MEPS) on the mutual use of the countries' POS systems by each others' debit card holders, was announced. In September 2002, an agreement was announced between NETS and PT Artajasa Pembayaran Elektronik (Artajasa), which operates ATM networks in Indonesia. It is planned that both NETS cardholders in Singapore and Artajasa's cardholders in Indonesia will be able to use each

others' ATM and POS networks.

BCS (which operates the ACH) has examined the infrastructure upgrades which will enable cross-border retail payments by linking the ACH in Singapore with the ACHs in Indonesia, Malaysia, and Thailand. They plan to expand to other ASEAN countries in the future, and already have a backup from the ASEAN Banking Association. It is said that they will assess what can be accomplished over the next several years.

ii. Cross-border Linkages of CSD and Stock Exchanges

a. CSD's Linkage

CDP has established a link with Clearstream, to facilitate Singaporean investors' holding of securities deposited in their CDP accounts there. Clearstream and Euroclear are also linked to CDP through their Singapore sub-custodians, allowing their participants to hold securities deposited in CDP.

CDP has links with Depository Trust & Clearing Company (DTCC) in the USA, Japan Securities Clearing Corporation (JSCC), and Shenzhen Securities Registrars Company (SSRC). These links are for the purpose of custodising American, Japanese and Chinese securities to facilitate the settlement of transactions in them in the Singapore market.

In November 2000 CDP and PT Kustodian Sentral Efek Indonesia (KSEI, a CSD in Indonesia) concluded a memorandum of understanding, to establish a bilateral custody link. Under the proposed arrangement, the depositories would hold accounts with each other, to facilitate the settlement of transactions in Singapore securities in the Indonesian market, and vice versa.

b. Stock Exchange Linkage

In December 2001 SGX and the Australian Stock Exchange (ASX) started operation of a co-trading system in both markets, by which selected securities are traded and electronically cleared. According to SGX, investors in Australia and Singapore may trade stocks in local currencies through stock brokers during the hours that each market is open. From the establishment of the link up until October 2002, the average daily value of transactions executed through the linkage has been around S\$900,000.

SGX agreed to study a strategic tie-up with the Tokyo Stock Exchange (TSE) in October 2001. It is said that they will pursue co-trading and settlement linkage of securities listed on both exchanges, development and marketing of new products, and the development and sharing of information technology.

Chapter 2: Payment Systems of China

1. PAYMENT SYSTEMS

China's payment systems consist of the nationwide inter-bank system operated by the People's Bank of China (the existing EIS will be replaced by the next-generation CNAPS), regional (cities and counties) payment systems (LCHS), and commercial banks' intra-bank payment systems.

(1) Electronic Interbank System

i. Outline

The Electronic Interbank System (EIS) handles exchange clearing and settlement processing among each financial institution on a nationwide scale. Its development began in 1989, and it went into operation in seven cities in 1991. EIS's National Clearing Center (NCC) that is located in Beijing and functions as a "host," and "relay centers," located in People's Bank of China's (PBC) units (branches and sub-branches) across the country, are connected through the VAST system (a 64–128 Kbps satellite digital interactive system). In January 2002, linkage of PBC sub-branches at the county level was completed, and now more than 2,160 of its units are linked via networks,¹ all together comprising EIS in a narrow sense. Furthermore the ABS System that is located in PBC's relay-center units, and conducts settlement processing of financial institutions' accounts (approximately 20,000) held with branches, based on data received from EIS, and the CEPS System that provides notification of remittance credit entries to many financial institutions, are linked to EIS. Since 1999, there has been a backup center located in Wuxi City, in Jiangsu Province (in the suburbs of Shanghai City).

ii. Payment Structure

The following uses funds payments between distant places and different financial institutions as an example.

- a.* A sending bank's X branch submits a written or electronic payment instruction to a PBC X branch in the same area.
- b.* After withdrawing funds from the sending bank's X branch's deposit account, the PBC X branch transfers the payment instruction via satellite to NCC.
- c.* NCC transmits the payment instruction to a PBC Y branch in the same area as the receiving bank's Y branch, and that PBC Y branch credits the funds to the receiving bank's Y branch's deposit account there.
- d.* The receiving PBC Y branch provides notification of the payment to the receiving bank's Y branch (or the receiving bank's Y branch receives a written payment notification via the clearinghouse.)
- e.* The receiving bank's Y branch credits the funds to the recipient's account.

¹ Number of relay centers is 646 in all over the country. In a small scale of sub-branch at a county level, multiple sub-branches jointly own one relay center.

One-sided entry where debiting and crediting at different times are performed, has been used in this manner.

This system's operating hours are from 8:30 a.m. to 7:30 p.m., and daily transactions average 150,000, amounting to RMB140 billion (in 2001).

If the sending bank's account balance is insufficient, the payment instruction is held in the queue until processing becomes possible, and the payment becomes final once credit processing is conducted. PBC does not permit intra-day overdrafts for the accounts of financial institutions held with it. Hence, if a financial institution does not have sufficient funds, the payment will not be executed. However, there is such a risk that operational factors may lead to overdrafts, and in such cases PBC's internal rules call for a deposit balance adjustment.

With the expansion of EIS, particularly in network linkages between PBC branches and financial institution's branches, STP processing has become possible, so that more than 90 percent of transactions between distant places are settled on a same-day basis at the inter-bank level. Between customers, however, since there are debit processing to EIS on the sending banks side, and credit processing to the customers' accounts on the receiving banks side, and some banks may use manual processing, same-day payment may not be possible in some cases.

Gross payment is performed between banks, and it may be said that RTGS is attained at major branches where immediate processing may be conducted via networks.

There is a remittance charge of RMB4.5 for each transaction.

iii. EIS Revaluation and Pending Issues

It may be appreciated that the updating of systems and networks had significantly increased the speed of payment, but financial institutions' settlement accounts have not been centrally managed, and are inefficiently dispersed among PBC branches and sub-branches. Since there is no clear mechanism for supplying liquidity, financial institutions must deposit excess reserves into each account of their branches. Moreover, since EIS settlement is operated on a gross basis, it is unsuitable for small-value settlements between distant places.

(2) China National Advanced Payment System

i. Development History

Starting from the computerization of payment systems designed in the Eighth Five-Year Plan (1991–1995), in 1991 an advisory group was established by five countries' central banks (Japan, USA, UK, Germany, and Switzerland) under an initiative of the World Bank. This group advised PBC on system requirements and bidding methods, and in June 1995 a consortium with NTT DATA Corporation as the core member was established. After that six years were required until delivery of the system to PBC in July 2001, due to loose setting of requirements based on diversified operations among PBC branches, efforts to unify PBC branches, and problems in interfaces with EIS. The cost of this project was US\$48.1 million (approximately ¥5.8 billion), all of which was borrowed from the World Bank. Partial customization was then performed by Chinese-affiliated SI companies, and eventually, on October 4, 2002, a three-month testing period for the large-value payment systems (described

below) was started in Beijing and Wuhan.²

ii. Outline

The China National Advanced Payment System (CNAPS) is composed of the High-Value Payment System (HVPS), the Bulk-Entry Payment System (BEPS), and the Settlement Account Processing System (SAPS). HVPS is an RTGS that performs real-time processing of large-value funds on a gross amount basis, and has the same functions as Bank of Japan's financial network system (BOJ-NET). BEPS is for small-value funds, with daily netting night batch processing, and has the same function as Data Telecommunication System of All Banks in Japan. SAPS is the system for common operations related to settlement accounts, including receipt and payment of money, settlement of LCHS, and management of overdraft limits. Although such a SAPS function makes up a part of the entire payment system in many other countries, CNAPS uses each of them independently.

There is a host computer at the CNAPS National Processing Center (NPC) in Beijing, and a backup center in Wuxi City, in Jiangsu Province. The NPC and PBC branches, and the NPC and the backup center, are connected via satellite (SINOSAT), with landlines used as a backup. Communication protocols use TCP/IC, and the message protocol is SWIFT-compliant.

PBC branches possess servers that process data from connected financial institutions' head offices and branches, and have PC terminals (EPC) to input data received via floppy disk or in writing from financial institutions that are not connected online.

iii. Payment Structure

a. HVPS

HVPS is a RTGS used for transactions of RMB500,000 or more, and for emergency credit transactions. The host computer processes two-sided concurrent entry, where debiting from a sending bank's accounts and crediting to a receiving bank's accounts are processed simultaneously. Payment becomes final once the entry is performed.

HVPS's operating time is from 8:00 a.m. to 5:00 p.m., 30 minutes ahead of EIS. Funding operations for handling lack-of-funds or executing credit instructions remaining in the queue are to be approved from 5:00 p.m. to 6:00 p.m. (described below in detail.) The average daily number of payments during the testing period is 40,000.

If a sending bank's account balance is insufficient, it will be held in an NSF queue called "Not Settlement File Queue" on the host server. Sending banks set payment instructions as either "priority payment" or "ordinary payment" status, and the NSF queue arranges them accordingly. Processing is performed according to the following rules.

- Priority-payment instructions in the queue are to be processed preferentially.
- Among payment instructions with the same priority order, processing is performed on a first-in-first-out basis.
- If there are priority-payment instructions in the queue, all ordinary-payment instructions in the queue will be held unconditionally.
- Ordinary-payment instructions in the queue will be processed after priority-payment instructions.

² This is lagging behind the initially planned July 1, 2002.

Since the inability to process one large-amount payment may delay many second-order payment instructions for a long time, sending banks may manually cancel payment instructions or make the large-amount payment into a second-order payment by changing its order in the NSF queue.³

If a payment instruction remains in the queue at 6:00 p.m., it will be returned to the sending bank, or a liquidity supply may be obtained from PBC by paying a high penalty. (For details, described below.)

b. BEPS

BEPS is for net payment of small-amount transactions of RMB500,000 or less. Three types of settlement—credit, pre-authorized collection, and dated debit—may be performed. Different from HVPS, BEPS uses one-sided entry, and depending upon the type of payment the timing of credits and debits to sending and receiving banks' accounts will vary. Although a sending bank's account will be debited on the same day, credit to a receiving bank's account will occur on the next day (T+1). For pre-authorized collection, credit to a sending bank's account will be performed on the same day, debit of a receiving bank's account will be T+1, with PBC extending credit to the receiving bank for one day. For dated debit, T+2 entry is performed for the accounts of both the sending and the receiving bank, with no credit extended from PBC. Payment becomes final once crediting and debiting have both been completed.

The system's operating hours are from 8:00 a.m. to 5:00 p.m., and batch processing after business hours closes at 12:00 p.m. In the daytime, payment instructions are retained in branches until 5:00 p.m. For a local transaction between financial institutions located within the jurisdiction of the same branch of PBC, the cut-off time is 5:00 p.m., and netting for the portion of same day is performed. By transmitting only the net position to the host, financial institutions' accounts are also processed within the same day. Payment data is transmitted by nighttime batch processing. For non-local transactions in which the receiving bank is located within the jurisdiction of another branch, the branch of the sending bank will transmit instructions to the host after dividing payment data among receiving banks. At the host, after making entry processing of the sending bank, payment data will be transmitted to the receiving bank via night batch processing. At the receiving branch, accompanied with payment data from other sending banks, netting is performed during the night and payment data is stored in files for netting. Netting will be performed again on the following day, after adding local transactions to the result of netting. The results will be sent to the host at 5:00 p.m., and payment will be performed (entry at the receiving side will be performed at T+1).

c. SAPS

SAPS performs real-time settlement of the receipt and payment of funds, and send positions computed by LCHS to PBC branches. The balance of clearing will be paid after the PBC branches send the net position to the host.

Although financial institutions may conduct real-time verification of deposit balances with PBC, there is also a system that automatically urges verification of overdraft balances. After the 5:00 p.m. cut-off time, a payment window for the following cases will be opened on the system's screen. PBC will issue notifications of overdrafts or incomplete payments to financial institutions.

³ Changes of priority status from priority-payment to ordinary-payment will not be approved.

- If the balance of a payment account is negative.
- If there is an unpaid payment instruction in the HVPS queue.
- If payment is not completed in BEPS, due to insufficient balance.
- If payment has not been completed in LCHS.

In HVPS, financial institutions must cancel payment instructions in the queue by 6:00 p.m., or credit them via HVPS after raising funds from other branches. When an overdraft is not compensated by 6:00 p.m., the unpaid payment instruction in HVPS will be compulsorily returned to the sending bank. If payment is not completed in BEPS or LCHS, PBC will apply a penalty interest rate to financial institutions with overdrafts, and extend an overnight credit.

To avoid arrears of payment due to an interim lack of funds, PBC permits intra-day overdrafts on a collateral basis to financial institutions. PBC monitors the credit and payment ability of financial institutions every day, and may cancel intra-day overdraft facility, if required.

There is an automatic repo function. If a financial institution to which an automatic repo arrangement is permitted lacks funds, CNAPS will automatically request PBC an open market operation, which will supply liquidity according to a pre-arranged agreement. Once an automatic repo agreement is concluded, even if an intra-day overdraft limit has been set, use of the automatic repo must be conducted first. Both systems may not be used simultaneously. Automatic repo function does not currently operate.

iv. Future Schedule

In addition to Beijing and Wuhan, HVPS had been expanded to 14 cities by August 2003, with the addition of Shanghai, Guangzhou, Xian etc HVSP is planned to be expanded up to 300 cities by the end of 2004. BEPS is expected to be developed further and to be introduced in 2004.⁴ Completion of expansion across the country by 2005 is planned. Until then, CNAPS and EIS will coexist. Efforts will also be made to achieve DvP for government bonds, by linking networks with China Government Securities Depository and Clearing Co., Ltd. (CDC).⁵

v. Valuation and Issues to Be Resolved

CNAPS has several advantages over EIS. In the current EIS, because financial institutions' deposit accounts with PBC are dispersed among regional branches there are problems (such as differences in call-market rates) of fund efficiency and the effectiveness of financial adjustment. With CNAPS, financial institutions' deposit accounts with PBC are collectively managed by the host center, greatly alleviating these problems. Intra-day overdrafts and automatic repo facilities are also provided, and liquidity risk management is improved. For small-amount payments, particularly between distant places, CNAPS is more efficient than EIS in which payment is performed on a gross basis. Finally, by CNAPS connecting of the government bond entry and payment system at CDC to the payment system, DvP payment of government bonds may become possible.

Commercial banks, as users, have nonetheless indicated some problems, such as in system design. Unlike with BOJ-NET, commercial banks cannot directly access the host center. Since

⁴ Initially scheduled within 2003.

⁵ Although it was planned for completion within 2003, according CDC in January 2003, they could not commit to a specific period.

there is a two-tier structure by which commercial-bank branches connect with PBC branches in the same areas, and those PBC branches then connect to the host center, CNAPS is not easier for commercial banks to use. There are also cost-effectiveness issues. Including the four large Chinese banks, due to increased competition commercial banks nationwide have made vast system investments, and improved internal payment systems, but the cost of developing linkages with CNAPS is approximately RMB1–2 million per branch. There is therefore little advantage in connecting small local branches other than those in central cities. For the necessity of replacing EIS in the future by expanding CNAPS all over the country, as planned by PBC, there is such an opinion that it may be sufficient to reach approximately 70-percent coverage, or to expand to up to 300 cities. There are also concerns about the considerable delays in introducing BEPS for small-amount payments. It appears that there have not been adequate discussions between PBC and commercial banks about how to integrate commercial banks' intra-office systems and CNAPS, or on how to finally handle EIS.

(3) Local Clearing House System

i. Outline

The Local Clearing House System (LCHS) is for local payments related to exchange, bill, and check transactions within the same region (cities and counties). There are approximately 2,300 clearing houses throughout the country, and although most LCHS sites are owned and managed by PBC, some are jointly owned by participants. All receipts and payments of funds on a written basis are cleared and settled via LCHS.

ii. Payment Structure

LCHS payments are performed as follows.

- a.* A client requests the sending bank to conduct a transfer.
- b.* The sending bank delivers a payment instruction, in writing or on magnetic tape, to the clearinghouse.
- c.* Processing the transaction manually or using magnetic tape, the clearinghouse calculates each financial institutions' net outgoing and incoming amounts.
- d.* The clearinghouse sends data on the financial institutions' net outgoing and incoming amount to the appropriate PBC branch.
- e.* Based on the data submitted, the PBC branch increases or decreases the financial institutions' deposit balances.
- f.* The sending bank sends a credit notice to the receiving bank.
- g.* The receiving bank makes a credit to the recipient's account.

Clearinghouses in cities and districts which have a large amount of trading have two clearing times each day (morning and afternoon), while other clearinghouses have only one (in the morning). At the busier clearinghouses, trades received in the morning will be paid in the afternoon, and those received in the afternoon will be paid in the morning of the next day, by a PBC branch or a designated commercial bank. Payment within 24 hours after receiving bills is therefore possible. At the less-busy clearinghouses, all payments are performed on the following day. In many cases, payment operations are conducted manually, but in 17 large cities where trading is particularly heavy, classification processing is automated by clearing

bills using barcodes, and other efforts to speed up processing. Beijing, Shanghai, Guangzhou, and Nanjing conduct extensive bill clearing.

LCHS payments are performed on the principle debit-first-credit-second. Payments become final when credit processing is completed. If there is an intra-day overdraft, PBC will collect penalty interest. If funds cannot be covered on the same day, an overnight loan will be granted by PBC, but in some cases financial institutions cannot conduct transactions within the next day.

Payments per day in China reach 2.1 million items, totaling RMB400 billion. Although in many cases costs are shared according to participants' trading volumes, there are some cases in which uniform yearly charges are collected, which differ depending upon clearinghouse.

iii. Valuation and Issues to be Resolved

LCHS is one of China's most important payment systems. PBC has determined rules and procedures common to all exchanges in China, and has requested faster classification processing, and rationalization by establishing communications networks.

(4) Commercial Banks' Intra-office Payment Systems

China's four largest banks have the most extensive centralization and integration hardware and software, on which each spends RMB1–3 billion annually, in their efforts to consolidate computer service centers and improve nationwide networks. If a credit remittance is performed within the same bank, it can process the transaction within approximately 24 hours. Although these banks can carry out payments within two or three hours, based on priority-processing agreements for such transactions as urgent large-amount securities settlements, the determination of priority order still often requires manual processing. Large private banks—such as Minsheng Bank of China and Shanghai Pudong Development Bank—have focused on systems investment, made efforts to centralize data on customers who are subject to international standards, and have focused on Internet banking services to make up for a lack of branches. Most banks' customer account databases are still dispersed, and real-time processing is not possible. Databases should be combined in host centers.

(5) National Interbank System

The National Interbank System (NIS) conducts manual inter-bank payments between distant places. After a payment instruction, either cabled or written, is sent by a sending bank directly to a receiving bank, daily netting is performed for funds payment and the final balance of payment. At each stage, notification of payments between correspondent banks are cabled and completed between PBC branches. After all crediting data are sent to NIS's computer center and inspected there, checking sheets are sent to the sending and receiving banks. NIS's status has decreased recently, due to improvement and expansion of EIS and commercial banks' intra-office systems.

2. SECURITIES SETTLEMENT SYSTEMS

(1) Outline

China's securities markets are roughly divided into stock exchanges and bond markets.

China's settlement organizations include China Securities Depository and Clearing Corporation (SD&C), a central organization for clearing stocks, trust fund, and convertible bonds, also government bonds and corporate bonds which are listed in the stock exchanges. and China Government Securities Depository and Clearing Co., Ltd. (CDC), a central organization for clearing government bonds, financial debentures, and corporate bonds.

(2) Stock Exchange Settlement Systems

i. Outline

Depending upon investors, issuers, and currencies, stock exchanges are divided into A shares (RMB-denominated and domestically issued), B shares (foreign currency-denominated, domestically issued, and since February 2001 open also to domestic personal investors), and H shares (HK-dollar-denominated, issued in Hong Kong, and issued for overseas investors).⁶ Stock exchanges are also classified by holder, into state shares, corporate shares, employee-ownership shares, and general-public shares.

A shares and B shares account for 1,287 companies, whose combined listed stock have a market value of RMB3.8 trillion (as of the end of 2003, with RMB1 equaling approximately ¥13). China is in competition with Hong Kong for the second position in Asia. Among these stocks, only negotiable stocks is defined by the China Securities Regulatory Commission (CSRC) may be traded, and represent only one-third of total shares. Free trade of state ownership shares,⁷ which account for more than 50 percent of all shares, is not permitted. Since the current aggregate value of shares against GNP exceeds 50 percent (equal to those in Japan), negotiable stocks' total market value is still less than 20 percent. Total trading in 2002 was RMB2.8 trillion (RMB11.8 billion per day), amounting to 27 percent of GNP,⁸ with a 65 percent turnover ratio⁹.

There are securities exchanges in Shanghai (established in 1990) and Shenzhen (established in 1991). Shanghai handled about 200 more listed companies than Shenzhen does. Although both exchanges handle listed A shares and B shares (US-dollar-denominated in Shanghai, HK-dollar-denominated in Shenzhen), A shares account for 90 percent of companies and total market value. A company listing A shares will sometimes doubly issue B shares. More companies do this than those who issue only B shares. Listing on both Shanghai and Shenzhen stock exchanges is not permitted.

The stock price earnings ratio (PER) of A shares increased 20–60-fold since 1996, becoming much higher than in the US and UK. There is strong appetite due to a rapid increase in the number of domestic personal investors. A shares have been 3 to 5 times higher in price

⁶ There are also N shares (listed in New York), L shares (listed in London), and S shares (listed in Singapore).

⁷ Combined state shares and state-owned corporation shares are called "state ownership shares." The details of the difference between state-owned corporation shares and non-state-owned corporation shares are not known, but state-owned corporation seem to hold a larger percentage.

⁸ Computed according to the RMB10.3 trillion GNP in 2002 (8.0 percent of the real economic growth rate.)

⁹ The turnover rate should not consider the non-tradable shares that will triple number.

than B shares, which overall appears to be an overvaluation. After the relatively undervalued B shares were made open to domestic investors, their stock price has declined by nearly half.

This persistent decline continued in 2001, due to a drop in stock prices in the US, the release of state-owned stocks into markets,¹⁰ and the creation of Hong Kong GEM (a market for emerging companies).¹¹ Meanwhile, the market has made efforts to strengthen information disclosure regulations (such as for quarterly settlement disclosure), to strengthen corporate governance (such as in introduction of an outside director system), to strengthen prudential regulations (such as in a revision of criminal laws), and to clarify procedures for listing and de-listing. Market reforms aimed at developing an advanced-country-type market have progressed. Following the opening of the B shares market to domestic investors in December 2002, for overseas investors there was a move toward opening the A shares market according to the Qualified Foreign Institutional Investor system.¹²

No securities derivatives or repo transactions have been conducted with securities companies.

Figure1: Outline of China's Stock Market

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Number of Domestically-listed Companies	53	182	291	323	530	745	851	949	1,088	1,160	1,224	1,287
B Shares Listed Companies	18	41	58	70	85	101	106	108	114	112	111	111
Number of H Shares listed Companies	0	6	15	18	25	42	43	46	52	60	75	93
Total market value (RMB0.1billion)	1,048	3,531	3,691	3,474	9,842	17,529	19,506	26,471	48,091	43,522	38,329	42,457
Negotiable Stocks (%)	n.a.	24.4	26.3	27.0	29.1	29.7	29.5	31.0	33.5	33.2	32.6	31.0
Shanghai Stock Exchange												
Stock Price Composite Index	780	834	648	555	917	1194	1147	1367	2073	1646	1358	1497
PER (A shares)	n.a.	42.5	23.5	15.7	31.3	39.9	34.4	38.1	59.1	37.6	34.5	36.5
Shenzhen Stock Exchange												
Stock Price Composite Index	241	238	141	113	328	381	344	402	636	476	389	378
PER (A shares)	n.a.	42.7	10.3	9.5	35.4	41.2	32.3	37.6	58.8	40.8	38.2	37.4

Number of domestically listed companies includes A shares redundantly listed with B and H shares.

Ratio of negotiable stock = negotiable stock's total market value/ total market value

Source: China Securities Regulatory Commission, "China Securities and Futures Statistical Yearbook, 2001",

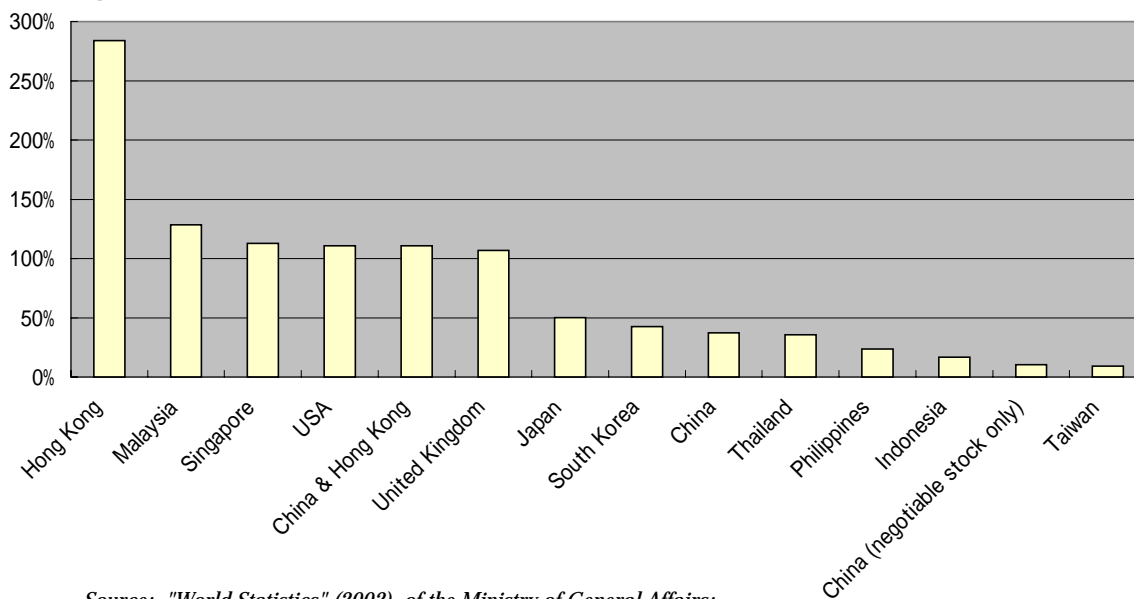
Factbook of Shanghai and Shenzhen Stock Exchange and website

¹⁰ According to "Provisional Regulations on Raising Social Security Funds by Reducing State-ownership Shares," by the State Council, the following items were determined in June 2001: when a state-owned corporation is reorganized as a stock corporation, with the new public issue of stock or a capital increase, 10 percent of the total funding amount of state-ownership shares is to be released at market prices; and funds obtained by state-ownership shares should be paid by the National Social Security Fund, which was established to compensate social security funds. Based on this, China Petrochemical Corporation and several other corporations' shares have been released to the markets, bringing about a nearly RMB10 trillion market-value reduction compared with its peak level. In October 2001 the CSRC had to suspend these regulations, and in June 2002, except for companies listed overseas, release of state-ownership shares using this method was officially suspended.

