

BANK FOR INTERNATIONAL SETTLEMENTS

**PAYMENT SYSTEMS
IN KOREA**

**Prepared by the Bank of Korea and the
Committee on Payment and Settlement Systems of the
central banks of the Group of Ten countries**

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FOREWORD

The Committee on Payment and Settlement Systems (the CPSS) of the central banks of the Group of Ten countries periodically publishes - under the aegis of the Bank for International Settlements - a reference work on payment systems in the G-10 countries known as the "Red Book", the latest edition of which dates from December 1993. The CPSS has also invited central banks in a number of countries where important developments in payment systems are under way to publish - in collaboration with its Secretariat at the Bank for International Settlements - separate "Red Book" studies for their countries. This is the first edition of the "Red Book" for the Republic of Korea.

Central banks in many countries have been influential in improving public understanding of payment and settlement arrangements in their countries and public awareness of the various policy issues connected with such arrangements. Payment systems include not only retail money transfer systems used by businesses and consumers for commercial purposes but also large-value interbank funds transfer systems that underpin the money and credit markets of market-oriented economies. In addition, major settlement systems include so-called exchange-for-value systems that are increasingly used for the settlement of securities transactions. Public interest in issues relating to the economic efficiency and financial risks of all types of payment and settlement systems has continued to increase in recent years.

We hope that this "Red Book" country study will contribute to the general understanding of payment and settlement arrangements in Korea, both domestically and internationally.

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March 1997

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INTRODUCTION

As in many other countries, the payment system in Korea has been evolving from a system based almost exclusively on cash and paper transactions towards an electronic system. The role of paper-based payment instruments, reflecting Koreans' traditional strong preference for cash and quasi-cash, still remains significant. However, the volumes of various types of electronic payment transaction have grown at an increasingly rapid rate since the mid-1980s as electronic banking has become widespread. Furthermore, the launch of the central bank financial wire network, which was brought into operation in December 1994, transformed the structure of the Korean payment system. As a result, in the first half of 1995 electronic payment instruments made up about 30% of all cashless payment instruments by volume and 47% by value.

The Korean payment system consists of several retail payment systems and the central bank large-value wholesale payment system.

The retail payment systems comprise the Cheque Clearing System, the Bank Giro System, the Interbank Funds Transfer (IFT) System and the Interbank Cash Dispenser/Automated Teller Machine (CD/ATM) System. All of these payment and settlement systems are run by the Korea Financial Telecommunications and Clearings Institute (KFTC), a non-profit clearing and financial data relay centre established and jointly owned by member banks. All payments through these retail systems are settled on a net basis.

The central bank financial network plays a decisive role as a wholesale system. The new real-time gross settlement system, the Bank of Korea Financial Wire Network or BOK-Wire, is an on-line network which connects the central bank with financial institutions. Through BOK-Wire, large-value funds transfers between these institutions are executed electronically and settled across their current accounts with the Bank of Korea.

1. INSTITUTIONAL ASPECTS

1.1 General legal aspects

There are a number of separate laws regulating various areas of the payment systems.

First, there are laws which define the obligations between parties who use means of payment; this category includes the Civil Code of 1962, the Commercial Code of 1962, the Regulation on the operation of BOK-Wire of 1994 and several institutional arrangements among KFTC members.

Second, there are laws which specify the way in which various payment instruments are to be offered and utilised; this category includes the Bills Act of 1962, the Cheques Act of 1962, the Credit Card Business Act of 1987 and the Postal Deposit and Insurance Act of 1983.

Third, there are laws which govern the institutional aspects of financial institutions and permit them to offer payment services; this category includes the Bank of Korea Act of 1953, the General Banking Act of 1950 and several special banking acts.

Lastly, the Law on the Distribution and Promotion of the Telecommunication Network of 1986 was promulgated to encourage the construction and improvement of electronic payment systems.

1.2 Institutions that provide payment services

Financial institutions in Korea are divided into monetary institutions and non-bank financial institutions according to their credit-creating ability. Monetary institutions include the central bank and deposit-money banks. Non-bank financial institutions, which cannot take deposits or

the amount of whose deposits is negligible, are classified into development institutions,¹ investment companies, savings institutions and life insurance companies. Most payment services are provided by monetary institutions and two of the development institutions. Credit card companies, the Post Office and various cooperatives also provide particular payment services.

1.2.1 The banking system

Payment services are provided mostly by the deposit-money banks, which at the end of 1995 included 15 nationwide commercial banks, ten local commercial banks, five specialised banks and 71 foreign-owned commercial banks, and by two development institutions. The deposit-money banks provide various payment services for their customers: issuance of cashier's cheques and credit cards; the installation of cash dispensers and ATMs for withdrawals and transfer services based on demand deposits; and the provision of other payment services such as bank giro credits and other interbank funds transfers. Recent financial innovations and demands from customers for better financial services have led to the provision of new payment services such as on-line corporate-banking and home-banking services. In addition, debit cards for EFTPOS transactions have been available since February 1996.

1.2.2 Other institutions

Other institutions which provide payment services are credit card companies, the Post Office and various cooperatives. Credit cards are currently issued by four bank-affiliated credit card companies and four specialised credit card companies, most of which are associated with VISA or MasterCard.

The Post Office provides payment services such as postal orders and the postal giro through its 2,800 branches across Korea. Since June 1995, it has participated in three of the five interbank funds transfer systems (the Bank Giro System, the Interbank CD/ATM System and the IFT System) and in the Automatic Response Service (ARS) System.

Also in June 1995, about 4,000 member cooperatives of the agricultural, fishery and livestock cooperative federations were allowed to join these four systems. The extension of the range of institutions participating in the shared interbank financial networks was decided upon in order to improve payment services in the country's regions and rural areas.

1.3 The role of the central bank

In accordance with the Bank of Korea Act, the Bank of Korea is responsible for maintaining and fostering a safe and sound financial system.

To meet these responsibilities the Bank performs various activities relating to the payment systems, including issuing banknotes and coin and providing current accounts used for the settlement of interbank obligations arising in the payment systems. The Bank is also empowered to regulate and supervise the business of the commercial banking institutions.

¹ Development institutions were established to facilitate financial support for specific sectors (such as major industries, trade and overseas investment) which needed large-value medium and long-term credits. These institutions comprise the Korea Development Bank, the Export-Import Bank of Korea and the Korea Long-Term Credit Bank. Their main sources of funds are borrowings from the Government and foreign financial institutions and the issue of financial debentures.

1.3.1 Issue of banknotes and coin

The Bank of Korea has the sole authority to issue legal tender. Currently, it issues banknotes in three denominations (1,000, 5,000 and 10,000 won) and coins in six denominations (1, 5, 10, 50, 100 and 500 won). Banknotes and coins are manufactured by the Korea Security Printing and Minting Corporation.

1.3.2 Provision of settlement facilities

As the central bank and lender of last resort, the Bank of Korea provides settlement facilities to financial intermediaries through the current accounts they hold on its books.

To ensure safe and efficient settlement for interbank large-value funds transfers, the Bank set up a real-time gross settlement (RTGS) system, which was brought into operation in mid-December 1994. This new electronic funds transfer system, called BOK-Wire, replaced most of the interbank funds transfers that used to be executed by telex and/or Bank of Korea cheques drawn on banks' accounts.

1.3.3 Oversight of the payment systems

Responsibility for the supervision of banks is vested in the Bank of Korea by the Bank of Korea Act and the General Banking Act. The Bank may also involve itself in payment systems through the activities of the KFTC, whose General Meeting, its supreme policy-making body, is chaired by the Bank's Governor.

1.4 The role of other private and public sector bodies

1.4.1 The Korea Financial Telecommunications and Clearings Institute (KFTC)

Responsible for the cheque clearing and bank giro operations, the KFTC is a non-profit organisation which was set up on a joint-ownership basis by member banks, including the Bank of Korea, by integrating two former centres, the Korea Clearing and Credit Reporting Centre and the Korea Bank Giro Centre, in June 1986. (It has also been entrusted by the FTNS with the development and operation of shared electronic banking systems such as the shared CD/ATM, IFT and ARS networks – see the next section.)

Following the establishment of a S.W.I.F.T. Access Point (SAP) in March 1992, the KFTC assumed general responsibility for overseeing the transmission of messages and the maintenance of the domestic network on behalf of S.W.I.F.T. It is also charged with the development of standards related to electronic banking.

There are two ways in which a financial institution can participate in the payment systems operated by the KFTC. One is to join all five interbank systems as a General Member or Associate Member. The other is to join one or more individual systems as a Special Member. As of the end of June 1995, there were 17 General Members, 18 Associate Members and three Special Members. Every institution participating in one of the KFTC's payment systems shares in its operational expenses on the basis of the rules defined by the KFTC's General Meeting.

The administrative structure of the KFTC consists of the decision-making function, which includes the General Meeting, the Board of Directors and four operational committees, and the operational function, which includes the headquarters and 49 regional cheque and bill clearing houses. The Governor of the Bank of Korea is, as mentioned above, Chairman of the General Meeting of the KFTC, while the President of the KFTC is Chairman of its Board of Directors. The Assistant Governor of the Bank of Korea with responsibility for payment systems is also a member of the KFTC's Board of Directors.

1.4.2 The Committee for Financial Telecommunication Network System Development (FTNS)

The Bank of Korea has made continuous efforts to promote electronic banking in order to enhance the efficiency of the banking industry and of the nation's payment systems.

For the promotion of electronic banking, the FTNS was established in June 1987 under the Law on the Distribution and Promotion of the Telecommunication Network. The Committee, chaired by the Governor of the Bank of Korea and composed of the heads of 25 domestic financial institutions and supervisory bodies, is empowered to take decisions on matters concerning the FTNS as follows:

- selection of the electronic banking operations to be run by the FTNS;
- drawing-up of a master plan and annual implementation schedules for FTNS projects;
- promulgation of rules and regulations governing the operations of the FTNS.

At present three nationwide network systems are in full operation under the control of the Committee, namely:

- the IFT System;
- the Interbank CD/ATM System; and
- the Automatic Response Service (ARS) System.

The Payment Systems Department of the Bank of Korea supports the work of the Committee, serving as its secretariat. The operation of the FTNS is entrusted to the Korea Financial Telecommunications and Clearings Institute.

2. PAYMENT MEDIA USED BY NON-BANKS

2.1 Cash payments

Currently, the Bank of Korea issues banknotes in three denominations – 1,000, 5,000 and 10,000 won – and coins in six denominations – 1, 5, 10, 50, 100 and 500 won. At the end of 1994, the value of banknotes and coin issued to the public was about 15 trillion won, of which 95% consisted of banknotes. Notably, the 10,000 won denomination accounted for 92% of all banknotes issued in terms of value.

In Korea, cash is widely used owing to its intrinsic convenience for small transactions and Koreans' traditionally strong preference for cash. But from the early 1980s, the use of cash declined following the introduction of new payment instruments including credit cards, bank giro and other electronic payment media. However, the share of cash in M1 has crept up again in recent years, mainly due to the implementation of the real-name system² for financial transactions in 1993, and to the levying of fees by banks for the issue of cheques from March 1993, both of which led Koreans to prefer cash.

² The "real-name system for financial transactions" was implemented under an Emergency Presidential Decree on 12th August 1993. It represented a major step forward in improving the transparency of financial transactions and laid the basis for equitable taxation. Under this system, all financial transactions must be executed using transactors' real names. Every holder of an account at a financial institution has to confirm his or her real name.

Table 1

The share of cash in M1

End of year	1981	1984	1987	1989	1991	1992	1993	1994
Cash/M1 (%)	50.9	45.6	44.0	42.8	36.4	34.9	41.7	40.4

In July 1988, a shared CD/ATM network was brought into operation. It allows customers to withdraw money from their accounts and transfer funds at any bank.

2.2 Non-cash payments

In Korea, non-cash payment instruments include cheques, bills, bank giro transactions, funds transfers over the IFT System, the Interbank CD/ATM System and BOK-Wire, and credit cards. The transfer of funds using these payment instruments requires transaction accounts such as demand accounts and savings accounts or current accounts held with the central bank in the case of BOK-Wire.

The most popular payment instruments among non-cash payment media include cheques, bills and paper-based bank giro credit transfers. Cashier's cheques, in particular, are widely used because of their close substitutability for cash. In the 1990s, the volume of non-paper-based payments has greatly increased as a result of the growing automation of financial institutions and developments in information technology.

2.2.1 Cheques and bills

Cheques and bills are the most popular payment instruments after cash. The total value of cheques and bills continues to increase in line with the expansion of the economy. In 1994, payments by cheques and bills cleared through nationwide clearing houses totalled 5,782 trillion won by value and 899 million by volume, which represented 96% of all retail payments by value and 56% by volume.

While two kinds of bill, namely promissory notes and bills of exchange, are used mainly for payments by corporations, various types of cheque are in use, including cashier's cheques, current account cheques, government cheques³ and household cheques.⁴ In Korea, cashier's cheques are used like cash, partly because they can be cashed instantly, deposited or remitted at any bank, and partly because the highest-denomination banknote is the 10,000 won note, worth only about US\$ 12.

There are four types of preset-value cashier's cheque in use in Korea as well as those on which the amount payable is entered by the drawer. Among them, the 1,000,000 won and 100,000 won cheques are very popular. In 1994, cashier's cheques accounted for 24% of all bills and cheques cleared by value and 94% by volume.

³ Government cheques are drawn on the Bank of Korea for the discharge of the Government's debts to creditors.

⁴ There are two kinds of chequing account in Korea: chequing deposits and household chequing deposits. Household chequing deposits, which were introduced in 1977 to foster the use of the banking system by the general public, allow individuals with good creditworthiness access to chequing account facilities. Account holders may issue household cheques (very similar to personal cheques) subject to a ceiling. Chequing deposits are deposits against which depositors can draw current account cheques without presenting a passbook. Interest is not paid on them, and they are held mostly by business enterprises.

2.2.2 Funds transfer

Funds transfer is a system whereby funds are transferred to the payee from the payer's account without any exchange of cash, bills or cheques. Funds transfers include credit transfers, in which funds are transferred on the order of the payer, and direct debits, in which funds are transferred on the order of the payee. In Korea, funds transfers are executed through the Bank Giro System (for paper-based credit transfers, electronic direct debits and automated credit transfers), the IFT System, the Interbank CD/ATM System and the ARS System. In addition, the EFTPOS system and the Cash Management Service (CMS) System were brought into operation in February and June 1996 respectively.

In 1994, electronic funds transfers through the Bank Giro System, the IFT System and the Interbank CD/ATM System totalled 206 trillion won by value and 284 million by number of transactions. Although their use is increasing rapidly, electronic funds transfers still account for rather a small share of total transfers compared with the amount of cheques and bills cleared.

2.2.3 Cards

(a) Cash cards

Cash cards are issued by banks to customers holding demand or similar accounts. Cash card services include the withdrawal of cash and interbank funds transfers using the CD/ATM network. As of the end of 1994, banks had issued 20 million cash cards, most of which also had credit card functions.

(b) Credit cards

Credit cards, which were first introduced in 1969, are one of the most widely used payment media in Korea. As of the end of 1994, issuers consisted of four bank-affiliated credit card companies and four specialised credit card companies. Most credit cards can be used abroad through affiliation with VISA International and MasterCard International. At the end of 1994, 20 million credit cards had been issued by bank-affiliated credit card companies.

(c) Prepaid cards

The shared prepaid card network was brought into operation in September 1994. There are six preset-value cards provided by banks and credit card companies, which are mainly used at filling stations, department stores and some other retail shops. So far, the cards have not proved very popular, but there are plans to extend the number of retail outlets.

(d) Debit cards

Debit cards, which allow holders to purchase goods and services in affiliated retailers' shops, were introduced at the beginning of February 1996. EFTPOS (Electronic Funds Transfer at the Point of Sale) is a network system that connects retail terminals to the computers of the 31 member banks. Payment is automatically transferred from the cardholder's bank account to the retailer's bank account.

2.2.4 On-line corporate banking and home banking

In Korea, on-line corporate-banking and home-banking services were introduced in the early 1990s in response to rapid advances in information and telecommunication technologies and the diversification of customers' financial needs. These services are provided through the telecommunication networks linking firms or homes and banks using host computers, personal computers, telephones, facsimile machines and terminals.

On-line corporate-banking services cover financial and accounting information services, funds transfer services, cash management services, and financial and economic information services (which provide firms with information concerning financial markets, foreign exchange and securities markets). Home-banking services enable customers to make enquiries about transactions and account balances, to receive detailed statements on deposits and withdrawals and to initiate funds transfers at home.

At present, however, on-line corporate-banking and home-banking services have not yet become established as a common means of making payments in Korea. As of the end of 1994, on-line corporate-banking and home-banking services were provided by 23 and 18 banks respectively, to 15,000 corporations and 160,000 individual customers.

2.2.5 The Automatic Response Service (ARS) System

Using the Automatic Response Service, a customer can obtain certain information by telephone or personal computer. When the customer's telephone or personal computer is connected to the computers of a financial institution through the switching computer of the KFTC using the ARS, the appropriate information in the bank's records can be located and relayed automatically to the customer.

First introduced as a telephone-only service in the Seoul area in April 1989, the ARS had been extended to customers with personal computers or facsimile machines by the end of 1991 and to ten cities by April 1993. As of the end of 1994, 31 banks and four credit card companies participated in this system.

The service enables customers to make enquiries about their deposit balances, obtain details of their credit card payments or of transactions executed through their account without the use of a passbook (e.g. direct debits), and access information on the exchange rates of major currencies and various other financial services. Customers may also make use of the ARS to transfer funds between accounts within the same bank. In addition, the ARS handles the verification of cashier's cheques against a list of those reported stolen or lost.

The ARS will also provide the basic environment for developing another financial information network that will include home-banking, on-line corporate-banking, EFTPOS and other services.

2.3 Recent developments

2.3.1 IC cards

So far, bank cards in Korea have been in the form of magnetic stripe cards, apart from those IC (integrated circuit) cards issued by a few banks to their customers for electronic purse services. Compared with magnetic stripe cards, IC cards have a greatly enhanced range of functions including a write, delete and rewrite function supported by a central processing unit. They also have a large memory capacity. Recently, common standards for IC cards were established by the KFTC, banks and related business circles in order to enable a common IC card network to be introduced. Korean IC card standards are based on international standards.

