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## **III Payment & Settlement Systems**

### **1. Large-Value Payment System**

#### **1.1 Outline**

The BOK has been running BOK-Wire as the only RTGS system for large-value funds since December 1994. It guarantees settlement finality for individual funds transfer requests by adopting the method of real-time gross settlement (RTGS). In other words, once a settlement is cleared, it is irrevocable and unconditional so that settlement risks are entirely eliminated.

BOK-Wire plays a pivotal role in the payment system in Korea because it also provides finality of settlement regarding interbank credits and receipts within the retail payment systems run by KFTC. It is also linked with the DvP (Delivery versus Payment) and PvP Systems to reduce settlement risks in securities and foreign exchange transactions.

#### **1.2 Functions**

Services provided through BOK-Wire can be categorized into funds settlement business and other business. The former includes domestic currency funds transfers, foreign currency funds transfers, and government and public bonds issuance and redemption, and the latter includes the Bank of Korea loans and the transmission of information concerning Treasury payments.

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### ***(Domestic Currency Funds Transfer Service)***

The Domestic Currency Funds Transfer Service carries out general funds transfers for transactions between financial institutions, call transaction settlement to process automatically the principal and interest arising from direct or brokered transactions, and recipient-specific funds transfers that allow an individual or a business to make a large-value funds transfer as a third party through a participant bank. It also deals with DvP transactions and net settlements for retail payment systems.

The General Settlement of Domestic Currency Funds Transfer Service executes the transfer of funds between participant institutions and their head office and local branches across current accounts held with the Payment Systems & Treasury Service Department of the BOK or its regional headquarters.

Call Transaction Settlement handles the supply and repayment of call funds across participants' current accounts with the BOK so as to adjust temporary excesses and shortages of funds. The service is available to all participant institutions, and banks can use it to transfer call funds from non-participant institutions such as investment trust companies and participant institutions.

Recipient-Specific Funds Transfer is a third-party transfer service that allows an individual or a business to make a large-value transfer of at least 1 billion won through a participant institution.

### ***(Foreign Currency Funds Transfer)***

Foreign Currency Funds Transfer System is used to transfer foreign currency funds in US dollar or Japanese yen between financial institutions across their foreign currency deposit accounts with the BOK. Dependent upon the characteristics of the transaction,

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foreign currency funds transfers are classified as foreign currency funds transfers between financial institutions, in-house foreign currency funds transfers between bank headquarters and branches, and foreign currency funds deposits into and/or withdrawals from the BOK account.

### ***(Government and Public Bonds Issuance and Redemption)***

The issuance and redemption of government and public bonds cover operations, handling the issuance of government and public bonds, registration of the right of pledge, the transfer of title, their redemption at maturity, and repurchase agreements(RP) involving them.

Government and public bonds are issued through a process of electronic bidding through BOK-Wire with purchasers of government and public bonds issued by the government and the BOK using their current accounts with the BOK for settlement on a DvP basis. Government and public bonds may be repurchased by the BOK prior to maturity at the financial institution's request with funds being credited to its current account via BOK-Wire. In the case of redemption at maturity, the principal and interest after deduction of withholding tax are credited to the current account of the holding institution after a redemption request is made through BOK-Wire.

In order to control short-term liquidity through repurchase operations, the BOK conducts with selected financial institution counterparts the sale of government bonds and government-guaranteed bonds under repurchase and reverse repurchase. Tenders, entry into contracts, repurchase prior to maturity and redemption at maturity are all processed through BOK-Wire.

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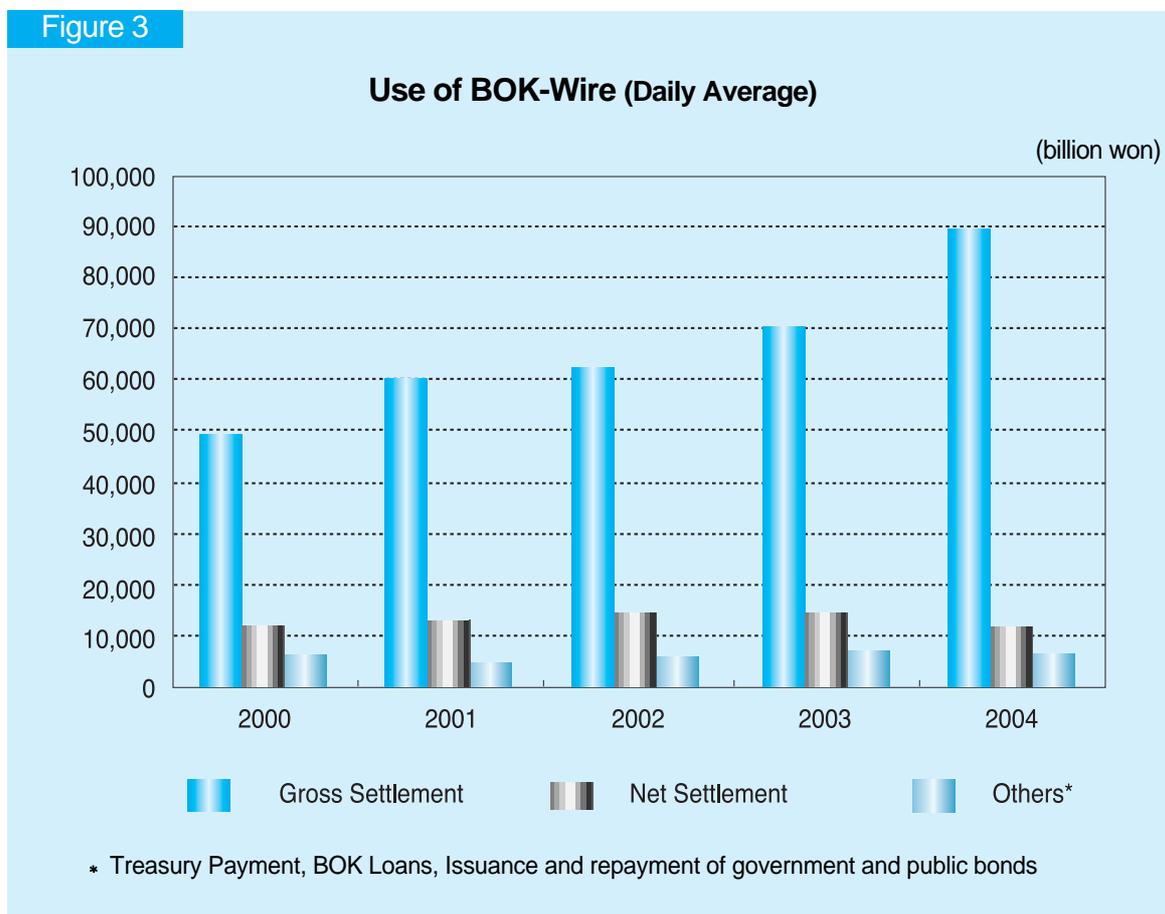
### ***(BOK Loans)***