¹¹ Since GEM (where listing requirements are looser than on Chinese domestic exchanges) was created in November 1999, some domestic issuing entities have flowed into it, due to which the competitiveness of B shares declined. Compared with the B shares market, GEM is more convenient for both issuing entities and investors, because no PBC issuing license is required, and because it is not necessary to open a specific foreign currency account for receiving issuing expenses and sending dividends, making issuing procedures simple. Also, corporations can issue stocks a mere two years after their establishment. There is also a small-amount investment of at least HK\$50,000 (approximately ¥770,000). Accordingly, the issuing amount of B shares was zero for 2001 and 2002.

¹² US\$10 billion and more in investment assets are required in the latest year, and the following conditions have been imposed for each business category: for investment trusts, actual results for more than five years; for insurance and securities companies, more than thirty years of business experience, and more than US\$1 billion in capital stock; for commercial banks, gross assets must be ranked within the world's top 100.

Figure2: Ratio of Total Market Value of Listed Stocks to GDP



Source: "World Statistics" (2002), of the Ministry of General Affairs; and International Financial Statistics (IMF).

Figure3: Scale of Market by Exchange in 2003

	Shanghai Stock Exchange		Shenzhen Stock Exchange	
	A Shares	B Shares	A Shares	B Shares
Total Trading (RMB 1 billion)	2,633	60	1,073	56
Daily Average Trading (RMB 1 million)	10,923	249	4,452	233
Number of Listed Companies	770	54	491	57
Total Emerging Market (RMB 1 billion)	2,940	40	1,212	53

Note : Since there are companies that redundantly issue A and B shares, aggregate number of listed companies in each column are not equal to the number of listed companies in the text

Source : Stock exchanges' and CSRC's homepages.

ii. Trading System Outline

All investors must open securities accounts with SD&C. The methods for doing so differ between financial corporate (such as securities firms and fund companies) and other investors (such as individual investors and general corporates). Financial corporate investors apply for such accounts directly to the SD&C. For other investors, after applying to an agency organization¹³ for such accounts when starting transactions, and passing the first examination by that organization, the documents for opening are sent to the SD&C electronically by the organization, after which there will be a second examination by the SD&C. If this examination is passed, an examination notice and transaction number for the successful applicant will be sent to the agency organization, based on which it issues a stockholder card, making transactions possible. Investors may open one account each for A shares, B shares, and fund investments.

For funds payment accounts, some investors open accounts with securities companies, and others open accounts with banks designated by securities companies. In the former case, investors' funds are collectively held in a bank account in the name of a securities company,

¹³ Available to securities companies, commercial banks, and approved SD&C B shares overseas settlement members.

with no separate management, which is conducted on the securities company's book. In the latter case, investors may open accounts directly with a bank, in their own names.

In China there has recently been an upsurge in business tie-ups between banks and securities companies. Investors may open securities-guarantee sub-accounts under ordinary accounts, and may conduct consignment trading and balance inquiry using telephone and internet banking services. When opening such accounts, an identification card or a shareholder code card issued by SD&C is required. SD&C's system allows direct verification of investors' securities balances, and investors may also verify fund balances through securities companies.

Investors can order and consign sales trading with securities companies via writing, telephone, terminal, Internet, and other means. Securities companies pass customers' orders to the stock exchange's trading system, in which all transactions will be executed by automatically matching them online. It is possible for these systems to execute 5,000 transactions per second.

The stock exchanges' business hours are 9:30 a.m. to 11:30 a.m., and 1:00 p.m. to 3:00 p.m., Monday to Friday, for intra-day transactions, and there is a 10-percent trading restriction from the previous day's closing price. The stock exchanges monitor transactions and disclose the required trade information or reports to the CSRC if an irregular transaction occurs. Membership in the stock exchanges is currently 195 companies in Shanghai, and 230 in Shenzhen. All are limited to domestic securities companies and investment trust companies; overseas companies cannot participate. Overseas trade participants must satisfy fixed qualification requirements,¹⁴ and must be recognized by the CSRC as a broker exclusively for B shares. Such brokers must conclude agreements with exchange members after paying fees, and execute overseas investors' orders to trade B shares via such members. Approximately half of all B shares brokers are from overseas. Since domestic general members have obtained securities brokers' licenses from the CSRC, it is not necessary for them to obtain the membership admission. Members' admission and withdrawal must be reported to the CSRC.

iii. Outline of SD&C

The SD&C has a head office in Beijing, with staff of nearly 70, and there are approximately 100 other personnel each in Shanghai and Shenzhen. Its capital stock is RMB0.6 billion. In addition to such major services as registration, settlement, and consignment custody, and such contingent services as opening customer accounts, balance control services, SD&C performs such services as preparation of shareholders lists accompanying the issue of stocks, establishment of hypothec, and other services. Risk management is also performed jointly with the CSRC and the Ministry of Finance.

Transactions on the Shanghai Stock Exchange were previously settled by its affiliate, Shanghai Securities Depository and Clearing Corporation, and those on the Shenzhen Stock Exchange were settled by its affiliate, Shenzhen Securities Depository and Clearing Corporation. On March 30, 2001, the CSRC instructed that these corporations be consolidated, to establish SD&C, and since October 1, 2001, all settlement has been performed collectively by it.

iv. Clearing and Settlement System

All listed securities must be registered with the SD&C, and separately stored by investor

¹⁴ Requirements include RMB50 million in net assets, at least two years of experience in international securities, and more than five years of excellent performance as an executive officer and senior manager.

code, to achieve entirely electronic processing. Although registration in the name of a nominee is still possible, for strictly separate management settlement accounts has usually been opened in the name of the final investor. SD&C may also verify securities and funds balances of securities companies and investors (including individuals).

For A shares, after closing hours the SD&C notifies each member of their net position at point T (the time of contract conclusion), and stock transfer is finished by T night. Payment is performed by the settlement bank at T+1. For B shares, notification of net position is performed at T+1, and payment is performed at T+3. If an overseas investor takes a position for payment, due to time differences the account is credited at T+2, and funds settlement is executed between members at T+3. For B shares in Shanghai, which are denominated in US dollars, payment is performed by SD&C's correspondent bank (City Bank) in New York. For B shares in Shenzhen, denominated in HK dollars, payment is performed through SD&C's correspondent bank (Standard Chartered Bank) in Hong Kong.

The safety net for liquidity risks consists of two stages. The first stage is the Settlement Risk Fund of RMB3 billion, composed of initial investments from the Ministry of Finance, contributions from SD&C's pretax profits (20 percent of operating net profits is deposited every year), and trading-volume based contributions¹⁵ by member securities companies. For the latter two, it is not necessary to contribute amounts once this fund reaches RMB3 billion. In the second stage there is settlement guarantee money, where a member makes deposits to an account with a securities exchange. For new members of the Shanghai Stock Exchange, RMB200,000 is required for each seat,¹⁶ and the addition of seats costs RMB50,000 each. In the Shenzhen Stock Exchange, basic guarantee money is RMB250,000 for a number of seats, adjusted every quarter by a percentage of average daily trading in the previous quarter.¹⁷ Funds from the former Shanghai Securities Central Depository and Clearing Corporation and the former Shenzhen Securities Central Depository and Clearing Corporation, the predecessors of the SD&C, are pooled in this fund.

Last year's trading amounted to RMB1.3 billion, in 1.3 million transactions. Membership includes almost all registered securities companies in China (126 at the end of 2002).

Although SD&C is Central Counter Party (CCP), it has no legal basis to become a CCP. SD&C facilitates CCP voluntarily, and detailed management rules are being formulated. Although all settlements must be conducted through SD&C's securities settlement account exclusively for CCP, debit and credit entry are actually conducted directly between member securities companies' accounts.

For A shares, since RTGS has not yet become fully operational in PBC's RMB payment system, and is not linked to the entry system, DvP has not been achieved. For B shares, since securities settlement (T+3) and the verifications of credit differ, DvP cannot be regarded as having been achieved. In US-dollar-denominated Shanghai, up to next day, and in HK-dollar-denominated Shenzhen, up to 5:00 p.m. on the same day, a seller assumes the trade counter-party's default risks. There was usually no short-selling of stocks, and since trading was performed after acquiring sufficient settlement funds, DvP had been substantially achieved. Since this is an automatic matching online system, STP has been performed for domestic

¹⁵ For stock, determined to be 3/10,000 of trading volume. For government bonds, 1/10,000. This includes 30 percent of profits for the four-day application fund frozen period when presenting applications for purchasing new stock, and penalties for operational errors and irregular transactions.

¹⁶ Member may hold multiple seats.

¹⁷ Previous quarterly turnover / number of trading days = quarterly guarantee money (A). If $A < \text{basic guarantee money}$, then it is basic guarantee money only, but if $A > \text{basic security money}$, then the excess portion ($A - \text{basic guarantee money}$) is also to be paid.

investors, but not for foreign investors, since it requires confirmation.

When same-day funds treatment cannot be made, it is necessary to supply liquidity by the next business day. No credit facilities are granted, so if an overdraft occurs penalty interest will be collected, and the requirement ratio for reserve funds for payment will become high. If the number of overdrafts increases, penalty interest will also become higher. Although a “Settlement Risk Fund” may be used for compensation when overdrafts cannot be resolved, none has ever been used.

If securities settlement is not matched, or if funds are not credited to SD&C’s payment account at T+3 in the trading of B shares, a failure will occur. This has been rare, since the securities balances of member securities companies can be verified online, and because there is usually no short-selling of stocks (it is prohibited in the Stock Exchanges), although it has happened due to operational errors. When failures occur, if settlement will be never performed by T+5, at T+6 SD&C will carry out the sale. The SD&C (as a CCP) will primarily assume the burden of economic loss in such cases, and the final burden will be determined after discussion with CSRC.

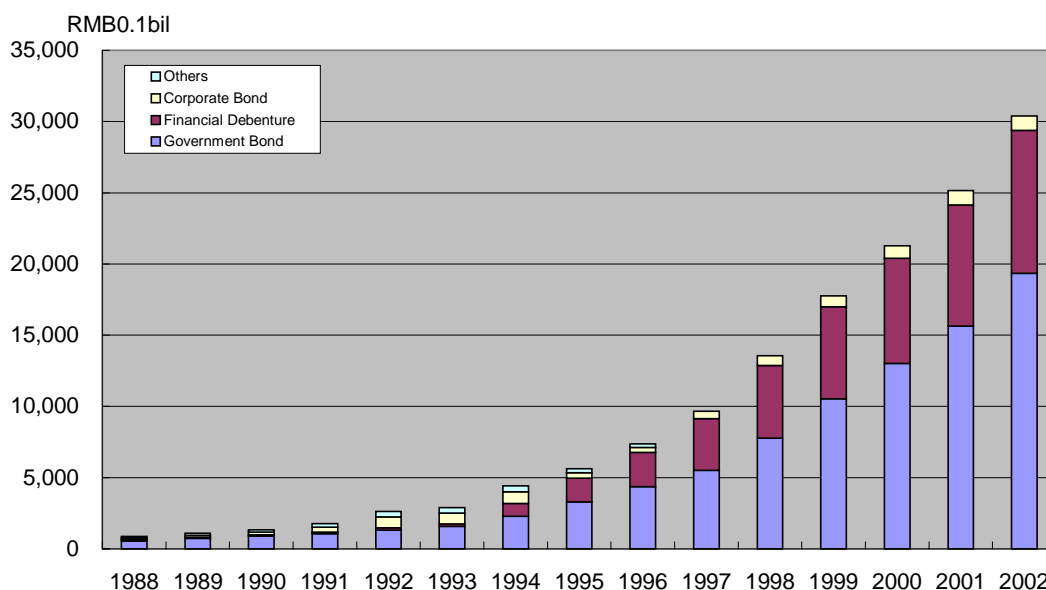
(3) Bond Market

i. Outline

By starting the underwriting and selling of government bonds in 1991, and issuing financial debentures by policy banks in 1994, and reflecting a dramatic increase of government bond issues (to compensate for budget deficits brought on by aggressive fiscal policies), China’s bond market has expanded rapidly mainly by government bonds and financial debentures since 1998.

At the end of 2002, it was composed of government bonds (62 percent), financial debentures (31 percent), central bank bills (5 percent) and corporate bonds (2 percent). The outstanding balance of government bonds amounted to RMB1.93 trillion, equivalent to 19 percent of GDP. By the end of July 2003, the outstanding amount of domestic debt securities rose to nearly RMB 4 trillion.

Figure4: China's Outstanding Bond Issues



Note: Others include national investment bonds, national investment corporation bonds, and other. There are none outstanding after 1997.

Source: China Financial Almanac

Looking into the details of government bonds, for general government bonds, bookkeeping-type government bonds¹⁸ for corporations mainly consisted of financial institutions and securities companies, and certificate-type government bonds (i.e., savings bonds) for personal investors, have been issued periodically. Bookkeeping-type bonds (structured almost the same as Japanese transfer settlement government bonds) are delivered by transferring them on CDC's books, and are entirely computerized, while for savings bonds a certificate is issued bearing the name of the creditor, amount, and interest rate. Certificate-type government bonds are purchased by personal investors from banks that conduct underwriting, and reselling to third parties is not permitted. If it is necessary to cash government bonds before their maturities, even though it is possible to exchange them for cash at the counters of the banks that sold them,¹⁹ those banks must retain them until their redemption dates.

For specified government bonds, there are also designated government bonds²⁰ issued after specifying investors for endowment insurance funds, unemployment insurance funds, and social insurance funds, and RMB270 billion of the special government bonds issued in August 1998 to finance public funds meant to expand the four large state-owned commercial banks' net worth, and a ten-year interest-bearing government bond issued in September 1998, for the four largest banks to supply funds for infrastructure construction.

Government bonds issued in 2002 amounted to RMB592.9 billion, 75-percent composed of bookkeeping-type government bonds, and 25 percent of certificate-type government bonds.

In 1980s, government bonds were traded in the physical-certificate OTC market. After 1990

¹⁸ Some are sold to individuals over-the-counter at banks.

¹⁹ The interest rate is determined according to when they are cashed, with 2 percent of the amount, with interest, is to be paid as a bank fee.

²⁰ Designated government bonds were issued from 1995 to 2000, but not in 2001 and 2002.

and with the creation of stock exchanges, the secondary market was mainly integrated into the Shanghai and Shenzhen exchanges. For stock exchange transactions, due to the void of central depository agency and the weakness of the risk control mechanism, securities companies have conducted short-selling repurchase agreement transactions with banks, using government bonds obtained from customers. Securities companies have manipulated stock prices based on the large amount of funds raised. Concerned about this, the authorities established CDC as the CSD for government bonds in 1996, and then created an inter-bank bond market in June 1997, requiring commercial banks to quit from the stock exchanges and perform their transaction only in the inter-bank market.

Non-bank institutions including securities companies may participate in both exchanges and an inter-bank bond market, and may conduct arbitrage transactions between them. Although bonds traded in the exchanges may be brought into the inter-bank bond market, the opposite transactions may not be conducted²¹. After starting in 1997, the inter-bank market had increased its turnover more than 8-fold by 2002, and turnovers including repurchase agreement transactions have considerably exceeded stock exchange transactions. In 2002 the RMB10 trillion barrier was broken, and its turnover has become three times that of stock exchange transactions. Most transactions in the inter-bank market consist of repurchase agreements (96 percent in 2002), and there are very few outright transactions. The Shanghai Stock Exchange has played a central role in these stock exchange transactions, and transactions on the Shenzhen Stock Exchange have become nominal. Large-amount transactions are centrally performed in the inter-bank market, averaging RMB200 million per repo transaction and RMB150million per outright transaction in 2003.

Participants in the inter-bank market consist of financial institutions, such as commercial banks, city and rural credit cooperatives, trust investment companies, securities companies, insurance companies, investment fund administration companies, and financial companies etc. Since June 2002, individuals and non-financial institutions can invest some kind of government bonds through commercial bank-OTC systems. Since October 2002, all non-financial institutions were permitted to participate indirectly in the inter-bank market through 39 commercial banks. The inter-bank market has substantially become open to all the institutional investors.

In efforts to unify both exchanges, while bookkeeping-type government bonds were issued on both the inter-bank market and stock exchanges in September 1999, participants in stock exchange transactions included non-banks, and there were efforts by the authorities to bring both exchanges closer to each other in products and participants.

PBC's open market operations are entirely performed in the inter-bank market, and purchase of bills under repurchase agreements, sales of bills under repurchase agreements, outright purchases of bills are appropriately selected through 43 primary dealers, and performed regularly on Tuesdays, and on Thursdays if necessary.

²¹ Since 2002, PBC has permitted some kinds of bonds to be traded across the markets.

Figure5: Government Bonds and Financial Debentures, by Category, in 2002

	Government Bond				Financial Debenture
	Certificate-type Government Bond	Bookkeeping Type Government Bond			Bookkeeping Type
Issue Market	OTC	Interbank Market	Stock Exchange	Cross-market	Inter-bank Market
Issue Serial Number	4	11	4	1	27
Issue Type	Underwriting	Bidding (rate/price)	Bidding (rate)	Bidding (rate)	Bidding (rate/spread/price)
Issue Amount (RMB1 billion)	1,473	2,992	864	600	3,275
Investor	Individuals	Institutions & Individuals	Institutions & Individuals	Institutions & Individuals	Institutions
Period	3, 5 years	1, 2, 3, 5, 7, 10, 30 years	5, 7, 10, 15 years	7 years	3, 6 months and 1, 2, 3, 5, 7, 10, 20, 30

Source: China Financial Almanac

Figure6: Turnover by Market and Trade Category

(RMB 1billion)

	Inter-bank			Stock		
	Bond Market	Spot Trading	Repo Trading	Exchange	Spot Transaction	Repo Transaction
1997	31	1	30	1,646	358	1,288
1998	104	3	101	2,232	606	1,626
1999	405	10	395	1,809	530	1,279
2000	1,646	68	1,578	1,889	416 (50)	1,473 (16)
2001	4,097	84	4,013	2,031	482 (43)	1,549 (14)
2002	10,630	441	10,189	3,313	871(233)	2,442(0.5)

Note: Figures in parentheses denote number of transactions in the Shenzhen Stock Exchange.

Not applicable before 1999.

Source: Chinese Financial Almanac, Factbook of Shanghai and Shenzhen Stock Exchange and websites

Depending on the amount of increases of outstanding deposits, before 1994 PBC had approved the issue of some financial debentures to commercial banks, and had determined both issue amount and interest rate. To separate policy credit from commercial credit, when three policy banks—State Development Bank of China, Agricultural Development Bank of China, and Export and Import Bank of China—were established in 1994, the issue of financial debentures started, to raise funds for them. Ninety-five percent of all issues is occupied by the State Development Bank of China, and is traded on the inter-bank bond market.

For corporate bonds, a market was created in Shanghai, Shenzhen, Sichuan Province, and Liaoning Province in 1984, and at some points in 1986 outstanding issues accumulated to several tens of billion of RMB. Many companies defaulted after that, and so issues have been strictly controlled by the State Development Planning Commission (SDPC) ever since. RMB20–30 billion in issues is allocated annually, limiting eligibility to large state-owned corporations, with the following strict conditions: three years' consecutive surpluses before issuing; for joint-stock companies, RMB30 million, and for private limited companies, RMB60 million, in net assets; less than 40 percent of the maximum interest rate in banking deposits.²² Fourteen companies have issued corporate bonds, including China Mobile, Changjiang Three Gorges Project Development Corporation, Shanghai Baoshan Iron, and Steel Complex Corporation. Convertible bonds were limited to already-listed state-owned companies, and such strict conditions as assuring a 10-percent of rate of return on assets (for such infrastructure-related resources as energy and others, 7 percent) were imposed.

The balance of all issued corporate bonds is nearly RMB100 billion (1 percent of GDP), which is extremely small compared with other advanced countries. The amount listed and circulated on stock exchanges is 10 percent or more of the total issued amount. Due to a stock

²² Interest rates are controlled by PBC. Other emerging markets are under the supervision of the CSRC.

market slump and a decline of interest rates, the need to issue bonds has risen since late 2001. To open the door to private companies that have active funding needs, SDPC presented an original plan for easing issuing conditions to the State Council²³. In the middle of 2003, PBC has planned to develop a well-built rating system and support the financial debenture issued by commercial banks.

The channel is open for overseas investors to purchase bonds in China. Since 1998, domestic branches of foreign banks have entered into the inter-bank market. At the end of 2002, overseas investors were permitted to participate in bond markets through QFII arrangements.

ii. Outline of Trading System

A trading system for the inter-bank market was started in June 1997. In October 2000, both financial institutions and corporations were permitted to directly participate in the market. More than 600 direct participants—including approximately 30 foreign banks' branches—have been approved by PBC. Since May 2002, financial institutions were permitted to link with the system. Transactions are conducted using offering systems on the inter-bank call market in the nationwide inter-bank call center. All bonds traded in the inter-bank market and over-the-counter are deposited with the CDC, and settlement is performed across the CDC's book-entry system and bank-OTC system.

Stock exchange transaction systems are the same as those for stocks, and all transactions are processed using automatic matching.

iii. Outline of the CDC

The CDC was established in December 1996, and is wholly-owned by the state. By the Ministry of Finance, it is assigned as the only physical-certificate bond custodian and CSD for all government bonds. It is also authorized by PBC as registering, depositary and clearing agency of inter-bank market. The CDC is under the control of PBC and the Ministry of Finance, and personnel management and supervision is under the China Bank Regulation Commission (CBRC).²⁴ The CDC has the following functions: nationwide consignment and management of government bonds, financial debentures, corporate bonds, and other fixed-income securities; settlement services for participants in securities markets; issuing services for securities issuers (Ministry of Finance, Central Bank, policy banks, state-owned companies, and other qualified issuers); technical services for open-market operations; services for concentrated consignment, management, and registration of bond funds and money market funds;²⁵ and services for providing market information and other intermediary services via publications and the Internet; performing cross-border settlement. The CDC is also responsible for periodically reporting trading status to PBC.

The CDC uses several computer systems: a bond entry system, a bond issuing system, an open-market policy system, information statistical system, bank-OTC central system, and bond holder-owned account inquiry system etc.

²³ *Shanghai Star*, February 13, 2003.

²⁴ According to structural reform approved by the Tenth National People's Congress in March 2003, the Financial Work Committee will be consolidated into the China Bank Regulation Commission.

²⁵ Services have not yet started.

iv. Settlement System

Unlike the SD&C, the CDC does not have CCP facilities, so no netting is performed in the inter-bank market; securities settlement of each transaction is performed on an RTGS basis.²⁶ Since netting settlement is performed in stock exchange transactions, for small-amount transactions these may be regarded as more efficient than inter-bank transactions.

PBC has initiated attainment of RTGS in funds payments at the beginning of 2003 in large cities (the number comes to 14 by August 2003) such as Beijing, Shanghai, Guangzhou, Wuhan, Xi'an etc. So real-time DvP capability for them and for securities settlement has not been achieved. This will become possible if RTGS in CNAPS becomes fully operational, and the linkage of the entry system is completed. There are currently three types of settlement: PAD, DAP, and FOP. DvP is expected to come into practice generally in the early of 2004.

Settlement dates are T+0 or T+1.

Confirmation of contracted details by participants is required in the inter-bank market, so STP has not been planned.

Since all government bonds issued before the "Provisional Rule for Managing Concentrated Custody of Government Bonds" in 1997 were deposited with the CDC, at the end of 2000 the redemption of government bearer bonds was completed. Government bonds (excluding certificate-type government bonds) are to be made wholly paperless.

For transactions in the Shanghai Stock Exchange, clearing and settlement are consigned to the SD&C in Shanghai. Under the two-tiered depository mechanism, CDC is the CSD for bonds. Bonds traded in stock exchanges are deposited in S&DC, which are ultimately deposited in CDC. As of July 2003, the balance of bonds at the CDC is approximately RMB3.2 trillion, of which re-consigning the balance to the SD&C is approximately RMB300 billion.²⁷

In the processing of rare failure transactions in the inter-bank market, the CDC reports them to the PBC, which handles them on a case-by-case basis.

In January 2002 an agreement on linkage between CDC's settlement system and HKMA's CMU (Central Moneymarkets Unit) was concluded. Technically, interface with HK-dollar RTGS and US-dollar RTGS held with CMU and DvP system have become possible.

In November 2003 the People's Bank of China (PBoC) and Hong Kong Monetary Authority (HKMA) to agreed to provide clearing arrangements for banks in Hong Kong to conduct personal renminbi (RMB) business on a trial basis.²⁸ In late February 2004, banks in Hong Kong started the offer of renminbi deposits and currency exchange services. According to the survey by HKMA to 14 banks, at the close of business on March 3, the total amount of renminbi deposits outstanding was approaching RMB1.5 billion.

²⁶ Both transactions send settlement instructions with encryption keys, and central systems, after verifying trading authorities according to the encryption keys, will transfer funds between accounts.

²⁷ Consistency with the RMB14 trillion figure (of which bonds are RMB1.4 trillion), the total trading amount in 2002 after aggregating stock exchange's amount and inter-bank market's amount, and Shanghai Stock Exchange's RMB3.1 trillion (of which bonds are RMB0.6 trillion) of total trading amount in 2002, has been unknown.

²⁸ The trial basis RMB business will include 4 areas; Deposit-taking, Exchange, Remittances and Renminbi Cards

Chapter 3: Payment Systems of Korea

Korea has an advanced payments system that provides its economy with safe and efficient payment instruments. In particular, with the progress of information technology and increases in awareness of the importance of reducing costs and meeting the customer demands, banks have introduced a variety of electronic payment systems.¹The Monetary Policy Committee of the Bank of Korea (BOK, the central bank) has exercised oversight over payment systems in accordance with the Bank of Korea Act, and has also managed BOK-Wire, a large-value payment system.

The majority of the securities settlement system's operations—trading, clearing, settlement, access to the system, and risk management—are entrusted to the self-regulating Korea Stock Exchange (KSE), Korea Securities Depository (KSD), and Korea Securities Dealers Association (KSDA). All revisions of rules and management methods require the approval of the Financial Supervisory Commission (FSC).

1. PAYMENT SYSTEMS

Payment systems in Korea are composed of BOK-Wire, which is an RTGS system for large-value payment, and 11 retail payment systems (see Figure 1).

(1) Retail Payment Systems

Retail payment systems in Korea are operated by the Korea Financial Telecommunications and Clearing Institute (KFTC), which is a nonprofit institution comprised of member banks. KFTC conducts multilateral netting, and final settlement is performed through bank accounts at BOK. KFTC is also responsible for the standardization of message formats and communications protocols related to interbank retail payments.

Depending upon the details of transactions, retail payments are conducted through the following 11 systems.

Cheque Clearing System (CCS): For the clearing of checks and bills.

Bank Giro System (BGS): For the settlement of periodic payments for specific purposes (from-one-to-many, from-many-to-one).

Interbank Funds Transfer System (IFT): For the settlement of non-periodic general payments (single-payer-to-single-payee basis), requested by the customers visiting the sending bank's counter.

Interbank CD/ATM System: For the settlement of cash dispensers and ATMs.