2.3.2 Electronic data interchange (EDI)

In Korea, EDI was originally developed so that trade-related documents, such as purchase orders and invoices, could be exchanged electronically between companies. Subsequently, from the late 1980s, financial EDI was provided by some banks so that payment-related information could be exchanged between banks and companies via the computerised telecommunication network.

In 1994, 33 banks provided financial EDI services to corporations and about 15,000 companies were registered as financial EDI users. Financial EDI services are not yet provided in a standard format by banks, but the KFTC, together with the banks, is currently working on establishing such a format.

2.3.3 The Cash Management Service (CMS) System

The Committee for Financial Telecommunication Network System Development (FTNS) has entrusted the KFTC with the development and operation of the shared CMS System. The shared CMS System was launched in Korea in August 1996. The types of service it provides are large-volume funds transfers and multibank reports. The multibank report service is a comprehensive service that enables companies with accounts at more than one bank to access data concerning credit transfers, detailed statements on debits and credits, and account balances.

3. INTERBANK EXCHANGE AND SETTLEMENT CIRCUITS

3.1 General overview

There are five interbank funds transfer systems in Korea: the Cheque Clearing System; the Bank Giro System; the IFT System; the Interbank CD/ATM System; and the Bank of Korea Financial Wire Network (BOK-Wire).

BOK-Wire, operated by the Bank of Korea, is a real-time gross settlement (RTGS) system, while the other four systems, operated by the KFTC, are multilateral net settlement systems where net positions are settled by debiting or crediting financial institutions' current accounts with the central bank at designated times on the next business day.

The Cheque Clearing System provides local clearing services for paper debit items such as bills and cheques which are exchanged between banks located within the same economic region (such as a city or large town). Most domestic and foreign financial institutions participate in the system directly or indirectly. The establishment of a clearing house requires the authorisation of the Minister of Justice under the Bills Act and the Cheques Act.

The Bank Giro System is operated by the KFTC both as a paper-based credit transfer system and as an electronic funds transfer system. It is used in particular for recurring transactions between a payer and a payee.

The IFT System allows a bank to remit funds instantly on behalf of its customers to an account held at any other bank using the interlinked computer network of the KFTC and participant banks. The volume and value of transactions through this system are increasing dramatically due to its convenience and speed.

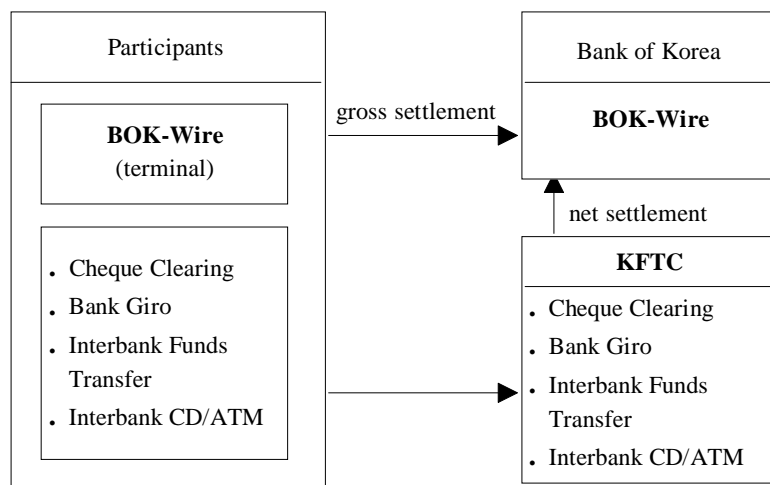
The Interbank CD/ATM System provides customers with services such as cash withdrawal and funds transfer through cash dispensers and automated teller machines at any bank. To give the public easier access, CDs/ATMs are increasingly being installed in public places as well as on bank premises.

BOK-Wire is an on-line network which interconnects financial institutions, including the central bank. Through BOK-Wire, large-value funds transfers between these institutions are executed

electronically and settled on a gross basis across their current accounts with the Bank of Korea. BOK-Wire, which was brought into operation in December 1994, should reduce settlement risk by providing significantly earlier finality.

Chart 1

Interbank payment systems in Korea



3.2 Structure, operation and administration of major interbank systems

3.2.1 The Cheque Clearing System

The Cheque Clearing, operated by the KFTC, is a system under which financial institutions within a certain area assemble at a clearing house and exchange bills, cheques and other payment documents. The Seoul Clearing House was the first in Korea, having been established in 1910. At the end of 1995, there were 50 clearing houses in Korea.

(a) Rules and participants

Each clearing house sets and maintains its own rules, but the rules are very similar except as regards opening and closing times.

Major banks, comprising 15 nationwide banks, ten local banks, five specialised banks and the Bank of Korea, participate directly in the Cheque Clearing System, while other, small financial institutions do so indirectly through direct participants. As of the end of 1994, the Seoul Clearing House was the largest of Korea's clearing houses, with 36 directly participating financial institutions (33 domestic banks (including the central bank), two foreign banks and the Post Office) and 190 indirectly participating financial institutions (such as other foreign banks).

(b) Operation of the system

When a participating bank receives bills and cheques issued by other banks, it sends them to the local clearing house for overnight clearing. More than 90% of the total number of bills and cheques are automatically read and sorted by reader-sorter machines.

Bills and cheques sorted by each bank using a reader-sorter may be sent to the local clearing house until 01:00 on the morning of the settlement day, whereas those of a bank without a reader-sorter have to reach the clearing house by 19:00 on the evening of the previous day to be sorted by the clearing house instead of the bank. Any bills and cheques that are not eligible for automatic sorting are set aside and exchanged manually in the clearing house during the night.

The drawer's bank should notify the payee's bank of bills and cheques which are expected to remain unsettled (e.g. because the necessary funds are not available) by 14:30 on the settlement day, and the payee's bank begins to make payment on all bills and cheques except notified items from 14:50. Notified items are dishonoured if sufficient funds to cover them are not deposited in the drawer's account by 16:30.

A proposal for electronic cheque truncation is currently under study by the Bank of Korea in order to reduce the burden of physical delivery of cheques and bills.

(c) Settlement procedure

The final stage of the daily clearing is when the clearing house requests the Bank of Korea to adjust the current accounts held by participating banks at 15:00 (13:00 on Saturdays) on the next business day.

In the event that a bank with a net debit position should fail to meet its obligation to pay, the positions would be unwound by eliminating all bills and cheques received by the defaulting bank.

(d) Sanctions against payers whose bills and cheques are dishonoured

The KFTC requires that participants apply sanctions which halt all current account transactions by drawers who have failed to honour bills and cheques that have been legally presented (e.g. due to insufficient funds). An individual or legal entity who is the subject of such sanctions cannot normally undertake current account transactions with any bank participant for two years thereafter. However, he can resume transactions if his credit is restored through the payment of all outstanding bills and cheques or if there are other good reasons for allowing him to do so.

(e) Interregional clearing

Mutual clearing between neighbouring clearing houses has been carried out since March 1977, and seven major cities, including Seoul, act as a regional centre in mutual clearing arrangements. This mutual clearing, which is based on agreements between neighbouring clearing houses, permits more rapid settlement of bills and cheques than the time-consuming collection method by which bills and cheques are exchanged directly between distant branches.

3.2.2 The Bank Giro System

The Bank Giro, which was introduced in February 1977, is a system whereby payments of various kinds are safely and conveniently executed by direct transfers of funds between bank demand accounts rather than through the exchange of cash or cheques. This allows the use of all bank branches as paying or receiving windows, while preventing the loss or misappropriation of funds sometimes associated with the direct payment of cash. Utilisation fees are relatively low compared with those for other means of remittance.

Currently, the KFTC maintains and operates the Giro Processing Centre on its premises for the 33 participating banks.

The daily volume of transactions during 1994 reached 1.4 million, of which paper-based credit transfers and electronic giro transfers accounted for 67% and 33% respectively. However, the use of the electronic giro services has been increasing dramatically in recent years.

(a) Rules

The operation of the Bank Giro System is governed by the KFTC's rules, which are formulated by the Board of Directors and the Giro Committee of the KFTC, the latter being made up of delegates of the participants. The Bank of Korea, being represented on the Board of Directors, takes part in the revision of the rules.

(b) Participants

As of the end of 1994, 32 domestic financial institutions and one foreign bank participated in the system. The users comprise about 23,000 entities (such as companies and government agencies) and this number is expected to increase continuously. In order to use the Bank Giro service, permission has to be obtained from the KFTC.

(c) Services provided

The Bank Giro System consists of a paper-based credit transfer system and an electronic funds transfer system.

In the paper-based credit transfer system, banks receive giro documents in respect of bill payments from customers all over the country to the order of a payee. These giro documents are then transmitted to the KFTC for processing. After processing, the KFTC informs the payee's bank of the sum to be credited to his account and sends the payee receipt details and a credit advice note. This scheme is used to receive instalment sales payments, insurance premiums, membership fees, local government tax and so on. At present, the Bank of Korea is studying the substitution of paper-based credit transfers by electronic-based credit transfers, which would be very similar to cheque truncation.

Giro transactions using electronic methods are direct debits, direct credit transfers and standing orders.

Direct debits allow recipients of large numbers of payments, such as public utilities, insurance companies and credit card companies, to collect them automatically from a bank account after the account holder has authorised his bank to pay either a regular fixed sum or a variable amount.

Direct credit transfers are used for making payments to a large number of recipients, such as those on a company's payroll. Payers such as major corporations and government agencies are able to credit individual employees' bank deposit accounts simultaneously using this type of transfer.

Standing orders are used to enable regular payments such as the principal and interest on borrowings and instalment savings deposits to be transferred automatically from the customer's account to another bank.

(d) Operation of the system

After the KFTC has processed giro transactions, it supplies the document details on magnetic tape or floppy disk to the payee's bank, while the payment details are also delivered to the payee directly. The detailed procedure is set out below.

Paper-based credit transfers are initiated when a bill is paid with a giro document by a customer. The bank remits the giro document to the KFTC by post or by cheque-clearing transport on the same day. The KFTC then classifies the documents by giro number, calculates the total amount due and makes a payment order to each payee's bank. In the case of an OCR giro document, the KFTC then sends the documents with receipt details to the respective payees on magnetic tape, while in the case of an MICR or any other giro document, the KFTC sends the magnetic tape together with the paper document.

Currently, there are two processing centres for paper-based credit transfers, at Seoul and Pusan. The Seoul main office handles nationwide giro transactions from 73 cities, while the Pusan office is responsible only for sorting and collecting the giro documents received from its own region.

Direct debits start when the KFTC receives a debit notice in the form of a magnetic tape or floppy disk from the receiving institution at least three days before the due date. The debit notices are classified and grouped according to paying bank, and debit orders are sent to the banks by the KFTC. Provided sufficient funds are available, the bank debits the amount to be paid from the appropriate deposit account on the due date and notifies the KFTC accordingly. The amount is credited to the recipient's bank account in accordance with the debit details.

Direct credit transfers start when the KFTC receives the payment details on magnetic tape or floppy disk at least three days before the due date. It classifies them according to receiving bank and draws up the credit details for each recipient, which are sent to the banks' head offices. Each bank then credits the funds to the accounts of the respective payees electronically.

A standing order transaction is initiated when the funds are debited automatically from a payer's account one day before the due date, and the payer's bank transmits the relevant data to the KFTC by file transfer. The KFTC classifies the data by receiving bank and transmits them to the banks concerned before the start of business on the due date. The funds are credited to the payee's account on the same day.

(e) Settlement procedure

Paper-based credit transfers take two or three days from presentation of the funds transfer instruction by the payer until the funds are credited to the payee's account. Direct debits and direct credit transfers require three working days before the payee can withdraw the funds. Standing orders are executed for next-day value. The payee can withdraw funds as soon as they are credited to his bank account, but interbank net settlement is finalised at 11:30 that day through the current accounts held with the central bank.

Data on the net settlement positions are sent by the KFTC to the Bank of Korea through BOK-Wire and to participant banks via the computerised telecommunication network.

(f) Pricing policies

The fees for bank giro services are set by the Board of Directors of the KFTC and levied by the banks on their corporate customers (individual customers are not charged fees). They range from 50 to 100 won for paper-based credit transfers, and from 30 to 50 won for direct debits. The fees for direct credit transfers and standing orders have already been deregulated and the rest will also be deregulated in the near future.

3.2.3 The Interbank Funds Transfer (IFT) System

The IFT System, which began operations in December 1989, is an electronic funds transfer system that allows nationwide remittances to an account held at any branch of a participant bank on a real-time basis by interconnecting banks' computers through the KFTC's switching computer. A customer can use any bank, whether or not he holds an account with it, for the transfer of funds to a payee holding an account at any bank. The remitting bank makes a funds transfer to the payee's account in real time through the IFT System network.

The volume and value of transactions carried by this system totalled 89 million and 173 trillion won respectively in 1994.

(a) Rules

The rules for the operation of the IFT System are established and revised by the Board of Directors of the KFTC. Technical matters concerning its operation are decided upon after consultation with the Board by the Electronic Banking Committee of the KFTC. The Bank of Korea, one of whose Assistant Governors sits on the Board of Directors, is involved in the establishment and revision of the rules. The rules provide for such matters as participants' obligations, the data-processing procedures and the settlement of balances.

(b) Participants

As of the end of 1994, 32 domestic financial institutions and one foreign bank took part in the IFT System, for which the KFTC acts as the relaying centre.

(c) Services provided

This system handles funds transfers and cashier's cheque enquiries. The funds transfer service can be used up to a ceiling on remittances of 50 million won (US\$ 62,000) per transaction.

Cashier's cheque enquiry is a service whereby the enquiring bank is able to provide its customers with information on the status (issued or unissued, honoured or dishonoured, etc.) of cashier's cheques, after making enquiries at the issuing bank through the IFT System.

(d) Operation of the system

A funds transfer is initiated by a payer's request to his bank in the form of a remittance slip or through the telecommunication network. A payment instruction is sent to the KFTC, which in turn transmits the instruction to the payee's bank. Upon receiving the instruction, the payee's bank credits the payee's account.

Under this system, the payment instruction is, in principle, irrevocable, although a transaction conducted in error by a sending bank may be revoked within that day.

The IFT System is available between 09:30 and 16:30 (13:30 on Saturdays), which corresponds to banking hours.

(e) Settlement procedure

A payee can withdraw funds once they have been credited to his bank account, but settlement between the banks involved is finalised by debiting and crediting their accounts with the central bank at 11:30 on the next business day through BOK-Wire. The KFTC calculates the multilateral net positions of participant banks and transmits the details on-line in tabulated form to the Bank of Korea and the individual banks.

(f) Pricing policies

Fees for use of the shared banking network have been deregulated and participant banks charge their customers at their discretion on the basis of the remittance amount and the location of the payee. However, no fees are received by the payee's bank (i.e. the entire fee collected from the remitter is retained by the remitting bank).

3.2.4 The Interbank CD/ATM System

In Korea, cash dispensers have been installed by individual banks since 1975 and automated teller machines (ATMs) since 1984. The Interbank CD/ATM System was launched in July 1988 in order to permit joint use of the computer resources of all banks. Customers can use the cash dispensers and ATMs of any bank to make cash withdrawals or funds transfers. Since October 1993, the operation of cash dispensers and ATMs installed in "cash corners" (unmanned automated centres) and public places other than bank premises has been allowed between 08:00 and 22:00, seven days a week.

In 1994, the volume and value of transactions processed by the system, apart from balance enquiries, totalled 61 million and 16 trillion won.

(a) Rules

The CD/ATM network is operated according to the rules of the KFTC, which are established and revised by its Board of Directors. The role of the central bank and the Electronic Banking Committee of the KFTC with regard to this system are the same as in the case of the IFT System.

(b) Participants

As of the end of 1994, 31 domestic financial institutions participated in the Interbank CD/ATM System.

(c) Services provided

This system handles cash withdrawals, balance enquiries, cash advance services using credit cards, and funds transfers. Cash advance services using credit cards began in September 1993, and funds transfers were added to the range of services in February 1994. Funds may also be withdrawn in the form of cashier's cheques, but only through the cash dispensers and ATMs of the account holder's bank.

(d) Operation of the system

When a customer holding a cash card uses a cash dispenser or ATM, a message is transmitted electronically to the issuing bank through the KFTC's switching computer. The issuing bank, after verifying the payment instruction, sends a message to the customer via the KFTC, enabling the customer to complete the transaction.

(e) Settlement procedure

Interbank funds settlement in this system is completed on a net basis at 11:30 on the next business day by debiting and crediting the individual banks' central bank accounts through BOK-Wire. The KFTC calculates the multilateral net positions of participating banks and transmits the details on-line in tabulated form to the Bank of Korea and the individual banks.

(f) Pricing policies

No fees are charged when a customer uses the cash dispensers and ATMs of the bank that issued his card. However, a fixed fee is levied for the use of the cash dispensers and ATMs of other banks and this is automatically debited from the customer's account when he conducts the transaction. The fees are currently set by individual banks in line with the deregulation of charges for use of the

shared banking network. The fees are divided between the fee-collecting bank and the bank whose cash dispensers and ATMs were used on the basis of a fixed ratio decided by the Board of Directors of the KFTC.

As of the end of 1994, the fee for a cash withdrawal was around 300 won; fees for funds transfers are increasingly being charged according to the amount involved.

3.2.5 The Bank of Korea Financial Wire Network (BOK-Wire)

BOK-Wire is an on-line network that was brought into operation in December 1994 for large-value transactions between financial institutions, including the central bank itself. Through BOK-Wire, which is a real-time gross settlement system, funds are transferred electronically and settled across the current accounts held with the Bank of Korea.

(a) Rules

A financial institution that holds a current account with the Bank of Korea is eligible to participate subject to the Bank's approval. The Monetary Board of the Bank, whose prime functions are the formulation of monetary and credit policies and the supervision of the activities of banking institutions, issued the Regulation for the Operation of BOK-Wire. Under powers delegated by the Regulation, the Bank's Governor formulates detailed regulations concerning various aspects of the operation of BOK-Wire.