BOK-Wire is also used for dealing with file transfers and funds settlement related to the BOK Loans System. Loan and securities provision applications are filed online to be screened for eligibility as collateral by the BOK prior to its granting of loans and collection of the redeemed proceeds at maturity. Financial institutions report their performance in the extension of credits such as commercial bill discounts and trade financing during a certain period as the basis for allocations under the Aggregate Credit Ceiling.

### ***(The Receipts of Treasury Funds)***

Treasury Payment System carries out the collection of tax revenues by concentrating at the BOK the Treasury funds received by Treasury agencies nationwide. All Treasury agencies enter the details of their daily revenue receipts into their individual computer systems. The records are collated at the head offices of individual financial institutions electronically and sent to the BOK by file-transfer through BOK-Wire by the 07:00 following business day. The BOK debits the related amounts from the current accounts of the revenue gathering institutions at a designated time on the second business day thereafter.

Figure 3



### 1.3 Intraday Liquidity Management

BOK-Wire operates queuing arrangements, a designated-time transaction system, advance funds transfer arrangements, half-day call transactions and intraday overdrafts to facilitate participating institutions' effective management of intraday liquidity.

#### *(Queuing Arrangements)*

BOK-Wire adopts a queuing mechanism when participants are short of the required current account balance. Typically such a system holds the payment orders in a queue

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until the necessary funds are deposited, and the orders are processed, but under the queuing system utilized by the BOK, queuing is limited to 1 hour. A By-pass FIFO (First-In, First-Out) rule has been introduced since January 1997 under which the system attempts to process the first transfer in a queue, but when this can not be executed owing to a lack of funds, it then tries to settle the next transfer instead in order to make funds transfer more efficient.

Since August 2002, optimization routines that simultaneously settle funds transfer orders from parties in gridlock have been introduced to improve system liquidity and increase settlement efficiency. They are run every five minutes after 13:30 when funds transfer orders are bunched.

### ***(Designated-Time Transaction System)***

BOK-Wire designates a set time to process net settlement in clearings, the Giro System, and IFT at the order of KFTC, redemption of call funds at maturity, and collection of Treasury funds from financial institutions. Integrated processing of large-value transactions involving a number of financial institutions with one another at one point in time heightens the efficiency of financial institutions' fund management and the convenience of settlement business.

### ***(Advance Funds Transfer Arrangements)***

If the net settlement amount of check clearings is significantly larger than the current account balance held by financial institutions, the net paying bank needs to borrow the settlement funds from the net receiving bank in bills clearing. In contrast, a net receiver bank has to wait until the settlement payment is deposited into its current account before lending the necessary funds to a net payer bank. The advance funds transfer

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arrangement system is designed to heighten the counterparties' convenience by making advance funds transfer arrangement for a designated time to cover the funds shortage in net clearings settlement.

The arrangement should be filed between the time that the BOK receives net settlement requests for the afternoon designated time(14:30) from KFTC and 14:10. The system is not in use for net settlement business at the designated time in the morning.

### ***(Half-day Call Transaction)***

The Half-day Call Transaction System, too, is designed to facilitate financial institutions' coverage of intraday funds' shortages for retail payments. Participating institutions interact with each other one-to-one without the involvement of an intermediary institution to make use of the advance funds transfer arrangement system. Non-bank participant institutions as well as banks can access the system in view of the objective of raising settlement funds seamlessly.

The half-day call transaction system differs from the advance funds transfer arrangement system in that a receiving institution must pay a set fee for every 100 million won borrowed. Half-day call transaction funds are automatically redeemed at maturity through BOK-Wire. There are two types of half-day call transaction: morning-time and afternoon-time.

### ***(Intraday Overdrafts)***

Daily current account loans are an instrumentality that facilitates the smooth operation of the RTGS. When the current account balance of a participant institution falls short of the amount of the funds transfer order, the system immediately supports an

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automatic loan within the preset credit limit to allow funds settlement to operate continuously during business hours.