Electronic Funds Transfer at the Point of Sale System (EFTPOS): For the settlement of the POS system.

Electronic Banking System (EBS): For the settlement of interbank funds transfers requested by PC, telephone or Internet. .

The Cash Management Service System (CMS): For companies' small-value, large-volume payments or collections.

¹ In the background of the development of electronic payment systems, the Financial Sector Informationalization Promotion Committee, in which all banks participate, was established early in 1984.

The BANKLINE System: For local banks' network systems.

The Electronic Money System: For K-CASH (electronic money) payments.

The E-Commerce Payment Gateway: For settlement of B2C internet trading.

B2B Payment System: For settlement of B2B Internet trading.

Figure 1 Payment system's result of settlement by system

Unit: 1000 items for number of transaction, WON1 billion for amount

	1998		1999		2000		2001		2002	
	Results	Share(%)	Results	Share(%)	Results	Share(%)	Results	Share(%)	Results	Share(%)
Number of Transaction										
Total of Retail Payment	2,315,113	99.9%	2,484,292	99.9%	2,896,277	100.0%	3,391,342	100.0%	3,796,710	100.0%
CCS	1,012,463	43.7%	1,027,172	41.3%	1,091,785	37.7%	1,094,533	32.3%	1,098,274	28.9%
BGS	664,819	28.7%	636,246	25.6%	723,940	25.0%	847,272	25.0%	854,022	22.5%
IFT	270,262	11.7%	320,603	12.9%	392,112	13.5%	380,462	11.2%	315,092	8.3%
CD/ATM	260,884	11.3%	324,312	13.0%	395,645	13.7%	472,121	13.9%	527,434	13.9%
EBS	229	0.0%	142	0.0%	56	0.0%	155,228	4.6%	406,012	10.7%
CMS	103,552	4.5%	172,729	6.9%	289,735	10.0%	438,787	12.9%	593,753	15.6%
BANKLINE	1,464	0.1%	1,197	0.0%	1,218	0.0%	1,317	0.0%	952	0.0%
EFTPOS	1,440	0.1%	1,892	0.1%	1,786	0.1%	1,623	0.0%	1,171	0.0%
BOK-Wire	1,426	0.1%	1,399	0.1%	1,406	0.0%	1,570	0.0%	1,513	0.0%
Total of Payment	2,316,539		2,485,691		2,897,683		3,392,912		3,798,223	
Amount										
Total of Retail Payment	8,808,185	38.1%	11,449,689	36.4%	8,986,877	32.3%	8,376,249	27.1%	9,504,017	30.1%
CCS	7,505,823	32.5%	9,677,298	30.8%	6,790,075	24.4%	5,804,000	18.8%	5,919,787	18.7%
BGS	55,797	0.2%	55,194	0.2%	73,610	0.3%	98,604	0.3%	104,559	0.3%
IFT	1,154,294	5.0%	1,589,201	5.1%	1,922,115	6.9%	1,487,244	4.8%	1,097,725	3.5%
CD/ATM	80,037	0.3%	109,972	0.3%	164,484	0.6%	206,590	0.7%	249,025	0.8%
EBS	19	0.0%	12	0.0%	7	0.0%	712,488	2.3%	2,023,306	6.4%
CMS	8,526	0.0%	14,547	0.0%	32,466	0.1%	62,943	0.2%	105,109	0.3%
BANKLINE	3,625	0.0%	3,368	0.0%	4,015	0.0%	4,282	0.0%	4,431	0.0%
EFTPOS	64	0.0%	98	0.0%	106	0.0%	98	0.0%	76	0.0%
BOK-Wire	14,290,165	61.9%	19,975,616	63.6%	18,840,784	67.7%	22,513,252	72.9%	22,078,351	69.9%
Total of Payment	23,098,350		31,425,305		27,827,661		30,889,501		31,582,368	

Note: EBS prior to April 2001 is applied with ARS system's figure

Source: BOK data

Nine of 11 retail payment systems (except CCS and BGS) are cleared entirely electronically. Even in the paper-based CCS, most checks are exchanged through the Check Truncation System, which eliminates the transport of checks and bills between banks. Also, Electronic Giro transactions make up more than 50 percent of BGS, and KFTC's Image Processing System digitalizes Paper-based Giro bills.

Further Internet-based Giro System and a CD/ATM-based Giro bills collection system were introduced recently. In the background of the increase of retail payment systems, accompanied by the development of computerization, many non-financial companies (such as computer companies) have tried to expand into the finance industry, and have begun related system development.

Most domestic banks have participated in all the retail payment systems. Unlike other countries, however, even foreign banks engaged in retail business also participate in the key interbank retail payment systems.

(2) BOK-Wire

i. Outline

BOK's financial wire network, BOK-Wire, was introduced in December 1994 and is the only RTGS payment system in Korea. It handles approximately 70 percent of all non-cash payments in Korea.

Among the institutions that maintain current accounts with BOK, only those who satisfy the eligibility criteria set by the governor are approved for participation in BOK-Wire. Participants in BOK-Wire as of December 31, 2003, amounted to 128 institutions, comprised of 19 domestic banks, 39 foreign banks' branches, 2 merchant banks, 50 securities firms, 10 insurance firms, the Korea Stock Exchange (KSE), the Korea Securities Depository (KSD), 2 foreign exchange brokers, and 4 others. Except the intra-day overdrafts (described below) that may be extended only to commercial banks, all other treatment on BOK-Wire is conducted in the same manner for all institutions, and there is no membership classification.

It is possible to conduct all payments using BOK-Wire. No minimum or maximum payment amounts have been set (transfer entry of third-party funds excluded), and in practice, the average settlement amount per item is extremely large, at 14 billion won.

Final settlement of retail payment systems' clearing balances and funds settlement of OTC bonds are performed through BOK-Wire, as are BOK's lending; settlement accompanied by delivery of government treasury bonds; and services for issuance, transfer, repo, and redemption of government treasury bonds and MSBs. Between participants who hold foreign currency accounts with BOK, funds transfers in US dollars and Japanese yen may be also performed through BOK-Wire. Non-participants may also transfer fund through BOK-Wire participants (in transfer entry of third-party funds) in amounts of at least 1 billion won.

ii. Operation and Settlement Hours

Although BOK-Wire's normal operating hours are from 9:30 a.m. to 5:00 p.m. (Monday–Friday), BOK may extend them if necessary.

BOK-Wire's settlement is performed on an RTGS basis. Retail payment systems' net positions are also settled through BOK-Wire at two different times, depending upon settlement type: CCS's clearing balance is settled at 2:30 p.m., while all other retail payment systems' clearing balances are settled at 11:30 a.m. This arrangement has been established according to banks' characteristics, such as in liquidity management.

iii. Fees

BOK determines fees for the use of BOK-Wire. The present table is as follows: 150 won per item up to 4:00 p.m.; 300 won after 4:00 p.m.; and 500 won to cancel unpaid settlement. However, a preferential rate is applied to OTC bonds transactions on a DVP basis; 100 won per a transaction up to 4:00 p.m. and 150 won after 4:00 p.m. There are no annual membership or other fees.

iv. Queue and Overdrafts

If there is a lack of funds, payment instructions are retained in a queue, and be processed on an FIFO basis. If available funds are insufficient to settle the first payment message, but

enough to settle the second one, then that second one will be settled automatically. BOK calls this mechanism a by-pass FIFO. Further, BOK runs an optimization mechanism to save participants' liquidity, and to prevent gridlocks in the system. Under this mechanism, bilateral payment instructions are offset between two participants in BOK-Wire, and it is applied automatically at five-minute intervals, from 14:30 to 17:00.

BOK provides interest-free intra-day overdraft facilities to member banks, for which they must pledge collateral in the form of government bonds, government guaranteed bonds or MSBs. The upper limit of intra-day overdrafts is up to twice members' monthly deposit balance at BOK. If it is expected that funds demand exceeds this limit continuously for several months, member banks may request an increase of the limit ("supplementary limit") to BOK in advance. If an intra-day overdraft is not be repaid on the same day, BOK extends emergency credit (Temporary Loan) automatically, and BOK charges a penalty interest rate (call rate target + 2 percent) for this loan. When there is an intra-day funds shortage, at first BOK's intra-day overdraft is used. If there is still a shortage of funds, it is possible to raise intra-day call funds between commercial banks. 16 of 39 foreign banks participating in BOK are now using intra-day overdraft facilities even though their deposit balances are very small, thanks to the supplementary limit arrangements.

(3) Current Issues and Initiatives for Further Development

On September 3, 2003, Article 81 of the Bank of Korea Act was amended to clarify the central bank's responsibility and authority in overseeing the national payments system. The new Article 81 became effective on January 1, 2004, after which the BOK's Monetary Policy Committee was enabled to issue regulations necessary to ensure the safety and efficiency of BOK-Wire. BOK is also enabled to request a payment system operator or a supervisory agency to improve its operational standards, if necessary, and require participants in BOK-Wire and payments system operators to submit information on payment and settlement.

Forex transactions between customers of different local banks have been cleared by some large local commercial banks, while inter-bank forex trades have been settled via the overseas correspondents of each party. Under this traditional forex settlement method, commercial banks in Korea have faced settlement risk caused by delays arising from settlement across time zones. In order to eliminate this risk (the so-called Herstatt risk), in May 2002 the Bank of Korea and Korean commercial banks began discussing participating in the CLS system with the CLS Group. On July 24, 2003, the Board of Directors at CLS Bank International ("CLS Bank") approved in principle the inclusion of the Korean won as a CLS-eligible currency. Since Kookmin Bank and Korea Exchange Bank became shareholders of CLS Group Holdings AG in October 7, 2003, the Korean won is expected to become a CLS currency during the fourth quarter of 2004, provided that all the requirements of CLS Bank's rules have been satisfied and that regulatory approval has been obtained. Since CLS Bank enables cross-border currency transactions to be settled intraday on a payment-versus-payment (PVP) basis, participants in the Korean won market will benefit tremendously from the CLS mechanism, such as in risk reduction, lower funding costs, and higher operational efficiency.

Payment in central bank money is increasingly seen internationally as the best settlement practice. Although a form of DVP is provided in the KSE and KOSDAQ markets in Korea,

the cash legs of securities transactions are settled in commercial bank money. In order to conform to the global standards for securities settlement systems, the Bank of Korea has taken the initiative in planning DVP settlement in central bank money for KSE and KOSDAQ's market transactions. The BOK has been discussing preliminary preparations for the implementation of DVP through BOK-Wire with the KSE and KSD, and has also consulted with the government and the Financial Supervisory Service on this initiative.

2. SECURITIES SETTLEMENT SYSTEMS

(1) Bond Market

Bond markets in Korea were rapidly reformed after the currency crisis of 1997.

Government bonds prior to 1997 had a number of problems: the amount of outstanding government bonds is small, due to narrow deficits of fiscal balances; issues were performed at odd intervals; issuing periods were usually for five years or less; there were many types of government bonds; investors held them all the way up to maturity; and liquidity was lacking, among other shortcomings. Against such problems, market reform was developed according to the "Comprehensive Plan for Developing the Government Bond Market" in August 1998, and the "Government Bond Market's Development Course and Promotion Issue" in July 1999.

Meanwhile, the corporate bond market that had expanded prior to the currency crisis was also obliged to reform, because in place of corporate bonds with guarantees, unsecured corporate bonds had increased. Further, asset-backed securities (ABS) increased rapidly, and with the bankruptcy of the Daewoo group, the investment trust companies (ITC, the largest holder of corporate bonds) lost much status as an investor. Since the issue of government and public bonds has increased in recent years, Korea's bond market has changed from a corporate-bond-driven market to one centered on government and public bonds.

The principal measures related to recent reforms of the bond market are as follows.

May 1999: Establishment of the IDB market (described below) for government bonds.

September 1999: Listing of government-bond futures on KOFEX.

May 2000: Introduction of a government-bond reopening system, or fungible issue, with issues at interval of three months.

July 2000: Introduction of the mark-to-market system in the bond market by KSDA, in place of the book-value system.

October 2000: Issuance of a 10-year government bond.

Although reforms of Korea's bond market have developed, two major problems have still not been resolved: investor's uneven distribution, and delay of the secondary market's activation. The distribution of investors is uneven because few long-term bonds are issued, there are relatively few investments made by annuity and insurance companies (which should be major investors), and investors are unevenly distributed throughout the banking circle. The delay in activating the secondary market is caused by this uneven distribution, by primary dealers and market makers not fulfilling their functions, and by the fact that market's diversification of hedging methods (such as options and swaps) is just starting.

Further, the delay in fostering the repo market also hinders the activation of the secondary

market. Although repo transactions by BOK have rapidly increased in the past two years, the scale of the repo market between commercial banks is small and underdeveloped. An automatic repo transaction system started operations in 2002, but trading is extremely low. There are several reasons cited for this: 1) since South Korean banks have high credibility between them, it is possible to execute loans without collateral, the call market accounts for 99 percent of short-term funds transactions, and financial institutions do not like transactions with collateral; 2) many government and public corporation bonds used as collateral in repo transactions have been held with the banks that will become the lenders; 3) a majority of dealers have taken no positions, and do not need repo transactions; 4) there is a lack of personnel to perform repo transactions, among other factors. It is also said that the existence of withholding taxes is an obstacle to repo transactions. Although taxes on bond-holding periods were abolished in July 2001, the degree of termination is insufficient, and has not led to an expansion of repo transactions between commercial banks.

Although it is cited that the presence of foreign investors is low due to delays in reforming business practices and clearing-system problems (T+0 and delay of DVP), as described below, reforms of problems concerning settlement systems are being carried out, and results may be expected in the future.

The stock market is more developed, in comparison with the bond market. In response to the 1997 currency crisis, there have been revisions to regulations related to securities markets, such as reform of the financial supervisory system, enhancement of stockholder's rights, improvement of M&A procedures, and increased transparency in corporate management. Other major developments related to stock trading in recent years are as follows.

May 2000: Establishment of the OTC Bulletin Board.

January 2001: Initiation of transactions on the Kosdaq Futures Index (KOSDAQ 50).

December 2001: Introduction of ECN.

December 2001: Initiation of KOSDAQ 50 options transactions.

(2) Outline of Major Organizations

Korea's stock trading is performed in the KSE, KOSDAQ, OTC Bulletin Board, and Electronic Communication Network (ECN) markets, and bond trading is performed in the OTC and KSE markets. (See Figure 2.)

i. KSE

KSE was established in 1956, and its membership is currently composed of 51 companies (29 ordinary members, 21 special members, and 1 ECN; 17 of these companies are foreign securities companies). KSE membership is limited to securities companies. Ordinary members have voting rights and rights of claim for KSE's assets, while special members have trading rights only. The board of directors determines KSE's operations (lines of business, ordering instructions, matching methods, clearing, settlement, market supervision).

KSE is an order-driven market, and on September 1, 1997, complete computerization was achieved. KSE is classified into five markets: the stock market, the bond market, the beneficial certificate market, the ETF market, and the derivatives market.

According to The Securities and Exchange Act, KSE plays the role of Central Counter-party (CCP) in its markets, and assumes legal responsibility for clearing related to all transactions

there. Since 1975 KSE has entrusted management of settlement systems to KSD, which also conducts settlement, with KSE taking charge of clearing only.

ii. KOSDAQ

KOSDAQ was jointly established by KSDA, KSD, and securities companies in 1996, and has grown significantly as a market for providing efficient, long-term funds to high-tech companies and to medium-sized and small companies. Its average trading volume now equals KSE's.

The KOSDAQ market is mainly operated by KSDA, which is responsible for market management, market supervision, listing procedures, and disclosure. Participants in the KOSDAQ market are limited to KSDA's ordinary and special members. All transactions are performed electronically by the central computers.

iii. KSD

On December 6, 1974, the Korea Securities Settlement Corporation (KSSC), the predecessor of the Korea Securities Depository, was established under the Commercial Code. The 11th amendment to the Securities Exchange Act (SEA) passed on December 17, 1993, calling for the KSSC to be transformed into KSD. KSD was formally established on April 25, 1994, as a special organization under the SEA, and with a wider range of shareholders. KSD is owned by approximately 100 companies, including KSE, KSDA, securities companies, banks, and insurance companies. The largest investor is KSE, with controlling shares exceeding 70 percent.

KSD is the only CSD in Korea, and in addition to clearing services, it also provides registration of bonds and brokerage services for securities lending. KSD acts as CCP in KOSDAQ's market transactions.

(3) Stock Trading

i. Stock Trading in the KSE Market

KSE's operating hours are from 9:00 a.m. to 3:00 p.m., Monday–Friday, and there is no lunch break. From 3:10 p.m. to 3:40 p.m. there is an after-hours session where customers can trade using set closing prices.

Figure 2: Outline of Stock and Bond Trading

	KSE	KOSDAQ	ECN	OTCBB	INAS	Bond OTC
Netting	Multilateral	Multilateral	Multilateral	Bilateral	Bilateral	Gross
Performance Guarantee	KSE: JCF, FGM, GFD	KSD/KSDA : SSF	KSD: SSF	—	—	—
Clearing Organization	KSE	KSD	KSD	KSD	KSD	KSD
Settlement Organization	KSD	KSD	KSD	KSD	KSD	KSD
Settlement Method	DvP 3	DvP 3	DvP 3	DvP 3	DvP 3	DvP 1, FOP
Settlement Fund**	Stock: CB IDM: BOK GBM: CB	CB	CB	CB	BOK, CB	BOK, CB
Settlement Cycle	Stock: T+2 IDM: T+1 GBM: T+0	T+2	T+2	T+2	T+2	T+1

*Settlement performance guarantee organization and means.

JCF: Joint Compensation Fund

FGM: Fidelity Guaranty Money

GFD: Good Faith Deposit

SSF: Settlement Stabilization Fund

**BOK: central bank money, CB: commercial bank money.

a. Transmission of Sales Orders and Confirmation of Transactions

Securities companies can input sales orders directly into KSE's electronic trading system, using a computerized order routine system.²

When a sales order is entered into the KSE market and sales are concluded, trading conformation is also conducted at the same time. Sales cannot be cancelled. KSE members confirm transactions within several seconds after conclusion, using terminals connected with KSE's electronic trading system.³

b. Clearing and Settlement

KSE offers clearing services in stock trading. After confirmation of trading, it computes the net position of securities and funds on a multilateral basis, and sends the net settlement data to KSD by the time at T+1.

Settlement is performed at T+2, using the DVP method (DVP Model 3). Securities settlement is performed by KSD's book-entry system, by transferring members' accounts held with KSD, and funds payment is performed between the KSE accounts of commercial bank designated by KSE (because KSE is a CCP). Final settlement is at 4:00 p.m., at T+2.

No intra-day funds against settlement funds shortage are provided, and securities lending is possible through intermediation by KSD. Borrowers are requested to present eligible securities

² When an investor presents a trade order for stocks to KSE members, collateral of a cash equivalent or securities are requested.

³ Transactions by indirect participants (such as institutional investors) are performed in the same manner, using terminals or, on the same date of trading, via facsimile or telephone.

or cash as collateral. (Securities repo transactions are described below.)

The Joint Compensation Fund (JCF), Fidelity Guaranty Money (FGM), Good Faith Deposit (GFD), and Securities Delivery Bill (SDB) have been established as measures against non-payment. From 1974 to 1999, KSE members deposited 1/100,000 of trading amounts with JCF, which now suspends deposits after they reached 100 billion won, which is upper limit. When a default occurred, the funds deposited by the defaulting member are used first. If losses still cannot be covered, funds deposited by other members were also used. If a seller of securities could not deliver securities by the settlement maturity date, if approved by the buyer, SDB issued by KSE were delivered in place of securities. Sellers performing delivery using SDB must deliver the securities within two business days after issuance of SDB. In addition to the KSE market, SDB has been used in the KOSDAQ and ECN markets.

In addition, The Securities and Exchange Act regulates usage of JCF. When a settlement default occurs, the stock exchange may use JCF preferentially (The Securities and Exchange Act, Article 97-1 and 2), and the stock exchange may exercise the right of indemnity on compensation money and expenses required against member securities company that have caused a settlement default (The Securities and Exchange Act, Article 97-3).

ii. Stock Trading in the KOSDAQ Market

KOSDAQ's operating hours are from 9:00 a.m. to 3:00 p.m., Monday–Friday, and there is no lunch break. Order transmission and price matching is processed in the same manner as at KSE.

Clearing in the KOSDAQ market is performed by KSD. KOSDAQ Stock Market, Inc. sends trading data to KSD at T+0. For securities and funds, KSD performs multilateral netting, and prepares net settlement data on the next day.

As in the KSE market, settlement is performed using the DVP method (DVP Model 3), at T+2, and final settlement is at 4:00 p.m., also at T+2. Securities settlement is performed through KSD's book-entry system, and funds payment is through commercial banks' accounts with KSD (KSD is a CCP in the KOSDAQ market).

The Settlement Stabilization Fund (SSF) held by KSDA is used as a measures against non-payment, and is similar to KSE's JCF. Participants deposit 1/100,000 of their trading amounts with the SSF, up to the upper limit of 100 billion won. SSF's deposits amounted to 40.1 billion won at the end of 2002.

iii. The Institutional Affirmation & Settlement System

The Institutional Affirmation & Settlement System (INAS) is KSD's settlement service for KSE and KOSDAQ members' transactions with their institutional-investor customers, and is particularly for the purpose of secure, easy settlement between institutional investors and securities companies that conduct vast amount of transactions.

Those who hold accounts with KSD may use INAS. Institutional investors who do not have accounts with KSD may also use INAS through entrusting to a KSD member.

Settlement procedures are as follows.

T: Securities companies send a details of transactions with institutional investors to KSD.

T+1: KSD sends out trade data via SAFE (Participants Terminal System which is KSD's securities settlement system) to institutional investors, who then sends a trade confirmation to

KSD via the SAFE in the same manner. KSD sends settlement data to both securities companies and institutional investors via SAFE. Bilateral netting is performed for both securities and funds.

T+2: Settlement is performed on a DVP basis, and KSD conducts securities settlement using the book-entry system.

iv. OTC Bulletin Board and ECN

For stocks not listed on KSE or KOSDAQ, the OTC Bulletin Board was established in 2000, to ensure the fairness of OTC transactions.

Securities companies deliver sales orders directly to the OTC Bulletin Board's trading system, and settlement is performed on a bilateral netting basis at T+2, through KSD's book-entry system.

ECN was introduced as a nighttime OTC market on December 27, 2001. Clearing and settlement in the ECN market is also performed at KSD (on a multilateral netting basis), and final settlement is at 4:00 p.m., at T+2. ECN has been subject to the SSF managed by KSD. The SSF's outstanding balance at the end of 2002 was 20 million won. In the ECN market, index stocks such as KOSPI 200 and KOSDAQ 50 issues can be traded in the market. When the ECN market first appeared, trades were executed at the single price, the closing price of the day, a restriction which failed to bring investors into the market. To activate the market, beginning in June 2003 the government permitted price fluctuations within a range of 5 percent of the closing price.

(4) Bond Trading

i. Bond Trading in the OTC Market

Although bond transactions are performed even at KSE, more than 95 percent are performed in the OTC market.

Regardless of whether listed or non-listed, all securities may be traded in the OTC market at any time. A majority of institutional investors participate, and there are no membership qualifications.

There is no specific settlement organization in the OTC market, but KSD's book-entry system is used for settling securities. In most cases, settlements are executed on DVP basis (DVP Model 1), by using central bank money, but FOP (free-of-payment) delivery can be used to cover any of the very rare exceptional cases. In both cases, settlement is performed at T+1.. Those who maintain accounts with KSD may become participants in this settlement, while investors may trade anonymously using an inter-dealer broker (IDB).

DVP for the settlement of OTC bond trades is based on a direct linkage between KSD's book-entry system and BOK-Wire's fund transfer system. First of all sellers' securities held in KSD accounts are locked, the funds are transferred from KSD's account with BOK to the sellers' accounts, and at the same time the securities in the sellers' account with KSD are transferred to the buyers' accounts. This DVP system was introduced in November 1999, to eliminate counterparty risks and make same-day funds possible.

The Regulation of Supervision of Securities Business makes it mandatory for the settlement of OTC bond trading between any securities company and any institutions to be made by

using the DVP method.

Using the FOP method, while securities are settled through KSD's book-entry system, funds are cleared through the BOK or commercial banks.

In Korea, most securities settlement is performed using the DVP method, but FOP is used for the settlement of secured securities transactions supported by collaterals and for the transactions by the ITCs whose securities are not deposited with KSD but trust banks.

ii. Bond Trading in the KSE Market

The operating hours of the KSE bond market are from 9:00 a.m. to 12:00 p.m., for the morning session, and 1:00 p.m. to 3:00 p.m., for the afternoon session, Monday–Friday.

As with stocks, trading is performed using an order-driven system. For clearing, multilateral netting is performed at KSE, which provides CCP services.

Depending upon trading, settlement is divided into two types. The Inter-dealer Market (IDM Market)⁴ is categorized as a regular-way transaction, and is settled at T+1 using DVP Model 3. As in the OTC market, this settlement cycle was changed to T+1 on June 1, 2003. The central bank money is used for the settlement of cash-legs of the IDM Market transactions.

Other bond trading, on the General Bond Market (GBM Market), is categorized as cash transactions, and is settled using DVP Model 3 at T+0. Funds and securities must be delivered by 4:00 p.m., at T+0. Commercial bank money are used for payment.

JCF is used in cases of a settlement default in the IDM and GMB markets.

(5) Other Trading

i. Securities Repo and Lending/Borrowing Transactions

Settlement services are provided by KSD for both repo and lending/borrowing transactions.

In securities repo transactions, BOK-Wire and SAFE21 (an information transmission system composed of SAFE terminals) are linked, and settlement is on a DVP basis. KSD has established specific accounts exclusively for repo transactions, to protect the rights of participants.

Settlement-coverage transaction in securities lending/borrowing transactions is performed at T+2, as in the regular securities transactions. KSD becomes an administrator of collaterals offered by a borrower and if a default occurs, KSD will purchase the securities using this collateral and deliver them to the lender.

ii. Home Trading System

KSD has developed the Home Trading System (HTS), as a new international settlement system for global securities trading. HTS automatically links KSD, custodians, and brokers and dealers. KSD has designated the Bank of New York as a custodian, and the system began operating on April 30, 2002. By using HTS, Korean investors can order securities trade online in US markets in real time.

⁴ Authorized dealers trade only government bonds between themselves in this market, established at KSE. Regardless of KSE's membership qualifications, participation in the IDM market is open to both banks and securities companies possessing FSC licenses as government bond dealers.

(6) Securities Settlement System Issues to be Resolved

i. Settlement Cycle

The T+1 Securities Settlement Promotion Committee was organized at the end of 2000, mainly by FSC and KSD, and a plan to shorten the settlement cycle from the current T+2 to T+1 in stock transactions has been targeted at the end of 2005.