(b) Participants

The participants in the system are banks, including most foreign bank branches, and non-bank financial institutions such as securities companies, insurance companies, and investment and finance companies which act as money brokers. As of end-June 1995, the number of participants was 138, of which 85 were banks and 53 were non-bank financial institutions.

(c) Types of function provided

BOK-Wire is composed of six subsystems arranged according to function: a domestic currency funds transfer system; a foreign currency funds transfer system; a government and public bonds transaction system; a Bank of Korea loans and discounts system; a Treasury funds transfer system; and a monetary and financial information system.

The *Domestic Currency Funds Transfer System* executes funds transfers between participants and between head offices and main local branches (in-house funds transfers) for various purposes using each institution's current accounts with the Bank of Korea. (The main local branches have separate current accounts at the Bank's local branches.) The Domestic Currency Funds Transfer System also deals with the settlement of call transactions⁵ between participants, the settlement of positions resulting from the Cheque Clearing, Bank Giro and IFT Systems, and large-value third-party funds transfers.

The system provides a queuing mechanism whereby a funds transfer message with insufficient covering funds is held pending in the queue file until sufficient funds are available.

As from 1997, the system will execute the net settlement of domestic currency amounts resulting from interbank foreign exchange transactions (Korean won/US dollar transactions). The settlement of Korean won/US dollar trades is currently executed on a gross basis, as a result of which participants bear the burden of maintaining sufficient covering balances. Meanwhile, uncovered payment orders are increasingly held pending by the queuing mechanism until sufficient funds have accumulated. To alleviate the problem of queued payment orders and facilitate the settlement in

⁵ For details, see Section 3.2.5(g) below.

Korean won of foreign exchange transactions, the net settlement of multilateral positions in Korean won will be added to the system. The netting of obligations between participants and the settlement of net balances are carried out through BOK-Wire.

The *Foreign Currency Funds Transfer System* carries out foreign currency funds transfers between participants and between head offices and branches using the banks' foreign currency (US dollar) accounts with the Bank of Korea. It also deals with foreign currency deposits and withdrawals by participants.

The *Government and Public Bonds System* handles the issuance, registration, transfer, repurchase and redemption of government bonds and the Bank of Korea's Monetary Stabilisation Bonds. Payments in respect of bond transactions which use a book-entry method are made on a delivery-versus-payment (DVP) basis to avoid settlement risk.

The *Bank of Korea Loans and Discounts System* executes file transfers and settlements related to the Bank's loans and discounts to banks. In addition to the on-line funds transfer function for loans and discounts and their repayment, the system can automatically screen the eligibility of each bank's loan application documents using its file transfer processing function. A participating bank can report through the network its total volume of loans and discounts, which is used as the basis for the credit line provided by the Bank. Banks can also register various kinds of relevant information on firms in connection with the Bank's loans and discounts.

The *Treasury Funds Transfer System* carries out file transfers and settlements related to the Bank's disbursement and receipt of Treasury funds⁶ via the Treasury agencies, which are the head offices and designated branches of banking institutions. The Treasury funds to be disbursed to or received by a Treasury agency using its current account with the Bank are, in principle, settled at a designated time.

The *Monetary and Financial Information System* gathers information about money supply, bank deposits, foreign exchange positions, required reserves and so on from participating banks.

Firms and individuals can make use of BOK-Wire for large-value (minimum 1 billion won, equivalent to about US\$ 1.2 million) transfers by means of a third-party transfer.

Although a funds transfer to other participants should take the form of a payer-initiated credit transfer, the head office of each participant is also allowed to make payee-initiated debit transfers from the accounts of its branches. This permits efficient centralised funds management.

(d) *Operating hours*

BOK-Wire operates 24 hours a day. It deals with on-line business such as funds transfers and settlements relating to Korean government bond transactions during banking hours (Monday to Friday, 09:30 to 16:30; Saturday, 09:30 to 13:30) and handles file transfers in connection with central bank loans and discounts and Treasury funds transactions outside banking hours. Several designated-time transactions are used mainly for the settlement of positions resulting from the net settlement systems, call-money repayments and funds transfers in respect of Treasury transactions.

⁶ The Bank of Korea handles the receipt and disbursement of Treasury funds, the main part of which consists of government revenues and expenditures, as the official depository of the Government. All government revenues are concentrated daily in the Bank's government account, and payments are made with government cheques drawn on the Bank of Korea.

Table 2
Designated times for settlement through BOK-Wire

		Monday - Friday	Saturday
Net settlements	Cheque Clearing	15:00	13:00
	CD/ATM, Giro, IFT, EFTPOS, CMS	11:30	11:30
	Foreign exchange transactions	16:00	-
Treasury funds transactions	Receipt	15:00	13:00
	Disbursement	15:00	13:00
Call-money borrowings	Morning half-day call	11:30	11:30
	Afternoon half-day call	15:00	13:00
Call-money repayments	Morning half-day call	13:00	13:30
	Afternoon half-day call	16:30	13:30
	One-day or longer-period call	15:00	13:00

(e) Settlement procedure

Once funds transfers are settled using BOK-Wire they are irrevocable and unconditional. If a payment is made in error, the sender therefore has to ask the recipient to carry out an offsetting transaction.

If funds are not available, payments are queued. Queued payments are executed on a FIFO ("first in, first out") basis. Queued payments can be revoked and re-ordered by the paying bank. The queuing mechanism does not allow a bank sending funds the option of assigning priority to a particular payment order. A payee bank can access details of incoming payment orders that are waiting in the paying bank's queue.

(f) Pricing policies

Participants pay the Bank of Korea a flat charge per transaction for certain types of service: 220 won for an ordinary funds transfer or government bond registration and 440 won for cancellation of a pending transaction. For a third-party funds transfer, the Bank charges 330 won per transaction to the participant banks, which set the handling fees for their customers individually.

(g) Credit and liquidity risks and their management

The Bank of Korea does not provide banks with intraday overdrafts. Adequate funds are typically available owing to banks' relatively high required reserve ratios. However, the Bank of Korea has put in place risk reduction measures, including the designated-time mechanism, a half-day call transaction system and an advance funds transfer arrangement.

Half-day call transactions between participating banks can be used to meet intraday funds shortages at designated times during either the morning or the afternoon. The half-day call transaction system was introduced so that participating banks facing an intraday funds shortage or unexpected liquidity risk caused by a mismatch of funds in the net settlement systems (such as the Cheque

Clearing, CD/ATM and Bank Giro Systems) at designated times can obtain adequate settlement funds easily through interbank call transactions.

Morning half-day call money is automatically transferred from the lending bank's account with the Bank to the borrowing bank's account at the designated time of 11:30, when interbank net settlement of positions resulting from the Bank Giro, CD/ATM and IFT Systems is executed. It should be automatically repaid by transfer from the borrower's account to the lender's account at 13:00. In a similar process, afternoon half-day call money is obtained by the borrowing bank at the designated time of 15:00, when obligations arising from the cheque clearing are settled on a net basis, and it is automatically repaid to the lending bank at 16:30.

An advance funds transfer arrangement was introduced so that a participant bank anticipating a net debit position in the cheque clearing can arrange the transfer of the necessary funds in advance with its branches or with other banks anticipating a net credit position to obtain sufficient funds to settle at the designated time of 15:00.

Both the half-day call transaction system and the advance funds transfer arrangement enable banks facing a temporary liquidity shortage to obtain the funds necessary for net settlement at designated times. As a result, they help prevent a bank's failure to make net settlement and the attendant systemic risk.

(h) Transaction-processing environment

The architecture of BOK-Wire, which is based on a V-shaped configuration, consists of two host computers located at the BOK-Wire Centre of the Bank of Korea, one of which is for the purpose of contingency backup, and a host computer located at each of the 32 participants. Each participant also has terminals connected to the front-end processor of the main BOK-Wire computer. The host computers of the 32 participating banks are used for file transfers as mentioned above, while the terminals are for on-line funds transfer processing.

In order to prevent network problems, dedicated leased lines are used as the telecommunication lines for the whole network, except where the use of a public switched telephone network (PSTN) line is unavoidable. Most items of peripheral equipment are duplicated.

4. SPECIAL USE OF INTERBANK TRANSFER SYSTEMS FOR INTERNATIONAL AND DOMESTIC TRANSACTIONS

4.1 Exchange and settlement systems for international transactions

In Korea, as of the end of 1995, there were 52 foreign banks operating 72 branches, while 23 domestic banks had 83 branches abroad. The international transfer of both small and large-value payments is effected primarily through correspondent banking relationships. With regard to retail transactions, there are several means by which cross-border transactions can be carried out by private individuals, for example credit cards, bankers' drafts and travellers' cheques.

Settlement of credit card transactions by overseas travellers is executed through correspondent banks and the related messages are transmitted through the networks of international credit card firms such as VISA and MasterCard. Total payments made by overseas travellers using credit cards in 1994 amounted to 531 billion won. Foreign credit card holders may withdraw cash from domestic cash dispensers and ATMs; however, debit cards issued abroad may not be used in settlement of domestic purchases.

Most large-value international payments, including interbank funds transfers related to foreign exchange transactions, securities transactions and trade-related business, are transmitted by Korean banks through S.W.I.F.T. Most domestic banks participate in S.W.I.F.T. as members (33

banks, including the central bank and two merchant banks), while 35 foreign bank branches are sub-members.

4.2 Exchange and settlement systems for securities transactions

4.2.1 General overview

Stocks, debentures of financial institutions and non-financial companies and government bonds are among the securities most heavily traded in the Korean securities market. The trading volume of stocks made up about 60% of that of all securities in 1994. Among bonds, the trading volume of non-financial companies' corporate bonds accounted for around 54% of total bond trading volume over the same period.

Stocks are traded by securities companies on the floor of the Korea Stock Exchange or on the over-the-counter market. Other institutional investors such as banks, insurance companies and investment trust companies participate in the markets indirectly through transactions with securities companies. Stocks are traded mainly on the trading floor whereas bonds are traded chiefly on the OTC market.

The Korea Stock Exchange (KSE), which remains the only securities exchange in Korea, was established in February 1956. It provides a market for securities trading, maintains a fair and orderly market, regulates and supervises member firms and lists and administers securities.

The Korea Securities Depository Corporation (KSD), known as the Korea Securities Settlement Corporation until April 1994, was established in 1974. It functions as the central securities depository, and also provides services such as delivery and settlement of securities, book-entry delivery processing and the safe deposit of securities, receipt and payment of dividends on stock and of principal and interest on bonds, and other clearing-related services. The KSD operates KSD-Net, also called the SAFE system; this connects the KSD with the depositors of securities, mainly securities companies and other institutional investors.

4.2.2 Structure of the securities settlement system

All securities are traded between securities firms on the trading floor or on the OTC market. The clearing and settlement procedures for securities according to the type of trade are as follows.

The KSE stipulates the method, time and other matters related to settlement of the securities traded on the floor (mostly stocks, as mentioned above). All transactions effected on the Exchange are cleared on a net balance basis through the KSD. Securities settlement is executed by book entry in the participants' account books on T+2 on a DVP basis. On receiving clearing data from the KSE, the KSD checks the balance of deposited securities of each participant, receives securities to make up for any shortage, and settles transactions by book entry to the KSE's settlement account. Simultaneously, it carries out settlement by paying funds to the selling securities company after receiving funds from the buying securities company at the bank designated by the KSD. Settlement deadlines are 13:00 on the same day for morning sessions and 16:00 on the same day for afternoon sessions for same-day settlement transactions, and 16:00 (13:00 on Saturdays) on T+2 for other standard transactions.

The Securities and Exchange Law contains several provisions designed to ensure that settlement of transactions on the Exchange is achieved. These include a Joint Compensation Fund, good faith deposit, fidelity guaranty money, and the ultimate responsibility of the KSE for indemnity.

The Institutional Affirmation and Settlement (INAS) system, which is applied to the settlement of Exchange-based trades, has streamlined the securities transactions of institutional

investors, settling them by book entry, providing a trade comparison procedure and further coordinating the many activities leading up to final settlement.

When settling transactions affirmed by institutional investors and not opposed by securities companies, the KSD nets them out on a bilateral basis by issue and nets out funds for each purchase and sale.

On completion, the KSD sends institutional investors a money settlement statement and, if required, a securities shortage statement. Securities settlement is made by book-entry delivery or deposit of the physical securities. Money settlement is executed through the bank designated by the KSD.

Since 1996, the settlement of funds related to the Stock Exchange transactions of institutional investors and the payment of dividends and of principal and interest has been carried out through the participants' current accounts with the central bank via BOK-Wire.

On the OTC market, the majority of stock transactions are executed through KOSDAQ (Korea Securities Dealers Association Automated Quotation) and settlements are processed by the KSD in a similar manner to transactions on the Exchange itself. Most bond transactions are traded directly between buyers and sellers and settled through the KSD on a gross basis.

4.2.3 The BOK-Wire Government and Public Bonds System

Government and public bonds such as Treasury bonds and the Bank of Korea's Monetary Stabilisation Bonds (MSBs) are mostly traded through the BOK-Wire Government and Public Bonds System and settled across the participants' current accounts with the central bank. Through this system, the Bank of Korea provides financial institutions with services such as registration, transfer, redemption and repurchase of government and public bonds.

The issuance of government and public bonds and trading and settlement between BOK-Wire participants are carried out using book registration. Payments associated with these bond transactions are made on a DVP basis. In the case of BOK-Wire participants who have a depository account with the KSD, the registration of bonds is done by "package registration", whereby all the bonds are registered under the name of the KSD in the main registration record and are then re-registered under the names of their ultimate holders in their depository accounts with the KSD.

5. THE ROLE OF THE CENTRAL BANK IN INTERBANK SETTLEMENT SYSTEMS

5.1 General responsibilities

The Bank of Korea issues banknotes and coin and provides financial institutions and government agencies with finality of settlement by executing funds transfers through their current accounts with the Bank.

By participating directly or indirectly in the construction and operation of interbank settlement systems, the Bank seeks to ensure the efficient and secure operation of the payment and settlement systems. It also encourages the development of electronic payment systems in order to handle the growing economic activity and the liberalisation and internationalisation of banking business.

5.2 Provision of settlement facilities

5.2.1 Central bank accounts for payment

The Bank of Korea is the sole provider of settlement facilities with finality, a more detailed account of which is given in Section 1.3.2 above.

Financial institutions eligible to hold and make use of a current account with the central bank are financial institutions as defined in the Bank of Korea Act, government agencies, and financial intermediaries and other legal entities designated by the Monetary Board.

5.2.2 BOK-Wire

The Bank of Korea carries out both interbank gross settlement and interbank multilateral net settlement via BOK-Wire, as explained in greater detail in Section 3.2.5 above.

5.2.3 Relations with net settlement systems

Debit and/or credit positions of participants in the privately managed payment systems are settled on a net basis through central bank accounts in accordance with the messages received from the KFTC. The net positions of participants in the Bank Giro System, the IFT System and the Interbank CD/ATM System are settled at 11:30 and those in the Cheque Clearing System at 15:00 (13:00 on Saturdays).

5.2.4 Role in the settlement of securities transactions

The BOK-Wire Government and Public Bonds System, which handles the issuance, transfer and redemption of government and public bonds, operates on a DVP basis, whereby bonds and the related settlement funds are transferred simultaneously in order to eliminate the settlement risk associated with time-lags.

5.2.5 Provision of credit facilities

The Bank of Korea provides financial institutions with credit through loans and discounts and open market operations. As banks maintain a relatively high ratio of required reserves,⁷ the Bank does not provide daylight overdraft facilities for settlement. Instead, a number of measures to avoid very short-term liquidity difficulties have been introduced, such as half-day call transactions, a designated-time mechanism and a queuing mechanism.

5.2.6 Pricing policies

The Bank of Korea imposes preset service charges for transactions on BOK-Wire, which are calculated so as to recoup some portion of the direct costs involved in setting up and operating the network. The tariff of charges, which are fixed at a comparatively low level, is set out in Section 3.2.5(f) above.

On the other hand, the Bank imposes a relatively high service charge of 2,000 won for funds transfers executed through paper-based or telex orders rather than through BOK-Wire.

⁷ Reserve requirement ratios for time, savings and demand deposits were lowered from 9.4% to 7.4% in April 1996, and further to 5.5% in November 1996.

5.3 Monetary policy and payment systems

5.3.1 Existing relationships

The Bank of Korea makes use of such traditional monetary instruments as loan and rediscount policy, changes in reserve requirements and open market operations to maintain the stability of the value of money, which is its primary purpose.

Transfers of reserve money in accordance with the central bank's monetary policy and transfers of funds between banks are executed via the payment and settlement system, which, as a result, acts as a channel for the transmission of monetary policy. As a change in the payment system can affect the public's practices in the use of money, there is a complementary relationship between the payment system and monetary policy.

5.3.2 Influence of changes in payment systems on monetary policy

Changes in the payment system, especially the use of paperless payment instruments and the development of electronic payment systems, not only affect the pattern of money use and the stock of money held by the private sector, but also accelerate the transmission of monetary and credit policies.

In Korea, the share of cash in M1 began to decline in the early 1980s after the Bank Giro System and in-house on-line systems were brought into operation in the banking sector. This general tendency has been accelerated further since around 1990, when the Interbank CD/ATM System, the IFT System and the ARS System came into full use. The reduction in the share of cash could well increase the creation of deposit money.

The growing use of electronic payment systems and the launch of BOK-Wire enable banks to monitor and manage their liquidity position more quickly and accurately, which may well have a positive effect on their management of the reserves used for interbank settlement.

Furthermore, BOK-Wire makes it possible for the central bank to monitor the flow of funds among financial institutions and acquire information on the situation in the markets through its Monetary and Financial Information System, which has replaced the previous mail and facsimile reporting system. The Bank is now in a better position to ensure the effectiveness of monetary policy and detect the factors that could cause a disturbance in the economy, because the new system helps it shorten the recognition lag in implementing the necessary measures.