The system serves participant institutions of BOK-Wire with a current account payment deposit at the BOK. Government bonds, government guaranteed bonds and monetary stabilization bonds(MSBs) are held as securities for the interest-free loan. The credit limit is computed as 200% of the average monthly balance of its current account with the BOK in the month two months earlier. When the loan is not repaid before the deadline, it is converted into a Temporary Funds Shortage Loan, carrying a relatively high interest rate.

## 1.4 Operation and Management

Any financial institution, whether monetary or non-monetary, having a current account with the BOK is eligible to participate in BOK-Wire subject to the approval of the BOK based on its management performance indicators, business performance ratios, forecast usage of BOK-Wire and its relevance for the BOK operations. As of the end of June 2005, a total of 121 institutions participated in BOK-Wire, of which 55 were banks and 66 non banks.

The BOK stipulates that participating institutions should assume the direct costs (excluding labor costs) of the BOK-Wire's construction and operations. The actual amount is decided on the basis of the level of the system's contribution to heightening the business convenience and profitability of the participants. Additionally, in order to reduce settlement risks and improve settlement practices of participating institutions, relatively higher fees are imposed for settlements executed near the close of business hours when there is typically a bunching of settlements.

## 2. Retail Payment Systems

There are 8 retail payment systems in Korea: the Check Clearing System, the Giro System, the IFT System, the CD/ATM System, the Electronic Banking System (HOFINET), the CMS System, the Local Banks Shared System(BANKLINE) and the K-CASH System. In addition, there are also the B2C & B2B Electronic Commerce Payment Systems, which support e-commerce activities.

Table 4

Retail Payment System Types			
Classification	Objects of Settlement	Intro-duction	Settlement Method
Clearing	Bills, Checks, and Payment certificates	1910	Paper
Giro	Sales, Insurance, Telephone, Public utility fees, Salary account transfers	1977	Paper & Electronic
CD/ATM	Savings withdrawals, Funds transfers, Credit card cash advances	1988	Electronic
IFT	Retail funds remittances	1989	Electronic
EFT/POS	Funds transfers from accounts linked with a debit card	1996	Electronic
CMS	Large-sum funds transfers	1996	Electronic
Local Banks Shared System(BANKLINE)	Account deposits/ withdrawals, Transfers	1997	Electronic
K-CASH	K-CASH funds transfers	2000	Electronic
E- Banking System	Phone/ Firm/ Internet banking transfers	2001	Electronic
B2C E-Commerce Payment System	B2C e-commerce transaction funds transfers	2000	Electronic
B2B E-Commerce Payment System	B2B e-commerce transaction funds transfers	2002	Electronic

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## 2.1 Check Clearing System

There were 51 clearing houses nationwide in Korea run by KFTC as of June 2005. Establishment of a clearing house requires the authorization of the Minister of Justice as prescribed by Article 83 of the Bills of Exchange & Promissory Notes Act and Article 69 of the Check Act. A total of 26 types of certificates including bills, checks, and certificates of time deposit as specified in the Check Clearing Agreement can be submitted for clearing.

### *(Participating Institutions)*

Financial institutions taking part in check clearing can be divided into general participating banks, special participating banks, and indirectly participating banks. General participating banks consist of general member and associate member banks of KFTC. Special participating banks are non-bank financial institutions other than the general participating banks that take part in the check clearing system on the special consent of the KFTC's general meeting. The Post Office is designated as a special participating bank under the Check Clearing Agreement. Apart from this, Korean branches of foreign banks and member cooperatives of the National Federation of Fisheries Cooperatives or member cooperatives of the National Agricultural Cooperative Federation may indirectly participate in checks and bills clearing on approval by the KFTC Clearings Review Committee.

The Seoul Clearing House had 19 general participating banks, 3 special participating banks, and 40 indirectly participating banks as of June 2005.

### *(Settlement Procedures)*

Operators of participant banks gather at a clearing house to exchange bills in accordance

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with the receipt record. The net receipt or payment is calculated and settled at the end. The process differs between Seoul Clearing House, where bills are cleared by both hand and machine, and other clearing houses where clearing is processed only by hand.

Once these clearing procedures are completed one hour prior to beginning of the next business day, the net clearing value is computed to be transmitted online to the BOK. These netted balances are settled across the current accounts of the participating banks at 14:30 that same day.

### ***(Interregional Clearings)***

If a bill's issuer is not from the area where the clearing house is located, the bill must in principle be cleared directly with the issuer. However, such a method requires 4~5 days for settlement with the burden of additional clearing fees being levied on customers, which results in making bills and checks from other regions unattractive. Clearing houses enter into agreements to exchange bills from their respective areas for settlement on the next business day to relieve such inconvenience and facilitate seamless and timely interregional funds settlement. The Interregional Clearing System has been in operation since March 1977 between clearing houses where the circulation of bills from other areas is large. It was in operation in eight areas as of June 2005; Seoul, Busan, Daegu, Gwangju, Jeonju, Gangneung, Daejeon, and Mokpo.

### ***(Cashier's Check Truncation)***

Economic growth in Korea led to a significant increase in financial transactions by volume and by value, giving financial institutions a heightened workload related to payment receipt processing. The Cashier's Check Truncation System was launched in May 2000 to transmit information concerning cashier's checks electronically between

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the payee's bank and the payer's bank. The scope of the service was expanded to all parts of Korea in September 2002.