In bond trading, the settlement cycle was extended from T+0 to T+1 on June 1, 2003. This change was made to facilitate DVP-based settlement in all securities transactions, considering that the operating hours of payment and securities settlement systems closing at 5:00, while KSE market closes at 3:00 p.m., leaving only two hours between the markets' and the settlement systems' closing times. It was also taken into account that settlement at T+1 is the international best practice in bond trading.

ii. Settlement Using the Central Bank Money

Settlement funds are shown in Figure 2. As used in INAS since October 2001, settlement using the central bank money has been promoted since October 2001. For stock trading, however, commercial bank money is still used as the settlement asset. Even though members of KSE cite BOK-Wire's 5:00 p.m. closing time as the main reason for not using the central bank's account, the actual reason is that as they depend heavily on intraday overdrafts provided by commercial banks, and tend to extend the final paying-in of the net debit position at KSE as late as possible. It is very important to establish the good practice of prompt settlement at the designated paying-in time (4:00 p.m.), or at least by the end of the day.⁵

iii. Consolidation of Clearing and Settlement Organizations

For the cash market, excluding clearing operations in the KSE market, all securities clearing and settlement operations are handled by KSD. For the futures market, each stock exchange has conducted its own securities clearing. Under the new Korean administration, securities market reorganization has been actively studied at the government level, and ways to deal with clearing and settlement operations have been discussed. Two ideas are being considered, but there has not yet been a conclusion: a CCP for the clearing of all transactions should be established as an independent organization; or clearing and settlement operations should be concentrated at KSD.

Futures exchanges are divided by product: bond futures transactions are performed at the Pusan Futures Exchange (an independent organization), stock futures transactions are performed at KSE. Accordingly, concerning futures transactions, prior to examination of futures clearing and settlement operations, consolidation of trading markets must be considered.

iv. STP Project

The STP Project Promotion Committee has been established as a subordinate organization of the T+1 Securities Settlement Promotion Committee, and examination of STP has progressed. Planning has included construction of the STP hub (mainly by KSD), standardization of securities messages, and improvement of market practices. Such measures

⁵ Some market participants said that funds management is complicated, because computation of reserve funds for payment and standard dates have been set in BOK's settlement account.

as creating an infrastructure for settlement of indirect investment assets, promoting cooperation with international clearing and settlement organizations, and analysis of securities messages specifications (based on ISO15022), have recently been conducted as part of the STP project.

v. Global Trading

In response to the rise in global trading, in addition to expanding development of HTS (described above) to the countries other than the US, settlement services related to residents' foreign securities investment in cooperation with overseas CSDs, and local custody services by the KSD toward domestic securities investment by non-residents has been offered. There are also plans to encourage dual listing of domestic and foreign corporations.

As summarized above, it may be said that the upgrade of funds and securities settlement systems has relatively progressed in Korea, although bond markets still have some ways to go. As seen in the existence of several retail payment systems, while it is preceded by building of a framework for systems, contents of markets which use them remains an issue to be resolved. When markets have expanded and improved, as in reviewing the T+0 settlement cycle, it may become necessary to modify the settlement systems as well.

The globalization of markets is also a serious future issue, for which measures have eventually been initiated. Although stock investment into Korea by foreign investors has developed somewhat, bond investments are extremely rare. Expansion of bond investment from Japan may be expected. Including legal systems, the basic framework of Korean market has many similarities to Japan's, and it may be considered effective to exchange opinions on fostering bond markets in both Korea and Japan.

Chapter 4: Payment Systems of Malaysia

1. PAYMENT SYSTEMS

Inter-bank payments in Malaysia consist primarily of two major payment systems: RENTAS (Real-Time Transfer of Funds and Securities), which is managed and operated by Bank Negara Malaysia for the transfer of large-value funds, government bonds, and unlisted securities; and SPICK (Sistem Penjelasan Imej Cek Kebangsaan or the National Cheque Image Clearing System), for cheque clearing and settlement. There is another system, Interbank GIRO (IBG), which is operated by the Malaysian Electronic Payment System (1997) Sdn Bhd. (MEPS) for retail payments.

While funds payments by RENTAS are on an RTGS basis, SPICK uses multilateral netting, where payments are carried out at the end of the same day. Both RENTAS and SPICK are cleared by debiting and crediting the deposit accounts of member institutions held with BNM through the Central Host System (CHS) at Bank Negara Malaysia.

For smooth funds transfers, Bank Negara Malaysia provides secured intra-day credit facilities to member banks.

(1) RENTAS

RENTAS was introduced by Bank Negara Malaysia in July 1999, to reduce payment risks between banks. Other than Bank Negara Malaysia, which owns and operates it, the 52 participants in RENTAS include financial institutions licensed under the Banking and Financial Institutions Act 1989 (BAFIA) and the Islamic Banking Act 1983 (IBA), and other financial institutions approved by Bank Negara Malaysia such as Cagamas Bhd (National Mortgage Corporation). The current access policy is being reviewed to admit universal brokers and other identified institutions as members.

The operating hours of RENTAS are from 8:00 to 18:00, Monday through Friday, and from 8:00 to 13:00 on Saturday. There is an annual membership fee of RM5,000 and a transaction fee of RM2.50 (per IFTS) for the use of RENTAS.

RENTAS is composed of the Interbank Funds Transfer System (IFTS), which deals with large-value funds transfers, and the Scripless Securities Trading System (SSTS), which books and settles government bonds and unlisted private debt securities (PDS).

i. IFTS

IFTS is used for large-value inter-bank funds transfers, withdrawals of cash by commercial banks from Bank Negara Malaysia, transfers of legal reserve requirements, payments of vostro accounts, payments of exchange funds, and payments between the government and government agencies.

There is no maximum or minimum transaction amounts for payments by members, but for third parties (where the applicant or beneficiary of a payment is a non-member) there is a RM50,000 transaction minimum for payments not to a central bank or involving a government account.

There were 1.584 million payments made through IFTS in 2002, amounting to a total of RM11.447 trillion.

ii. SSTS

SSTS is a system for the book entry and settlement of scripless securities on a delivery-versus-payment (DVP) basis. Government bonds, Bank Negara papers, Cagamas bonds and unlisted PDS are settled through this system. (See Section 2, Securities Settlement Systems below, for further details.)

For RENTAS members, the transfer of securities and the payment of funds are conducted simultaneously, by accessing it to confirm transactions after completion. The payment of funds is carried out through CHS with Bank Negara Malaysia.

There were 99,000 settlements using SSTS in 2002, amounting to a total of RM838 billion.

(2) SPICK

SPICK was introduced by the central bank in November 1997, to expedite the clearing of cheque, and is owned and operated by BNM. SPICK's member institutions authorize their customers to issue cheques, and are composed of 12 domestic commercial banks (of which two are Islamic banks) and 14 locally incorporated foreign banks.

SPICK is available in three regions of west Malaysia (Kuala Lumpur, Penang, and Johore Bahru), and accounts for about 90 percent of the cheques cleared in the country (the remaining 10 percent are cleared manually). SPICK is an image-based cheque-clearing system where inward cheque images are sent to the paying banks on a CD-ROM at the same time as that the data is transmitted to those banks, for verification of signatures, prior to receipt of physical cheques.

SPICK is operated in the following manner:

- Banks deliver cheques for clearing to SPICK by 18:00.
- Cheques for clearing are processed, cheque images stored in CD-ROM and data is sent to banks through the Financial Institution Network (FINET).
- At 9:00 on the following business day, the net clearing balance are settled through the accounts of member banks maintained at Bank Negara Malaysia with unpaid cheques cleared at 15:30 on the same day.

SPICK's usage fees are as follows: RM0.05 per check for inward clearing, RM1.00 per unpaid check, and RM0.04 per cheque image on CD-ROM.

In addition to regular cheques, SPICK handles banker's acceptance bills, banker's cheques, demand drafts, interest warrants, pension warrants and drawing vouchers. The number of items cleared in 2002 was 176.43 million, amounting to a total of RM1.081 trillion.

(3) IBG

IBG was implemented by MEPS in October 2000, to electronically handle payment transactions between accounts of different banks. While the central bank's RENTAS handles large-value funds transactions between banks, IBG is used primarily for high-volume, low-value third-party inter-bank payments.

IBG member banks consist of 14 domestic commercial banks and finance companies, with total annual transactions of 592,000 amounting to RM4.73 billion. There are three parties to the IBG system: remitting financial institutions, system operators of MEPS, and receiving financial institutions. Upon receipt of payment orders from customers, the remitting financial

institutions sends them to MEPS, which classifies them by receiving banks and executes the transfers between banks. The receiving banks post into the accounts of the final recipient, (beneficiaries) after receipt of entries from MEPS.

2. SECURITIES SETTLEMENT SYSTEMS

The securities settlement systems in Malaysia consist of SSTS (part of the RENTAS payment system), managed and operated by Bank Negara Malaysia to handle government bonds, short-term government securities, Cagamas bonds, Bank Negara bills, and unlisted PDS, and of SCANS, which handles listed shares and bonds traded on the Kuala Lumpur Stock Exchange (KLSE).

(1) Bond Settlement System

Preparation for the bond market's settlement system began with the introduction of the Principal Dealer (PD) system in 1989. In January 1989, BNM designated 18 financial institutions as PDs, with the intention of improving liquidity in the secondary market.

While trying to increase the number of market participants through PD, Bank Negara Malaysia also introduced a computerized settlement system, SPEEDS (Sistem Pemindahan Elektronik untuk Dana dan Sekuriti), in 1990, to facilitate a faster and more efficient system of trading, registration and settlement of government securities that would further develop the secondary market. SPEEDS is composed of two systems: IFTS, which automatically clears inter-bank payments on a netting basis at the close of business hours; and SSTS, which settles securities via on-line transfer disposal. SPEEDS eliminated delays in securities settlements. To improve on the process and enhance secondary market trading, all unlisted PDs have been required to issued on scripless basis, with clearing and settlement executed electronically via SPEEDS.

As the volume of SPEEDS settlements expanded, however, some risk-management defects came to light, including insufficient Y2K measures and inadequate provisions for non-settlement caused by a bank's default. As a result, in July 1999 the SPEEDS net clearing system was replaced by RENTAS, the real-time, gross-transfer electronic system.

In SSTS, the issuers of securities float them in the form of master certificates, which BNM keeps in custody as the "Central Depository." Further, BNM designates Principal Dealers (those authorized to bid and accept securities issued on a bidding basis) playing the role of "Authorized Depository Institutions" (ADI) and "Approved Dealers" (those who can bid only through Principal Dealers).

The custody of securities and registration of transactions by Bank Negara Malaysia are only for and between member institutions of SSTS. Other investors conduct transactions through SSTS members, with ADIs fulfilling the functions of custody of securities and registration of transactions. Meanwhile, in accordance with legal provisions set by Bank Negara Malaysia, ADIs are required to separate securities for their own accounts and those held in custody for their customers, so that ADIs function only as agents.

(2) Share Settlement System

i. SCANS (Securities Clearing Automated Network Services Sdn. Bhd.)

Listed shares and bonds on the secondary market are mostly traded at the Kuala Lumpur

Stock Exchange (KLSE), through stockbroking companies which are members of KLSE. SCANS was established in 1983 as a subsidiary of KLSE, and has been in charge of clearing and settlement since 1984. Electronic book-entry settlement of securities is handled by the Malaysian Central Depository (MCD), a subsidiary of KLSE.

In 1990, the Fixed Delivery and Settlement System (FDSS), a fixed rolling settlement system, was established to bring the settlement cycle to T+7. Since the introduction of the CDS in 1992, deposits to CDS of listed issues of the Second Board, listed issues of the Main Board, convertible bonds, and warrant bonds have been completed, in this order, to achieve “scripless” trading environment. Newly listed issues must be deposited into CDS. With the achievement of scripless environment transactions, the settlement cycle was reduced to T+5 in August 1997, and to T+3 in December 2000, which has substantially alleviated settlement risks.

There are two kinds of transactions in KLSE: transactions on a “ready” basis, with delivery three business days later, and those on an “immediate” basis, with delivery two business days later. The specific flow of settlements by SCANS is as follows, using ready-basis transactions as an example:

- Investors open CDS accounts through stock brokerages designated as Authorized Depository Agents (ADA).
- Orders from investors are input into the terminal of the broker-front-end trading system (winSCORE) by a brokerage.
- Orders input into winSCORE are automatically matched through the System on Computerized Order Routing and Execution (SCORE) at KLSE.
- The selling investor secures the necessary shares in its own CDS account by 12:30p.m. two business days later.
- The shares are delivered via book entry debiting from the selling investor’s CDS account and crediting into the buying investor’s CDS account by 9:00a.m. three business days later on gross basis.
- The funds transfer is completed by 10:00a.m. three business days later, between the brokerage and SCANS on net basis, and by 12:30p.m. between the brokerage and customer.

When on an immediate basis, all the above mentioned time schedules are advanced by one day, resulting in T+2 settlement.

ii. ISS (Institutional Settlement Service)

The members of SCANS are currently composed of Trading Clearing Members (TCM), who are KLSE-member brokers, and Non-Trading Clearing Members (NTCM), who are banks and other financial institutions with qualified SCANS membership.

Malaysia’s DVP settlement is limited to settlements between SCANS and TCMs, the stockbroking companies. To achieve DVP for institutional investors, KLSE introduced a settlement service called the Institutional Settlement Service (ISS) in July 1999. This service enabled NTCMs, the non-brokerages to clear settlement directly with SCANS. Shares delivered under ISS are reserved in the buyer’s CDS account at 9:00a.m. on T+3, and will be released after confirming payment at SCANS, thereby assuring DVP settlement.

The ISS is available for both on market and direct business transactions of securities. Direct business transactions which refer to off-board trades without using KLSE’s trading system, are required to be reported KLSE through winSCORE and are cleared and settled through

SCANS and MCD in the same manner as on market transaction. To ensure that shares were ready in the account of the selling broker on the morning of T+3, it was necessary that the transfer of shares from the seller's custodian bank be completed by 12:30p.m., on T+2, whereas funds payments were on a T+3 basis, causing a one-day settlement risk. To avoid this risk and in cooperation with clearing members and related organizations, ISS was made available for direct business transactions in 2001.

(3) Capital Market Master Plan

Since the Asian currency crisis of 1997, the Malaysian authorities have emphasized the promotion of a sound capital market, led by the Securities Commission (SC).³

In September 1999, the Securities Commission established the Capital Market Strategic Committee (CMSC), to prepare a Capital Market Master Plan (CMP). The CMP was formulated by the Securities Commission through detail studies and through a substantial and robust consultation with industry participants and the public. The CMP containing the vision and broad strategies for the development of the capital market was presented to the Ministry of Finance, which approved it and made it public in February 2001.

The CMP proposes a phased approach to the development of Malaysian capital market for the next 10 years (2001–10) and is presented in three phases, each bearing its theme (see Figure 2). It contains 152 recommendations to be implemented over this period. .

Figure 2 : Phased Development Approach in th CMP

	Period	Theme
Phase 1	2001–2003	Strengthen domestic capacity, and develop strategic and nascent sectors
Phase 2	2004–2005	Further strengthen key sectors and gradually liberalise market access
Phase 3	2006–2010	Strengthening of market processes and infrastructure towards becoming a fully-developed capital market, and enhancing international positioning in areas of comparative and competitive advantage

Source: SC (2001), "Capital Market Master Plan".

Among the key strategic initiatives are to strengthen the competitiveness and positioning of the capital market including the market institutions, such as the exchange, clearing, and settlement as well as strengthening domestic intermediaries such as brokers and to increase the efficiency of the fund-raising process. (see Figure 3).

³ Regulatory agency established under the provisions of the Securities Commissions Act 1993. In July 2000, overlapping regulatory authority over the securities market at the Ministry of Finance and BNM were centralized with the Securities Commission.

Figure 3: Outline of CMP

Purpose	Basic Measures
To be the preferred fund-raising center for Malaysian companies	<ul style="list-style-type: none"> • Enhance the efficiency of the fund-raising process • Implement a concerted programme to develop the corporate bond market as a competitive source of financing • Facilitate the development of the venture capital industry to finance emerging high-growth companies • Foster a liquid and efficient market for the secondary trading of securities
To promote an effective investment management industry and a more conducive environment for investors	<ul style="list-style-type: none"> • Develop a strong framework for active corporate governance and shareholder value recognition • Heighten efforts to establish a vibrant and competitive investment management industry • Enhance the role of institutional investors in the provision and management of funds • Facilitate effective risk management by actively developing the derivatives industry • Facilitate the introduction of a broad range of capital market products catering to various risk-return profiles
To enhance the competitive position and efficiency of market institutions	<ul style="list-style-type: none"> • Restructure Malaysian exchanges and clearing institutions to strengthen their efficiency and competitiveness • Ensure Malaysian exchanges are well positioned to respond to changing market dynamics through the adoption of flexible business structures and commercially-oriented strategies • Enhance the efficiency of the trading, clearing and settlement infrastructure
To develop a strong and competitive environment for intermediation services	<ul style="list-style-type: none"> • Foster constructive competition through the deregulation of services, products and fixed fee structures • Develop strong full-service brokers to provide a competitive market for integrated financial services • Ensure Malaysian intermediation services are anchored on appropriate prudential standards, with high levels of business conduct and professional skills • Adopt a pragmatic programme for liberalization, supported by appropriate safeguards
To ensure a stronger and more facilitative regulatory regime	<ul style="list-style-type: none"> • Move towards a market-based system of regulation for capital market activities • Ensure regulatory parity and consistency between all institutions and participants conducting similar capital market-related activities • Ensure strong enforcement of the regulations governing the capital market • Enhance capacity for maintaining systemic and financial stability
To establish Malaysia as an international Islamic capital market centre	<ul style="list-style-type: none"> • Facilitate the development of a wide range of competitive products and services • Create a viable market for the effective mobilization of Islamic funds • Ensure that there is an appropriate and comprehensive accounting, tax and regulatory framework for the Islamic capital market • Enhance the value recognition of the Malaysian Islamic capital market internationally

Source: SC (2001), "Capital Market Master Plan".

Even before the Asian currency crisis, Malaysia had an advanced infrastructure for the transfer systems of funds and securities. After the crisis, the overall infrastructure for capital markets (including the bond market) has been further strengthened with substantial improvements in process efficiencies, under the strong leadership of the relevant authorities. The market tends to be dominated by domestic players, as limited participation by foreign investors, due to the imposition of strict exchange controls (which was subsequently been removed to some extent) in the aftermath of the Asian currency crisis.

As shown in Figure 2, one of the key objectives of the CMP is to strengthen the competitiveness and international value recognition of the Malaysian capital market over the long-term. Malaysia has been strengthening its financial infrastructure through pro-active initiatives by the regulators, and further reforms and improvements of the market (in line with the CMP) are expected.

Nevertheless, some market participants have cited the delay in secondary-market reform, including those related to government bonds¹. Development of a sophisticated financial market is also a precondition, enabling the easing of exchange controls and the opening of a ringgit bond market. In particular, improving the infrastructure to encourage financial transactions is essential, for which dialogue with private-sector market participants is important.

¹ Officials at SC pointed out a lack of readiness in the domestic market and a broader macro-economic concern over the impact of implementing the recommendations. In this regard, we understand that a continuous consultation between regulators and private sector participants on potential improvements of the relevant infrastructure should be very important.

Chapter 5: Payment Systems of Thailand

Thailand has been active in improving its payment systems, since its comparatively early introduction of RTGS in 1995. Although the upgrading of infrastructures for securities settlement was slow in coming, the DvP settlement of government bonds was achieved with the inception of BAHTNET 2 in December 2001.

The government bond market has greatly expanded after the Asian currency crisis, and the corporate bond market has also become active, so the issue of upgrading the securities settlement systems has become all the more important. It is worth noting that a cross-border linkage of payment systems is being studied in this regard.

1. PAYMENT SYSTEMS

(1) Outline

i. BAHTNET

BAHTNET is an acronym for the Bank of Thailand Automated High-value Transfer Network, used for high-value inter-bank transfers and operated by the central bank.

ii. Electronic Check Clearing System

The Electronic Check Clearing House (ECH) was established in July 1996, to operate the Electronic Check Clearing System (ECS). ECH's members are commercial banks, and it handles the payment of checks and bills (including bills of exchange).¹ Data are exchanged electronically, and payments are carried out using accounts with the central bank.

Banks send checks and bills from customers to ECS for payment in evening of the day of their acceptance. The deposited check will be credited to customers' accounts on that day, and they can draw against the deposits on the next business day. Banks are informed of their tentative clearing position by 3:45 p.m., and if their account balances with the central bank are not sufficient for payment, they are required to deposit the necessary funds into these accounts by 5:15 p.m. If a bank fails to make such a deposit, all payments in the system are cancelled and then clearing position is recalculated excluding the bank in question. Large-amount checks are singled out for confirmation of readiness to pay them by their paying banks by 4:00 p.m.

iii. Provincial Check Clearing System

The Provincial Check Clearing System is operated under the membership of the central bank, Bank of Thailand (BOT), and commercial banks. The capability of provincial clearing houses has been upgraded and the time required for clearing has been reduced, while the activities covered by the system have been expanding. The previous 7–15 days required for clearing between distant provincial clearing houses has been reduced to 6 business days. The net clearing positions at provincial clearing houses are reported by ECH to the head offices of

¹ In Thailand, companies will frequently issue bills of exchange for short-term fund raising, the majority of which will be bought by financial institutions.

commercial banks by 4:00 p.m. on the same day, and cleared through BAHTNET at 4:30 p.m.

iv. Media Clearing & SMART

BOT has operated Media Clearing, a retail funds-transfer system, since January 1997. Members consist of 13 commercial banks, two specialized banks, and 13 foreign banks. There are two kinds of services: credit transfer, by which to conduct transfers from a customer’s account to another customer’s account with another bank (used for payments of salaries, pensions, dividends, interests, and other items), and debit transfer, by which to conduct transfers by debiting a customer’s pre-arranged account (used for payments of public utility charges, insurance premiums, credit card bills, loan repayments, and other items). Since December 2002 files have been exchanged on-line between member financial institutions and the central bank, using the System for Managing Automated Retail Funds Transfer (SMART). For transfers amounting to less than 500,000 baht, data is sent 1–7 days in advance, to dispose of periodical payments.

v. Miscellaneous

Commercial banks provide Automated Teller Machine (ATM) services. As of the end of 2000, there were 5,865 ATMs installed nationwide. For transfers between different banks, funds for such payments must be transferred to Bangkok Bank by 3:30 p.m. the next day. Bangkok Bank will complete the payment by 5:00 p.m.

Credit card companies have installed Electronic Data Capture (EDC) at retail member shops, enabling them to accept ATM cards in addition to obtaining authorizations for credit cards. Cards using magnetic data (credit cards, ATM cards, and other cards) and those using Smart Card technology are collectively called “plastic money.”

Among these means of payments, the amounts handled by BAHTNET and ECS are overwhelmingly large.² (See Figure 1.)

Figure 1: Average Daily Usage of Major Payment Services

	1999	2000	2001	2002
BAHTNET	26.9	247.3	275.3	266.3
ECS	267.4	103	61.7	69.4
Media Clearing	0.3	0.5	0.7	1.1
Provincial Cheque	5.8	8.6	6.5	7.4
	300.4	359.4	344.2	344.2

(Average per day)

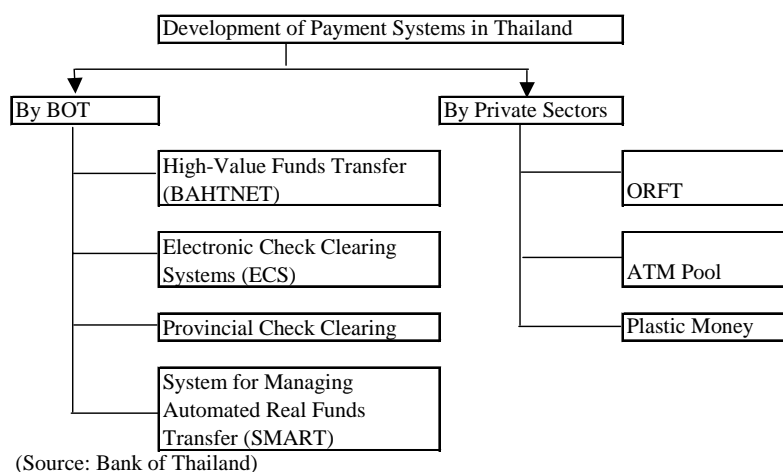
(Unit: billion baht)

(Source: Bank of Thailand)

² Use of postal and money orders has been increasing recently. This service is provided by Thailand Post Company Limited.

Payment services classified by developing entities are shown in Figure 2.

Figure 2: Development of Payment Services³



(2) BAHTNET

i. Object of Transaction

BAHTNET handles funds transfers and securities-related transactions.

Although BAHTNET began operating in May 1995, it was seldom used at first. Usage rose sharply after March 2000, when BOT made it a policy to use BAHTNET for large-value transactions among member banks.⁴ Since then, inter-bank loans, foreign exchange transactions (transactions with customers and proprietary dealings of financial institutions), funds transfers for non-residents, and government bond transactions have been handled by BAHTNET, resulting in a decrease in the use of checks.

ii. Major Features

BAHTNET's major features are as follows:

- BAHTNET carries out transfers on an RTGS basis.
- BAHTNET uses SWIFT message formats and transmits messages via the SWIFT network, and also supports Straight-Through Processing (STP). BAHTNET's members consist of commercial banks (31), finance and securities companies (23), specialized banks (8), bureaus and departments of the central bank (7), government agencies (2), and Thailand Securities Depository Co., Ltd., for a total of 71 institutions. Of this total, there are 62 direct members of BAHTNET, of whom 35 are SWIFT members. SWIFT members (9) use BAHTNET through

³ ORFT is an acronym for "on-line retail funds transfer," which enabled commercial banks to transfer small-amount remittances on-line. The Thai Bankers Association (TBA) has developed ORFT under the advice of the central bank.

⁴ Previously, 80 percent of check payments were these types of transactions. In 1998 and 1999, there were frequent complaints about BAHTNET's high fees and high costs of intra-day liquidity facilities. The central bank says BAHTNET became popular with the lifting of the 30-percent ceiling for ILF out of total credit facilities for each bank, and with the drastic review of the fee structure in 1997.

SWIFT. Also, the BOT Web-based System has been developed for the benefit of those who are unable to use SWIFT.

- BOT Web Station is provided for checking account balances and transaction details, managing queues, servicing messages, and reports. These are also available to SWIFT members.

iii. Devices for Facilitating Payment

The following devices are used to facilitate payments by BAHTNET.