5.4 Main projects and policies being implemented

5.4.1 Risk reduction policies

BOK-Wire is a real-time gross settlement system in which no intraday overdrafts are provided by the central bank. Basically, the real-time settlement system does not entail settlement risk. Nevertheless, the failure of a large bank to meet its payment obligations could have knock-on effects on other participants, so the Bank of Korea has introduced a real-time monitoring scheme, a half-day call transaction system, a designated-time mechanism and an advance funds transfer arrangement to prevent settlement risk.

The final settlement of positions in the various multilateral net settlement systems operated by the KFTC is carried out at designated times through BOK-Wire. This procedure, however, involves the risk of potential gridlock owing to insufficient covering balances. In the event of a failure in net settlements, unwinding could be applied, although it is envisaged that this would rarely occur in practice. In order to further reduce the risks associated with net settlement systems, same-day settlement, the introduction of net debit caps, loss-sharing arrangements and collateral requirements are under consideration.

With the rapid developments in information technology and the increasing volume and value of payment and settlement transactions, the integrity of the payment system is a prime focus of attention. In this connection, the Bank of Korea is not only planning to set up a separate backup site for the BOK-Wire system but is also encouraging the KFTC and banks to establish backup facilities for the primary processing elements in critical payment systems.

The FTNS also prepares various contingency measures and programmes, including manuals for emergency recovery, and recommends that individual banks encrypt financial messages to avoid illicit use.

5.4.2 Introduction of a foreign exchange net settlement system

The Bank of Korea is introducing a Foreign Exchange Net Settlement System as part of the BOK-Wire system. The new net settlement system will calculate each participant's multilateral positions in the Korean won equivalent of the foreign exchange amounts transacted between domestic interbank foreign exchange market participants, and settle them at a designated time (16:00) each day. This system will replace the current practice of foreign exchange settlements on a gross basis in 1997.

5.4.3 Measures for the improvement of electronic payment systems

The Bank of Korea is taking the following steps to foster paperless payment and settlement and further develop electronic payment systems so as to enhance the efficiency of the nation's payment system:

- it endeavours to assist the standardisation of computerised banking business, through, for example, the establishment of common basic specifications for IC cards issued by domestic financial institutions and the development of standard file formats for corporate on-line banking business;
- it is playing a leading role in banks' development of the shared Cash Management Service (CMS) System;
- it is planning a feasibility study on the introduction of electronic cheque truncation and electronic information processing for giro credit transfers.

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Table 1
Basic statistical data

	1991	1992	1993	1994	1995
Population (thousands) ¹	43,268	43,663	44,056	44,453	44,851
GDP (nominal; billion won)	215,734.4	240,392.2	267,146.0	305,970.2	351,294.8
GDP per capita (thousand won)	4,986.0	5,505.6	6,063.8	6,883.0	7,832.5
Exchange rate (domestic currency vis-à-vis USD):					
<i>year-end</i>	760.80	788.40	808.10	788.70	774.70
<i>average</i>	733.60	780.84	802.73	803.62	771.04

¹ As at 1st July.

Table 2
Settlement media used by non-banks¹
(in billions of Korean won)

	1991	1992	1993	1994	1995
Notes and coin	7,913.1	8,580.6	12,109.1	13,127.2	15,060.5
Narrow money supply (M1)	21,752.4	24,586.3	29,041.4	32,510.6	38,872.8
Broad money supply					
(M2)	83,745.9	96,258.6	112,219.2	133,178.7	153,945.3
(M3)	244,837.3	298,277.3	354,933.3	442,663.2	527,017.0
Transferable deposits ²	37,619.5	36,519.2	33,239.8	35,064.7	39,699.3
of which held by:					
<i>individuals</i>	17,730.1	16,885.2	17,609.2	18,054.5	21,140.8
<i>corporations</i>	14,448.0	14,338.0	12,070.1	12,418.8	12,751.1
<i>public entities</i>	5,441.4	5,295.9	3,560.5	4,591.4	5,807.4
Postal deposits	1,889.2	2,786.0	3,063.8	4,115.6	4,380.6

¹ Not seasonally adjusted; year-end figures. ² Demand deposits at deposit-money banks.

Table 3
Settlement media used by banks¹
(in billions of Korean won)

	1991	1992	1993	1994	1995
Reserve balances held at central bank ²	6,234.2	6,905.0	7,577.7	8,447.7	9,701.7
<i>of which:</i>					
<i>required reserves</i>	7,249.5	8,038.5	9,009.6	10,203.5	11,809.7
Transferable deposits at other institutions .....	.	.	.	.	.
Banks' borrowing from central bank ³	12,973.1	16,616.9	16,090.5	13,656.5	11,345.8

¹ Not seasonally adjusted. ² Averages of daily figures. ³ Deposit-money banks' borrowing from the Bank of Korea; year-end figures.

Table 4
Banknotes and coin¹
(in billions of Korean won)

	1991	1992	1993	1994	1995
Total banknotes and coin issued	9,102.3	9,807.7	13,883.5	15,088.9	17,323.8
Denomination of banknotes:					
10,000 won	7,728.9	8,323.5	12,249.0	13,271.0	15,324.5
5,000 won	329.6	341.4	360.1	417.6	470.0
1,000 won	516.0	556.1	614.6	673.2	714.9

¹ Not seasonally adjusted; year-end figures.

Table 5
Institutional framework¹

Categories	Number of institutions	Number of branches	Number of transferable accounts (thousands)	Value of transferable accounts (billion won)
Central bank	1	16	1.2	12,070.0
Commercial banks ²	25	2,816	.	28,475.9
Specialised banks ³	5	1,102	.	11,031.5
Branches of foreign banks ⁴	52	71	.	191.9
Post office	1	2,786	313	167

¹ End-1995. ² Including 14 nationwide commercial banks and ten local banks. ³ Including the Industrial Bank of Korea, the Korea Housing Bank, the credit and banking sectors of the National Agricultural Cooperative Federation (NACF), the National Federation of Fisheries Cooperatives (NFFC) and its affiliated local Fisheries Cooperatives and the National Livestock Cooperatives Federation (NLCF). ⁴ Foreign banks with multiple branches in Korea are counted as single institutions.

Table 6
Cash dispensers, ATMs and EFTPOS terminals¹

	1991	1992	1993	1994	1995
Cash dispensers and ATMs:					
Number of networks	1	1	1	1	1
Number of machines	7,191	9,720	12,484	18,192	26,231
Volume of transactions ² (thousands)	22,494	31,502	44,492	83,968	151,050
Value of transactions..... (billion won)	2,843	4,334	6,839	16,371	32,012
EFTPOS: ³					
Number of networks .....	.	.	.	.	.
Number of machines .....	.	.	.	.	.
Volume of transactions (thousands) .....	.	.	.	.	.
Value of transactions (billion won) .....	.	.	.	.	.

¹ Year-end figures. ² Balance enquiries included. ³ The EFTPOS system came into operation in 1996.

Table 7
Number of payment cards in circulation¹
 (in thousands)

	1991	1992	1993	1994	1995
Cards with a cash function ..	9,147	9,336	13,090	19,965	22,668
Cards with a debit/credit function	9,900	12,072	15,168	19,838	24,379
<i>of which:</i>					
<i>cards with a debit function² .....</i>	.	.	.	.	.
<i>cards with a credit function³</i>	9,900	12,072	15,168	19,838	24,379
Cards with a cheque guarantee function .....	.	.	.	.	.
Retailer cards ⁴ .....	.	.	.	116	221

¹ Year-end figures. A card with multiple functions may appear in several categories. Therefore it is not meaningful to add the figures. ² Cards with a debit function are not available in Korea. ³ Bank cards only. ⁴ Data are based on those for prepaid cards (but exclude prepaid cards used for telephones, the subway, etc.).

Table 8
**Payment instructions handled by selected payment systems:
 volume of transactions**
 (in thousands)

	1991	1992	1993	1994	1995
Cheque Clearing System	997,114	1,179,531	838,595	898,621	1,010,470
Bank Giro System	225,754	277,783	336,411	407,218	509,013
Interbank Funds Transfer	21,682	37,211	54,911	88,924	137,716
Interbank CD/ATM System	16,062	23,029	33,312	60,987	105,153
Shared ARS network .....	.	42	54	77	95
BOK-Wire .....	.	.	.	52 ¹	1,103

¹ Figures are for the period 15th-31st December 1994.

Table 9
**Payment instructions handled by selected payment systems:
 value of transactions**
 (in billions of Korean won)

	1991	1992	1993	1994	1995
Cheque Clearing System	6,056,272	5,715,350	5,429,692	5,781,761	6,416,338
Bank Giro System	22,195	28,143	35,216	43,756	47,705
Interbank Funds Transfer	21,848	37,902	69,969	173,392	348,131
Interbank CD/ATM System	2,843	4,334	6,839	16,371	32,012
Shared ARS network .....	.	.	55	210	215
BOK-Wire .....	.	.	.	269,341 ¹	5,407,184

¹ Figures are for the period 15th-31st December 1994.

Table 10
**Transfer instructions handled by securities settlement systems:
 volume of transactions**
 (in thousands)

	1991	1992	1993	1994	1995
Korea Securities Depository ¹ ...	2,279	3,799	5,919	7,064	9,992
BOK-Wire					
<i>Government and Public</i>					
<i>Bonds System</i> .....	.	.	.	0.2 ²	3.9

¹ Transactions through the Korea Securities Depository are settled on a net basis. ² Figures are for the period 15th-31st December 1994.

Table 11
**Transfer instructions handled by securities settlement systems:
 value of transactions**
 (in billions of Korean won)

	1991	1992	1993	1994	1995
Korea Securities Depository ¹ ...	10,258	14,014	22,054	38,070	53,241
BOK-Wire					
<i>Government and Public</i>					
<i>Bonds System</i> .....	.	.	.	6,887 ²	65,499

¹ Transactions through the Korea Securities Depository are settled on a net basis. ² Figures are for the period 15th-31st December 1994.

Table 12

**Indicators of the use of various cashless payment instruments:
volume of transactions**
(in thousands)

Instruments	1991	1992	1993	1994	1995
Bills and cheques cleared	997,114	1,179,531	838,595	898,621	1,010,470
Payments by credit card	69,315	79,267	107,386	151,511	210,157
Paper-based credit transfers					
<i>customer-initiated</i> ¹	169,742	199,245	231,779	272,918	343,707
<i>interbank/large-value</i> .....	.	.	.	.	.
Paperless credit transfers					
<i>customer-initiated</i> ²	42,651	65,561	94,165	156,892	249,819
<i>interbank/large-value</i> .....	.	.	.	52 ³	1,103
Direct debits	51,105	73,259	98,744	127,396	158,451
Total	1,329,927	1,596,863	1,370,669	1,607,390	1,973,707

¹ Paper credit transfers through the Bank Giro System. ² Automated credit transfers and standing orders through the Bank Giro System, the IFT System and the Interbank CD/ATM System and funds transfers through the shared ARS network. ³ Transactions through BOK-Wire between 15th and 31st December 1994.

Table 13

**Indicators of the use of various cashless payment instruments:
value of transactions**
(in billions of Korean won)

Instruments	1991	1992	1993	1994	1995
Bills and cheques cleared	6,056,272	5,715,350	5,429,692	5,781,761	6,416,338
Payments by credit card	11,338	12,951	20,653	31,638	40,670
Paper-based credit transfers					
<i>customer-initiated</i> ¹	14,758	17,764	22,067	26,980	30,642
<i>interbank/large-value</i> .....	.	.	.	.	.
Paperless credit transfers					
<i>customer-initiated</i> ²	29,829	48,275	84,064	199,425	388,555
<i>interbank/large-value</i> .....	.	.	.	269,341 ³	5,407,184
Direct debits	2,298	4,340	5,948	7,324	8,866
Total	6,114,495	5,798,680	5,562,424	6,316,469	12,292,255

¹ Paper credit transfers through the Bank Giro System. ² Automated credit transfers and standing orders through the Bank Giro System, the IFT System and the Interbank CD/ATM System and funds transfers through the shared ARS network. ³ Transactions through BOK-Wire between 15th and 31st December 1994.

Table 14
Participation in S.W.I.F.T. by domestic institutions¹

	1991	1992	1993	1994	1995
Members .....	.	31	33	34	38
<i>of which: live</i> .....	.	27	32	33	37
Sub-members .....	.	31	32	33	36
<i>of which: live</i> .....	.	30	32	33	36
Participants .....	.	0	0	0	1
<i>of which: live</i> .....	.	0	0	0	1
Total users .....	.	62	65	67	75
<i>of which: live</i> .....	.	57	64	66	74
<i>Memorandum items:</i>					
Total S.W.I.F.T.:					
<i>members</i>	1,963	2,074	2,244	2,551	2,845
<i>sub-members</i>	1,607	1,738	1,887	2,097	2,311
<i>participants</i>	78	91	125	218	315
<i>users</i>	3,648	3,903	4,256	4,866	5,471

¹ Korea was connected to S.W.I.F.T. in March 1992.

Table 15
S.W.I.F.T. message flows to/from domestic users¹

	1991	1992	1993	1994	1995
Total messages sent	1,754,727	3,726,506	5,326,434	7,103,434
<i>of which:</i>					
<i>category I</i>	638,379	1,129,332	1,580,883	2,136,849
<i>category II</i>	342,992	746,108	1,003,937	1,280,538
<i>sent to domestic users</i>
Total messages received	2,106,612	3,753,846	4,944,085	6,152,316
<i>of which:</i>					
<i>category I</i>
<i>category II</i>
<i>Memorandum item:</i>					
Global S.W.I.F.T. traffic	365,159,291	405,540,962	457,218,200	518,097,873	603,575,374

¹ Korea was connected to S.W.I.F.T. in March 1992.

Annex 1

COMPARATIVE TABLES

Table 1
Notes and coin in circulation¹

	1991	1992	1993	1994	1995
	USD per inhabitant²				
Korea	240	249	340	374	433
Belgium	1,331	1,239	1,164	1,229	1,391
Canada	646	627	636	637	662
France	863	828	739	807	891
Germany	1,411	1,534	1,511	1,790	2,025
Italy	1,168	1,023	921	1,032	1,082
Japan	2,789	2,739	3,243	3,736	3,873
Netherlands	1,432	1,339	1,267	1,428	1,541
Sweden	1,587	1,207	1,042	1,120	1,312
Switzerland	2,802	2,748	2,638	2,985	3,394
United Kingdom	509	446	455	504	528
United States	1,070	1,167	1,272	1,385	1,443
	as a percentage of GDP				
Korea	3.7	3.6	4.5	4.3	4.3
Belgium	6.2	5.9	6.0	5.2	5.3
Canada	3.1	3.3	3.4	3.4	3.4
France	3.7	3.6	3.5	3.4	3.7
Germany.....	6.0	6.5	6.7	6.8	6.9
Italy	5.4	5.7	5.8	5.9	5.5
Japan	9.4	9.0	9.5	9.7	10.4
Netherlands	6.8	6.5	6.5	6.3	6.0
Sweden	5.3	5.1	5.3	5.0	4.7
Switzerland	8.0	8.0	7.9	7.9	7.7
United Kingdom	2.7	2.9	2.8	2.8	2.8
United States	4.6	4.8	5.0	5.2	5.2
	as a percentage of narrow money³				
Korea	36.4	34.9	41.7	40.4	38.7
Belgium	31.2	31.5	29.6	27.1	27.2
Canada	46.1	47.0	44.0	44.2	42.8
France	15.8	15.9	15.3	15.1	14.0
Germany	28.4	29.9	29.2	29.6	29.1
Italy	14.2	15.7	15.5	16.0	16.3
Japan	33.1	31.2	31.1	30.7	29.2
Netherlands	28.6	27.4	25.1	25.0	22.1
Sweden	11.5	10.8	10.7	10.7	10.5
Switzerland	21.8	21.6	19.7	19.7	18.0
United Kingdom	5.6	4.8	4.5	4.6	4.6
United States	29.5	28.5	28.5	30.7	33.0

¹ For an explanation of the figures see the relevant country tables. ² Year-end figures converted at end-of-year exchange rates. ³ Narrow money: M1, except for Sweden (M3) and the United Kingdom (M2).

Table 2
Transferable deposits held by non-banks¹

	1991	1992	1993	1994	1995
	USD per inhabitant²				
Korea	1,143	1,061	934	1,000	1,143
Belgium	2,929	2,700	2,764	3,307	3,715
Canada	3,728	3,505	3,614	3,511	3,693
France	4,445	4,381	4,080	4,543	5,459
Germany	3,655	3,591	3,761	4,287	4,953
Italy	6,756	5,286	4,863	5,236	5,399
Japan ³	7,001	7,141	8,160	9,424	11,031
Netherlands	3,585	3,561	3,776	4,277	5,433
Sweden	12,450	10,119	8,850	9,811	11,351
Switzerland	5,565	5,601	5,839	6,799	8,359
United Kingdom	8,515	9,357	9,589	10,493	11,073
United States	2,529	2,910	3,182	3,101	2,913
	as a percentage of GDP				
Korea	17.4	15.2	12.4	11.5	11.3
Belgium	13.6	12.8	14.0	14.0	14.0
Canada	18.0	18.5	19.5	18.8	19.1
France	19.9	19.3	19.4	19.2	20.4
Germany	15.6	15.3	16.7	16.3	16.8
Italy	31.0	29.4	30.4	29.8	27.6
Japan ³	26.3	25.0	24.6	25.3	25.1
Netherlands	17.0	17.3	19.4	18.8	21.2
Sweden	41.2	43.0	44.6	42.4	40.6
Switzerland	15.9	16.3	17.4	18.0	19.0
United Kingdom	45.8	60.0	60.0	58.6	59.5
United States	10.8	11.9	12.5	11.7	10.6
	as a percentage of narrow money⁴				
Korea	172.9	148.5	114.5	107.9	102.1
Belgium	68.8	68.5	70.0	72.9	72.8
Canada	266.3	263.0	249.9	243.9	238.7
France	84.2	84.1	84.7	84.9	86.0
Germany	73.7	70.1	72.7	70.8	71.2
Italy	82.2	81.3	81.9	81.4	81.1
Japan ⁵	97.9	91.5	86.5	85.3	82.7
Netherlands	71.4	72.6	74.9	75.0	77.9
Sweden	90.2	90.6	90.6	90.3	90.6
Switzerland	43.7	43.6	43.6	44.9	44.2
United Kingdom	94.4	95.5	95.5	95.4	95.4
United States	69.7	71.1	71.2	68.9	66.6

¹ For an explanation of the figures and a definition of transferable deposits, see the relevant country tables. ² Year-end figures converted at end-of-year exchange rates. ³ End-March figures converted at end-March exchange rates. ⁴ Narrow money: M1, except for Sweden (M3) and the United Kingdom (M2). ⁵ End-March figures.