The truncation system allows each financial institution to transmit data on checks and bills that are to be cleared to KFTC instead of gathering at the clearing house with the physical documents. The BOK plans to establish a new computer system that will allow information exchange about promissory notes, household checks, and current account checks, for all of which confirmation of the seal impression is essential, in addition to the text-based cashier's checks.

## 2.2 Bank Giro System

### *(Outline)*

The modern form of the Bank Giro System in Korea springs from the introduction of the use of Giro for the collection of electricity charges in Seoul in February 1977. Since then the system has grown continuously to include various types of bill payments along with a range of services. These can be categorized into paper based giro services for credit transfers and electronic giro services for direct debits, direct credit transfers, and standing orders, which are carried out nationwide. The Internet Giro service was introduced in March 2000. Through this service, payments may be made over the internet without a physical giro slip.

KFTC plays the role of a clearing center by processing information and ordering funds settlement in regard to interbank funds transfers and net settlement. The BOK settles giro transaction balances between banks with finality across their current accounts.

As of June 2005, the membership of the Giro System comprised 26 banks, the Post Office, member cooperatives of the National Agricultural Cooperative Federation and

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the National Federation of Fisheries Cooperatives, the Korean Federation of Community Credit Cooperatives, the National Credit Union Federation of Korea, and the Korea Federation of Savings Banks.

### ***(Credit Transfers)***

In the credit transfer system, funds deposited by the payer in cash or credited from her/his account are transferred to the recipient's account. The system is used for public utility charge payments and other large-value payment transactions as well as for funds transfers between individuals. Currently, large-volume payment transactions making use of credit transfers include electricity/telephone bills, premiums for insurance and national pensions, other insurance premiums, city gas charge, school & college tuition, purchase payments, membership fees, service fees, installment payments, newspaper subscriptions and many others.

### ***(Direct Debits)***

Direct debits operate in accordance with an agreement made between a payee institution, a payer, and a financial institution regarding a recurring payment obligation. Without a separate transfer request, the financial institution debits the payer's account with the specified amount and credits it to the payee's account based on the billing information. Like credit transfers, direct debits typically include those for electricity and telephone charges, insurance premiums, installment-purchase payments, and credit card payments; in other words, they are also mostly used for large-volume payment transactions.

Payee institutions using the direct debit system can not only use all branches of participating institutions to collect funds, but because they may also receive notification

Table 5

### Use of Bank Giro System

(thousand transactions, billion won)

	2000	2001	2002	2003	2004
By Volume	723,940	847,272	854,022	926,338	928,388
Credit Transfers	387,143	507,742	491,306	472,330	432,416
Direct Debits	314,642	314,323	330,746	414,243	452,724
Direct Credit Transfers	11,074	11,150	14,884	19,712	20,813
Standing Orders	11,082	14,057	17,086	20,053	22,434
By Value	73,610	98,604	104,559	114,963	122,255
Credit Transfers	39,956	60,463	61,771	62,389	61,432
Direct Debits	18,085	20,170	21,966	28,438	33,048
Direct Credit Transfers	13,193	14,884	16,915	19,347	20,914
Standing Orders	2,376	3,088	3,907	4,789	6,860

as to the outcome of their settlement requests, the need to draw up and register those not making payments is obviated.

So long as the payer's bank account has sufficient credit, the payee institutions are certain of receiving the payments, whereby the efficiency of processing a large volume of collections is heightened.

#### **(Standing Orders)**

Standing orders are used to automatically transfer funds from a payer's bank account to another bank for loan repayment, time installment savings and other routine payments on a regular basis. The most common use of the system is for regular bank

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payments such as those of loan interest and principal, installment savings, subscription savings, trust fund payments and other recurring membership and sponsorship payments.

### ***(Direct Credit Transfers)***

Direct credit transfers enable funds to be credited on a regular basis to multiple recipients' accounts with different banks upon the payer's request. They are widely used for large-volume periodical or one-off payments such as salaries, pensions and dividends.

Salary, pension, and dividend payments require the paying public agency or business to transfer a large-volume of funds to the bank accounts of a large number of recipients. The direct credit transfer system facilitates the process by allowing the payer to transfer these funds to recipients' accounts in any bank nationwide through its own bank.

### ***(Internet Giro)***

Internet Giro allows collecting institutions to send online billing information to customers electronically. After checking the billing details, the customer makes payment at the website by the transfer of funds as an electronic giro payment to the billing institution's account. This financial service was first launched in March 2000. As of June 2005, its coverage included the payment of national taxes, local taxes, various public utility fees, and other giro fees for some 33,000 institutions. It had as of that date some 2.7 million people subscribers.