- **Queuing Mechanism and Gridlock Resolution.** If funds for payment are not available to a remitter, the payment order will be placed in a queue. If several BAHTNET members are in this queue, Gridlock Resolution calculates their net positions. If their net positions are positive, Gridlock Resolution carries out several queued payment orders simultaneously. This device has been in operation since 1997.⁵ The Queuing Mechanism makes it possible to give preference to funds payments and securities settlements in the queue.
- **Intraday Liquidity Facility (ILF).** This provides members with intra-day liquidity facilities secured by government-bonds. ILF initially had a 30-percent ceiling (from the total credit line made available by BOT to financial institutions), but this limit was lifted in March 2000. BOT currently allows members unlimited collateralized use of the facility during the day. Intra-day liquidity facilities are free from commissions as long as they are repaid within the day (otherwise, interest is payable at a rate of 2 weeks' repo, plus 1.5 percent). Balances derived from the payment of checks and bills may be used for the repayment of ILF borrowing, or for other funds transfers of BAHTNET, but the ILF credit line must be 10 percent or more of the average remittance amount during the last two weeks on BAHTNET. If this condition is not met, a handling commission must be paid at three times the normal rate.

iv. Operations

BAHTNET is run by the Bank of Thailand, whose Payment Systems Group and Information Technology Group are in close contact while monitoring operations. The Payment Systems Group follows policies decided by the Payment Systems Committee.⁶

v. Miscellaneous

Use of BAHTNET through SWIFT is encouraged, rather than through the Web Interface, because fees are lower using SWIFT. This is coupled with efforts toward achieving Straight Through Processing (STP).

To facilitate BAHTNET's operations, the central bank requires members to remit at least 30 percent of the remittance amount before noon, and at least 70 percent of the same by 3:00 p.m.

There are three time slots: 8:30 a.m. to 12:00 p.m., 12:00 p.m. to 4:00 p.m., and 4:00 p.m. to 5:30 p.m. There are higher fees for the later slots, to encourage remittances during earlier ones. Fees for BAHTNET through SWIFT and BAHTNET through Web Service are, respectively, 5 and 8 baht for the first time slot. For the second time slot, while payment orders cost 10 and 16 baht, securities-settlement orders cost 10 and 13 baht, and in the third slot all transactions cost 200 baht respectively, regardless of type or channel.

⁵ Usage is high, according to BOT, with the number of financial institutions involved ranging from three to as many as ten.

⁶ This committee periodically works on the payment system, under the chairmanship of the central bank governor.

BOT plans to expand BAHTNET membership to include institutional investors.⁷

2. SECURITIES SETTLEMENT SYSTEMS

The Securities and Exchange Commission (SEC) was established on the basis of the Securities and Exchange Act of 1992. Also based on this Act, Thailand Securities Depository Co., Ltd. (TSD) was established as a subsidiary of the Stock Exchange of Thailand (SET), to provide financial institutions and securities companies with clearing and settlement services for securities such as shares, bonds, investment unit, warrants and so forth.

(1) Types of Securities Settlement Systems

Currently, TSD handles all listed securities including shares and corporate bonds. From August 2000, it started to settle them on a DvP basis by electronic fund transfer system. Corporate bonds listed on the SET are settled on a T+2 basis through BAHTNET and three domestic banks, called “settlement banks.”

Unlike other securities, government bonds are cleared and settled by the BOT. Initially, the government bonds were settled by check until December 2001, when BAHTNET 2 started operations. Since the finality of payment of checks is not obtained until the next day after completing delivery of the securities to the counterparty, the seller of securities was previously at risk of settlement risk, while the settlement of shares shifted earlier to BAHTNET starting September 2000.

Excluding corporate bonds, TSD delivers and settles securities traded at SET and Markets for Alternative Investment (MAI, established within SET in 1999 for small- and medium-sized companies) on a T+3 basis. For delivery and settlement, all securities including corporate bonds must be maintained in securities clearing accounts by 1:30 p.m. on the settlement date. Delivery is carried out from 1:30 p.m., and may be completed and transferred out of securities clearing accounts after 2:15 p.m. on the same day. The majority of securities are dematerialized and held on a scripless basis. For shares and corporate bonds traded at the SET and MAI, TSD will carry out multilateral netting and settlement through BAHTNET and settlement banks.⁸

(2) BAHTNET 2

Following the inception of BAHTNET 2 in December 2001, delivery of scripless government bonds and payment through BAHTNET were linked to DvP settlement. Until then, the majority of government bonds were issued in bearer form, and settled physically at BOT. Payment was made by check, resulting in a one-day gap between securities settlement and funds payment.

⁷ Although BOT officials explains that a participation in BAHTNET is based on the voluntary decision of an applicant, some major institutional investors have been strongly critical of such issues due to some practical reasons. For example, members have to make payments through BAHTNET, yet receive checks which require the arrangement of intra-day credit.

⁸ Three settlement banks are used by TSD for DvP settlement: Krung Thai Bank, Bangkok Bank, and Siam Commercial Bank.

Most corporate bonds are issued on a registered basis. There are 20 registrars⁹, all of which belong to financial institutions. Delivery of securities is on a T+2 basis, as is the case with government bonds.

Bond trading is not automated at all. Thai Bond Dealing Centre (TBDC) is in the process of establishing an electronic trading system, in cooperation with a local software developer.

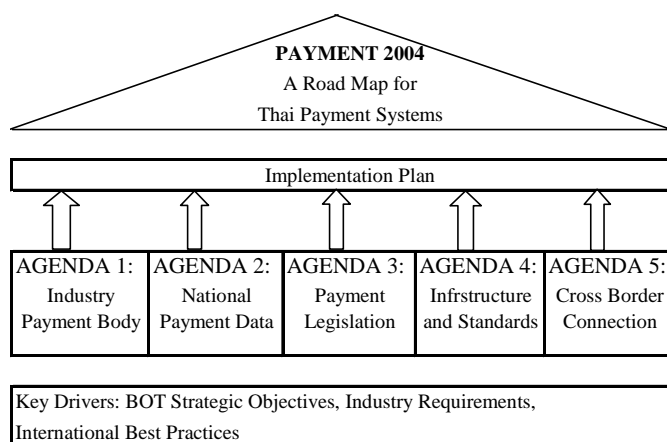
3. FUTURE PLANS FOR PAYMENT SYSTEMS

(1) Future Plans

The 1997 Asian currency crisis spurred Thailand to expedite the upgrading of its payment systems. Improvement of payment systems was understood to be essential to financial-system stability, the importance of upgrading the infrastructure for securities settlement has been recognized for the development of the bond market. When the first master plan for the bond market was presented in the autumn of 1998, an individual subcommittee for the payment systems was established.

“Payment 2004: A Road Map for Thai Payment Systems”¹⁰ was released in January 2002, showing a five-area plan for the next three years.

Figure 3: Payment 2004 — Key Agendas



The first part of this plan is to establish an industry payment body, in preparation for cooperation between financial institutions and non-financial institutions. There is a proposal to establish a “Thailand Payments Association” which would include a committee overseeing regulations, standards, safety, card payments, global payments, electronic commerce, and other matters.

The second part is the systematic collection of national payment data, by which to support decision-making by market participants and policy-making by the central bank.

The third part is the enactment of a specific Payment Systems Act, to reduce the risks of

⁹ Based on data released by TBDC, Bangkok Bank, Thai Farmers Bank, Bank of Ayudhya, TISCO Securities, Siam Commercial Bank, Thai Danu Bank, and First Investment & Trust appear to be active in the registrar business.

¹⁰ Available on BOT’s Web site (<http://www.bot.or.th/>).

payment systems, promote efficiency, and safeguard financial stability.

The fourth part is the development of a common payment infrastructure and standards.

The fifth part is a linkage to global payment systems.

On the necessity to upgrade and improve cross-border payment services, the following points have been cited: promotion of foreign trade, increase in cross-border payments, and reduction of payment charges; and reduction of foreign exchange settlement risks. In relation to these, studies have been requested on connecting Media Clearing to small-value cross-border transactions, and on connecting BAHTNET 2 to large-value cross-border payment systems, respectively. BOT explains that it is taking the initiative on these, with the Thai Bankers Association, Foreign Bankers Association, Ministry of Foreign Affairs, and Ministry of Trade are playing important roles in the project.

Major plans for upgrading the securities market are as follows:

- **Promotion of STP.** In June 2000, TSD conducted a preliminary study on Straight-through processing (STP). Since TSD members use a variety of message standards in most of the trades disposed of on a manual basis, it became apparent that the introduction of STP would have a number of positive effects. A feasibility study for the implementation of STP has been outsourced, and another study on the settlement practices of shares to reduce T+3 to T+1 is under consideration. Along with the plan to move toward the STP, at the moment, TSD has been integrating its post trading systems in order to provide more efficiency and flexibility to the system in the future. Also the settlement cycle of all listed securities handled by TSD is going to be shortened from T+3 to T+2 by the end of 2005.
- **A scope of handling by the Central Securities Depository (CSD), to be established in the future.** According to consultation with Capco¹¹ at the request of the World Bank in July 2001, TSD was recommended to handle all kinds of securities, but later consultation with the Reserve Bank of Australia at the request of BOT stated that government bonds and government agency bonds should continue to be handled by the central bank, thus revealing opposing views. It has been pointed out that TSD lacks in bond related expertise, and has no backup site, and that TSD is under considerable systemic risk. On the other hand, there will be a number of advantages in establishing CSD that handles all kinds of securities. It would be appropriate, for the time being, to use the function of the central bank, and in the future to look for the establishment of CSD to centralize this. Since November 2003, TSD has already begun the clearing and settlement services as well as depository services for listed corporate bonds (and the back-up site was established in years ago). In addition, TSD has been developing new post trading systems while deploying more efficient technology to allow more effectively response to the various types of securities. As time goes, TSD is looking forward to being assigned from BOT to handle the government bonds and become the CSD in the future.

(2) Prospects

Thailand's policy to make cross-border linkages available for fund transfers is conspicuous among ASEAN economies. Viewed in terms of necessity and cost-effectiveness, this may appear rather hasty, but to increase regional integration it is very significant that the financial

¹¹ Capital Markets Company Pte Ltd.

authorities should study upgrading such infrastructures in a wide sense of the word.

In securities settlements there remain several points still to be improved.

The bond market in Thailand (mostly for government bonds) greatly expanded after the Asian currency crisis, ahead of improvement in market infrastructures, and there appears to remain further room for development if infrastructures for settlement are upgraded. The investment needs of local institutional investors are very strong, and the growth of investment will be promoted by improvements in tax-system, settlement, and other infrastructures. In this sense, upgrading the infrastructures for securities settlements may be key in the development of the bond market.

The fact that several entities related to financial institutions in the private sector are playing the role of registrar means, conversely, that the number of corporate bond issues is still small, and that holdings by overseas investors may not be large enough to strongly advocate the necessity of CSD. In the future, the corporate bond market in Thailand is expected to play an important part in the development of regional bond markets, in which the upgrading the settlement infrastructures is also important.

Figure 4: Size of Thai Financial and Corporate Bond Markets

	(unit: billion bahts)										
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bank Loans *	2,669.1	3,430.5	4,230.5	4,825.1	6,037.5	5,372.3	5,119.0	4,585.9	4,298.9	4,602.7	4664.7 (Oct)
Equities **	3,325.4	3,300.8	3,564.6	2,559.6	1,133.3	1,268.2	2,193.1	1,279.2	1,607.3	1,986.2	23860.3 (Nov)
Corporate Bonds	26.3	86.1	133.6	182.4	187.6	177.6	402.0	501.2	538.1	543.4	607.3
Government Bonds	100.7	62.5	43.0	18.0	13.8	426.9	587.1	658.7	706.4	1,114.6	1,132.2
T-Bills	-	-	-	-	-	-	25.0	62.0	110.0	134.0	127.0
State enterprise Bonds	135.0	190.4	238.3	278.4	293.8	300.6	356.4	408.8	416.1	395.7	412.2
FIDF/PLMO	-	-	9.5	40.5	51.6	36.2	18.1	4.1	112.3	112.3	239.3***

Source : Bank of Thailand, Thai Bond Dealing Centre, Registrars (BAY,BBL,BFITSEC,DTDB,IFCT,KGL,SCB,SCIB,TFB,TISCO,TMB,TSD), and SEC

*: Bills, Loans and Overdrafts, excluding inter-bank loans

**: SET market capitalization

***: excludes THB 411.5 billion short-term FIDF bonds traded in the Repo market at the Bank of Thailand.

Although the Thai corporate bond market grew greatly after the currency crisis, its size as of the end of 2002 was only 543.4 billion baht, about one-ninth of bank loans. The corporate bond balance of 393.3 billion baht as of the end of last year shows that the holdings of institutional investors (27 percent) have already exceeded those of financial institutions (18 percent).

Chapter 6: Payment Systems of Indonesia

1. FINANCIAL SYSTEM

The banking system of Indonesia consists of Bank of Indonesia (the central bank), commercial banks, and regional credit banks.

Formerly, under the Act No.13 Year 1968, Bank Indonesia's status and position was to assist the government to achieve several goals. This dependency and unclear goals had caused ineffectiveness, and the Act No.13 Year 1968 was perceived inadequate to support an independent central bank. On May 17, 2000, the Act No. 23 Year 1999 was enacted to replace Act No. 13 Year 1968, which furnished the central bank with the status and position as an independent central bank, that is free from the interference of other parties or the government. Besides, the major functions of the central bank became emphasized, in the form of using monetary policy to maintain the stability of financial and exchange markets, as well as ensuring the stability of the financial system through stricter governance and the upgrading of financial infrastructures. The central bank's head office is located in Jakarta, and through its 38 offices throughout the country it carries out the clearing, money market operations, and supervision of banks.

As of December 2003 there were 138 commercial banks, with 7,730 offices. Too many banks were established due to wide-ranging financial deregulation in 1988, numbering 222 at the end of 1997, amid the Asian currency crisis. Under the leadership of the Indonesian Bank Restructuring Agency (IBRA), established in January 1998, some banks were provided with public money, and others were nationalized, closed, or merged, resulting in a 35-percent reduction in the number of banks.

Details of Commercial Banks

State Banks*	5
Regional Development Banks	26
Private Sector Banks	76
Foreign Banks, Joint-venture Banks	31

* BNI, BRI, BTN, Bank Mandiri, and BEI.

Among the state banks, Bank Mandiri (the largest) and Bank Negara Indonesia (BNI) are commercial banks, while Bank Rakyat Indonesia is specialized for agriculture and small- and medium-sized companies, Bank Tabungan Negara is for housing finance, and Bank Expor Indonesia is for trade finance. The total assets of commercial banks amount to 1,219.3 trillion Rupiah, of which 558.5 trillion Rupiah (45.81 percent) is accounted for by five state banks, 238.4 trillion Rupiah (19.55 percent) by four nationalized major commercial banks, and 38.8 trillion Rupiah (3.1 percent) by foreign banks, making the total assets of the 15 largest commercial banks to 943.8 trillion Rupiah, or 77.41 percent of the total assets of commercial banks. There are now 76 commercial banks, which is still too many in relation to the size of the economy. Some are small banks acting as finance companies for group companies, and that are expected to be merged or closed in the years to come. Besides 11 foreign banks which possess branch status, there are thirty two foreign banks that hold representative offices.

Other than commercial banks, regional credit banks are said to number over 8,000, but handle only regional deposits and loans in small amounts, and are not members of the payment systems.

There are non-banks which come under the supervision of the Ministry of Finance as leasing companies, insurance companies, pension funds, and other capital-markets related companies such as securities companies under the supervision of Capital Market Executive Agency(BAPEPAM).

2. PAYMENT SYSTEMS

Only commercial banks and the post office system (PT POS) provide payment services in Indonesia. The post office system provides payment services by means of Giro Book, but this is not included in the payment systems of banks. The payment systems provided by commercial banks are explained below.

(1) Means of Payment

The means of payment used are as follows.

- **Cash:** The denominations of Rupiah bank notes in circulation are 1,000, 5,000, 10,000, 20,000, 50,000, and 100,000, and coins come in 25, 50, 100, 200, 500, and 1,000 Rupiah denominations.
- **Funds Transfer:** Banks provide transfers between accounts of the same bank and between branches, clearing between banks, transfers between regions through network of correspondent banks, and transfers within a same region and between regions using the central bank's Real Time Gross Settlement (RTGS).
- **Check:** Checks may be drawn by opening checking accounts. According to the rules of the central bank, if checks for small amounts are unpaid three times in 6 months, or a check for a large amount is unpaid once, the drawer's name appears on a blacklist, resulting in the suspension of banking transactions for one year.
- **Direct Debit:** Prior to February 2004, there was no inter-bank electronic payment system (like Zengin-Net) available in Indonesia. On February 2004, an interbank electronic payment system was launched by PT Artajasa for its 26 members. For payments of public utility charges, direct debits from the accounts of users are widely used by arrangement between utilities companies and specific commercial banks.
- **Payment Cards:** A variety of cards are used for payments. ATM cards are generally used for the withdrawal and deposit of cash. There are five local inter-bank ATM networks (ALTO, ATM BERSAMA, CAKRA, FLASH, and BCA) and two international networks (CIRRUS and PLUS). Debit cards (EFTPOS) are available in Jakarta and some larger cities. Other cards in use include credit cards and prepaid cards ("smart cards," issued by telephone companies and other entities).

(2) Clearing System of the Central Bank

The clearing system of Indonesia is the basis for the inter-bank payment system operated by the central bank, based on the Central Bank Act of 1999. Payments of inter-bank balances are cleared through accounts opened with the central bank, as follows.

- **Operating Entity:** The central bank owns and operates the clearing house and the clearing system. The clearing system in Jakarta is called the Jakarta Electronic Clearing System (SKEJ), and is the largest in the country.
- **Clearing House:** There are 102 clearing houses nationwide, of which 38 are operated by the central bank (where it has offices), with the remainder operated by designated commercial banks. Among 38 clearing houses of BI, the one in Jakarta is an electronic system, both Surabaya and Medan are automated, and the rest are function on a manual basis.
- **Payment Instruments:** Means of payment used in clearing are regular checks, “Bilyet giro” checks (that cannot be cashed, similar to “crossed checks” in Japan), credit notes, debit notes, and bank checks. Of these, 54.6 percent are debit instruments, and 45.4 percent are credit instruments. Of the debit instruments, the largest item is the Bilyet giro, at 48.2 percent, followed by checks, at 6.1 percent.
- **Volume:** In 2000 the annual number of items cleared in Jakarta reached 35.6 million, amounting to 6,222 trillion Rupiah, while locales other than Jakarta cleared 38.0 million items, amounting to 1,082 trillion Rupiah. Before the introduction of RTGS, the average daily amount cleared was 7.3 billion Rupiah, 75 million items, but a considerable volume has now been shifted to RTGS. In December 2003, settlement through RTGS was 94.8% of the total value of interbank settlement (the remaining 5.2% was settled on net basis). In 2003, total clearing decreased by 20.38 percent in terms of value and 24.6 percent in terms of volume. The total value of cleared items in 2003 was 1,157 trillion Rupiah and the total volume was 57,003 thousand. In contrast, total transactions settled through RTGS increased 51.9 percent in terms of value and 93.1 per cent in terms of volume. In terms of daily average, RTGS volume increased from 8,724 to 17,055 and the value has increased from 55.8 trillion Rupiah to 85.6 trillion Rupiah.
- **Transaction Limit:** Currently, the upper limit per transaction that can be proceed through netting system is 100 million Rupiah. Any transaction exceeding this limit must go through RTGS. This policy aimed at minimizing risk in the netting system.
- **Inter-bank Payment:** Inter-bank payments are conducted by transfers of accounts with the central bank on a gross basis using RTGS system, or on a netting basis through the clearing system. Since the implementation of RTGS system, most of the interbank payments are settled through RTGS. Even though the settlement risk on netting system has been decreasing significantly, the central bank together with the banks are currently establishing a failure to settle arrangement. This mechanism is expected to be implemented by July 2005.
- **Clearing Participants:** Clearing involves either direct or indirect participation by commercial banks holding accounts with the central bank. The number of participants in December 2003 was 1,890-(on the basis of branches located near clearing houses).

(3) Real Time Gross Settlement System

Real Time Gross Settlement (RTGS and BI-RTGS) was introduced in November 2000, after other countries had also done so, so that the central bank could reduce systemic payment risks and increase financial-system stability. RTGS has enabled the central bank to obtain precise, timely information for the supervision of banks and monetary policy, as follows:

- **Operating Entity:** The central bank designed the RTGS system and operates it.
- **Participating Banks:** Participating banks include all commercial banks (123) located in Jakarta. By the end of 2003, RTGS had been implemented throughout all Bank Indonesia’s

regions.

• **Transaction Items:** All inter-bank funds transfers (inter-bank money market transactions, Rupiah payments of foreign-exchange transactions, payments to the government, transfers of accounts with the central bank, and transactions between bank customers) are subject to RTGS. All credit transfer of 100 million Rupiah or more between customers must go through RTGS, but in the absence of a lower limit any urgent small transfer may also go through it. The flow of the operating system and monthly handling since the 2000 introduction of RTGS are as follows.

Flow of Operating System

Start of RTGS Headquarters System	6:30
Operating hours of RTGS	
Cash withdrawals	6:30–12:00
Transfers of tax payments to government accounts	6:30–12:00
Transfers in customer's names	6:30–16:30
Inter-bank funds transfers	6:30–17:00
Clearing payments	12:00–17:00
Warnings on completion	17:00
Inter-bank position covers	17:00–18:00
Pre-completion	18:00
Central bank position covers	18:00–19:00
Central bank Intervention Window payments	18:00–19:00
Completion	19:00

Aggregate Monthly Handling

		Amount (Trillion Rupiah)	Number (Thousand)
2000			
	Nov	429.1	26.9
	Dec	971.3	54.2
2001			
	Jan	1,997.8	62.5
	Feb	778.0	59.3
	Mar	936.5	66.3
	Apr	885.8	66.8
	May	857.3	71.9
	Jun	750.3	72.6
	Jul	944.9	93.2
	Aug	992.2	105.7
	Sep	928.5	96.6
	Oct	961.1	117.2
	Nov	1,069.2	130.2
	Dec	1,323.2	113.0
2002			
	Jan	1,223.2	121.4
	Feb	927.2	112.9
	Mar	1,022.1	125.8
	Apr	1,130.7	148.9
	May	1,199.5	147.3
	Jun	1,089.9	139.5
	Jul	1,310.8	162.2
	Aug	1,190.6	167.4
	Sep	1,141.6	166.8
	Oct	1,186.6	311.6
	Nov	1,179.8	312.7
	Dec	1,221.2	258.9

Source: Bank Indonesia

- **Payment Procedure:** Gross settlement per payment in real time.

- **Liquidity from the Central Bank:** Intra-day liquid facilities (ILF) may be provided by depositing a security (central bank certificates (SBI) or government bonds (IGB)) with the central bank.

- **Gridlock Avoidance, Dispute Settlement:** Procedures are set for gridlock avoidance. If an inter-bank dispute occurs, the Bankers Association's Bylaws Committee will settle it.

(4) Issues and Projects Underway

i. Integration of all branches of the central bank into RTGS: Twelve offices in 2001, and 15 offices by 2002, have already introduced RTGS. By the end of 2003, all offices were integrated into RTGS.

ii. Development of Straight-through Processing: Straight-through Processing (STP) was established in 2002, enabling the handling of small-amount transactions.

iii. Inter-city clearing: Until 2002, clearing was conducted in cities with clearing houses (commercial banks sent means of payment to them). In November 2002, a system for verifying signatures was introduced in 101 office of the 36 commercial banks, allowing

clearing between some distant areas. It is planned that clearing between cities will be extensively expanded.

iv. Inter-bank Giro system: The establishment of an inter-bank electronic remittance system has become an important issue. Since such remittances are possible for up to 3 million Rupiah via ATM, and 1 billion Rupiah or over via RTGS, remittances between 3 million and 1 billion Rupiah may be covered by this Giro system. It is expected that a system will be introduced by which to make credit notes paperlessly by June 2005

v. Establishing a system for payment disruptions: A plan for introduction of a system based on the security of SBI and IGB is underway, with a target date of April of this year. The absence of laws concerning funds transfers, and the five different organizations representing banks, are reasons for delays of this plan.

vi. Central-bank accounts of securities companies and institutional investors: No securities companies or institutional investors can currently hold accounts for payment with the central bank. Accordingly, funds payments for securities settlements are limited to three commercial banks where brokerages have accounts. To achieve DvP, it would be efficient to allow securities companies and institutional investors hold accounts for payment with the central bank, but because of the small size of brokers in Indonesia not much progress is being made, despite of there being an awareness of this issue.

3. SECURITIES SETTLEMENT SYSTEMS

(1) Capital Market

Indonesia's capital market has a long history, with its first securities exchange established in 1912, during the colonial period under the Netherlands. It was interrupted during the Second World War, and in 1952 the Jakarta Securities Exchange (JSX) was reopened followed by the establishment of the Capital Markets Executive Agency (BAPEPAM) and State Securities Company (DANAREKSA) in 1976. In the public and corporate bond market, the first government bond was issued in 1950, and was continued until 1960s. The issuance of government bonds was later prohibited during fiscal reconstruction (until 1999, when the government bond for recapitalization—Recap Bond—was issued for the restructuring of the banking sector). With the issues of corporate bonds in 1988 and floating rate corporate bonds in 1989, the Surabaya Securities Exchange (SSX) was established as the market for public and corporate bonds, thus generally finalizing the framework for capital markets in Indonesia by the end of 1980s. It was not, however, until after the enactment of the "Capital Markets Act" in 1996, and the implementation of the government's "Five-Year Plan for the Capital Markets Development," that the full expansion of capital markets was achieved.

The major developments of capital-markets development are as follows.

- **June 1998:** The Indonesian Clearing & Guarantee Corporation (KPEI) was established as a clearing organization for corporate bonds.
- **March 1999:** Recap Bonds were issued for the restructuring of the banking sector. A recapitalized bank was asked to issue new shares in exchange for these Recap Bonds. They were issued 25 times, totaling 433 trillion Rupiah.
- **February 2000:** Sales of Recap Bonds held by recapitalized banks was approved. Shifting to "trading accounts" of Recap Bonds was approved for up to 10 percent of balances held in

February 2000, 15 percent in September, 25 percent in December, 35 percent in February 2001, and all the remaining balance in July 2001. Trading (mostly over-the-counter) of the bond started at SSX, and following the start of Recap Bond trading, the scripless registry and settlement system (BI-SKRIP)—a settlement system for paperless registered bonds—was introduced in February. While the central bank becomes the central registry in this system, 10 (as of Feb 2004, there are 11 Sub Registries) commercial banks assume sub-registries to manage accounts of investors other than banks. In November, use of RTGS for funds transfers started to complete the structures for DvP.

- **October 2002:** The “Indonesia Government Securities Law” went into effect, specifying that the central bank will assume the roles of Fiscal Agent and Paying Agent, and when there is bidding, of Auction Agent. This law enabled the issuance of treasury bills with maturities up to one year, and of treasury bonds with maturities exceeding one year.
- **December 2002:** First government bond issuance after enactment of Government Securities Law, amounted Rp. 2 trillion through book building method by lead arrangers. Since this time *it is not relevant* to differentiate government bonds which are originated from banking recapitalization program and government bond issuance after enactment of government securities law.
- **February 2004:** The On-line Scripless Securities Settlement System named Bank Indonesia Scripless Securities Settlement System (BI-SSSS) was introduced.