Table 3
Settlement media used by banks¹
 (1995)

	Banks' reserves at central bank (USD billions)²	Banks' reserves at central bank as a percentage of narrow money³	Transferable deposits at other banks (USD billions)²	Transferable deposits at other banks as a percentage of narrow money³
Korea	12.5	24.9	.	.
Belgium	0.063	0.12	4.4	8.4
Canada	0.3	0.57	.	.
France	1.4	0.39	643.0	175.2
Germany	26.0	4.6	253.9	44.6
Italy	46.6	12.2	40.5	10.6
Japan	31.5	1.9	92.9 ⁴	5.5 ⁵
Netherlands	6.091	5.65	1.9	1.8
Sweden	0.11	0.10	8.0	7.2
Switzerland	4.2	3.1	16.7	12.5
United Kingdom	2.8	0.4	347.4	51.3
United States	29.6	2.6	32.7	2.8

¹ For an explanation of the figures see the relevant country tables. ² Year-end figures converted at end-of-year exchange rates, except for Korea (average of daily figures converted at end-of-year exchange rates). ³ Narrow money: M1, except for Sweden (M3) and the United Kingdom (M2). ⁴ End-March figure converted at end-March exchange rate. ⁵ End-March figure.

Table 4
Institutional framework¹
 (1995)

	Number of institutions	Number of inhabitants per institution	Number of branches	Number of inhabitants per branch	Number of accounts per inhabitant
Korea	84	533,940	6,791	6,604	.
Belgium	146	69,562	9,456	1,074	1.2
Canada ²	2,553	11,633	13,681	2,171	.
France	613	94,290	46,646	1,236	1.1
Germany	3,617	22,615	67,986 ³	1,203	1.0
Italy	972	58,951	38,038	1,506	0.5
Japan	4,929	25,482	72,628	1,729	.
Netherlands	127	121,717	6,501	2,378	1.2
Sweden	109	81,009	3,892	2,269	3.1
Switzerland	384	18,386	7,383	956	.
United Kingdom	565	103,363	36,964	1,580	2.3
United States	23,958	10,978	72,124	3,646	.

¹ For an explanation of the figures see the relevant country tables. ² Deposit-taking institutions only. ³ Including post office branches which are entrusted with the execution of semi-cashless payments for Deutsche Postbank AG.

Table 5
Cash dispensers and ATMs¹

	1991	1992	1993	1994	1995
Number of machines per 1,000,000 inhabitants					
Korea	166	223	283	409	588
Belgium	105	109	119	313	360
Canada	467	510	554	578	595
France	284	305	325	356	395
Germany	171	235	308	361	436 ⁵
Italy	204	245	266	326	378
Japan	795	870	935	978	1,013
Netherlands	222	261	292	325	355
Sweden	258	254	255	259	267
Switzerland	347	387	439	481	532
United Kingdom	314	324	328	342	358
United States	331	342	367	418	467
Number of transactions per inhabitant					
Korea	0.5	0.7	1.0	1.9	3.3
Belgium	8.1	8.8	9.1	11.9	14.2
Canada	33.6	36.0	37.5	41.0	45.9
France	11.0	12.0	13.3	14.2	15.7
Germany .....	.	.	.	11.5	13.4 ⁵
Italy ²	2.9	3.6	4.1	4.6	5.3
Japan	2.2	2.9	3.3	3.6	3.8
Netherlands	13.7	17.3	20.5	23.9	27.5
Sweden	24.1	25.1	28.3	30.7	31.8
Switzerland	6.6	7.4	8.3	9.1	10.3
United Kingdom	18.5	20.2	21.3	22.9	25.2
United States	25.3	28.2	29.8	31.8	36.9
Average value of transactions (USD)³					
Korea	241.3	241.0	255.8	334.0	394.9
Belgium	117.4	113.2	110.3	125.2	137.5
Canada ⁴	56.7	56.7	53.5	51.2	51.3
France	82.7	86.1	77.0	76.5	81.3
Germany .....	.	.	.	157.6	196.6 ⁵
Italy	239.2	245.4	196.8	195.3	194.4
Japan	363.0	359.3	395.4	419.8	450.6
Netherlands	92.2	98.5	96.4	97.9	108.4
Sweden	120.6	128.6	101.2	104.7	112.6
Switzerland	224.6	225.1	207.8	217.8	242.1
United Kingdom	78.2	84.6	72.5	74.6	77.3
United States	67.0	66.9	68.2	67.2	67.7

¹ For an explanation of the figures see the relevant country tables. ² Estimated figures referring to the whole system; they differ from those provided in the statistical annex of the Italian chapter. ³ Converted at yearly average exchange rates. ⁴ Average value of a cash withdrawal only. ⁵ Increase partly due to new data source.

Table 6
EFTPOS terminals¹

	1991	1992	1993	1994	1995
Number of terminals per 1,000,000 inhabitants					
Korea ² .....	.	.	.	.	.
Belgium	3,213	4,034	5,246	6,294	7,174
Canada	472	1,035	2,134	4,086	6,394
France	3,568	5,594	7,435	7,574	9,394
Germany	432	640	344	767	856
Italy	805	1,094	1,350	1,819	2,683
Japan	213	264	168	227	200
Netherlands	268	754	1,606	3,094	4,747
Sweden	1,034	1,647	3,054	5,514	6,160
Switzerland	697	1,022	1,433	2,379	3,499
United Kingdom	3,299	3,806	4,639	5,993	8,647
United States	348	450	759	1,440	2,107
Number of transactions per inhabitant					
Korea ² .....	.	.	.	.	.
Belgium	9.9	12.0	14.2	18.0	20.8
Canada	0.4	1.1	2.6	6.3	13.3
France	18.5	22.7	24.3	26.1	32.9
Germany	0.25	0.35	0.85	1.28	1.83
Italy ³	0.19	0.28	0.39	0.57	0.83
Japan	0.006	0.006	0.005	0.006	0.007
Netherlands	2.1	3.1	4.4	8.2	16.6
Sweden	3.5	5.3	6.5	8.8	10.4
Switzerland	2.0	2.8	4.0	5.7	8.0
United Kingdom .....	.	.	.	.	.
United States	1.0	1.3	1.7	2.4	2.9
Average value of transactions (USD)⁴					
Korea ² .....	.	.	.	.	.
Belgium	57.9	57.7	63.2	71.2	77.6
Canada	44.3	43.8	38.8	37.3	35.0
France	58.5	62.5	58.0	57.6	63.3
Germany	53.6	43.5	54.2	64.0	95.7
Italy	163.6	161.6	121.5	117.5	116.0
Japan	103.9	97.7	184.9	80.2	.
Netherlands	30.1	46.0	58.5	62.9	59.1
Sweden	93.5	101.0	85.5	80.8	80.7
Switzerland	41.0	51.8	58.8	73.8	96.4
United Kingdom .....	.	.	.	.	.
United States	28.7	27.7	24.0	25.0	24.0

¹ For an explanation of the figures see the relevant country tables. ² The EFTPOS system came into operation in 1996. ³ Estimated figures referring to the whole system; they differ from those provided in the statistical annex of the Italian chapter. ⁴ Converted at yearly average exchange rates.

Table 7
Number of cards¹
 (1995, per 1,000 inhabitants)

	Cards with a cash function	Cards with a debit/credit function	Cards with a cheque guarantee function	Retailer cards
Korea	505	544	.	5
Belgium	931	931	457	120
Canada	1,405	533	.	4,209
France	423	409	.	.
Germany .....	.	909	470	59
Italy	241	357	29	.
Japan	2,077	1,891	.	471
Netherlands	1,062	97	47	.
Sweden	699	537	.	.
Switzerland	795	847	545	.
United Kingdom	1,433	1,014	822	223
United States .....	.	2,475	.	2,233

¹ For an explanation of the figures see the relevant country tables.

Table 8

Relative importance of cashless payment instruments¹

(percentage of total volume of cashless transactions)

	1991	1992	1993	1994	1995
	Cheques				
Korea	75.0	73.9	61.2	55.9	51.2
Belgium	21.6	18.8	16.0	11.7	10.6
Canada	64.8	62.4	58.7	52.8	46.9
France	52.2	50.6	49.1	46.9	44.8
Germany	9.6	8.8	8.1	7.9	7.0
Italy ²	41.6	40.0	37.2	34.0	32.8
Japan .....	.	.	.	.	.
Netherlands	14.3	12.3	8.1	6.0	4.0
Sweden ³	9.9	9.3	.	.	.
Switzerland ⁴	5.4	4.4	3.3	2.6	2.0
United Kingdom ⁵	48.5	45.4	43.0	40.2	36.7
United States	81.6	81.1	80.1	78.9	77.4
	Payments by card				
Korea	5.2	5.0	7.8	9.4	10.6
Belgium	13.3	15.6	16.5	18.0	19.7
Canada	27.8	28.9	31.1	35.3	40.0
France	14.5	15.0	15.7	16.3	17.3
Germany	1.8	2.1	2.6	3.1	3.6
Italy ²	3.1	3.7	4.1	5.2	6.6
Japan .....	.	.	.	.	.
Netherlands	1.8	2.6	4.1	7.9	13.6
Sweden ³	8.8	8.2	9.8	11.6	14.2
Switzerland	9.7	11.8	13.8	16.2	18.4
United Kingdom	16.4	18.8	21.0	23.3	25.9
United States	16.0	16.2	16.9	18.0	19.1

¹ For an explanation of the figures see the relevant country tables. In some cases the total may not sum to 100% because of other items. ² Estimated figures referring to the whole system; they differ from those provided in the statistical annex of the Italian chapter. ³ Statistics on the volume and value of cheque payments are not available for 1993 and 1994. The percentage figures for these years therefore do not include cheques. ⁴ Postal cheques are not included because detailed figures were no longer published by the PTT after 1992. In 1991 its share was approximately 4%. ⁵ Includes Town cheques.

Table 8 (cont.)

	1991	1992	1993	1994	1995
	Credit transfers				
Korea	16.0	16.5	23.8	26.7	30.2
Belgium	57.0	56.9	58.5	60.9	60.2
Canada	3.9	4.4	5.2	6.4	7.3
France	15.2	15.4	15.4	15.7	16.0
Germany	51.3	49.8	45.6	48.7	49.5
Italy ²	40.9	42.1	44.6	46.8	45.9
Japan .....	.	.	.	.	.
Netherlands	61.3	61.3	66.4	64.2	60.6
Sweden	76.9	77.6	84.5	82.3	79.4
Switzerland	82.7	81.3	80.1	78.1	76.3
United Kingdom ⁶	20.9	20.6	20.4	20.1	19.7
United States	1.6	1.8	1.9	2.1	2.3
	Direct debits				
Korea	3.8	4.6	7.2	8.0	8.0
Belgium	8.2	8.8	9.0	9.4	9.5
Canada	3.5	4.3	5.0	5.5	5.8
France	9.3	10.2	10.6	11.7	12.2
Germany	37.3	39.3	43.7	40.3	39.9
Italy ²	3.8	4.1	4.4	4.7	5.4
Japan .....	.	.	.	.	.
Netherlands	22.6	23.9	21.5	21.9	21.8
Sweden	4.4	4.9	5.7	6.1	6.4
Switzerland	2.3	2.5	2.8	3.1	3.3
United Kingdom	14.2	15.1	15.6	16.5	17.7
United States	0.8	0.9	1.0	1.1	1.2

⁶ Paper-based and paperless (includes large-value: CHAPS).

Table 9

Relative importance of cashless payment instruments¹
(percentage of total value of cashless transactions)

	1991	1992	1993	1994	1995
	Cheques				
Korea	99.0	98.6	97.6	91.5	52.2
Belgium	5.4	6.2	5.4	4.6	4.3
Canada	99.0	98.8	98.8	98.7	98.1
France	7.3	6.4	4.6	4.4	4.7
Germany	2.8	2.4	2.3	2.3	2.1
Italy ²	9.1	7.1	5.4	4.5	4.5
Japan .....	.	.	.	.	.
Netherlands	0.2	0.2	0.1	0.1	0.1
Sweden	11.4	10.6	.	.	.
Switzerland ⁵	0.2	0.1	0.1	0.1	0.1
United Kingdom ⁴	16.1	11.6	9.4	7.6	5.3
United States	13.7	13.1	12.6	12.2	11.9
	Payments by card				
Korea	0.2	0.2	0.4	0.5	0.3
Belgium	0.1	0.2	0.1	0.1	0.2
Canada	0.3	0.3	0.3	0.3	0.5
France	0.2	0.2	0.2	0.2	0.2
Germany	0.02	0.02	0.02	0.02	0.03
Italy ²	0.04	0.04	0.03	0.04	0.05
Japan .....	.	.	.	.	.
Netherlands	0.0	0.0	0.0	0.1	0.2
Sweden	0.7	0.7	0.9	1.0	1.4
Switzerland ⁵ .....	.	.	.	.	.
United Kingdom	0.2	0.2	0.2	0.2	0.2
United States	0.1	0.1	0.1	0.1	0.1

¹ For an explanation of the figures see the relevant country tables. In some cases the total may not sum to 100% because of other items. ² Estimated figures referring to the whole system; they differ from those provided in the statistical annex of the Italian chapter. ³ Postal cheques are not included because detailed figures were no longer published by the PTT after 1992. In 1991 their share was less than 0.1%. ⁴ Includes Town cheques. ⁵ Less than 0.1%.

Table 9 (cont.)

	1991	1992	1993	1994	1995
Credit transfers					
Korea	0.7	1.1	1.9	7.9 ⁶	47.4
Belgium	94.3	93.4	94.2	94.7	95.2
Canada	0.6	0.7	0.7	0.7	1.1
France	89.9	91.2	93.5	94.0	93.3
Germany	95.4	95.5	95.7	95.7	95.8
Italy ²	88.6	91.1	93.2	94.2	94.1
Japan .....	.	.	.	.	.
Netherlands	98.4	98.6	98.8	98.7	98.6
Sweden	84.9	86.3	95.8	96.2	95.7
Switzerland	99.8	99.9	99.9	99.8	99.8
United Kingdom ⁷	82.5	87.1	89.5	91.2	93.4
United States	85.4	85.8	86.4	86.8	87.0
Direct debits					
Korea	0.04	0.07	0.1	0.1	0.1
Belgium	0.2	0.2	0.3	0.5	0.3
Canada	0.1	0.2	0.2	0.2	0.3
France	0.7	0.6	0.7	0.8	0.6
Germany	1.8	2.1	2.0	2.0	2.1
Italy ²	0.3	0.2	0.2	0.2	0.2
Japan .....	.	.	.	.	.
Netherlands	1.4	1.2	1.1	1.1	1.2
Sweden	3.0	2.4	3.3	2.8	2.9
Switzerland .....	.	.	.	0.1	0.1
United Kingdom	1.2	1.1	1.0	1.0	1.0
United States	0.8	1.0	0.9	0.9	0.9

⁶ The figure increased sharply as a result of the introduction of BOK-Wire on 15th December 1994. ⁷ Paper-based and paperless (includes large-value: CHAPS).

Table 10a
Features of selected interbank funds transfer systems¹
 (figures relate to 1995)

	Type ²	Owner/ Manager ³	No. of participants		Processing ⁴	Settlement ⁵	Membership ⁶
				of which direct			
Korea							
Cheque Clearing	L + R	PA ⁷	1,647 ⁸	36	M	N	O
Bank Giro	R	PA ⁷	37	37	M+ACH ⁹	N	O
Interbank Funds Transfer	R	PA ⁷	37	37	RTT	N	O
Interbank CD/ATM	R	PA ⁷	36	36	RTT	N	O
BOK-Wire	L	CB	152	152	RTT	RTGS	O
Belgium							
CH	L + R	B + CB	142	72	M	N	O
CEC	R	B + CB	81	.	ACH	N	O
Canada							
IIPS	L	B + AS	66	20	.	. ¹⁰	RM
France							
SAGITTAIRE	L	CB	60	60	RTT	N	RM
CH Paris ¹¹	L + R	B	435	38	M	N	RM
CH Provinces ¹²	R	CB	. ¹³	. ¹³	M	N	O
SIT	R	B	289	23	RTT	N	RM
CREIC	R	CB	16	16	ACH	N	O
Card payments	R	B	212	11	ACH	N	RM
TBF	L	CB	.	.	RTT	RTGS	O
Germany							
MAOBE	R	CB	5,570	.	ACH ¹⁴	GS	O
DTA	R	CB	5,570	.	ACH	GS	O
EIL-ZV	L	CB	5,570	.	RTT	RTGS	O
Platz. ¹⁵	L + R	CB	5,570	.	M	GS	O
Konv. Abrechnung ¹⁶	L + R	CB	625	.	M	N	O
EAF	L	CB	68	.	RTT	N	RM
Italy							
Local clearing	L + R	CB	643	268	RTT ¹⁷	N	O
Retail	R	CB ¹⁸	832	124	ACH	N	O
ME ¹⁹	L	CB	299	299	RTT	N	O
SIPS	L	CB ¹⁸	678	178	RTT	N	O
BISS	L	CB	426	426	RTT	RTGS	O

¹ For additional information see the relevant country chapters. ² L = Large-value system, R = Retail system. ³ Owner/Manager: B = Banks, CB = Central Bank, PA = Payments Association. ⁴ Processing method: M = Manual, ACH = Automated Clearing House (off-line), RTT = Real-Time Transmission. ⁵ N = multilateral Netting, BN = Bilateral Netting, RTGS = Real-Time Gross Settlement, GS = other Gross Settlement. ⁶ O = Open membership (any bank can apply), RM = Restricted Membership (subject to criteria). ⁷ Managed by the KFTC. ⁸ Including indirectly participating financial institutions (such as branches of foreign banks and the banking sectors of the member cooperatives of NACF, NFFC and NLFCF). ⁹ Manual for paper-based credit transfers; ACH for direct debits, direct credit transfers, standing orders. ¹⁰ Other (see Table 11, footnote 8). ¹¹ Clearing House in Paris. ¹² Clearing Houses in the provinces. ¹³ All institutions on which cheques are drawn or at which bills of exchange are payable are bound by regulation to participate in the local clearing houses, through an agent in certain cases. ¹⁴ ACH for paper-based instruments. ¹⁵ Platzüberweisungsverkehr. ¹⁶ Konventionelle Abrechnung. ¹⁷ Transactions can also be submitted on floppy disk. ¹⁸ System managed by the Interbank Society for Automation in the name and on behalf of the Bank of Italy. ¹⁹ Electronic memoranda.