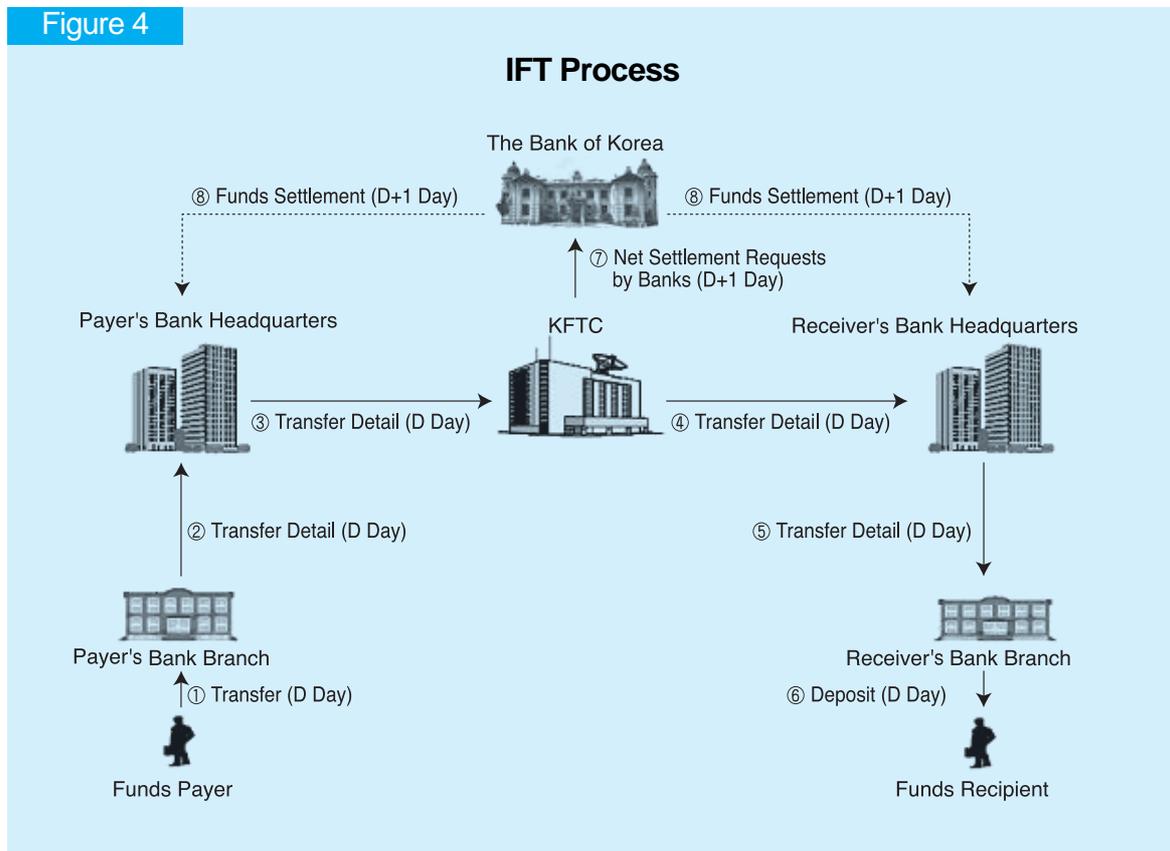
## 2.3 Interbank Shared Networks

### 2.3.1 Interbank Funds Transfer System

The Interbank Funds Transfer System allows all branches of participating members to process remittances to the account of a payee at any branch. It was first launched in December 1989.

As of the end of June 2005, all the domestic banks apart from the Export-Import Bank of Korea, plus the Post Office, member cooperatives of the National Agricultural Cooperative Federation and the National Federation of Fisheries Cooperatives, the Korean Federation of Community Credit Cooperatives, the National Credit Union

Figure 4



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Federation of Korea, the Korea Federation of Savings Banks and Korean branches of seven foreign banks for participated in the IFT system. Cash transfers, cashier's check transfers, remittances of payments and cashier's check information inquiries can be processed through the IFT system network. The transfer value ceiling is 100 million won per transaction.

Settlement between the banks involved is finalized by debiting and crediting their accounts with the BOK through BOK-Wire on 11:30 of the next business day following the transfer transaction. The system is fast losing ground to the Internet Banking System, and its business volume has been shrinking every year since 2000.

### **2.3.2 CD/ATM System**

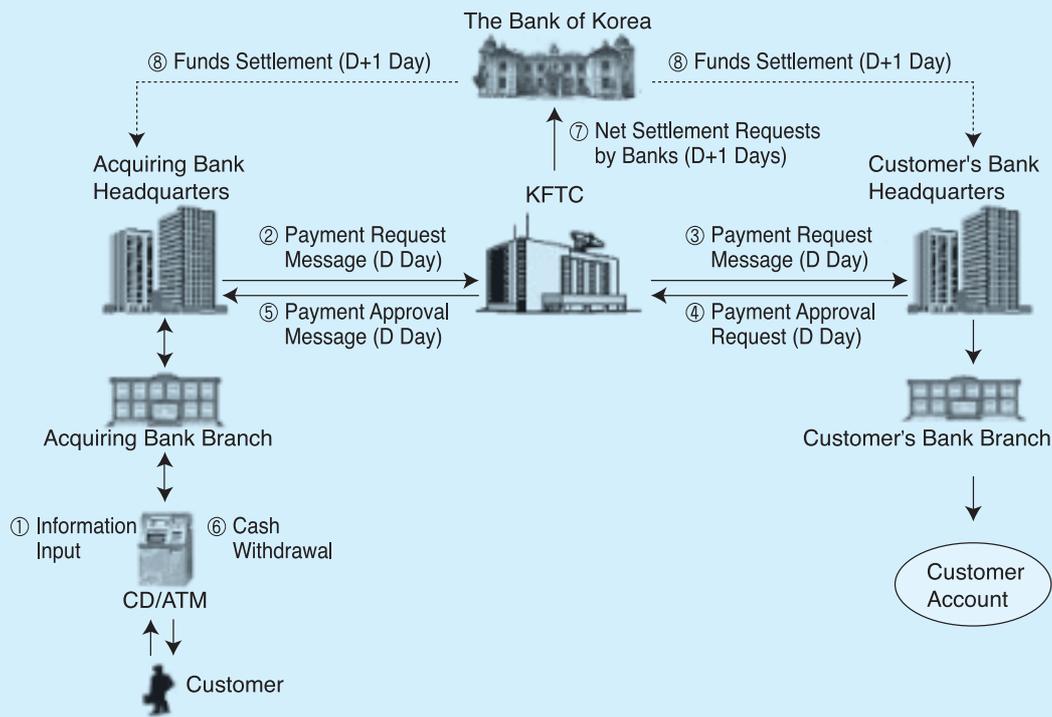
The CD/ATM System is designed to facilitate bank customers' cash withdrawals, funds transfers, and information inquiries through the CD or ATM terminals of other banks. The System was launched in July 1988.