Size of Indonesian Capital Market (End of February 2004)

Unit: trillion Rupiah

Securities Type	Balance	Remarks
Shares (JSX)	509.3	
Industrial bonds	46	
Recap government bonds	398.8	
Hedge bond (untradable)	11.05	
Floating rate notes	226.2	
Fixed rate bonds	161.6	
Gov. bonds held by the central bank*	233	Issued in payment for central bank’s emergency loans to commercial banks.
Central bank certificate (SBI)*	141.7	Issued by central bank to the money market as means of monetary adjustment. Will gradually be replaced by treasury bills after fiscal 2003.

** figures as of September 2002*

Source: Bank Indonesia

In the current capital market the percentage of government bonds issued for the restructuring of banks is high, as opposed to a very low percentage of corporate bonds. With the issues of treasury bills and treasury notes, it is expected that the percentage of government bonds in the capital market will continue to rise after fiscal 2003.

Government Bond Issuance in 2003 and 2004 (March, 2004)

Auction Results	FR0022 8 Apr 03	FR0023 9 Sep 03	FR0024 5 Nov 03	FR0024 (Reop) 16 Dec 03	FR0023 (Reop) 24-Feb-04	FR0023 (Reop) 16-Mar-04
Maturity	15-Sep-11	15-Dec-12	15-Okt-10	15-Okt-10	15-Dec-12	15-Dec-12
Auction Result (Rp. Billion)	2.700,0	3312.5	2.500,0	3.200,0	2.520,0	2.000,0
Bids Received (Rp. Billion)	8047.5	4700.5	5.400,0	6.400,0	5.397,5	5.672,5
Auction Target (Rp. Billion)	2.700,0	5.000,0	2.500,0	2.500,0	2.500,0	2.000,0
Coupon (% pa)	12.00	11.00	12.00	12.00	11.00	11.00
W.A Yield (% pa)	12.21	11.6	12.92	13.05	11.82	11.57
3-month SBI Rate (%)	11.97	8.75	8.43	8.33	7.75	7.33

Source: Bank Indonesia

(2) Secondary Securities Market

Indonesia has two secondary securities markets: Jakarta Securities Exchange (JSX), for shares, and Surabaya Securities Exchange (SSX) for public and corporate bonds.

The number of listed companies on JSX as of February 2003 was 302. A brief glance at the number of listed companies each 5 years shows 6 in 1980, 24 in 1985, 132 in 1990, 248 in 1995 and 332 in 2000. There was a sharp rise since the latter half of 1980s, with a slight slow-down due to de-listings after the 1997 economic crisis. Several Japanese companies are included among those listed, such as the subsidiary of Teijin (TIFICO).

SURABAYA STOCK EXCHANGE								
CORPORATE BONDS MARKET ACTIVITIES (as of Jan. 2004: 92 issuers, 182 issuances)								
No	Years	Bond Outstanding		Volume (Bln Rp)	Freq (x)	Bourse Day	Daily Average Transaction	
		Rupiah	US Dollar				Vol. (Bln Rp)	Freq. (x)
	1997	15,191,744,000,000		7,301.95	1,910	246	29.68	7.8
	1998	13,835,172,000,000		4,860.79	1,476	247	19.68	6.0
	1999	14,190,269,500,000		4,844.02	1,522	247	19.61	6.2
	2000	18,895,235,878,000		8,791.74	2,495	241	36.48	10.4
	2001	18,830,911,330,000		1,115.14	403	246	4.53	1.6
	2002	22,020,583,787,000		6,091.73	2,077	245	24.86	8.5
	2003	45,484,700,831,000	105,000,000	13,811.87	2,666	239	57.79	11.2
	2004							
1	January	45,306,205,567,000	105,000,000	1,113.60	355	20	55.68	17.8
2	February	45,463,732,936,000	105,000,000	652.95	240	18	36.28	13.3
Total 2004				1,766.55	595	38	46.49	15.7
Average Transaction per Month				1,766.55	595			

Source: SURABAYA STOCK EXCHANGE (reported by OTC-FIS Participants)

Corporate bonds and government bonds are listed on SSX's public and corporate bond market. As of January 2004, 92 issuers with 182 issuances of corporate bonds were listed, with an outstanding balance of 45.3 trillion Rupiah. The volume of trading in 2003 was 13.8 trillion Rupiah, with an average turnover of 11 items per day, falling to 1.7 per day in 2001, and rising sharply to 7 per day in 2002 following the preferential tax system for trades through SSX, which went into effect in March. The trading volume of corporate bonds is extremely small, however, compared with those of bonds and shares.

Government bonds are listed on SSX. Although all the outstanding bonds held by banks were allowed to shift to trading accounts by July 2001, in February 2004 among the 387.7 trillion Rupiah in tradable government bonds (excluding hedge bonds), 187.3 trillion Rupiah worth were shifted to trading accounts. The daily trading volume of government bonds (ratio to balance) averaged 234 billion Rupiah (0.37 percent) in 2001, rising to 1.4 trillion Rupiah

(0.74 percent) in 2003, but liquidity is still low. In the first two months of 2004 this figure increased. As of February 2004, average daily trading was 2.87 trillion Rupiah and turn over rising to 1.50%. Investors in government bonds have been gradually expanding to parties other than recapitalizing banks since regulations on resale were eased in February 2000. The balances of Recap bonds held by investors are as follows.

Balances of Recap Government Bonds Held by Investors

Unit: billion Rupiah

	End of 2000	End of 2001	End of 2002	Jan 2004
Recapitalizing banks	390,143	356,271	334,573	293,128
Non-Recapitalizing banks	6,954	24,772	13,829	26,223
Held by Sub-registry	1,823	13,022	44,782	76,968
Insurance companies	1,042	3,758	6,512	5,860
Investment trusts	16	2,025	35,719	43,644
Pension funds	5	160	360	18,905
IBRA	755	6,661	1,908	5,945
General companies	2	109	71	246
Securities companies	—	301	133	1,712
Public utilities	—	3	—	—
Individuals, etc.	2	2	75	654

Source: Bank Indonesia

By investor, the table above shows recapitalizing state banks holding 60 percent, private-sector banks 7 percent, and nationalized banks 22 percent, evidencing mostly the lack of liquidity. Holdings by non-Recap banks and sub-registry remain at 15 percent. Among the holdings by sub-registry, investment trusts are the largest, with 80 percent, followed by insurance companies, with 14 percent.

Both government bonds and corporate bonds are mostly traded over-the-counter. Trading prices quoted at SSX are only indications. SSX uses a system called the OTC-Fixed Income Service (OTC-FIS). The registration organs for public and corporate bonds are as follows.

- **Government Bonds — Central Registry:** The central bank (BI-SKRIP).
- **Sub-registry for government bonds and central bank bills (SBI):** Bank Niaga, Bank Mandiri, Deutsche Bank, Citibank, ABN Amro, Bank International Indonesia (BII), Bank Negara Indonesia (BNI), HSBC, Bank Central Asia (BCA), Standard Chartered Bank and Bank Rakyat Indonesia (BRI).
- **Corporate Bonds — Clearing:** Indonesian Clearing & Guarantee Corporation (KPEI).
- **Corporate Bonds — Central Registry:** Indonesia Central Securities Depository (KSEI)

Although the infrastructure for developing secondary markets is being improved, their liquidity (mostly of Recap bonds) is still very low, and promotion of secondary market for the government bonds has become a particularly urgent issue. The central bank cites the following as reasons for this.

- i.* The ratio to GDP of the outstanding balance of government bonds (mostly Recap bonds) reached 60 percent, making it essential to promote secondary markets for public and corporate bonds, to establish a sustainable debt structure for the government.
- ii.* Due to past restrictions on the issue of deficit-covering government bonds, covering of the fiscal gap has been dependent on raising funds from foreign countries, based on the Consultative Group of Indonesia (CGI). The fiscal burden derived from exchange fluctuations may be avoided by issuing government bonds domestically, decreasing financial assistance from foreign countries.

iii. The central bank currently issues central bank certificates (SBI) as a means of monetary policy. Following the new issue of treasury bonds (TB) BI will be freer from the conflict of a concern of raising interest rate by issuing SBIs.

iv. To promote the corporate bond market, the expansion of the government bonds market to provide a benchmark is essential. If government bonds with different maturities are freely traded in the market a benchmark yield curve will become available, to provide a basis for issuance terms of corporate bonds, and to lead to the development of a derivatives market.

(3) Securities Settlement System

The specific mechanism for securities settlement differs from that of government bonds, corporate bonds and shares, but all three are included in the Scripless Registry and Settlement System, introduced in Indonesia in 2000 to apply to all securities transactions (including shares). The turnover of the public and corporate bond market in Indonesia is small and it is not possible to introduce the most advanced technology. An outline of the settlement system is as follows.

i. Settlement System for Government Bonds

Government bonds are on the basis of registered bonds, with the central bank as central registry (CR), and the members which consist of banks and eleven sub-registries (SR). On February 16, 2004, Bank Indonesia as the central registry for government bonds implemented a new system named Bank Indonesia Scripless Securities Settlement System (BI-SSSS).

BI-SSSS is a system that enables members to conduct transactions with Bank Indonesia including the administration of such transaction and also an electronic system for the registration and settlement of securities (Bank Indonesia Certificate/Central Bank Bills (SBI) and Government Securities (SUN)) that is directly connected with the members, Bank Indonesia as the system provider and the Bank Indonesia - Real Time Gross Settlement (BI-RTGS) system (for fund settlement).

The BI-SSSS combines Bank Indonesia's transaction system that facilitates the conduct of the Open Market Operation and the funding facility provided by Bank Indonesia for banks with a system for the transaction of Government Securities for and on behalf of the Government into an integrated system that connects Bank Indonesia with market players.

The settlement of securities in the BI-SSSS is carried out seamlessly with the member's funds settlement done through the Bank Indonesia – Real Time Gross Settlement (BI-RTGS) system that enables members of BI-SSSS to carry out a Delivery Versus Payment (DVP) settlement for SBI and SUN quickly and instantly thus minimizing settlement risk.

The main components and functions of the BI-SSSS can be divided into three, which are:

1. Automatic Bidding System Central Computer (BidCC) at the system operator's site that functions as a means to transact with Bank Indonesia
2. BI-SSSS Central Computer (SCC) at the system operator's site that functions as the settlement system for transactions with Bank Indonesia and settlement of securities transaction between other members, and
3. BI-SSSS Terminal (ST) at the member's site, which functions as a tool to send transactions with Bank Indonesia and to send securities settlement instruction to SCC.

Besides that, BI-SSSS also possesses a supporting function to distribute information and tools for communication from and to system operator and between members.

There are two methods of government securities settlement: the DvP method, and the Free-of-Payment method (for specific kind of transactions such as grant and inheritances). To avoid settlement risks, the DvP method is desirable, and used wherever possible in Indonesia. The flow of specific procedures when a government bond is traded is as follows.

- After a trade is completed, the buyer and the seller enter the purchase instruction into their ST, which transmits the instruction to the SCC
 - The SCC then will match these instructions. If the instructions match, the system will then check the securities ownership of the seller. If there are sufficient securities, the system will then check the availability of the buyer's fund in the BI-RTGS. If the fund is available, securities settlement and funds transfers are then carried out simultaneously (i.e., on a DvP basis).
- After settlement, the SCC will send a confirmation advise to BI-SSSS CR and SR will send statements of account to both the buyer and the seller for each transaction.

Specific procedures for settlement of government bonds are as described above. Points of note are as follows.

- As long as the instructions arrive at the SCC by 5:00 p.m., Jakarta time, settlement will be carried out on the same day.
- In a government-bond transaction, there is no Central Counter Party (CCP), so if one party fails in settlement (due to insufficient funds or government-bond balance) the transaction will become null and void.
- For payments of principal and interest on a government bond, the central bank (the paying agent) will send a statement automatically through the BI-SSSS to the holder of the registered bond (registry banks or sub-registry) two days before the payment date (T-2). On the payment date, the central bank will transfer the funds to the central-bank account of the registered bond holder.

Members of BI-SSSS are the Ministry of Finance, banks, sub-registries, and Money Market Brokers and securities companies that are appointed as auction members. The function usage of the BI-SSSS terminal at these members is adjusted according to the needs and business characteristics of each member. For example:

1. The Ministry of Finance can use the enquiry function for monitoring among other things the total of Government Securities issued and its outstanding position
2. Banks can conduct transactions with Bank Indonesia using the function in the Automatic Bidding System (ABS) and carry out settlement of securities using the SSTS function
3. Sub-registry can only use the SSTS function to settle securities transaction on behalf of their customer
4. Money Market Brokers and securities companies that are appointed as auction members may only access the BidCC function. Besides that, members can customize the functions of the BI-SSSS for each specific user.

ii. Settlement System for Corporate Bonds

Trading of corporate bonds is conducted by securities companies registered with the Surabaya Securities Exchange (SSX). The points of the settlement system for corporate bonds are as follows.

- A computer system developed by SSX, OTC-Fixed Income Services (OTC-FIS), is used. For trading purposes, OTC-FIS is capable of displaying bid and offer quotations on its screen, as well as revised quotations and cancellations, and is also used for reporting to SSX and collecting market information.
- Tradable corporate bonds are listed and unlisted, with trading of repo and outright sales.
- Trading hours are as follows:

Monday through Thursday:

Morning session: 9:30 a.m. – 12:00 p.m.

Afternoon session: 1:30 p.m. – 5:00 p.m.

Friday:

Morning session: 9:30 a.m. – 11:30 a.m.

Afternoon session: 2:00 p.m. – 5:00 p.m.

- When trading is completed, a confirmation is sent by OTC-FIS within business hours on the same day.
- Transaction settlement takes place two days after trading (T+2), although OTC-FIS is capable of reducing this to T+0 (as for government bonds).
- Central registry and securities settlement are handled by the Indonesia Central Securities Depository (KSEI), a private-sector organization established in December 1997, with the subscription of 11 custodian banks, 31 securities companies, JSX, SSK, and KPEI. The function of the Central Counter Party (CCP), function of KPEI (described below), does not apply to corporate bonds.
- Of the 75 corporate bonds, those issued after 2000 (when scripless system was introduced) are scripless, but the 39 bonds issued prior to that are still in the form of actual bonds.

iii. Settlement System for Shares

Share transactions are conducted at JSX and SSX. Trading takes place either through the exchange or off-board. Securities settlement is carried out based on Central Depository and Book Entry Settlement (C-BEST), a paperless system introduced in July 2000, with KSEI taking the function of CR.

Specific details of the settlement of trades are as follows.

- Transactions through exchanges are settled once during the trading day. KPEI sends instructions of securities settlement to KSEI, for transfer from the Exchange Member Delivering Account of Securities Delivery to the Exchange Member Receiving Account of Securities Receiving, and for booking disposal.
- Off-board transactions are processed one by one in real time. If instructions of a seller and a buyer are verified automatically, the trade is done and settlement is carried out.

- The Indonesian Clearing & Guarantee Corporation (KPEI), established in August 1996 with 90-percent participation by JSX and 10 percent by SSX, has the function of Central Counter Party (CCP), by which to reduce settlement risk. Account holders with KPEI are limited to securities companies and custodian banks.
- Transactions carried out at the exchange must be settled on the designated settlement date. Transaction data are sent for netting to KPEI at the closing time of trading. In this, KPEI performs the function of Central Counter Party (CCP), called Alternate Cash Settlement. In the event of an insufficient balance of securities on the part of the seller, KPEI guarantees the buying broker to pay cash equivalent to 125 percent of the highest price of the day, or the securities. Therefore, KPEI constantly monitors the credit standing of participating members of the clearing, while asking for payment of a guaranty fund and secure fund.
- C-BEST processes the transfer of members' KSEI accounts on an STP basis.
- Securities and funds transfers take place simultaneously, at 12:00 p.m., four days after the trading date (T+4). C-BEST has made DvP practicable; this was impossible using the previous payment-through-clearing method.
- Funds transfers are conducted twice a day by the three commercial banks (ABN Amro Bank, Lippo Bank, Bank Mandiri) designated by KSEI (at 7:00 a.m. to 8:30 a.m. and at 12:00 p.m. to 1:00 p.m.).
- The central bank and KSEI are currently consulting on how to link C-BEST to BI-RTGS, to achieve perfect DvP.

Chapter 7: Payment Systems of the Philippines

The Philippines has an RTGS-based wholesale funds payment system and it is widely used for inter-bank payments.

In securities settlements, the improvement of market infrastructures for government securities has made notable progress, such as in the “scripless” issuance of government securities partly to finance chronic fiscal deficits smoothly. There are well-maintained public organizations to handle registry, custody and clearing of government securities, although their transactions are not yet operated on a delivery-versus-payment (DvP) basis. Meanwhile, improvements to market infrastructures of private bonds including corporate debentures and commercial papers have made little progress, partly because their trading volumes are lower than those of government securities. Private-bond markets and their market infrastructures including their settlement systems need substantial improvement. The Bankers Association of the Philippines (BAP) is now taking initiatives and playing the core role in establishing the Fixed Income Exchange in this country. It will take some time, but the exchange will surely contribute to progress in improving settlement infrastructures of both public and private bonds.

1. PAYMENT SYSTEMS

(1) Wholesale Funds Payment Systems

i. Philippine Payment System

The central bank, Bangko Sentral ng Pilipinas (BSP), previously handled inter-bank wholesale funds payments using a proprietary RTGS-based system, MIPS2 Plus.¹ In December 2002, however, the Philippine RTGS or Philippine Payment System (PhilPaSS)², was finally made operational. . The system improved the efficiency of the existing Multi-transaction Inter-bank Payment System (MIPS 2 Plus) by allowing the banks to interface directly to the automated accounting and settlement system of the BSP. Although MIPS2 Plus handled RTGS-based large-amount inter-bank transactions (including inter-bank call loans), it was not very efficient because it required a combination of automated and manual operations, and was not fully integrated with BSP’s financial accounting system. It also needed stronger security features that are based on global standards. Compared with MIPS2 Plus, PhilPaSS is much more efficient and secure because it is based on SWIFT

¹ The Multi-Transaction Interbank Payment System (MIPS1), an electronic multilateral net clearing system, handled large-amount inter-bank call loans and bank transfers. BAP and the Philippine Clearing House Corporation (PCHC: see footnote 6 for further details) operated this system in coordination with BSP. In July 2001, the RTGS-based MIPS2 partially replaced MIPS1 for payments of inter-bank call loans between banks and non-bank financial intermediaries performing quasi-banking functions (NBQB), and for cash payments for deliveries of government securities based on repurchase agreements among banks, NBQB, and BSP (as part of BSP’s open-market operations). In November 2001, the RTGS-based MIPS2 Plus was installed for payments of foreign exchange transactions and other inter-bank operations.

² It was developed by Logica (a British company). The European Central Bank also uses this system.

formats (the global standard), ensuring the complete automation of inter-bank transactions. It is also superior to MIPS2 Plus in its queue management.³ In consideration of these factors, BSP has finally decided upon PhilPaSS as the replacement for MIPS2 Plus.

PhilPaSS handles almost all large-amount inter-bank transactions, including payments of inter-bank loan transactions, cash payments in government securities transactions (including those on repurchase agreements), payments of large-amount domestic transactions among customers, and peso payments in foreign exchange transactions. Members of the PhilPaSS include commercial banks, small banks such as savings banks, and NBQBs (non-bank financial intermediaries performing quasi-banking functions). PhilPaSS processes from 10:00 a.m. to 5:45 p.m. all payment instructions sent by individual banks via online computers, and settles them by debiting and crediting settlement accounts of individual banks maintained with BSP, all on a RTGS basis. During the survey period from December 12, 2002 to the end of February 2003, an average of 300 transactions were processed by PhilPaSS each business day, amounting to an average of 120 billion pesos.⁴ Most member banks and financial institutions said that this system has worked well, and without problems, and that its replacement of MIPS2 Plus has improved the efficiency and security of the inter-bank wholesale funds payment system. On the other hand one market participant commented on PhilPaSS, saying that it does not cover all financial institutions, because there are still those that are not yet equipped with system infrastructures required for membership.

In addition to payments of inter-bank large-amount transactions, PhilPaSS also handles net balance payments of cleared checks and final net balance payments of the Electronic Peso Clearing System (EPCS) used for payment of customers' small-amount cross-bank account transfer transactions, all by debiting and crediting settlement accounts of individual banks maintained with BSP. covering wholesale interbank loan transactions among banks and non-banks, the purchase/sale of government securities under repurchase agreements between and among banks and the BSP, customer electronic fund transfer transactions and net check clearing results processed by the Philippine Clearing House Corporation. The processing and final settlement of electronic fund transfer instructions take place continuously and individually, thereby achieving real time, final and irrevocable gross settlement of high value electronic fund transfers of banks and participating non-banks. This system markedly reduces credit, settlement and systemic risks among participating banks, which now include 85 banks (of which 42 are commercial banks, 35 thrift banks and 8 non-banks with quasi-banking functions). The BSP is the exclusive service provider for the PhilPaSS. The RTGS is intended to eventually cover all transactions in the equities, fixed income, money and foreign exchange markets

In November 2003, the real-time gross settlement for peso-dollar foreign exchange

³ The payment instructions of PhilPaSS members registered in the SWIFT FIN Copy Service are dispatched via the SWIFT network. If there are any pending payment instructions because of shortages of funds in settlement accounts with BSP, PhilPaSS stores and manages such data in the queue until the accounts are sufficiently replenished. Data suspended in the queue will be settled according to business priority, and in "first-in-first-out" order. PhilPaSS automatically transmits the latest queue information to member banks, which then send instructions to change payment priorities of these data to accelerate settlement.

⁴ Figures based on the interview with BSP.

transactions was launched⁵. The BSP, the Bankers' Association of the Philippines (BAP), Citigroup Manila, and the Philippine Depository and Trust Corporation (PDTC) formally launched a *Payment-versus-Payment* (PVP) electronic system⁶ for the local inter-bank spot and forward foreign exchange market, aligning the country's payment and settlement system to global standards. Under the PVP, final transfer in one currency takes place only if a final transfer in the other currency occurs.⁷ Thus, the mechanism is expected to eliminate settlement risks inherent to peso-dollar foreign exchange transactions, spur trading activities and enhance market liquidity, leading to stronger growth of the financial sector. The PVP links two real-time gross settlement systems—the BSP's PhilPASS for peso transactions of commercial banks and Citigroup's Philippine Domestic Dollar Transfer System for dollar transactions of commercial banks—with PDTC as designated clearing entity for peso-dollar transactions of commercial banks under the BAP.

PhilPaSS has been introduced in expectation of its assuming a central role in the future payment systems of the Philippines. The installation of PhilPaSS based on the SWIFT network and formats foresees the future realization of DvP in the government securities settlements.. PhilPaSS fully automates inter-bank payment systems. Even intra-network settlement of Megalink ATM transactions are now settled through PhilPASS, although PhilPaSS this does not yet apply to funds-transfer operations for customers' accounts with banks.

The improvement of customers' account transfers of funds, however, mainly depends upon the upgrading of payment infrastructures by individual financial institutions rather than on the further development of payment systems by the financial authorities. Nonetheless, such improvement is vital for the enhancement and efficiency of wholesale funds payment systems in the Philippines.

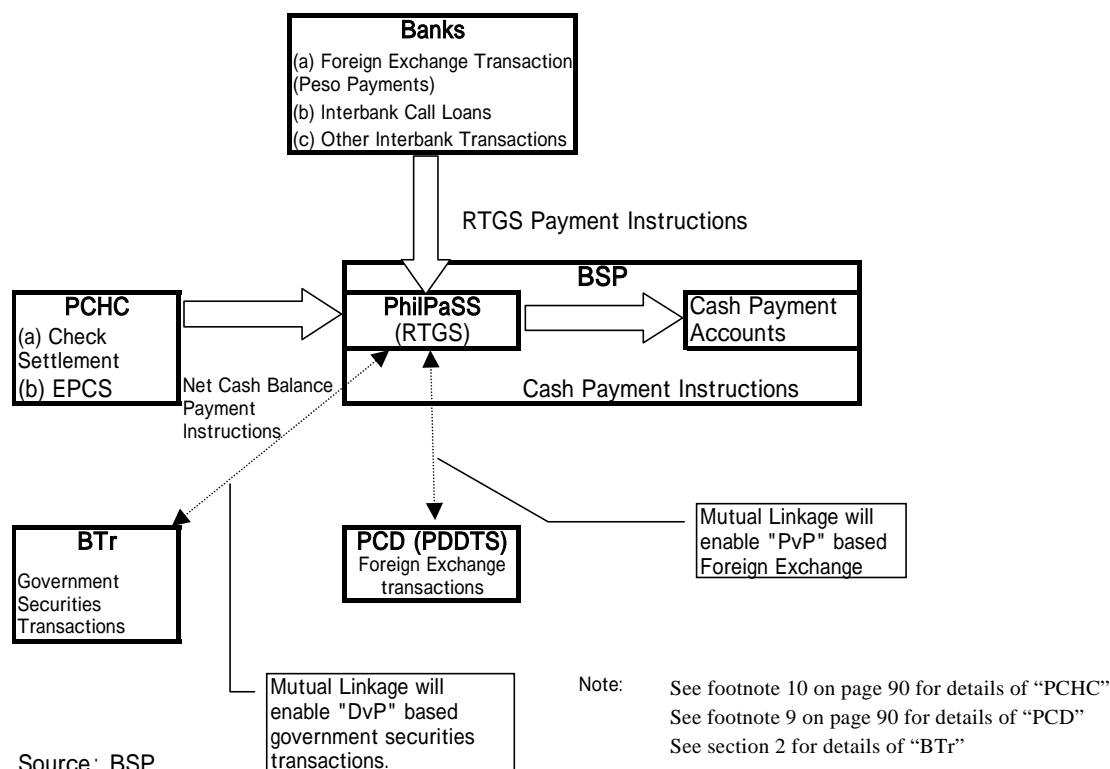
⁵ IIMA noted that there are some financial institutions that are not the members of this system.

In addition, daylight and/or moonlight (from the close of the Philippines time to the open of NY time) overdraft limit should be provided to the account holders (i.e., limit secured by government bonds) is important for the smooth operation of this system.

⁶ BAP, PCD (described later). This project was actually initiated in the first quarter of 2002 with MIPS2 Plus in mind. However it was put on hold until PhilPaSS went alive. An interface between PDDTS and PhilPaSS has been built and tested to provide the PvP functionality. An interface between PDDTS and PhilPaSS has been built and tested to provide the PvP functionality.

⁷ Before, banks place pesos first before receiving an equivalent dollars later in the day. If the amount requested is insufficient, however, buying dollars from a new source expose banks to the risk of transacting under a different foreign exchange rate.

Figure 1: PhilPaSS Flowchart



ii. Liquidity Supply by BSP

A day-time liquidity supply system, Intra-day Liquidity Facility (ILF)⁸, has been established to enable smooth RTGS-based inter-bank transactions. Banks can use this system to replenish temporary funds-shortages arising from payments of inter-bank transactions. BSP supplies liquidity to banks based on repurchase agreements of government securities, by which banks must surrender government securities to BSP as pledges. Government securities eligible for ILF pledges are limited to those that meet the terms below, in addition to the condition that they are unencumbered and free from any other uses.