Table 10a (cont.)

	Degree of centralisation ²⁰	Pricing ²¹	Closing time for same-day transactions ²²	Number of transactions (thousands)	Value of transactions (USD billions) ²³	Ratio of transactions value to GDP (at annual rate)
Korea						
Cheque Clearing	D	F	NO	1,010,470	8,321	18.20
Bank Giro	D	F	NO	509,013	62	0.14
Interbank Funds Transfer	C	F	16:30	137,716	451	0.99
Interbank CD/ATM	C	F	17:00	105,153	41	0.09
BOK-Wire	C	V ²⁴	16:30	1,103	6,801	15.39
Belgium						
CH	D	V	16:30	14,445	11,357.1	42.2
CEC	C	F	13:45	826,221	903.1	3.4
Canada						
IIPS	D	N	16:00	2,323	11,706	20.4
France						
SAGITTAIRE	C	F	13:00	4,500	27,532	13.64
CH Paris ¹¹	C	F	15:00	699,100	26,210	17.07
CH Provinces ¹²	C	N	11:00	2,883,000	1,322	0.86
SIT	D	F	13:30	2,588,800	1,873	1.2
CREIC	C	F	NO	281,800	23	0.02
Card payments	C	F	10:30	1,872,600	119	0.08
TBF	C	F	17:30	.	.	.
Germany						
MAOBE	D	V	NO	115,300	186	0.07
DTA	D	V	NO	2,107,100	3,092	1.28
EIL-ZV	D	F	15:00	5,500	18,840	7.81
Platz. ¹⁵	D	N	12:00	8,100	3,620	1.50
Konv. Abrechnung ¹⁶	D	F	13:00	1,700	5,149	2.14
EAF	C	V	12:30	17,800	103,514	42.92
Italy						
Local clearing	D	V	09:30	235,665	2,194	2.0
Retail	C	F	NO	586,865	761	0.7
ME ²¹	C	V	16:00	1,810	11,300	10.4
SIPS	C	F	14:00	4,462	16,807	15.4
BISS	C	V	17:00	46	85	0.1

²⁰ Geographical access to the system: C = Centralised (one processing centre only), D = Decentralised. ²¹ Prices charged to participants: F = Full costs (including investments), V = Variable costs, S = Symbolic costs (below variable costs), N = No costs. ²² Closing time for same-day transactions (NO = no same-day transactions). ²³ Converted at yearly average exchange rates. ²⁴ Prices are set on the principle that institutions which benefit from on-line processing should pay the related charges.

Table 10b
Features of selected interbank funds transfer systems¹
 (figures relate to 1995)

	Type ²	Owner/ Manager ³	No. of participants		Processing ⁴	Settlement ⁵	Membership ⁶
				of which direct			
Japan							
FEYCS	L	B	264 ⁷	264 ⁷	RTT	N	RM
BOJ-NET	L	CB	417 ⁷	417 ⁷	RTT	RTGS ⁸	RM
Netherlands							
BGC-CH.....	R	B	66	66	ACH	N	O
8007-S.W.I.F.T.....	L	CB	64	64	ACH + RTT	N	O
FA	L	CB	145	145	RTT	N + RTGS	O
Sweden							
RIX	L	CB	114	23	RTT	RTGS	RM
Bank Giro System	R	B	20	20	ACH	N	O
Switzerland							
SIC	L + R	CB + B	214	214	RTT	RTGS	RM
DTA/LSV	R	B	168	168	ACH	N	RM
United Kingdom							
CHAPS	L	B	429	16	RTT	N	RM
TOWN .....	.	.	.	.	.	.	.
BACS	R	B	35,000	17	ACH	N	RM
Cheque/credit	R	B	613	12	M	N	RM
United States							
Fedwire	L	CB	10,000	10,000	RTT	RTGS	O
CHIPS	L	B	105	105	RTT	N	RM

¹ For additional information see the relevant country chapters. ² L = Large-value system, R = Retail system. ³ Owner/Manager: B = Banks, CB = Central Bank. ⁴ Processing method: M = Manual, ACH = Automated Clearing House (off-line), RTT = Real-Time Transmission. ⁵ N = multilateral Netting, BN = Bilateral Netting, RTGS = Real-Time Gross Settlement, GS = other Gross Settlement. ⁶ O = Open membership (any bank can apply), RM = Restricted Membership (subject to criteria). ⁷ End-1994. ⁸ The system has been designed to allow participants to enter funds transfer instructions continuously, in which case settlement takes place on the central bank's books immediately. It is, however, also used to settle on a net basis.

Table 10b (cont.)

	Degree of centralisation ⁹	Pricing ¹⁰	Closing time for same-day transactions ¹¹	Number of transactions (thousands)	Value of transactions (USD billions)	Ratio of transactions value to GDP (at annual rate)
Japan						
FEYCS	D	V ¹²	13:45	8,839	81,624	16.0
BOJ-NET	D	V ¹²	17:00	3,849	434,677	85.0
Netherlands						
BGC-CH	D	F	12:45	1,410,900	1,363	3.4
8007-S.W.I.F.T.	C	V	12:45	2,100	6,438	16.3
FA	C	V	15:30	400	5,261	13.3
Sweden						
RIX	C	F	16:30	119	7,509	32.8
Data-Clearing	C	F	11:00	249,153	318	1.4
Switzerland						
SIC	C	F	16:15	95,990	27,235	88.9
DTA/LSV	C	F	NO	80,368	238	0.8
United Kingdom¹³						
CHAPS	D	F	15:45	12,596	42,171	38.1
TOWN .....	.	.	.	.	.	.
BACS	C	F	NO	2,268,000	1,664	1.5
Cheque/credit	D	F	NO	2,377,000	2,104	1.9
United States						
Fedwire	C	F	18:30	75,900	222,954	30.7
CHIPS	C	F	16:30	51,000	310,021	42.7

⁹ Geographical access to the system: C = Centralised (one processing centre only), D = Decentralised. ¹⁰ Prices charged to participants: F = Full costs (including investments), V = Variable costs, S = Symbolic costs (below variable costs), N = No costs. ¹¹ Closing time for same-day transactions (NO = no same-day transactions). ¹² Prices are set on the principle that institutions which are to benefit from on-line processing should pay the relevant charges. ¹³ Interbank figures only.

Table 11
Operating hours of selected large-value interbank funds transfer systems¹
 (as at December 1995)

System	Gross (G) or net (N)	Opening-closing time for same-day value (local time)	Settlement finality (local time)	Cut-off for all third-party payment orders	Cut-off for international correspondents' payment orders	Memo item: Standard money market hours (local time)
Korea						
BOK-Wire	G	09:30-16:30 09:30-13:30 (Sat.)	09:30-16:30 09:30-13:30 (Sat.)	16:30 13:30 (Sat.)	14:00 .	(09:30-16:30) ² (09:30-13:30) ² (Sat.)
Belgium						
C.E.C. ³	N	13:46-13:45 ⁴	16:30	13:30	08:30 ⁵	
Clearing House of Belgium	N	09:00-16:30	16:30	13:00	08:30 ⁵	(09:00-16:15) ⁶
Canada⁷						
IIPS	N ⁸	08:00-16:00	12:00 ⁹	14:30 ¹⁰	16:00 ¹⁰	(07:30-17:30)
France						
SAGITTAIRE	N	08:00-13:00 ¹¹	18:30	n.a. (13)	08:00 ¹²	(08:15-17:00)
TBF (planned).....	G	07:30-17:30	07:30-17:30		08:00 ¹²	
Germany						
Express electronic credit transfer system	G	08:15-15:00	08:15-15:00	(14)	08:00 ¹²	
Express (paper-based) local credit transfer system	G	08:00-12:00	08:00-12:00	(14)	08:00 ¹²	(09:30-13:00) ¹⁵
EAF ¹⁶	N	08:00-12:30	14:30 ¹⁷	(14)	08:00 ¹²	
Italy						
BISS	G	08:00-17:00	08:00-17:00	17:00	09:00 ¹²	(08:45-16:30) ¹⁸
SIPS	N	08:00-14:00	16:30	14:00	09:00 ¹²	
ME	N	08:00-16:00	16:30	16:00	09:00 ¹²	
Japan						
FEYCS.....	N	09:00-13:45	15:00	10:30 ¹²	10:30 ¹²	(09:00-17:00)
BOJ-NET	G ¹⁹	09:00-17:00	09:00-17:00	14:00	n.a.	
Netherlands						
Central Bank FA System	G	08:00-15:30	08:00-15:30	n.a. ²⁰	n.a. ²⁰	(09:00-13:00)
8007 S.W.I.F.T.	N	08:00-12:00 ²¹	13:00	08:00 ¹²	08:00 ¹²	
Sweden						
RIX	G ¹⁹	08:00-16:30 ²²	08:15-16:30 ²²	(23)	08:00 ¹²	(09:00-16:00)
Switzerland						
SIC	G	18:00-16:15 ²⁴	18:00-16:15 ²⁴	15:00 ²⁴	08:00 ⁵	(09:00-16:00)
United Kingdom						
CHAPS	N	08:30-15:45	end of day	none	12:00	(07:30-15:30) ²⁵
United States⁷						
Fedwire	G	08:30-18:30	08:30-18:30	18:00	18:00	(08:30-18:30) ²⁶
CHIPS	N	07:00-16:30	18:00 ²⁷	16:30	16:30	
ECU clearing system	N	14:01-14:00 ²⁸	15:45	none	none	(TOM/NEXT) ²⁹

Footnotes to Table 11

(n.a.= not applicable)

- ¹ Some systems make no explicit distinction between large-value and retail transactions and may be used to settle interbank transfers relating to a variety of underlying transactions. Some systems may also accept payment orders for a number of value days. Money market hours indicated refer to the time period in which domestic interbank transactions are normally carried out. They therefore do not relate to particular interbank funds transfer systems.
- ² The standard money market hours are based on banking hours.
- ³ In June 1990 a special "large-value credit transfer application" was introduced in the C.E.C. All net settlements from the C.E.C. take place at the end of the day at the (manual) Clearing House of Belgium.
- ⁴ The C.E.C. transfer system operates round-the-clock, five days a week.
- ⁵ S.W.I.F.T. guideline.
- ⁶ Luxembourg dealers, who are important operators in Belgian francs, are only active in the market before noon; the central bank conducts its daily fine-tuning operations at about 11:00.
- ⁷ Eastern time.
- ⁸ Settlement typically takes place on the basis of bilateral net positions. The net receiving bank in each pair creates a paper document called an inter-member debit voucher and delivers it to the net sending bank as part of the exchanges covered by the Automated Clearing and Settlement System (ACSS) operated by the Canadian Payments Association. Settlement may also take place on a gross basis or on an item-by-item basis, in each case over the ACSS.
- ⁹ Net settlement at noon the next day (retroactively).
- ¹⁰ Local time at the receiving IIPS point, or the beneficiary account point, whichever is earlier.
- ¹¹ SAGITTAIRE'S exchange day, i.e. the period during which orders are recorded by the Bank of France, begins at 08:00 and ends at 17:30. Orders sent after 17:30 are stored by S.W.I.F.T. and processed at the start of the next exchange day. SAGITTAIRE'S accounting day starts at 13:00 on D - 1 and ends at 13:00 on D (transfers sent after 13:00 on D, regardless of whether they are processed during the same exchange day or at the start of the following exchange day, are only entered in the accounts on D + 1). The net positions of members are drawn up after the close of the accounting day.
- ¹² S.W.I.F.T. guideline; in practice it may be later.
- ¹³ A cut-off for third-party orders is being discussed for the planned TBF system.
- ¹⁴ This is subject to arrangements between the correspondent banks.
- ¹⁵ For settlement purposes it can be later.
- ¹⁶ Electronic netting system in Frankfurt for interbank transfers predominantly relating to international DM transactions.
- ¹⁷ Planned time for communication of completion (positive message) or non-completion (negative message) of settlement.
- ¹⁸ The money market may continue to operate beyond the standard hours according to the closing times of the clearing and settlement systems.
- ¹⁹ The system has been designed to allow participants to enter funds transfer instructions continuously, in which case settlement takes place on the central bank's books immediately (in the case of RIX, provided they are confirmed by the counterparty). BOJ-NET, however, is also used to settle on a net basis.
- ²⁰ Interbank guilder transfers relating to international transactions are sent through the 8007 S.W.I.F.T. system which is operated by the Netherlands Bank; net settlement of these transactions takes place over the Central Bank FA System.
- ²¹ The 8007 S.W.I.F.T. system is, for a given value day, also open from 15:00 to 17:00 on the previous business day.
- ²² Closing time for new payment orders is 16:15; payments can be confirmed, and thereby settled, until 16:30.
- ²³ Since mid-1994, the routine involving a single cut-off time at noon for third-party payment orders has no longer been used. Instead, the participants have to decide among themselves which cut-off times they will use for different types of third-party orders. Large-value payments can be made during any time of the day.

- 24 The system is open for input 24 hours a day. Settlement services are limited by the indicated opening and closing times. A value day starts at 18:00 local time on the previous business day and ends at 16:15 on the value day. Third-party payments may be entered for same-day settlement until 15:00. Between 15:00 (cut-off 1) and 16:00 (cut-off 2) only cover (bank-to-bank) payments are accepted for same-day settlement. From 16:00 to 16:15 transactions are restricted to the processing of lombard credits (collateralised loans from the Swiss National Bank at a penalty rate).
- 25 For same-day value: there are no standard money market hours but trading typically takes place between about 07:30 and 15:30. The market is most liquid in the morning. The Bank of England intervenes in the market as necessary between 09:45 and 15:30.
- 26 Trading occurs among dealers for funds on deposit at Federal Reserve Banks (i.e. federal funds) as early as 06:30.
- 27 Payments over CHIPS become final on completion of settlement, which normally occurs between 17:00 and 17:30. Rules are designed to ensure that settlement takes place no later than 18:00.
- 28 ECU payment orders can be sent (for up to 28 forward value days) through S.W.I.F.T. 24 hours a day, seven days a week. At 14:00 (GMT + 1) on each value day the netting computer calculates participants' net net positions. Messages arriving after 14:00 are processed automatically for the next value day(s).
- 29 There is no overnight market for ECU interbank loans. Day-to-day interbank ECU transactions are normally carried out in the Euro-markets on a TOM/NEXT basis.

Table 12
Features of selected securities settlement systems
 (figures relate to 1995)

	Type ¹	Owner/ Manager ²	No. of participants		Settlement of cash leg ³	Delivery ³
				of which direct		
Korea						
Korea Securities Depository	G,E,O	SE	145	145	N	G/N
BOK-Wire	G	CB	152	152	G	G
Belgium						
NBB Clearing	G	CB	209	.	N	N
CIK	E	B	163	.	N	N
Canada						
BBS ⁴	G,E,O	B,SE,O	85	85	N	G/N
DCS ⁵	G	B,SE,O	55	55	N	G
France						
SATURNE	G,O	CB	450	450	N	G
RELIT	G,E,O	B	449	449	N	G/N
Germany						
DKV	G,E,O	SE	397	395	N/G	G
Italy						
Securities Settlement Procedures:						
Daily Procedure	G,O	CB	317	317	N	N
Monthly Procedure	E	CB	256	256	N	N
CAT	G	CB	780	780	. ⁶	G
Japan						
JGB registration	G	CB	424 ⁷	424 ⁷	G/N	G/N
JGB book-entry	G	CB	360 ⁷	360 ⁷	G/N	G/N
Netherlands						
NECIGEF	G+E+O	B+CB+SE	53	53	G	G
CB Clearing Institute	G+O	CB	80	80	N	N
Sweden						
VPC	G+E+O	B+O	51	51	G/N	G
OM	O	O	37	37	N	N
Switzerland						
SECOM	G,E,O	B	348	348	N ⁸ /G ⁹	G
United Kingdom						
CGO	G+O	CB/SE	297	15	N	G
CMO	O	CB	61	13	N	G
United States						
Fedwire	G	CB	8,192	8,192	G	G
DTC (NDFS) ¹⁰	E,O	B,SE,O	522	522	N	G

¹ G = Government securities, E = Equity, O = Other. ² B = Banks, CB = Central Bank, SE = Stock Exchange, O = Other. ³ G = Gross, N = Net. ⁴ The book-based system of The Canadian Depository for Securities Limited (CDS). ⁵ The real-time, on-line debt-clearing service of CDS, which commenced operation during August 1994. ⁶ Deliveries free of payment. ⁷ End-1994. ⁸ Until 24th March 1995. ⁹ Since 27th March 1995. ¹⁰ Next-day funds settlement.

Table 12 (cont.)