Participants in the CD/ATM System at the end of June 2005 included all the domestic banks apart from the Export-Import Bank of Korea, the Post Office, member cooperatives of the National Agricultural Cooperative Federation and the National Federation of Fisheries Cooperatives, the Korean Federation of Community Credit Cooperatives, the National Credit Union Federation of Korea, the Korea Federation of Savings Banks, and the Korean branches of HSBC. The system handles cash (including fixed denomination 100,000 won cashier's checks) withdrawals, cash advances on credit cards, funds transfers, balance inquiries, and giro payment services between 08:00 and 23:30 everyday. Interbank funds settlement arising from the system is finalized on a net basis at 11:30 on the next business day by debiting and crediting the individual banks' current accounts held with the BOK through BOK-Wire.

Delivery of services including cash withdrawals, balance inquiries and cash advances on credit cards is made possible throughout the year by an Outdoor CD/ATM System installed in heavily frequented public places such as subway stations. The installation and operation of the Outdoor CD/ATM System are the responsibility of NICE e-Banking services. NICE e-Banking draws up detailed daily statements of inpayments and withdrawals for each individual bank and of cash advances provided

Figure 5

### Cash Withdrawals from the CD/ATM System



- ① Customer: Inputs related information personally into the CD
- ② Acquiring Bank Headquarters: Sends payment request message to KFTC
- ③ KFTC: Sends payment request message to the customer's bank
- ④ Customer's Bank: Sends payment approval message to KFTC after reviewing the information
- ⑤ KFTC: Sends payment approval message to the Acquiring bank
- ⑥ Customer: withdraws cash
- ⑦ KFTC: Creates net settlement document and sends it to the BOK(D +1 Day)
- ⑧ The BOK : makes interbank net settlement (D+1 Day)

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on credit cards and it sends them to KFTC, which handles the processing of positions for settlement across participants' current accounts with the BOK.

### **2.3.3 EFT/POS System**

The EFT/POS System was launched in February 1996 as a settlement system involving debit cards, which are issued to account holders by banks. The cardholder uses her/his debit card for purchase of the product or service purchases, debiting her/his account with the related funds, which are then credited to the seller's account the next business day.

As of the end of June 2005, all the domestic banks apart from the Export-Import Bank of Korea and the Industrial Bank of Korea, plus 6 VAN businesses including KFTC, National Information & Credit Evaluation Inc, Korea Information & Communication Co. Ltd, KIS Information & Communication, Korea VAN Service Co.Ltd, and KSNET Inc participated in the System.

Debit card transaction information is compiled at KFTC on the business day following the purchase by gathering debit card transaction records from each VAN business. After the net transaction values have been computed for every bank, the files are transmitted to the BOK and merchants' banks are notified of the details so that merchants' accounts may be credited.

### **2.3.4 Cash Management Service (CMS) System**

The CMS System, launched in May 1996, interlinks the computers of participating institutions and banks to facilitate the electronic processing of large-volume funds transfers, transaction information inquiries, and financial information services.

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Large-volume funds transfers through the CMS System consist of a debit transfer service for collections of money and a credit transfer service for the payments of money. The debit transfer service is similar to Giro direct debits, being related to payments of various installment and insurance premiums. The credit transfer service is similar to Giro direct credit transfers related to various disbursements and payments of dividends and salaries. Interbank funds settlement is finalized daily at 11:30 on the day of transaction for deposit transfers prior to that time and on the next business day for debit transfers.

### **2.3.5 Local Banks Shared System (BANKLINE)**

The Local Banks Shared System was established in June 1997 to interconnect participating banks with KFTC to facilitate BANKLINE operations allowing customers to make account transactions in all bank offices regardless of their location. The System enables local banks without a national sales network to provide customers from across the nation with deposits, withdrawals, and transfer services. All six local banks participated in the system as of June 2005.

The operations of the system consist of funds transfers and other transactions including inquiries for information about transaction details. The former are then divided into deposits and withdrawals. Interbank funds settlement is made across individual participant banks' current accounts with the BOK through BOK-Wire at 11:30 on the next business day.