- Peso denominated securities, issued by the national government, with a remaining period until maturity of 11 days to 10 years. Special Series Treasury Bills for reserve requirements are also included.
- US-dollar denominated securities issued by the national government, with a remaining period until maturity of 11 days or more.

⁸ It is intended to prevent the possibility of failed settlements through MIPS2 for interbank transactions not covered by the implementation of BSP Circular No. 266 and which are still being settled on a net (gross, trade-by-trade) basis. These interbank transactions include primary auctions and secondary trading of government securities; peso netting for dollar-peso swaps; and lending activities including collections and repayment. The ILF, considered part of the BSP's open market operations, basically operates like a repurchase arrangement backed up by eligible, peso-denominated securities issued by the National Government.

As described later, government securities are scripless issues in the Philippines. These securities and their ownership are electronically registered with the Bureau of Treasury under the Department of Finance. Ownership transfers of government securities resulting from their sale and purchase are also made by revising their electronic registrations. ILF users must transfer eligible government securities to BSP's Client Securities Accounts (CSA-ILF) with the Bureau of Treasury, and these securities are pooled there as collateral for the exclusive use of ILF.

User banks can usually access the ILF system from 10:00 a.m. to 4:00 p.m. on business days. They sell to BSP government securities deposited in their CSA-ILF accounts, at prices calculated using a predetermined method, and receive liquidity (as sales proceeds) from BSP via their settlement accounts. BSP resells these government securities at 5:30 p.m. to recover the ILF funds. If repayment funds fall short, ILF user banks have two alternatives.

One alternative is that BSP allows them to contract an Overnight Repurchase Agreement (O/N RP) at the interest rate of the BSP lending rate plus 600bp on that date. This agreement provides that ON/Repo must be paid to BSP before 11:00 a.m. of the following morning. If ON/Repo repayment is not executed by that deadline, collateral securities will be sold outright to BSP.

The other alternative is that ILF users pay back refundable money to BSP as much as possible, and supplement the remaining debt balance by outright selling and transfer of collateral securities from their CSA-ILF accounts to the BSP's principal account, both maintained with the Bureau of Treasury.

BSP sets limits on liquidity supplies to individual banks in proportion to the total values of government securities deposited in their CSA-ILF accounts, and the values of these securities are based on their mark-to-market prices quoted at 11:16 a.m. on the last business day of the week, when pledged documents are filed with BSP. Bloomberg's MART homepage is used to determine these prices. If the mark-to-market prices of deposited bonds are not indicated on Bloomberg's MART homepage, BSP and ILF users will discuss and decide them. BSP uses the following guidelines for appraisal of government securities in pesos.

Residual Period Until Maturity	Value of Government Securities
Up to 182 days	90 percent of market value
More than 182 days but less than 5 years	80 percent of market value
5 years up to 10 years	70 percent of market value

Market participants commented on the ILF system, saying that the ILF system is costly and not user-friendly, because it sets limits on liquidity supply and caps usable funds at designated percentages of the market values of collateral securities. As of February 2003, the financial authorities were easing monetary conditions to stimulate the economy, giving rise to no liquidity problems. However, if financial-market environments become tight, there will be

uncertainty about the monetary situation of the Philippines. The ILF system is positioned as part of the open-market operations of BSP.

All financial institutions using the ILF system must pay BSP an annual commitment fee of 20bp for the intra-day liquidity facility, and a transaction fee of 100 pesos. They must also pay the Bureau of Treasury a maintenance fee for their CSA-ILF accounts.

iii. Philippine Domestic Dollar Transfer System

The Philippine Domestic Dollar Transfer System (PDDTS) is a domestic US-dollar electronic clearing and payment system operated jointly by the BAP, Philippine Central Depository (PCD),⁹ Philippine Clearing House Corporation (PCHC),¹⁰ and Citibank Manila.

The PDDTS system uses the PCD system and network infrastructure with Citibank Manila as the US dollar settlement bank. The PCD system allows for online entry and real-time-gross-settlement (RTGS) of high-value US-dollar inter-bank transfers (MT100: customer-and bank-to-bank cash transfers and MT202: cross-border cash transfers) in the PCD system. Low value US dollar inter-bank transfers and checks are entered and cleared through the PCHC where it is netted at end-of-day and passed on to the PCD system for final settlement. All BAP-member banks maintain US dollar settlement accounts in Citibank Manila, and have online link to the PCD system.

The RTGS-payment system operates from 9:00 a.m. to 4:00 p.m., and is mainly used for high-value US-dollar inter-bank foreign exchange transactions¹¹.

The net cash balance payment system through PCHC operates from 10:00 a.m. to 4:00 p.m., and is mainly used for US dollar payments of retail banking transactions. The end-of-day net cash balances of individual member banks are transmitted to Citibank Manila at 4:30 p.m. for final settlement in the PCD system. Citibank Manila's US-dollar funding window is up to 6:00 p.m.

⁹ PCD is a private corporate entity, established in 1995 by the major capital market participants in the Philippines. Its shareholders are as follows: Philippine Stock Exchange (31.75%); BAP (31.75%); Financial Executives Institute of the Philippines (10%); Development Bank of the Philippines (10%); Investment House Association of the Philippines (6.5%); Social Securities System (5%); and Citibank N.A. (5%). PCD is mainly a central securities depository providing depository and nominee services for listed equity securities (immobilized), as well as scrippless debt securities. PCD also provides other services such as registry infrastructure provision for issuers or transfer agents, clearing and settlement of exchange-traded transactions, and clearing and settlement of PDDTS transactions. (See section 2, item iii, for details of stock transaction settlements.)

¹⁰ PCHC is a private corporate entity, established in 1977 with BAP's 100 percent equity investment. PCHC is responsible for clearing of checks drawn in the Greater Manila Area and for the Electronic Peso Clearing System used for net balance cash payments of small-amount peso transactions (described later).

¹¹ Inter-bank spot foreign exchange transactions are entered and processed using the Philippine Dealing System (an electronic dealing and communication system), with which all member banks are connected online via their computer systems. BAP established this system in 1992, with the collaboration of BSP. This system limits transactions to dollars-against-pesos foreign exchange dealings. PDDTS clears US-dollar payments, while peso payments are settled by PhilPaSS, EPCS, or managers' checks. PvP-basis payments of foreign exchange transactions can be achieved only when PCD's US-dollar payments and BSP's peso payment system (PhilPaSS) are integrated via online links.

(2) Retail Funds Payment Systems

i. Checks

After cash, checks are most commonly used for small-amount payments. All checks drawn and presented for payments in the Greater Manila Area (GMA), the Integrated Regions (within a 150 km radius of Manila), or 27 rural regions newly converted to BSP-defined clearing regions, are cleared through PCHC. When checks are drawn and presented for payments in the vicinity of the same BSP-defined clearing region, they are cleared through BSP Regional Clearing Units. BSP has 27 regional clearing units nationwide, all connected online with the BSP Headquarters in Manila. In cases where checks are drawn in a BSP-defined clearing region and presented for payments in a different BSP-defined clearing region, they are cleared through PCHC.

When checks are drawn in the GMA or the Integrated Regions and presented by payees to branches of their banks in GMA or Integrated Regions for credit to their accounts, these branches send them before 3:00 p.m. on the same day to their banks' clearing centers, which resend them to PCHC before the predetermined deadline, or directly to PCHC before that deadline. Branches or clearing centers of individual banks aggregate presented checks by batch processing, and transmit clearing data to PCHC via the Electronic Check Clearing System (ECCS) network.

PCHC calculates and transmits net cash balances of checks for individual banks to BSP before 4:00 p.m. on the same day. According to the clearing information sent by PCHC, BSP proceeds in the final payment of checks by debiting and crediting the settlement accounts of individual banks. BSP pays net cash balances of checks via PhilPaSS. The payees of checks may withdraw check amounts from their accounts only on the second business day (T+2) after the date when the checks have been presented and credited to their accounts.

When checks are drawn on paying banks outside the GMA and the Integrated Regions, and presented by their payees to their banks for payments, these banks aggregate these checks by batch processing and send them to respective PCHC-Authorized Couriers, which have established drop/pick up centers nationwide. Checks processed by individual banks' batch processing reach the PCHC's Manila Office on the day after their presentation. PCHC calculates and transmits net cash balances of checks for individual banks to BSP by 4:30 p.m.. The paying banks of these checks receive them on the third business day following their presentation date (Day 3), and debit amounts of individual checks to drawers' accounts. The payees of these checks can eventually withdraw the proceeds of checks from their accounts on the fifth business day following their presentation date, in cases where they are drawn in GMA and drawn on paying banks in 27 BSP defined clearing regions or 27 newly converted BSP-defined clearing regions (Manila vs Region). Meanwhile, when checks are drawn in the Integrated Region, BSP-defined clearing regions, or newly converted BSP-defined clearing regions and drawn on paying banks in these regions, the proceeds of them can be available to their payees on the seventh day following their presentation date (Region vs Region).

ii. Electronic Peso Clearing System

The Electronic Peso Clearing System has functioned under BAP and PCHC since January 2003, and is used for payments of small-amount domestic cross-bank peso account transfers upon the over-the-counter request of customers. This system has replaced PCHC's former Peso Netting system.¹²

Customers send account transfer instructions to their banks, which retransmit them to PCHC for payment. PCHC sends BSP the net cash balances of these transfers for individual banks at the end of trading hours. BSP then proceeds in final payments by debiting and crediting the settlement accounts of individual banks, using PhilPaSS. Although inter-bank payments terminate on the same day of receipt of account transfer instructions, the beneficiaries of these transfer payments cannot withdraw transferred amounts from their accounts until the next business day. The EPCS system is accessible from 10:00 a.m. to 4:00 p.m. on business days.

In addition to payments of ordinary remittances, the EPCS system handles payments of reverse remittances and funds collections. Payees or creditors instruct their banks to collect funds from payers or debtors based on agreements between debtors and creditors, and collected funds are transferred from the debtors' accounts to the creditors' accounts. The EPCS system can be used for peso payments in foreign exchange transactions.

The establishment of EPCS is aimed at supplementing payments by checks for small-amount transactions. Its position as another payment system for small-amount transactions in parallel with checks is worthy of attention. In the maintenance and improvement of payment systems for small-amount transactions, a large underlying problem is that opportunities for people to use payment instruments other than cash is limited, because banking outlets are concentrated in urban areas. Banking infrastructures in rural areas with large populations are making gradual progress.

iii. ATMs

ATMs are less used for payments of small-amount retail remittances than for those in large amounts. There are three ATM networks in the Philippines: BANCNET, MEGALINK, and EXPRESSNET. Customers maintaining their deposit accounts at member banks of EXPRESSNET and BANCNET can make cross-bank remittances via ATMs, while cross-branch remittances within the same bank are available to them via the ATMs of respective three networks.

These cross-branch remittances within the same bank via ATMs are finally paid by individual banks' internal computer systems. All cross-bank remittances via ATMs are transmitted to the Treasury Bank, the payment intermediary bank of member banks. The Treasury Bank checks and sends cross-bank remittances to PCHC for clearing. PCHC computes and transmits net cash balances of these remittances for individual banks to BSP, which proceeds in their final payment by debiting and crediting the settlement accounts of

¹² The Peso Netting system was also an electronic payment system, but it was not equipped with the fund collection (reverse remittance) functions of the EPCS system. Withdrawals of transferred funds from payees' accounts required at least 48 hours following the remittance date, while the EPCS system enables payees to withdraw funds on the next business day.

individual banks.

The banking industry and the financial authorities of the Philippines appear to have plans to connect these three ATM networks online, but no specific schedules have been formulated.

iv. Credit Cards

Credit cards are mostly issued by banks in the Philippines, and the most widely used cards are VISA, MasterCard, JCB, and Diners Club. Banks have recently begun issuance of international credit cards both for domestic and overseas use, which are often used for payments of travel expenses and luxury goods rather than for daily shopping.

Figure 2: Cash Payment System Diagram

	Transaction Type	Major Participant	Clearing Org.	Payment Org.	Other managing Org.	Settlement Type	Settlement Term	Whole sale/ Retail	Operating Hours	Other
PhilPaSS	Large-amount inter-bank transactions	Commercial and savings banks, and NBOB	BSP	BSP	—	RTGS	T+0	Whole sale	10:00–17:45	Replaced MIPS2, Dec. 2002
PDDTS	US\$ payments in inter-bank forex transactions (RTGS)	Banks	PCD	Citibank Manila	BAP	RTGS	T+0	Whole sale	9:00–16:00	—
	US\$ payments in inter-bank forex transactions (net bal.)	Banks	PCHC	Citibank Manila	BAP	Net settlement (at end of trading)	T+0	Retail	10:00–16:00	—
EPCS	Peso payments of small-amount inter-bank transactions	Banks	PCHC	BSP (via PhilPaSS)	BAP	Net settlement (at end of trading)	T+0 (inter-bank) T+1 (customer)	Retail	10:00–16:00	Replaced Peso Netting system, Jan. 2003
Checks	MICR coded checks	Banks and individuals	PCHC	BSP (via PhilPaSS)	—	Net settlement (at end of trading)	T+2 (GMA/Integ rated) T+4	Retail & whole sale	8:00–16:30	—

							(Manila vs Regions) T+6 (Region vs Region)			
ATM Remittances	—	—	PCHC	BSP	Treasury Bank	Net settlement (at end of trading)	T+1	Retail	—	—

Sources: EMEAP, BSP, BTr, BAP.

2. SECURITIES SETTLEMENT SYSTEMS

(1) Settlement Systems of Securities Markets

i. Government Securities

BSP was in charge of auctions of government securities until 1995, when they were transferred to the Bureau of Treasury (an agency of the Department of Finance). In 1997 the Bureau of Treasury established the Registry of Scripless Securities (RoSS), due to which all government securities are now scripless in the Philippines and registered in RoSS with their ownership. When they are traded, their ownership is assigned from sellers to buyers by transfers of these scripless issues between the securities accounts in RoSS.

a. Primary Market for Government securities

Government securities are regularly issued at auction, and so subject to competitive bidding methods. Only the Government Securities Eligible Dealers (GSED)¹³ are authorized to participate in these auctions, based on the electric mode “Automated Debt Auction Processing System (ADAPS)”. When GSEDs participate in these auctions, they input bid amounts, prices, and yields into terminals connected online with the ADAPS at the Bureau of Treasury via the Moneyline network. The deadline for bidding is 1:00 p.m. on the auction date. The auction committee¹⁴ selects and decides successful bidders based on bid data collected from GSEDs, the results of which are distributed to GSEDs via ADAPS terminals. Bid amounts are to be paid two days after the auction date. Scripless government securities are delivered to successful bidders via electronic registration into their securities accounts in RoSS. Meanwhile the Bureau of Treasury sends cash-payment information to BSP, which debits bid amounts from the settlement accounts of successful bidders.

¹³ GSED qualifications: a securities dealer with the SEC license, belonging to a industry under the supervision of the SEC, BSP or Insurance Commission, with 100 million unimpaired capital and surplus account, with the statutory ratio above the criteria prescribed for the industry, with the system infrastructures sufficient for the ADAPS participation and, with the accreditation of the Bureau of Treasury as the eligible participant of public bond auctions.

¹⁴ The Auction Committee is composed of the representatives from the Department of Finance, BSP and SEC.

b. Secondary Market for Government Securities

Government securities transactions in the secondary market are settled through RoSS. When these transactions are contracted, market participants input settlement instructions into the Moneyline Interface connected online with RoSS via the network. After ID numbers and passwords are checked, telegraphic data of securities transactions are transmitted to RoSS, which reflects these data in market participants' securities accounts in real time. At the end of trading hours each day, the Bureau of Treasury computes net cash balances of the securities transactions for individual market participants and transmits net cash payment data to BSP.

RoSS processes settlement instructions of securities transactions from 9:00 a.m. to 2:00 p.m., and the Bureau of Treasury transmits net cash payment data for individual market participants before 4:00 p.m. to BSP, which reflects them in the settlement accounts of market participants to complete all payment processes before 4.30 p.m. every day.

This government-securities settlement system is based in netting with same-day, to meet the T+0 criteria recommended by G30. Although securities are delivered in real time according to individual transactions during business hours, cash payments of securities transactions are made only at the end of trading hours, because they depend on their net cash balances for individual market participants at the end of each business day. The DvP scheme is not yet realized in secondary trading of government securities. Even after deliveries of government securities, market participants still bear settlement risks, due to potential funds shortages of their transaction counterparts. It needs online linkage between the Bureau of Treasury and BSP, to connect individual securities transactions (i.e., deliveries) with their cash payments, to reduce settlement risks. This has been the most vital issue to be resolved in enhancing the government-securities settlement systems. Although market participants do not take this issue seriously in the settlements of government-securities auctions because of the simplicity of its transactions, they admit that the absence of linkage between securities settlements and cash payments in secondary markets is a serious issue.

There has not been any outstanding progress in the introduction of a DvP-based securities settlement system. No specific schedules appear to have been decided for this. With the installation of PhilPaSS by BSP for cash payments of inter-bank transactions, it is expected that the system environment and infrastructure now have the capacity for introduction of a DvP-based settlement of securities. BSP in coordination with BAP is currently working on the establishment of a custodianship facility for bank's proprietary government securities holdings and it may help to make DvP a reality.

Government-securities transactions can be carried out manually if market participants are unable to execute electronic securities settlements with RoSS because of problems in their system infrastructures, or when the computer system of RoSS is not functioning. In such cases, buyers of government securities prepare Confirmation of Purchase (CoP) forms, and sellers prepare Confirmation of Sale (CoS) forms. Both parties enter ISIN numbers, issue dates, maturity dates, par values, transaction numbers, and other information on the traded securities on these forms and forward them to RoSS. After reconciliation between CoP and CoS forms, RoSS reflects the results of securities transactions in the securities settlement accounts of

individual market participants. With the deliveries of securities, buyers pay cash to sellers via check or debit of their payment accounts maintained with the settlement banks.

The Bureau of Treasury charges monthly fees to all banks, financial institutions, and individuals for the securities accounts maintained with RoSS. These charges vary according to the type of accounts, from 5,000 pesos (principal account) to 1,000 pesos (client account).

ii. Corporate Debentures and Commercial Papers

The outstanding balances of issued corporate debentures and commercial papers (CPs) are very limited in the Philippines, compared with those of government securities. Several factors are likely to have adversely affected the development of domestic bond markets, including unfavorable taxation and regulations imposed on these bond markets (as in other East Asian countries), unstable political and economic conditions, and high interest rates of these bonds (derived from high inflation). The issuers of corporate debentures and CPs are limited to some prominent domestic conglomerates.

According to the Philippine corporate law, the issuance of corporate debentures requires approvals by at least two-thirds of shareholders, while issuance of CPs requires only a resolution by a board of the directors. Many companies choose flexible issuance of CPs instead of corporate debentures. Accordingly, CPs¹⁵ account for the majority of outstanding private bonds issued in this country.

There has been little improvement in the settlement infrastructures for private bonds. Their total outstanding balances are very small and their transaction volumes are very limited in the secondary markets.

For CP settlements, there are no scrippless CP issues like government securities, and no central securities depository like RoSS. Transfer Agents (financial institutions, mostly banks) function as custodians of issued CPs and register the names of their holders. When CPs are traded, their deliveries are based on their certificates. Sellers of CPs sign the reverse sides of the certificates and forward them to the assigned transfer agents, to report selling of CPs. These agents transfer the ownership of CP holders from sellers to buyers according to the endorsed certificates, and issue new certificates for the buyers. It usually takes 40 to 60 days for the whole process of CP ownership transfers, during which time payable CP coupons may not be correctly paid to the new holders. There are also settlement risks, in the time differences between the delivery of and cash payment of CPs. Some financial institutions (including foreign banks) do not participate in dealing operations of private bonds (including CPs), to avoid the high settlement risks arising from insufficient settlement infrastructures. Some have called for electronic certificates, for the improvement of the current settlement systems for private bonds, but no specific plans for these appear to have been scheduled. As described later, the establishment of the Fixed Income Exchange will improve bond market

¹⁵ CPs are usually issued, instead of corporate debentures. There are two types of CPs, according to their maturity. The maturity of short-term CPs becomes due in less than one year, and that of long-term CPs expires from one to seven years, following the issuing date. Issued CPs are seldom traded in secondary markets, and many are held by investors until maturity. When they are traded, most are based on repurchase agreements, and tradings are concentrated in short periods (of a few months) designated for payments of their coupons.

infrastructures, including the settlement systems for private bonds, to a great extent.

iii. Stocks

All listed stocks on the Philippine Stock Exchange (PSE)¹⁶ are scripless issues (like government bonds), and registered in the Philippine Central Depository (PCD). When they are traded, their ownership is assigned from sellers to buyers by transfers of scripless shares between the securities accounts of the investors in PCD. The Securities Clearing Corporation of the Philippines (SCCP) sends payment instructions to the settlement banks of individual investors for cash payments in stock transactions. Cash payments are made from 12:00 p.m. to 1:30 p.m. on the third business day (T+3) following the transaction date. In settlements of stock transactions, there are DvP-based deliveries of shares and cash payments. The stock settlement system is said to be the most advanced of all securities settlement systems of the Philippines.

Figure 3: Securities Settlement System Diagram

	Securities Form	Clearing Org.	Settlement Org.	Other Managing Org.	Settlement Type	Settlement Term	Operating Hours	Transaction Volume	Transaction Amount
Gov. securities	Scripless	RoSS	RoSS (securities), BSP (cash)	—	Securities (gross), cash (net)	T+0	09:00–14:00	498	P17,034 million
CPs	Physical Paper	Transfer agent	BSP	—	—	40–60 days	—	n.a.	n.a.
Listed Stocks	Scripless	PCD (securities), SCCP (cash)	PCD (securities) and Equitable PCI bank or Rizal commercial banking corp. (cash)	PSE	DvP	T+3	09:30–12:10	399 million	P638 million

Sources: EMEAP, BSP, BTr, BAP.

Note: Transaction Volumes and Transaction Amounts are the daily averages of 2002.

¹⁶ Dealing hours are from 9:30 a.m. to 12:10 a.m. in PSE. Small-denomination Treasury Bonds are also listed and traded there.

(2) Fixed Income Exchange (FIE)

i. Concept

In the Philippines, the PSE trades fixed-income securities issued by the government. However, secondary trading of these instruments is virtually non-existent and, if any at all, is done by phone and not in the trading floors. Subsequently, the BAP helped set up a FIE in the country, to provide a platform for the secondary trading of private and public fixed-income securities such as government securities, commercial papers and asset-backed securities issued by companies. Initially capitalized at ₱500 million, major investors to the FIE include the Philippine Stock Exchange,¹⁷ the Development Bank of the Philippines, the Social Security System, as well as insurance companies and corporate insurers, among others. The FIE is scheduled to begin operations in second quarter of 2004.

Another critical requirement of a well functioning market is to have an orderly and established mechanism to manage its securities inventory. Subsequently, in October 2003, the BSP, BAP, Investment Houses Association of the Philippines (IHAP) and Money Market Association of the Philippines (MART), and Bureau of Treasury signed a memorandum of agreement (MOA) for cash-settled securities swap transactions (CSSTs).¹⁸ The MOA lays down the parameters for a more structured system of securities swap transactions among member-banks and participating financial institutions.

FIE is a comprehensive financial market infrastructure that shall provide an electronic trading, clearing and settlement and depository, registry and custody of fixed income securities such as among others -government securities, private bonds, and CPs. It is proposed to be structured as a holding company which will wholly own and operate three subsidiaries namely:

- i.* The Dealing and Exchange Entity, which shall be engaged in the business of providing and maintaining a primary and secondary marketplace and facility to bring together buyers and sellers of securities;
- ii.* The Clearing and Settlement Entity, which shall provide an efficient clearing and settlement system that shall facilitate the payment for and transfer of fixed income securities to minimize settlement risks through DvP-based settlement;
- iii.* The Depository and Custody Entity, which shall provide depository and custodianship capabilities for the proper consummation of trades.

ii. Advantages

The establishment of FIE will bring many advantages, as follows.

First, FIE will enable investors to look through indicative quotations of selling and buying prices of fixed income securities, and thus promote price discovery and transparency. FIE is

¹⁷ The PSE's investment came about following the conversion of 32 percent of its stake in the Philippine Central Depository (valued at around ₱60 million) into approximately 12 percent of that of the new bond exchange.

¹⁸ A swap transaction is an arrangement between financial institutions to buy or sell government securities on the spot and buy or sell similar securities at an agreed date and price.

envisioned to improve the domestic market environments and through the Dealing and Exchange Entity which is proposed to be a Self-Regulating Organization (SRO) ensure that applicable best practices are followed.

Second, the infrastructures for the custody of securities shall complete the cycle of trading and settlement through the proper disposition of the assets transferred in each transaction and DvP-based settlement systems for securities (including government bonds)¹⁹.

¹⁹ Some market participants consider that the establishment of the FIE may be just another installation of a new trading software, rather than set-up of a new exchange, if maintenance of system infrastructures in financial institutions is insufficient for the FIE system and securities trading using FIE are limited to among some financial institutions only.

Chapter 8: Payment Systems of Vietnam

Vietnam's financial and payment systems are the least developed of all those of the countries covered in this survey, because Vietnam did not initiate full-scale financial reforms until the middle of the 1990s. Information on its economic and financial systems is very limited in Japan, and so this survey has focused not only technical aspects of Vietnam's payment systems, but also on the past and future developments of its financial system. It must be understood that the Vietnamese are apt to mistrust banking systems, because of their hard experiences of wars and financial crunches. Vietnam's banking system has been underdeveloped, and cash has been the most commonly used payment instrument. US dollars are widely accepted for payments of goods and services, to the extent that they are estimated to make up nearly 30 percent of the money supply in Vietnam.

As described above, Vietnam began its financial reforms in the mid 1990s, and its electronic payment systems have recently made a rapid progress. Banks have begun installing ATMs and issuing credit cards, and these are gradually becoming widespread. A stock exchange was established in 2000, although transactions are still limited in size and amount. Insurance companies have recently begun making long-term investments, and the introduction of investment trusts are now being studied by the authorities. Rapid changes are taking place in Vietnam's financial sector.

Research for this survey included interviews with financial sources in Vietnam, concerning the development of financial systems and reforms. Interviewees' explanations were sometimes inconsistent with each other, in reflection of rapid changes. Vietnam's financial statistics have been underdeveloped in comparison with those in the leading ASEAN countries, and many materials and data remain undisclosed; improvement is also needed in their publication.

1. HISTORY OF VIETNAM'S FINANCIAL SYSTEM

(1) Economic Reforms to be Accelerated by the Open-door Policy

Vietnam's financial system has been behind those of the leading ASEAN members, including Singapore, Malaysia, and Thailand. The main cause of this was the "mono-bank" system, which had long continued until 1988, hindering functional diversification and decomposition of financial institutions, accumulating bad loans extended without consideration of profit and efficiency, and slowing financial and technical innovations.

The Vietnamese government began its Doi Moi policy in 1986, and since then has made great efforts to create a market-oriented economy, and to promote economic revitalization. Financial reforms have been addressed as part of the Doi Moi policy, although their progress was slow in the beginning. Since the end of 1990s, however, these innovations have accelerated and become stable.