	Delivery lag	Central securities depository	Cash settlement agent	Number of transactions (thousands)	Value of transactions (USD billions) ¹¹	Ratio of transactions value to GDP (at annual rate)
Korea						
Korea Securities Depository	T+2, T ¹²	KSD	B	9,992	69.0	0.15
BOK-Wire	T	CB	CB	3.9	84.9	0.19
Belgium						
NBB Clearing	T+2/T+5 ¹³	NBB	NBB	198	2,888.9	10.73
CIK .....	.¹⁴	CIK	NBB	1,750	18.6	0.07
Canada						
BBS ⁴	up to T+3	CDS	B ¹⁵	{10,200 ¹⁶	{28,886 ¹⁶	{ 50.4
DCS ⁵	up to T+3	CDS	B ¹⁷			
France						
SATURNE	T	Banque de France	CB	316	8,824	5.75
RELIT	T+3 ¹⁸	SICOVAM	CB	.	8,446	5.50
Germany						
DKV	T+0-40	DKV	CB	23,400 ¹⁹	8,286 ¹⁹	3.4
Italy						
Securities Settlement Procedures:						
Daily Procedure	T+3	CAT	CB	.	9,139	8.4
Monthly Procedure ..	T+15/45	Monte Titoli	CB	.	152	0.1
CAT	T	CAT	. ⁶	960.5	967	0.9
Japan						
JGB registration	T+10 ²⁰	CB	CB	598.3	17,417	3.4
JGB book-entry	T+10 ²⁰	CB	CB	486.5	26,730	5.2
Netherlands						
NECIGEF	T+3	NECIGEF	KAS-ASS	1,028	.	.
CB Clearing Institute ..	T,T+3	CB	CB	3	62.3	0.16
Sweden						
VPC	T+2, T+3 ²¹	VPC	CB	2,912	5,821	25.4
OM	T+3		CB	31,638	931	4.1
Switzerland						
SECOM	T+3	SEGA	CB	3,952	752	2.5
United Kingdom						
CGO	T+1	.	CB	747.5	25,254	22.8
CMO	T	CB	CB	269.0	5,216	4.7
United States						
Fedwire	T,T+1	CB	CB	12,800	149,800	20.7
DTC (NDFS) ¹⁰	T+3	DTC	DTC	119,000	41,000	5.7

¹¹ Converted at yearly average exchange rates. ¹² T+2 for standard transactions; T for spot transactions. ¹³ T+2 for Treasury bills; T+5 for OLOs (long-term government bonds). ¹⁴ Seller delivery. ¹⁵ A single chartered bank. ¹⁶ Figures are for the twelve months ended 31st October 1994. ¹⁷ A single chartered bank, though not the same bank as for the BBS. ¹⁸ When processed by the "SLAB" system (special delivery service by bilateral agreements), the delivery occurs same day. ¹⁹ Delivery-versus-payment settlements only. ²⁰ T+10 or less. ²¹ Same-day delivery and settlement is also possible under specific conditions.

Annex 2

GLOSSARY

List of terms and abbreviations

Red Book terms

Advisory netting: see position netting.

Assured payment system (APS): an arrangement in an exchange-for-value system under which completion of timely settlement of a payment instruction is supported by an irrevocable and unconditional commitment from a third party (typically a bank, syndicate of banks or clearing house). See exchange-for-value settlement system.

Automated clearing house (ACH): an electronic clearing system in which payment orders are exchanged among financial institutions, primarily via magnetic media or telecommunication networks, and handled by a data-processing centre. See also clearing.

Automated teller machine (ATM): electro-mechanical device that permits authorised users, typically using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services, such as balance enquiries, transfer of funds or acceptance of deposits. ATMs may be operated either on-line with real-time access to an authorisation database or off-line.

Bank draft: in Europe, the term generally refers to a draft drawn by a bank on itself. The draft is purchased by the payer and sent to the payee, who presents it to his bank for payment. That bank presents it to the payer's bank for reimbursement. In the United States, the term generally refers to a draft or cheque drawn by a bank on itself or on funds deposited with another bank. In the case of a cashier's cheque, the bank is both the drawer and drawee. In the case of a teller's cheque, one bank is the drawer and a second bank is the drawee. Bank drafts may be written by a bank for its own purposes or may be purchased by a customer and sent to a payee to discharge an obligation. See draft.

Batch: the transmission or processing of a group of payment orders and/or securities transfer instructions as a set at discrete intervals of time.

Beneficial ownership/interest: the entitlement to receive some or all of the benefits of ownership of a security or other financial instrument (e.g. income, voting rights, power to transfer). Beneficial ownership is usually distinguished from "legal ownership" of a security or financial instrument. See legal ownership.

Bilateral net settlement system: a settlement system in which participants' bilateral net settlement positions are settled between every bilateral combination of participants. See also net credit or debit position.

Bilateral netting: an arrangement between two parties to net their bilateral obligations. The obligations covered by the arrangement may arise from financial contracts, transfers or both. See netting, multilateral netting, net settlement.

Bill of exchange: a written order from one party (the drawer) to another (the drawee) to pay a specified sum on demand or on a specified date to the drawer or to a third party specified by the drawer. Widely used to finance trade and, when discounted with a financial institution, to obtain credit. See also draft.

Book-entry system: an accounting system that permits the transfer of claims (e.g. securities) without the physical movement of paper documents or certificates. See also dematerialisation, immobilisation.

Bulk transfer system: see retail transfer system.

Call money: a loan contract which is automatically renewed every day unless the lender or the borrower indicates that it wishes the funds to be returned within a short period of time.

Capital risk: see principal risk.

Caps: for risk management purposes, the quantitative limits placed on the positions (debit or credit positions, which may be either net or gross) that participants in a funds or securities transfer system can incur during the business day. Caps may be set by participants on credit extended bilaterally to other participants in a system, e.g. bilateral credit limits, or by the system operator or by the body governing the transfer system on the aggregate net debit a participant may incur on the system, e.g. sender net debit limits. Sender net debit limits may be either collateralised or uncollateralised.

Card: see cash card, cheque guarantee card, chip card, credit card, debit card, delayed debit card, prepaid card, retailer's card, travel and entertainment card.

Cash card: card for use only in ATMs or cash dispensers (often, other cards also have a cash function that permits the holder to withdraw cash).

Cash dispenser: electro-mechanical device that permits consumers, typically using machine-readable plastic cards, to withdraw banknotes (currency) and, in some cases, coins. See also automated teller machine (ATM).

Cashier's cheque: see bank draft.

Central bank credit (liquidity) facility: a standing credit facility that can be drawn upon by certain designated account holders (e.g. banks) at the central bank. In some cases, the facility can be used automatically at the initiative of the account holder, while in other cases the central bank may retain some degree of discretion. The loans typically take the form either of advances or overdrafts on an account holder's current account which may be secured by a pledge of securities (also known as lombard loans in some European countries), or of traditional rediscounting of bills.

Central securities depository: a facility for holding securities which enables securities transactions to be processed by book entry. Physical securities may be immobilised by the depository or securities may be dematerialised (i.e. so that they exist only as electronic records). In addition to safekeeping, a central securities depository may incorporate comparison, clearing and settlement functions.

Certificate: physical document which evidences an ownership claim in, indebtedness of, or other outstanding financial obligations of the issuer.

Chaining: a method used in certain transfer systems (mostly for securities) for processing instructions. It involves the manipulation of the sequence in which transfer instructions are processed to increase the number or value of transfers that may be settled with available funds and/or securities balances (or available credit or securities lending lines).

Charge card: see travel and entertainment card.

Cheque: a written order from one party (the drawer) to another (the drawee, normally a bank) requiring the drawee to pay a specified sum on demand to the drawer or to a third party specified by the drawer. Widely used for settling debts and withdrawing money from banks. See also bill of exchange.

Cheque guarantee card: a card issued as part of a cheque guarantee system. This function may be combined with other functions in the same card, e.g. those of a cash card or debit card. See also cheque guarantee system.

Cheque guarantee system: a system to guarantee cheques, typically up to a specified amount, that have been validated by the merchant either on the basis of a card issued to the cheque writer or through a central database accessible to merchants. Validated cheques are guaranteed by the issuer of the guarantee card, the drawee bank or the system operator.

Chip card: also known as an IC (integrated circuit) card or smart card. A card containing one or more computer chips or integrated circuits for identification, data storage or special-purpose processing used to validate personal identification numbers (PINs), authorise purchases, verify account balances and store personal records. In some cases, the memory in the card is updated every time the card is used, e.g. an account balance is updated.

Clearing/Clearance: clearing is the process of transmitting, reconciling and in some cases confirming payment orders or security transfer instructions prior to settlement, possibly including netting of instructions and the establishment of final positions for settlement. In the context of securities markets this process is often referred to as clearance. Sometimes the terms are used (imprecisely) to include settlement.

Clearing house: a central location or central processing mechanism through which financial institutions agree to exchange payment instructions or other financial obligations (e.g. securities). The institutions settle for items exchanged at a designated time based on the rules and procedures of the clearing house. In some cases, the clearing house may assume significant counterparty, financial or risk management responsibilities for the clearing system. See clearing/clearance, clearing system.

Clearing house funds: term most commonly used in certain US markets to refer to funds that typically are provisional on the day of receipt and final on the following day. More specifically, the term is used to refer to monetary claims with next-day finality that are exchanged by participants in certain clearing house arrangements in settlement of obligations arising from the clearing process. Such claims are typically transferred via cheques, drafts or other similar payment

Clearing system: a set of procedures whereby financial institutions present and exchange data and/or documents relating to funds or securities transfers to other financial institutions at a single location (clearing house). The procedures often also include a mechanism for the calculation of participants' bilateral and/or multilateral net positions with a view to facilitating the settlement of their obligations on a net or net net basis. See also netting.

Comparison: see matching.

Confirmation: a particular connotation of this widely used term is the process whereby a market participant notifies its counterparties or customers of the details of a trade and, typically, allows them time to affirm or to question the trade.

Correspondent banking: an arrangement under which one bank (correspondent) holds deposits owned by other banks (respondents) and provides payment and other services to those respondent banks. Such arrangements may also be known as agency relationships in some domestic contexts. In international banking, balances held for a foreign respondent bank may be used to settle foreign exchange transactions. Reciprocal correspondent banking relationships may involve the use of so-called nostro and vostro accounts to settle foreign exchange transactions.

Counterparty: the opposite party to a financial transaction, such as a securities trade or swap agreement.

Credit caps: see caps.

Credit card: card indicating that the holder has been granted a line of credit. It enables him to make purchases and/or draw cash up to a prearranged ceiling; the credit granted can be settled in full by the end of a specified period or can be settled in part, with the balance taken as extended credit. Interest is charged on the amount of any extended credit and the holder is sometimes charged an annual fee.

Credit card company: a company which owns the trademark of a particular credit card, and may also provide a number of marketing, processing or other services to the members using the card services.

Credit risk/exposure: the risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. In exchange-for-value systems, the risk is generally defined to include replacement cost risk and principal risk.

Credit transfer: a payment order or possibly a sequence of payment orders made for the purpose of placing funds at the disposal of the beneficiary. Both the payment instructions and the funds described therein move from the bank of the payer/originator to the bank of the beneficiary, possibly via several other banks as intermediaries and/or more than one credit transfer system.

Credit transfer system (or giro system): a system through which payment instructions and the funds described therein may be transmitted for the purpose of effecting credit transfers.

Cross-currency settlement risk (or Herstatt risk): see principal risk.

Custody: the safekeeping and administration of securities and financial instruments on behalf of others.

Daylight credit (or daylight overdraft, daylight exposure, intraday credit): credit extended for a period of less than one business day; in a credit transfer system with end-of-day final settlement, daylight credit is tacitly extended by a receiving institution if it accepts and acts on a payment order even though it will not receive final funds until the end of the business day.

Debit caps: see caps.

Debit card: card enabling the holder to have his purchases directly charged to funds on his account at a deposit-taking institution (may sometimes be combined with another function, e.g. that of a cash card or cheque guarantee card).

Debit transfer system (or debit collection system): a funds transfer system in which debit collection orders made or authorised by the payer move from the bank of the payee to the bank of the payer and result in a charge (debit) to the account of the payer; for example, cheque-based systems are typical debit transfer systems.

Default: failure to complete a funds or securities transfer according to its terms for reasons that are not technical or temporary, usually as a result of bankruptcy. Default is usually distinguished from a "failed transaction".

Delayed debit card: card issued by banks indicating that the holder may charge his account up to an authorised limit. It enables him to make purchases but does not offer extended credit, the full amount of the debt incurred having to be settled at the end of a specified period. The holder is usually charged an annual fee.

Deletion: a mechanism whereby some or all transfers to/from a defaulting participant are excluded from the settlement process. In a netting scheme, other participants' bilateral and/or multilateral net positions are recalculated. See unwinding.

Delivery: final transfer of a security or financial instrument.

Delivery versus payment system (or DVP, delivery against payment): a mechanism in an exchange-for-value settlement system that ensures that the final transfer of one asset occurs if and only if the final transfer of (an)other asset(s) occurs. Assets could include monetary assets (such as foreign exchange), securities or other financial instruments. See exchange-for-value settlement system, final transfer.

Dematerialisation: the elimination of physical certificates or documents of title which represent ownership of securities so that securities exist only as accounting records.

Direct debit: a pre-authorised debit on the payer's bank account initiated by the payee.

Direct participant/member: the term generally denotes participants in a funds or securities transfer system that directly exchange transfer orders with other participants in the system. In some systems direct participants also exchange orders on behalf of indirect participants. Depending on the system, direct participants may or may not also be settling participants. In the EC context this term has a specific meaning: it refers to participants in a transfer system which are responsible to the settlement institution (or to all other participants) for the settlement of their own payments, those of their customers and those of indirect participants on whose behalf they are settling. See participant/member, indirect participant/member, settling participant/member.

Discharge: release from a legal obligation imposed by contract or law.

Draft: a written order from one party (the drawer) to another (the drawee) to pay a party identified on the order (payee) or to bearer a specified sum, either on demand (sight draft) or on a specified date (time draft). See cheque, bank draft, bill of exchange.

EFTPOS: see point of sale (POS).

Electronic data interchange (EDI): the electronic exchange between commercial entities (in some cases also public administrations), in a standard format, of data relating to a number of message categories, such as orders, invoices, customs documents, remittance advices and payments. EDI messages are sent through public data transmission networks or banking system channels. Any movement of funds initiated by EDI is reflected in payment instructions flowing through the banking system. EDIFACT, a United Nations body, has established standards for electronic data interchange.

Exchange-for-value settlement system: system which involves the exchange of assets, such as money, foreign exchange, securities or other financial instruments, in order to discharge settlement obligations. These systems may use one or more funds transfer systems in order to satisfy the payment obligations that are generated. The links between the exchange of assets and the payment system(s) may be manual or electronic. See delivery versus payment system.

Face-to-face payment: payment carried out by the exchange of instruments between the payer and the payee in the same physical location.

Failed transaction: a transaction (e.g. a funds or securities transfer) that does not settle on time, usually for technical or temporary reasons.

Final (finality): irrevocable and unconditional.

Final settlement: settlement which is irrevocable and unconditional.

Final transfer: an irrevocable and unconditional transfer which effects a discharge of the obligation to make the transfer. The terms "delivery" and "payment" are each defined to include a final transfer.

Giro system: see credit transfer system.

Gridlock: a situation that can arise in a funds or securities transfer system in which the failure of some transfer instructions to be executed (because the necessary funds or securities balances are unavailable) prevents a substantial number of other instructions from other participants from being executed. See also failed transaction, queuing, systemic risk.

Gross settlement system: a transfer system in which the settlement of funds or securities transfers occurs individually on an order-by-order basis according to the rules and procedures of the system, i.e. without netting debits against credits. See real-time gross settlement, net settlement system.

Haircut: the difference between the market value of a security and its collateral value. Haircuts are taken by a lender of funds in order to protect the lender, should the need arise to liquidate the collateral, from losses owing to declines in the market value of the security. See margin.

Herstatt risk: see principal risk.

Home banking: banking services which a retail customer of a financial institution can access using a telephone, television set, terminal or personal computer as a telecommunication link to the institution's computer centre.

IC card: see chip card.

Immobilisation: Placement of certificated securities and financial instruments in a central securities depository to facilitate book-entry transfers.

Imprinter: mechanical device to reproduce the name and account number of a cardholder on a paper sales slip. See also imprinter voucher.

Imprinter voucher: in card transactions, a sales slip that is to be signed by the customer on which the name and card number of the customer are imprinted. See also imprinter.

Indirect participant/member: refers to a funds or securities transfer system in which there is a tiering arrangement. Indirect participants are distinguished from direct participants by their inability to perform some of the system activities (e.g. input of transfer orders, settlement) performed by direct participants. Indirect participants, therefore, require the services of direct participants to perform those activities on their behalf. In the EC context the term refers more specifically to participants in a transfer system which are responsible only to their direct participants for settling the payments input to the system. See direct participant/member, settling participant/member, tiering arrangement.

Interbank funds transfer system (IFTS): a funds transfer system in which most (or all) direct participants are financial institutions, particularly banks and other credit institutions.

Intraday credit: see daylight credit.

Irrevocable and unconditional transfer: a transfer which cannot be revoked by the transferor and is unconditional.

Issuer: the entity which is obligated on a security or other financial instrument. For example, a corporation or government having the authority to issue and sell a security; a bank that approves a letter of credit. Sometimes used to refer to a financial institution that issues credit or debit cards.

Large-value funds transfer system: interbank funds transfer system through which large-value and high-priority funds transfers are made between participants in the system for their own account or on behalf of their customers. Though as a rule no minimum value is set for the payments they carry, the average size of payments through such systems is relatively large. Large-value funds transfer systems are sometimes called wholesale funds transfer systems.

Legal ownership: recognition in law as the owner of a security or other financial instrument.

Letter of credit (L/C): a promise by a bank or other issuer to a third party to make payment on behalf of a customer in accordance with specified conditions. Frequently used in international trade to make funds available in a foreign location.

Liquidity risk: the risk that a counterparty (or participant in a settlement system) will not settle an obligation for full value when due. Liquidity risk does not imply that a counterparty or participant is insolvent since it may be able to settle the required debit obligations at some unspecified time thereafter.

Loss-sharing rule (or loss-sharing agreement): an agreement between participants in a transfer system or clearing house arrangement regarding the allocation of any loss arising when one or more participants fail to fulfil their obligation: the arrangement stipulates how the loss will be shared among the parties concerned in the event that the agreement is activated.