### **2.3.6 K-CASH System**

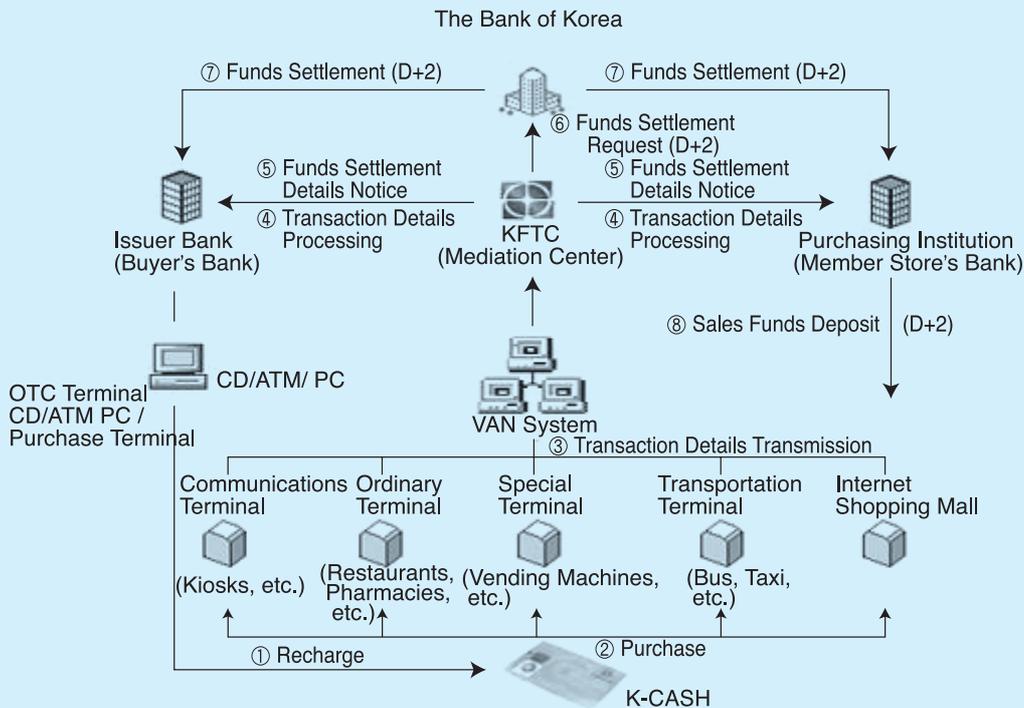
The K-CASH System is a system that processes settlement of credits and debits between financial institutions based on the use of K-CASH, jointly developed by

financial institutions. It was launched in July 2000.

The system is used most widely in the transportation sector as well as in some cyber cafes or PC rooms, vending machines, and internet shopping malls where the scale of individual transactions remains very small. Related interbank funds settlement is finalized at 11:30 on the next business day across participants' current accounts with the BOK.

Figure 6

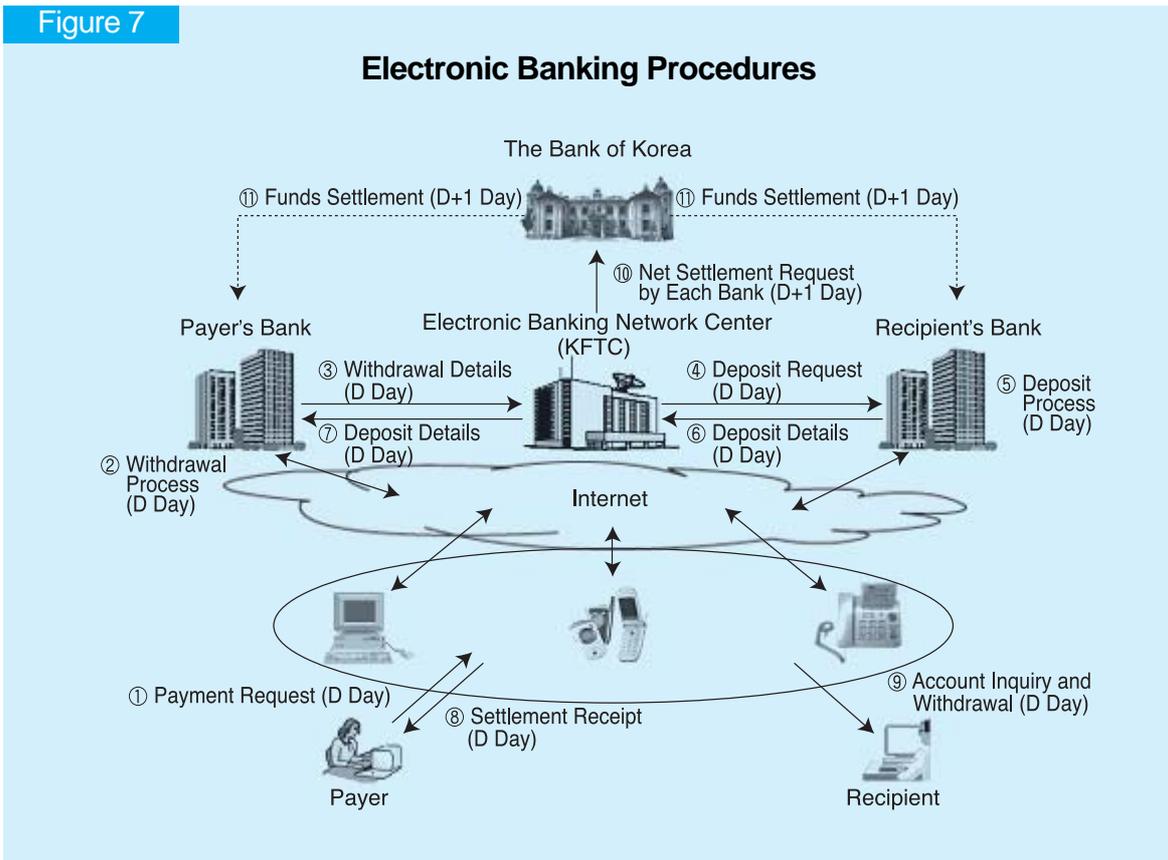
### K-CASH System Business Procedures



- ① Recharge the K-CASH using the value-storage terminal
- ② Pay for the product or service purchase with K-CASH
- ③ Sales-related information is transmitted to KFTC via VAN businesses
- ④ KFTC transfers the transaction details to issuer and purchasing banks
- ⑤ KFTC transfers the funds settlement details to issuer and purchasing banks
- ⑥ KFTC requests net settlement to the BOK through BOK-Wire
- ⑦ The BOK processes interbank net settlement across current accounts
- ⑧ K-CASH buyer's bank makes a deposit into the seller's account