Vietnam now has access to the ASEAN Free Trade Area (AFTA), and has concluded a bilateral trade agreement with the United States. Vietnam is also orienting itself toward gaining membership in the WTO. With the increasing integration of its economy into the global economy, Vietnam must accomplish greater economic and financial innovations than before.

Vietnam previously protected its domestic companies by imposing heavy customs duties on

imported industrial goods. Since joining AFTA, however, it has committed itself to a phased reduction of these high duties during the ten-year period from 1996 to 2006. Vietnam has actually exercised its commitment and also abolished or reduced quantity controls on imported goods over the last years.¹

Vietnam signed a bilateral trade treaty with the United States in July 2000. Effective as of December 2001, this treaty stipulates Vietnam's market liberalization and deregulation schedules, as described below.²

After three years following the effective date of this treaty, joint ventures with US partners will be authorized to carry out business activities in Vietnam's service industries.

After eight years following the effective date of this treaty, US banks will be authorized to establish subsidiary banks with a capital composition of 100 percent US direct investment. Until then, however, US banks are authorized to become business partners in joint ventures, with an investment share of 30–49 percent of the total legal capital.

For eight years after the effective date of this treaty, Vietnam retains the administrative rights to control the deposit services in VND dong made by US banks for Vietnamese corporate entities with which US banks have no credit relations. This control applies to US banks' deposit services made for individual entities for ten years after the effective date of this treaty.

Vietnam must therefore pursue reforms of state-owned companies, and in the financial and banking sector, amid an environment in which all its goods and services face global competition.

China's entry into the WTO has invited huge amounts of foreign investment into its markets, which is one reason why Vietnam has been so strongly urged to pursue market-opening policies. Vietnam is expected to have difficulties in attracting foreign investment if it does not speed up the opening of its markets to overseas investors. Vietnam began membership talks with the WTO in 1998, and it is thought probable that it will gain entry before 2005. Vietnam is therefore making determined efforts to carry out financial reforms.

(2) Financial System

The development of financial systems in Vietnam originated from its "mono-bank" system, in which the policy finance bank assumed authority and responsibility in many different financial and banking functions.

The Vietnamese government subdivided the state-owned policy finance bank in 1988, and began the construction of a financial system based on market principles.³ The State Bank of Vietnam (SBV) was formerly responsible for all banking functions, but has now become the central bank of Vietnam, with only financial policy and supervisory authorities and responsibilities. Four state-owned commercial banks have been established as a result of SBV's subdivision: Vietcombank; Bank for Investment and Development (BIDV); Vietnamese Bank for Agriculture and Rural Development; and Industrial and Commercial

¹ CIEM, Vietnam's Economy in 2001, 2002, and World Bank, Delivering on its Promise Development Report 2003, November 2002.

² Vo Tri Thanh, The Dream of Prosperity and the Wave of Change: Challenges on Vietnam's Journey of Trade Liberalization and Economic Integration, CIEM 2002.

³ Kovsted, Jens, John Rand, and Finn Tarp, Le Viet Thai, Vuong Nhat Huong and Nguyen Minh Thao, Financial Sector Reforms in Vietnam: Selected Issues and Problems, CIEM 2003.

Bank of Vietnam (Incombank). Other banks include joint stock banks and local branches of foreign banks, as well as credit cooperative funds to provide loans to small companies. The four state-owned commercial banks occupy an overwhelming position in the banking sector, and maintain about 70 percent of customer accounts, and 80 percent of banking transactions.

In 1990 the total outstanding loan balance of the banking sector was equal to 13 percent of the estimated GDP; this reached 27 percent in 1995, and 44 percent in 2000. Bank loans are increasing, a high percentage of which still go to state-owned companies. It is said that the financial reform of Vietnam's banks has just begun, in terms of granting loans to customers based on economic efficiency and profit.⁴ Although the disposal of bad loans is the most vital issue concerning financial reforms, its burden is expected to be relatively small, compared with China, since the ratios of all bank loans and bad loans to GDP in Vietnam are smaller.

Foreign-currency loan rates were liberalized in 2001, and interest rates for dong-denominated loans and deposits were liberalized in 2002. The Vietnamese authorities cite these as significant steps toward financial reform.⁵

(3) Position of Payment System Reforms

According to the financial authorities interviewed for this survey, they regard payment system reforms as the most important of all financial innovations. The World Bank's financial modernization program, the "Payment System and Bank Modernization Project," is composed of seven sub-projects, the core of which is the construction of an electronic inter-bank payment system developed by Hyundai Information Technology (of South Korea). This system has been running since May 2002. The other six projects include modernization of the internal systems of commercial banks, which are addressing improvements of their in-house systems subject to these projects.

SBV regards the accomplishment of these seven sub-projects as having the following purposes and effects:

- i.* Modernization of the inter-bank payment system.
- ii.* Online connection with all branches of all commercial banks.
- iii.* Inclusion of all commercial transactions.
- iv.* Inclusion of all cash flows.
- v.* Use for the implementation of government financial policies, and inclusion of all government banking transactions.
- vi.* Increased user-friendliness for customers of commercial banks.
- vii.* Usefulness in Vietnam's economic development, via all the items above.

The World Bank's financial modernization program is said to have been steadily advancing, with the support of the Vietnamese government and National Assembly.

⁴ World Bank, as described above.

⁵ The cap on foreign-currency deposit interest rates is the only interest-rate regulation still applicable. For example, the cap interest rates of ordinary deposits, fixed deposits of less than 6 months, and fixed deposits of more than 6 months (all denominated in US dollars) are 0.1, 0.5, and 1.0 percent, respectively. (Source: Bank of Tokyo- Mitsubishi, Ltd.)

(4) Legal Background of the Inter-bank Payment System

Vietnam's inter-bank payment system is defined in the central banking law, which mandates its management by SBV. According to this law, SBV is responsible for the inter-bank public payment system, and for the supervision of the in-house payment systems of individual commercial banks. SBV is in charge of maintaining legal frameworks for commercial banks' internal payment systems, as well as of securing these systems (including hardware, software, and power sources).

2. PAYMENT SYSTEMS

(1) Paper-based Payments

i. Scheme

Inter-bank payments were carried out on a paper basis before the introduction of the electronic payment system. There are 64 provinces in Vietnam, each of which has one SBV branch. There are also provincial payment centers, managed by SBV branches, in charge of remittance payments and check clearing, although very few bills and checks are used in Vietnam. According to interviews with state-run commercial banks, only 5 percent of their customers use checks for transactions, which are rare and in small amounts. Remittance payments make up the major portion of inter-bank payments at these centers. Before the establishment of the electronic inter-bank payment system, these centers manually handled paper-based remittance instructions received from member banks, and executed final payments by balancing them through these banks' settlement accounts with SBV.

ii. Flow

Inter-bank cash payments in provincial payment centers are based on the outstanding balances of member banks' settlement accounts at the end of business hours on the day when remittance instructions are received. According to interviewed commercial banks, the number of checks used is very small, and their amounts are manually credited to the deposit accounts of customers on the date of their presentation. The use of checks is restricted to the same province in which they are drawn. If checks are drawn in one province, for use in another province, they are not accepted or paid unless guaranteed by commercial banks. Nonetheless, checks are seldom used in Vietnam; cash and remittances are the most commonly used payment instruments.

iii. Problems

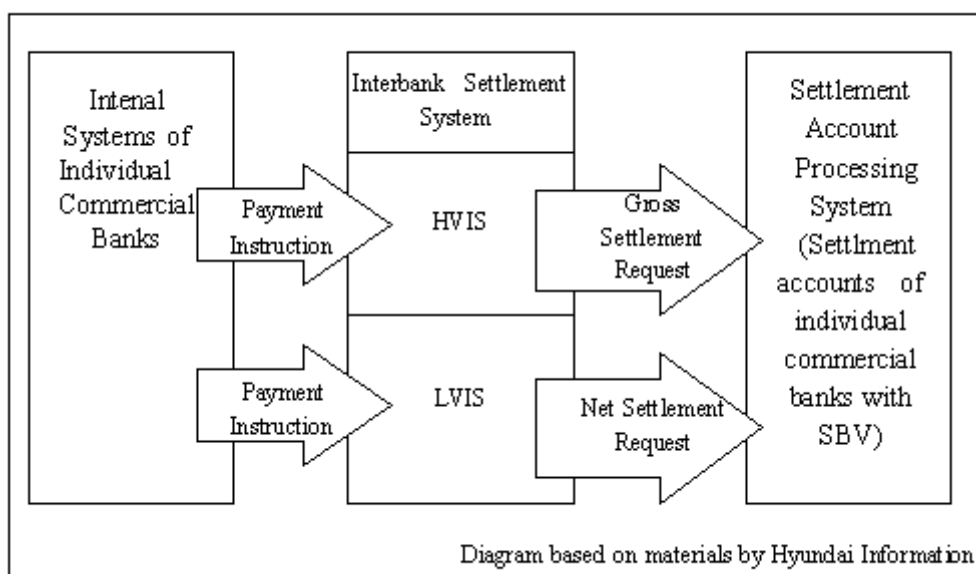
The final payment of remittances took many days under the previous paper-based payment system. Particularly, payments of inter-province remittances required several days (at least 3 days, or up 5 or 6 days, if necessary) before transfers were credited to beneficiaries' accounts. It was therefore uncertain when remitted funds would finally be paid. Member banks had difficulty in liquidity control, and there were also difficulties in the stable management of funds markets. It was very difficult for the beneficiaries of remittances to predict the arrival dates of funds, and to carry out efficient funds management.

(2) Electronic Payment System

i. Installation

The electronic inter-bank payment system was installed in July 2002, to replace the paper-based inter-bank payment system. This new system has required maintenance and improvement of its legal frameworks.

ii. Outline



As illustrated in the diagram above, the inter-bank electronic payment system is composed of two sub-systems: High Value Sub-system (HVTS), for large-amount remittances on a gross basis, and Low Value Sub-system (LVTS) for small-amount remittances on a net basis.

This system is based on the Korean Inter-Bank Payment System (KIPS), and was developed by Hyundai Information Technology.

HVTS and LVTS:

SBV explains that remittances of 500 million dong (US\$33,000) or more are handled by HVTS, while LVTS is for remittances of less than 500 million dong. Some commercial banks say that they send all remittances through HVTS, regardless of their face amount. Actual use appears to be different from original concept.

If there are sufficient balances in the SBV settlement accounts of member banks, funds are immediately transferred via HVTS. If account balances are insufficient, remittance instructions are stored in a system queue. They will be sequentially processed when account shortfalls are replenished. According to member banks, funds remitted to receiving banks will reach their branches within ten seconds, regardless of whether they are inter- or intra-province. Although transfers among banks may be processed in ten seconds, time necessary to credit funds to beneficiaries' accounts varies from bank to bank.

Small-amount payment instructions sent by member banks via LVTS are balanced out on a net basis, and at the end of business hours SBV executes net balance payments via transfers of

settlement accounts.

iii. Domestic Remittance Flow

Vietnam's domestic telecommunications system is based on an X.25⁶ network connection, managed by Vietnam Posts and Telecommunications (VNPT), and is designed to match Vietnam's environment and infrastructure.

There are provincial payment centers (PPC) in charge of intra-province payments in rural regions. Individual banks transmit inter-province payments to the National Processing and Settlement Center, through which they are re-sent to member banks.

PPCs have installed the electronic payment system in six rural locations, to process the remittances of five provinces: Hanoi, Ho Chi Minh, Haiphong, Danang, and Can Tho. PPC member banks include 44 branches of commercial banks, some foreign banks, and joint stock banks. According to future plans, PPCs are to expand the coverage of remittances from these five provinces to all of Vietnam's 61 provinces. In the first step, connections with PPCs by 10–15 commercial banks' branches in neighboring provinces is scheduled, and 3–5 more PPCs will be established in other regions. By the end of 2004, it is expected that all branches of all commercial banks will be connected with PPCs.

According to the financial institutions interviewed, intra-province payments account for 75–85 percent of all remittances. The rest are inter-province payments handled by NPSC. Remittances processed using the electronic inter-bank payment system average 7,000 transactions per day.

iv. SBV Overdraft Facilities

At the end of each business day, SBV provides the branches of member banks with overdraft facilities if there are funds shortages in their settlement accounts. Member banks must deposit valuable securities (including government bonds) as collateral with SBV before they may receive such facilities. Overdraft facilities are offered to member banks based on these collateral securities, and SBV charges overnight interest to these banks according to its official instructions. If any bank is unable to repay borrowed funds within two business days, SBV issues a notice to them. If no funds are repaid within four business days, SBV is authorized to sell off the collateral securities to recover the loaned funds.

v. Improvement of Over-the-counter Banking Services

The World Bank's financial modernization project is also targeted at upgrading user-friendliness for the customers of commercial banks. Although the quick arrival of remittances is the primary contribution to such enhancement, SBV initially campaigned for one-stop services over-the-counter in each bank, by upgrading internal systems. Previously, customers had to visit at least three different counters (for balance inquiry, account withdrawal, and remittance request) in one bank, just for one remittance. The World Bank's financial modernization sub-project for upgrading banks' internal systems is expected to accommodate customers with one-stop counter services.

⁶ ITU-T standard of the interface between DTE and DCE in the public data network. It defines the three lower layers (from the physical to network), and assigns LAPB as the protocol for the data link layer, and PLP as the protocol for the network layer. X.25 is used in the transmission of IP, DECnet, XNS, and many other protocols. It is being replaced by the frame relay. (Source: Cisco System's homepage.)

vi. Effects of Modern Inter-bank Payments on Financial Policy

The introduction of the inter-bank electronic payment system has affected Vietnam's financial markets. This modern system enables banks to quickly send and receive funds, contributing to the reduction of unnecessary short-term borrowing. Some sources report that this system makes a contribution to slowing the increase of short-term interest rates in Vietnam's money markets.

(3) Internal Payment Systems in Major Commercial Banks

Vietnam's inter-bank payment system has developed to a great extent, as described above. State-owned commercial banks have also improved their internal payment systems, to process remittances of funds all over the country. The development of banks' internal remittance systems is one of the World Bank's financial modernization sub-projects. Vietcombank, Incombank, and BIDV, for example, handle large volumes of transfer transactions using their internal remittance systems, as described below.

When customers request BIDV branches to remit funds to other banks, they transmit remittance instructions to the central computer at the Hanoi headquarters, where they are re-sent to PPCs via BIDV branches in their locations. For example, when BIDV's Ho Chi Minh Branch receives a request for a remittance to another bank in Hanoi, its remittance route is as follows: BIDV's Ho Chi Minh Branch > BIDV's internal system > BIDV's Hanoi headquarters PPC in Hanoi > Hanoi headquarters of the destination bank. This route, bypassing NPSC, applies to inter-province remittances. In other words, routes via NPSC (BIDV's Ho Chi Minh Branch > PPC in Ho Chi Minh City > NPSC > PPC in Hanoi) are not necessarily used for all inter-province remittances.

According to Incombank, their internal system handles a daily average of 7,500 remittances, and it can process intra-branch funds transfers within 2 seconds. It is said that the development of internal systems by individual banks has supplemented the delay in development of inter-bank payment system of Vietnam.

(4) Retail Funds Payments

Non-cash payments by credit and debit cards have just begun to be available in Vietnam. All commercial banks emphasize the increase of ATMs and non-cash payment instruments as strategic financial products.

i. ATMs

All state-owned commercial banks emphasize the nationwide availability of ATMs as one of the most significant management issues in competition with other banks. They have all directed much effort toward the installation of ATMs.

Vietcombank has 24 branches nationwide, with 70 ATMs. According to a survey in March 2003, the functions of ATMs are limited to balance inquiry, cash deposit, and cash withdrawal of savings accounts. Functions are expected to include funds remittances before the end of 2003. BIDV has 120 nationwide branches, with 14 ATMs. No ATMs have been introduced in Incombank, which is now a priority issue.

ii. Credit Cards

Credit cards have recently become available in Vietnam, and are expected to become more popular. Vietcombank has issued credit cards since 1998;⁷ its issued VISA and MasterCard totaled 17,000 at the end of 2002, up 83 percent from 2001.⁸ All state-owned commercial banks have access to international credit card issuers and they are developing their systems to allow credit-card withdrawals on ATMs. According to Vietcombank, their system has already upgraded to provide dong-cashing services for VISA and other credit cards on ATMs.

3. SECURITIES SETTLEMENT SYSTEMS

(1) Securities Market Reforms

Vietnam has implemented measures to develop its securities markets, as part of the Doi Moi policy since the early 1990s, but progress has been slow. The State Securities Commission (SSC) was established in 1996 for the development of Vietnam's securities markets. It has a wide range of authority, responsibilities, and functions in the planning, supervision, and administration of securities markets, and in the management of securities settlements.

A Stock Trading Center (STC) was established in Ho Chi Minh City in 2000. Preparations for the establishment of another STC in Hanoi are now underway, scheduled for the end of this year. The STC and its personnel are considered part of SSC. The STC in Ho Chi Minh City administers securities dealings and settlements. SSC intends to make a clear separation of these two functions, and to reassign securities settlements from STC to other organizations at some future date.

(2) Stock Exchange Market

The Stock Trading Center (STC) was founded in July 2000, and listed 21 stocks by the end of February 2003 (11 as of the end of 2001). The aggregate market value of listed stocks is US\$100 million, equal to 0.3 percent of GDP. Stock dealings are still very limited in STC,⁹ which has 10 member securities companies.

The securities trading system used at the STC was developed in Thailand. According to market participants, this system will not meet future needs of STC, which is now working on a joint project with the ADB and other parties to develop a new stock trading system before 2005.¹⁰

Stock trading is from 9:00 a.m. to 10 a.m., Monday to Friday. Daily trading at STC averages 3 billion dong (US\$200,000).¹¹ It is reported that there were 13,000 stock trading accounts at the end of 2002, of which 2,000 are constantly active.¹² Trading at the Ho Chi Minh City STC is still very limited.

⁷ See chronological list on Vietcombank's Web page.

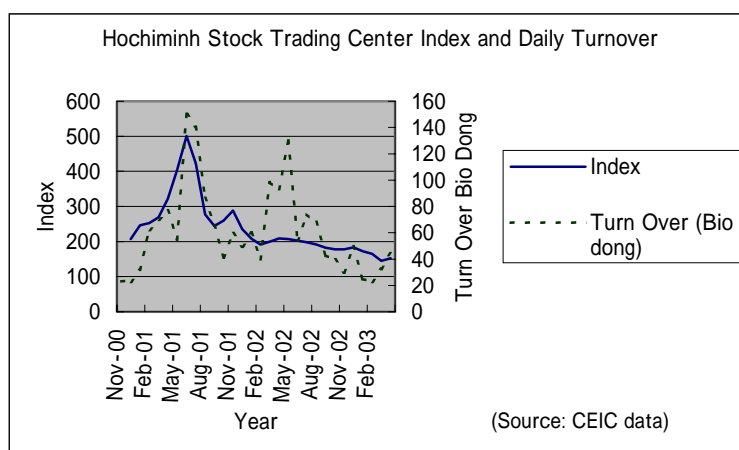
⁸ *Nikkei Financial Newspaper*, March 5, 2003.

⁹ Based on interviews with STC and MOF. Vietnam News Brief Service of January 23, 2003, reported an aggregate market value of 999 billion dong (US\$65 million) on December 24, 2002.

¹⁰ Based on the World Bank, described earlier. In interviews, STC in Ho Chi Minh City said that it would install a new stock trading system by 2004, which would cost about US\$15 million. It will include operations of STC's back office, and enable straight-through processing. It has studied the stock trading system in Shenzhen, China. SSC in Hanoi said that the details of a new stock trading system had not yet been determined.

¹¹ Interviews with the Ho Chi Minh City STC.

¹² Vietnam News Brief Service of January 23, 2003.



When trading stocks, customers used to personally visit securities companies and to write order sheets at the counter. Internet and telephone orders are now available to customers, although securities companies have their own discretion to allow such services.

Stocks are scrip issues, but once they are listed at STC, their dealing transactions will usually be carried out on a registration basis, i.e., there will be no scrip of listed stocks. Settlement of stock dealings is currently based on T+3. STC's future stock trading system is targeted for T+1 or T+2. A good portion of trading values appears to concentrate on one stock issue, REE (a manufacturer of household appliances). The above figure shows the daily trading volume and the index movement of STC.

The government limits the acquisition of domestic corporate stocks by foreign investors to 20 percent. This limit was formerly 30 percent. Consequently, there is little room left for further purchases of stocks by foreign investors, which has caused problems in some stock dealings. For REE's stock, the most actively traded issue at STC, the foreign-investors' participation limit of 4.5 million shares has been used up.¹³

(3) Flow of Stock-trading Settlement

The flow of procedures in stock-trading settlement is as follows.

Customers open securities accounts with securities companies, and bank accounts at the Ho Chi Minh City Branch of BIDV. STC is in charge of settlements of securities, and BIDV's Ho Chi Minh City Branch provides services for cash payments of all securities transactions. When securities are traded, purchased securities are deposited into customers' accounts with securities companies, and BIDV debits customers' bank accounts for payments of traded stocks.

Customers in regions far from Ho Chi Minh City are also able to trade stocks, by remitting funds to buy them from BIDV's provincial branches to its Ho Chi Minh City Branch.¹⁴

(4) Bond Market

Compared with the stock market, Vietnam's bond markets are undeveloped. There are two

¹³ *Saigon Times Weekly* of January 1, 2003. Foreign investors hold 30 percent of REE's outstanding issued shares, which must be reduced to 20 percent. New acquisition of REE's shares is very difficult.

¹⁴ Interviews with BIDV headquarters, on cash payments for securities transactions.

types of bonds: government bonds and corporate debentures. Government bonds are issued by MOF or SBV, but their outstanding balances are undisclosed. Corporate debentures are very limited, because only one corporate issue is listed at the Ho Chi Minh City STC. The aggregate market value of issued bonds is estimated to be about US\$300 million, although this varies according to source materials. Even in interviews with relevant sources, this figure was unclear.¹⁵ Trading values of bonds at the Ho Chi Minh City STC average 300 million dong per day (US\$20,000). All market participants interviewed in this survey agreed that there is no awareness of secondary trading among bond purchasers.

Government bonds are issued with different terms, from short maturity to 15 years. Two- to 5-year government bonds account for most of all issued government bonds. The issuing bodies of government bonds are MOF and SBV. MOF issues them in three different types depending on their maturities and target purchasers: direct issuance at all provincial branches of MOF; issuance via STC; and issuance by auctions to institutional investors.

Decree No.01/2000/ND-CP provides that National Treasury Bureau of MOF (the issuing body) is responsible for management of Vietnam's government bonds. As described above, the issuance of government bonds is complicated. Booking and settlement proceedings are not unified, and are controlled using decentralized management methods.

- Beginning this spring, Vietnam's MOF has been developing a new system for the management and settlement of government bonds, in collaboration with domestic software vendors. It is now working hard toward live operations.
- The current system of the Ho Chi Minh City STC developed in collaboration with South Korea and Thailand does not always satisfy its members. STC is planning to develop a new system for securities trading and safekeeping, in collaboration with the ADB.
- Development of new securities management software is a future issue of SBV.
- There are no links between systems or linkages between securities settlements and their cash payments. Preparation for such links or linkages is vital, in light of increased volumes of securities transactions, as well as in consideration of future increases in demand for liquidity.

When Vietnam begins to plan full-scale securities markets, it will be imperative to seek new securities settlement and payment systems, focused on long-term development.

According to the interviewed banks, Vietnamese insurance companies have been growing and they are now increasing their purchases of government bonds auctioned in the primary market, although there are hardly any secondary markets in Vietnam.

4. INTERNATIONAL PAYMENTS

International payments are partly deregulated in Vietnam. The receipt of funds remitted from foreign countries has been liberalized, but remittances to foreign countries are strictly controlled, requiring many documents as evidence of reasons for such offshore payments. Payment and receipt of funds for capital accounts are usually prohibited, and require government authorization.

International payments are usually subject to the same methods as used in other countries. Individual commercial banks have correspondence agreements with overseas banks and access to SWIFT. They implement electronic banking and manage online their overseas deposit

¹⁵ Vietnam News Brief Service of January 23, 2003, reports that the outstanding balance of listed government bonds as of December 10, 2002, amounted to 420.1 billion dong (about US\$272.9 million).

accounts due from foreign correspondence banks. They also said that they offer electronic banking services for dong accounts.

5. PAYMENT SYSTEM REFORMS AND FINANCIAL POLICY

As described above, improvement of the inter-bank and internal payment systems have had a significant impact on SBV's financial policies. Individual banks can now effectively manage funds in customers' savings accounts for loans. The electronic inter-bank payment system enables banks to foresee arrivals of remitted funds to a certain extent, and to carry out efficient cash-flow management, thus contributing to stable interest rates in short-term money markets and to the government financial policy management in macro-economic terms.

6. FUTURE PAYMENT SYSTEM ISSUES

(1) Further Improvement of Domestic Payment Systems

The first issue is expansion of the domestic payment systems. As described earlier, to improve the inter-bank payment system, the number of branches of member banks connected online with PPCs is to be increased, and banks are to upgrade their internal systems. Some member banks are concerned about the capacity of the current payment system using outdated communication lines to sufficiently handle increasing transaction volumes.

For the pursuit of the long-term development of the capital markets, it is necessary to plan and develop a new securities settlement system, including back-office operations and cash payments, in tandem with the development of a new stock trading system.

Since governmental financial institutions including commercial banks do not have enough fund resources and technical capacities to develop standardized securities systems, some are individually making efforts to develop their own systems, unique to their organizations, and which are not sufficiently based on industrial standards. These systems may cause difficulties in their future integration. In this context, making a master plan for securities settlement systems—as in the development of electronic payment systems—is very important, to reduce significant development costs and to avoid discordance and inconformity among these systems in foreseeing their future integration.

(2) People and Bank Accounts

Vietnamese have little confidence in bank accounts, due to hard experiences during wars and financial system crunches. In interviews with many financial sources, bank account holders are expected to make up 10–15 percent of the population. One reason why people are reluctant to open bank accounts in Vietnam is that they wish to avoid the seizure of taxable income by the authorities. Nonetheless, it is quite likely that most people have earned extremely low incomes, and have little need for bank accounts. It is said that Vietnamese will gradually open bank accounts, in proportion to growing incomes and savings. The initial step for the creation of an effective payment system is to campaign for the opening bank accounts or postal savings by people. Vietnamese authorities are required to continue the education process, to increase the awareness of the necessity and significance of bank accounts and postal savings among people. The increased use of checks and bills is also necessary for Vietnam's economic modernization.

(3) Further Cultivation of Capital Markets

The aggregate market value of listed stocks is still very limited in Vietnam, and the bond market has just begun. Many in Vietnamese financial circles say that they appraise the TA of the World Bank, ADB, and other international financial organizations in terms of capital market development. They also eagerly hope for Japan's support in the further advancement of securities markets, particularly bond markets.

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