Magnetic ink character recognition (MICR): a technique, using special MICR machine-readable characters, by which documents (i.e. cheques, credit transfers, direct debits) are read by machines for electronic processing. See optical character recognition (OCR).

Margin: margin has at least two meanings. In the futures/commodity markets, margin is a good faith deposit (of money, securities or other financial instruments) required by the futures clearing system to assure performance. In the equities markets, margin is a sum of money deposited by a customer when borrowing money from a broker to purchase shares. The money deposited with the broker is the difference between the purchase value of the shares and the collateral value of the shares. See haircut.

Marking to market: the practice of revaluing securities and financial instruments using current market prices. In some cases unsettled contracts to purchase and sell securities are marked to market and the counterparty with an as yet unrealised loss on the contract is required to transfer funds or securities equal to the value of the loss to the other counterparty.

Matching (or comparison checking): the process used by market participants before settlement of a transaction to ensure that they agree with respect to the terms of the transaction.

Money order: an instrument used to remit money to the named payee, often used by persons who do not have a chequing account relationship with a financial institution, to pay bills or to transfer money to another person or to a company. There are three parties to a money order: the remitter (payer), the payee and the drawee. Drawees are usually financial institutions or post offices. Payees can either cash their money orders or present them to their bank for collection.

Multilateral net settlement position: the sum of the value of all the transfers a participant in a net settlement system has received during a certain period of time less the value of the transfers made by the participant to all other participants. If the sum is positive, the participant is in a multilateral net credit position; if the sum is negative, the participant is in a multilateral net debit position.

Multilateral net settlement system: a settlement system in which each settling participant settles (typically by means of a single payment or receipt) the multilateral net settlement position which results from the transfers made and received by it, for its own account and on behalf of its customers or non-settling participants for which it is acting. See multilateral netting, multilateral net settlement position, settling participant and direct participant.

Multilateral netting: an arrangement among three or more parties to net their obligations. The obligations covered by the arrangement may arise from financial contracts, transfers or both. The multilateral netting of payment obligations normally takes place in the context of a multilateral net settlement system. See bilateral netting, multilateral net settlement position, multilateral net settlement system.

Net credit or debit position: a participant's net credit or net debit position in a netting system is the sum of the value of all the transfers it has received up to a particular point in time less the value of all transfers it has sent. If the difference is positive, the participant is in a net credit position; if the difference is negative, the participant is in a net debit position. The net credit or net debit position at settlement time is called the net settlement position. These net positions may be calculated on a bilateral or multilateral basis.

Net debit cap: see caps, net credit or debit position.

Net settlement: the settlement of a number of obligations or transfers between or among counterparties on a net basis. See netting.

Net settlement system: a system to effect net settlement.

Netting: an agreed offsetting of positions or obligations by trading partners or participants. The netting reduces a large number of individual positions or obligations to a smaller number of obligations or positions. Netting may take several forms which have varying degrees of legal enforceability in the event of default of one of the parties. See also bilateral and multilateral netting, position netting, novation, substitution.

Nominee: a person or entity named by another to act on his behalf.

Novation: satisfaction and discharge of existing contractual obligations by means of their replacement by new obligations (whose effect, for example, is to replace gross with net payment obligations). The parties to the new obligations may be the same as to the existing obligations or, in the context of some clearing house arrangements, there may additionally be substitution of parties. See substitution.

Obligation: a duty imposed by contract or law. It is also used to describe a security or other financial instrument, such as a bond or promissory note, which contains the issuer's undertaking to pay the owner.

Off-line: in the context of payment and settlement systems, the term may refer to the transmission of transfer instructions by users, through such means as voice, written or telefaxed instructions, that must subsequently be input into a transfer processing system. The term may also refer to the storage of data by the transfer processing system on media such as magnetic tape or disk such that the user may not have direct and immediate access to the data. See on-line.

On-line: in the context of payment and settlement systems, the term may refer to the transmission of transfer instructions by users, through such electronic means as computer-to-computer interfaces or electronic terminals, that are entered into a transfer processing system by automated means. The term may also refer to the storage of data by the transfer processing system on a computer database such that the user has direct access to the data (frequently real-time) through input/output devices such as terminals. See off-line.

Optical character recognition (OCR): a technique, using special OCR machine-readable characters, by which documents (e.g. cheques, credit transfers, direct debits) are read by machines for electronic processing. See magnetic ink character recognition (MICR).

Overnight money (or day-to-day money): a loan with a maturity of one business day.

Paperless credit transfers: credit transfers that do not involve the exchange of paper documents between banks. Other credit transfers are called paper-based.

Participant/Member: a party who participates in a transfer system. This generic term refers to an institution which is identified by a transfer system (e.g. by a bank identification number) and is allowed to send payment orders directly to the system or which is directly bound by the rules governing the transfer system. See direct participant/member, indirect participant/member.

Payment: the payer's transfer of a monetary claim on a party acceptable to the payee. Typically, claims take the form of banknotes or deposit balances held at a financial institution or at a central bank.

Payment lag: the time-lag between the initiation of the payment order and its final settlement.

Payment order (or payment instruction): an order or message requesting the transfer of funds (in the form of a monetary claim on a party) to the order of the payee. The order may relate either to a credit transfer or to a debit transfer.

Payment system: a payment system consists of a set of instruments, banking procedures and, typically, interbank funds transfer systems that ensure the circulation of money.

PIN (personal identification number): a numeric code which the cardholder may need to quote for verification of identity. In electronic transactions, it is seen as the equivalent of a signature.

Point of sale (POS): this term refers to the use of payment cards at a retail location (point of sale). The payment information is captured either by paper vouchers or by electronic terminals, which, in some cases, are designed also to transmit the information. Where this is so, the arrangement may be referred to as "electronic funds transfer at the point of sale" (EFTPOS).

Position netting (or advisory netting): the netting of instructions in respect of obligations between two or more parties which neither satisfies nor discharges those original individual obligations. Also referred to as payment netting in the case of payment instructions.

Prepaid card (or payment card): a card "loaded" with a given value, paid for in advance.

Principal risk: the credit risk that a party will lose the full value involved in a transaction. In the settlement process, this term is typically associated with exchange-for-value transactions when there is a lag between the final settlement of the various legs of a transaction (i.e. the absence of delivery versus payment). Principal risk that arises from the settlement of foreign exchange transactions is sometimes called cross-currency settlement risk or Herstatt risk. See credit risk.

Provisional transfer: a conditional transfer in which one or more parties retain the right by law or agreement to rescind the transfer.

Queuing: a risk management arrangement whereby transfer orders are held pending by the originator/deliverer or by the system until sufficient cover is available in the originator's/deliverer's clearing account or under the limits set against the payer; in some cases, cover may include unused credit lines or available collateral. See also caps.

Real-time gross settlement (RTGS): a gross settlement system in which processing and settlement take place in real time (continuously).

Real-time transmission, processing or settlement: the transmission, processing or settlement of a funds or securities transfer instruction on an individual basis at the time it is initiated.

Receiver finality: analytical rather than operational or legal term used to describe the point at which an unconditional obligation arises on the part of the receiving participant in a transfer system to make final funds available to its beneficiary customer on the value date. See final settlement.

Registration: the listing of ownership of securities in the records of the issuer or its transfer agent/registrar.

Remote participant: a participant in a transfer system which has neither its head office nor any of its branches located in the country where the transfer system is based.

Remote payment: payment carried out through the sending of payment orders or payment instruments (e.g. by mail). Contrast with face-to-face payment.

Replacement cost risk (or market risk, price risk): the risk that a counterparty to an outstanding transaction for completion at a future date will fail to perform on the settlement date. This failure may leave the solvent party with an unhedged or open market position or deny the solvent party unrealised gains on the position. The resulting exposure is the cost of replacing, at current market prices, the original transaction. See also credit risk.

Respondent: see correspondent banking.

Retailer's card: a card issued by non-banking institutions, to be used in specified stores. The holder of the card has usually been granted a line of credit.

Retail transfer system: interbank funds transfer system which handles a large volume of payments of relatively low value in such forms as cheques, credit transfers, direct debits, ATM transactions and EFT at the point of sale.

Same-day funds: money balances that the recipient has a right to transfer or withdraw from an account on the day of receipt.

Securities depository (book-entry system): see central securities depository.

Sender finality: analytical rather than operational or legal term used to describe the point at which an unconditional obligation arises on the part of the initiating participant in a funds transfer system to make final payment to the receiving participant on the value date. See final settlement.

Settlement: an act that discharges obligations in respect of funds or securities transfers between two or more parties. See gross and net settlement system, net settlement, final settlement.

Settlement agent: an institution that manages the settlement process (e.g. the determination of settlement positions, monitoring the exchange of payments, etc.) for transfer systems or other arrangements that require settlement. See final settlement, settlement, settlement institution(s), multilateral net settlement system.

Settlement finality: see final settlement.

Settlement institution(s): the institution(s) across whose books transfers between participants take place in order to achieve settlement within a settlement system. See settling participant/member, settlement agent, multilateral net settlement system, bilateral net settlement system.

Settlement lag: in an exchange-for-value process, the time-lag between entering into a trade/bargain and its discharge by the final exchange of a financial asset for payment. See payment lag.

Settling participant/member: in some countries, a settling participant in a funds or securities transfer system delivers and receives funds or securities to/from other settling participants through one or more accounts at the settlement institution for the purpose of settling funds or securities transfers for the system. Other participants require the services of a settling participant in order to settle their positions. Currently in the EC direct participants are by definition also settling participants. See direct participant/member, tiering arrangement.

Settlement risk: general term used to designate the risk that settlement in a transfer system will not take place as expected. This risk may comprise both credit and liquidity risk.

Settlement system: a system in which settlement takes place.

Standing order: an instruction from a customer to his bank to make a regular payment of a fixed amount to a named creditor.

Substitution: the substitution of one party for another in respect of an obligation. In a netting and settlement context the term typically refers to the process of amending a contract between two parties so that a third party is interposed as counterparty to each of the two parties and the original contract between the two parties is satisfied and discharged. See novation.

S.W.I.F.T. (Society for Worldwide Interbank Financial Telecommunication): a cooperative organisation created and owned by banks that operates a network which facilitates the exchange of payment and other financial messages between financial institutions (including broker-dealers and securities companies) throughout the world. A S.W.I.F.T. payment message is an instruction to transfer funds; the exchange of funds (settlement) subsequently takes place over a payment system or through correspondent banking relationships.

Systemic risk: the risk that the failure of one participant in a transfer system, or in financial markets generally, to meet its required obligations will cause other participants or financial institutions to be unable to meet their obligations (including settlement obligations in a transfer system) when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of financial markets.

Telematics: the combined use of data-processing and data-transmission techniques.

Teller's cheque: see bank draft.

Tiering arrangement: an arrangement which may exist in a funds or securities transfer system whereby participants in one category require the services of participants in another category to exchange and/or settle their transactions. See direct, indirect and settling participant/member.

Trade date: the date on which a trade/bargain is struck.

Trade netting: a consolidation and offsetting of individual trades into net amounts of securities and money due between trading partners or among members of a clearing system. A netting of trades which is not legally enforceable is a position netting.

Trade-for-trade (gross) settlement: the settlement of individual transactions between counterparties. See gross settlement system.

Trade-for-trade settlement system: see gross settlement system.

Transfer: operationally, the sending (or movement) of funds or securities or of a right relating to funds or securities from one party to another party by (1) conveyance of physical instruments/money; (2) accounting entries on the books of a financial intermediary; or (3) accounting entries processed through a funds and/or securities transfer system. The act of transfer affects the legal rights of the transferor, transferee and possibly third parties in relation to the money balance, security or other financial instrument being transferred.

Transfer system: a generic term covering interbank funds transfer systems and exchange-for-value systems.

Travel and entertainment (charge) card: card issued by non-banks indicating that the holder has been granted a line of credit. It enables him to make purchases but does not offer extended credit, the full amount of the debt incurred having to be settled at the end of a specified period. The holder is usually charged an annual fee.

Truncation: a procedure in which the physical movement of paper payment instruments (e.g. paid cheques or credit transfers) within a bank, between banks or between a bank and its customer is curtailed or eliminated, being replaced, in whole or in part, by electronic records of their content for further processing and transmission.

Ultimate settlement: sometimes used to denote final settlement in central bank money.

Unwinding (or settlement unwind): a procedure followed in certain clearing and settlement systems in which transfers of securities or funds are settled on a net basis, at the end of the processing cycle, with all transfers provisional until all participants have discharged their settlement obligations. If a participant fails to settle, some or all of the provisional transfers involving that participant are deleted from the system and the settlement obligations from the remaining transfers are then recalculated. Such a procedure has the effect of transferring liquidity pressures and possibly losses from the failure to settle to other participants, and may, in the extreme, result in significant and unpredictable systemic risks.

Variation margin (or mark-to-market payments): the amount which is paid by a counterparty to reduce replacement cost exposures resulting from changes in market prices, following the revaluation of securities or financial instruments that are the subject of unsettled trades.

Wholesale funds transfer system: see large-value funds transfer system.

Korean institutions and terminology

Advance funds transfer arrangement: a risk management arrangement whereby a participant bank anticipating a net debit position in the Cheque Clearing System can arrange the transfer of the necessary funds in advance with its branches or with other banks anticipating a net credit position before net settlement is executed at the designated time in the afternoon.

Automatic Response Service (ARS) System: see Section 2.2.5.

Bank Giro System: see Section 3.2.2.

Bank of Korea: the central bank of Korea, established in June 1950 under the Bank of Korea Act. Its primary purposes are defined as maintaining the stability of the value of the currency and ensuring the sound operation and functional improvement of the nation's banking and credit system.

Bank of Korea Financial Wire Network (BOK-Wire): a real-time gross settlement system operated by the Bank of Korea, which came into service on 15th December 1994. See Section 3.2.5.

Bank of Korea Loans and Discounts System: see Section 3.2.5.

Bank of Korea's Monetary Stabilisation Bonds (MSBs): MSBs are special negotiable debt instruments of the Bank of Korea which are issued to control monetary growth and serve as one of the most important instruments in the Bank's open market operations.

Cash Management Service (CMS) System: a shared payment and cash management system offering firms which have accounts with several banks various services including multibank enquiries and large-volume real-time funds transfers. See Section 2.3.3.

Cashier's cheque: see Section 2.2.1. (See also "bank draft" under list of Red Book terms.)

Cheque Clearing System: see Section 3.2.1.

Committee for Financial Telecommunication Network System Development (FTNS): the Committee, established in June 1987 to promote nationwide electronic network systems,

is empowered to take decisions on matters concerning the introduction and development of interbank network systems. See Section 1.4.2.

Direct credit transfer: credit transfer to a payee's bank account from the payer's account at another bank using magnetic tape or electronic file transfer. See Section 3.2.2.

Domestic Currency Funds Transfer System: see Section 3.2.5.

Foreign Currency Funds Transfer System: see Section 3.2.5.

Government and Public Bonds System: see Sections 3.2.5 and 4.2.3.

Half-day call transaction: see Section 3.2.5.

Institutional Affirmation and Settlement (INAS) System: see Section 4.2.2.

Interbank CD/ATM System: see Section 3.2.4.

Interbank Funds Transfer (IFT) System: see Section 3.2.3.

Interregional clearing: see Section 3.2.1.

Korea Financial Telecommunications and Clearings Institute (KFTC): the KFTC was established in June 1986 by integrating two former organisations, the Korea Clearing and Credit Reporting Centre and the Korea Bank Giro Centre. It has also been entrusted with the development and operation of electronic funds transfer systems such as the shared CD/ATM, IFT and ARS networks. See Section 1.4.1.

Korea Securities Dealers Association (KSDA): the KSDA, all of whose regular members are securities companies, was established in 1953 to promote coordination, mediate conflicts between its members and foster the securities market through self-regulation.

Korea Securities Depository Corporation (KSD): the central securities depository, which was founded in 1974. See Section 4.2.1.

Korea Security Printing and Minting Corporation: founded on 1st October 1951 to produce banknotes, postage stamps, cheques, etc.

Korea Stock Exchange: established in February 1956 to provide a market for the trading of securities (including futures), maintain a fair and orderly market, regulate and supervise member firms and list securities. See Section 4.2.1.

KSD-Net (the Korea Securities Depository Net): an on-line information enquiry system and communication network that provides information stored in the host and server computers to the KSD and its customers. It is sometimes called the SAFE system.

Monetary and Financial Information System: see Section 3.2.5.

Monetary Board: as the supreme policy-making organ of the Bank of Korea, the Monetary Board, under the terms of the Bank of Korea Act, formulates monetary and credit policies and is responsible for the general policy and supervision of the Bank. It also has regulatory and supervisory authority over the activities of banking institutions.

National Agricultural Cooperative Federation (NACF): the NACF and its member cooperatives were established in 1961. The credit and banking sector of the NACF is deemed to be a banking institution within the meaning of the Bank of Korea Act and the General Banking Act.

National Federation of Fisheries Cooperatives (NFFC) and its affiliated local Fisheries Cooperatives: the NFFC and its member cooperatives were established in 1962. The credit and banking sector of the NFFC serves as a banking institution mainly for members, who are fishermen or manufacturers of fishing vessels or equipment.

National Livestock Cooperatives Federation (NLCF): the NLCF and its member cooperatives were established in 1981. The credit and banking sector of the NLCF supplies funds to its member cooperatives and other sectors of the NLCF.

On-line corporate banking: banking services whereby a firm can access a financial institution's information processing centre by telephone or via a personal computer. See also the CMS System, and Section 2.2.4.

Post Office: the Post Office operates the postal savings system under the Postal Savings and Insurance Act. See also Section 1.2.2.

Seoul Clearing House: the country's oldest and largest clearing house, which was established in 1910. See Section 3.2.1.

Third-party funds transfer: a non-negotiable order by an account holder to a financial institution to pay a specified sum of money to a third party. Customers, especially large companies, who do not have current accounts with the Bank of Korea can use the third-party funds transfer service for large-value transfers.

Treasury Funds Transfer System: see Section 3.2.5.

Won: the won is the basic currency unit of the Republic of Korea.