### 2.3.7 Electronic Banking System

The Electronic Banking System was launched by upgrading the former Automatic Response Service (ARS) System in April 2001, while also mediating the e-finance services of telebanking, internet banking, and mobile banking that had been previously delivered through the IFT or the CD System Networks. Interbank funds settlement from telebanking, internet banking, and mobile banking services is processed on 11:30 of the following business day across individual banks' current accounts with the BOK.



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### **2.3.8 B2C E-Commerce Payment System**

B2C E-Commerce Payment System provides a real-time intermediation service for funds settlement between individual buyers and sales businesses in the e-commerce transaction environment that also delivers a real-time inquiry service concerning transaction outcomes. It has been in operation for interbank funds transfers and credit card settlements and transfer detail inquiry services since December 2000.

A number of devices and measures have been put in place to protect customers' settlement information especially in the e-commerce setting of anonymity and the service is available only for customers and shopping malls with official certificates. To heighten system security, for example, all settlement information is encoded prior to transmission to protect the confidentiality of customer information. Interbank funds settlement related to B2C transfers is finalized at 11:30 on the following business day across individual banks' current accounts with the BOK through BOK-Wire.

### **2.3.9 B2B E-Commerce Payment System**

B2B E-Commerce Payment System was launched in March 2002 to provide transmission of B2B contract information and a delivery channel for a new payment instrument, Online Registered Bill(ORB). ORB, the most commonly used payment instrument in the B2B E-Commerce Payment System, brings together electronically the payment function of checks and the credit function of bills. KFTC acts as the central clearing institution for ORBs as well as the operator of the B2B E-Commerce Payment System.

The services available in the System include issuing and processing ORBs, interbank funds transfers, and escrow. The settlement of ORBs at maturity and interbank fund transfers arising from real-time credit transfers are accomplished by

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multilateral net settlement at 11:30 on the business day following the transaction across participants' current accounts with the BOK through BOK-Wire.

## 2.4 Credit Card Payment Systems

Through credit card payment systems, card holders can obtain goods or services on credit or get cash advances or loans. There is no dedicated interbank settlement system for credit card payments and each credit card issuer makes use of a different method of settlement. In the case of banks and bank-affiliates, multilateral netting balances for each member bank are calculated by BC Card Co., which is a supporting organization for these credit card issuers, and they are then settled through the Check Clearing System. In the case of stand-alone credit card issuers, settlement is made by the companies' payments of the settlement funds, directly into their merchant members' bank accounts.

## 3. Securities Settlement Systems

### 3.1 Overview

Securities settlement systems in Korea include the Securities Market Settlement System and the KOSDAQ Market Settlement System managed by KRX(Korea Exchange), and the OTC Bond Market Settlement System run by KSD(Korea Securities Depository).

Table 6

#### Payments through Securities Settlement Systems (2004)

(trillion won)

Securities Settlement System		Total		Daily Average		Operator
		Trading Value	Settlement Value	Trading Value	Settlement Value	
Securities Market Settlement	Stocks	558.0	65.8	2.2	0.26	KRX
	Bonds	376.5	104.8	1.5	0.42	
KOSDAQ Market Settlement		153.3	7.4	0.61	0.03	
OTC Bond Market Settlement		2,300.5	1,404.0	9.2	5.6	KSD

### 3.2 Securities Market Settlement System

The Securities Market Settlement System settles transactions in listed stocks and bonds between securities companies in the securities markets run by KRX.

Under the Securities & Exchange Act, KRX is given full responsibility for the

settlement of transactions in the securities market. It entrusts KSD with the setting-up of the detailed settlement methods and the handling of DvP settlement procedures. Settlement of stocks and funds takes place in the order of customer -> securities companies -> KRX within the prescribed time of 2 business days after the trade date (T+2). Book-entry of securities is made across participants' accounts opened at KSD, while funds are settled through participants' accounts at designated commercial banks.

Settlement of bonds and funds takes place in the same sequence as that of stocks within 1 business day after the trade date (T+1) for government bonds and the prescribed time of the same day of the trade date (T+0) for other bonds. Bonds delivery is conducted in the same way as that of stocks. Funds transfer is settled across participants' accounts at the BOK for government bonds and across their accounts with designated commercial banks for other bonds.

Table 7

### Securities Market Settlement Systems

Classification	Stocks	Ordinary Bonds	Government Bonds
Participants	Securities Companies	Securities Companies	Securities Companies, Banks
Clearing House	KRX		
Settlement Agency	KSD		
Settlement Method	Multilateral Netting		
Settlement Date	T+2	T+0	T+1
DvP	Yes	Yes	Yes
(Funds Settlement)	(via Designated Commercial Banks)	(via Designated Commercial Banks)	(via BOK-Wire)
(Securities Settlement)	(Book-Entry)	(Book-Entry)	(Book-Entry)

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### 3.3 KOSDAQ Market Settlement System

The KOSDAQ Market Settlement System is a system for mutual transfers of the stocks and funds arising from transactions in KOSDAQ-listed stocks by securities companies; it is operated by KRX.

The Securities & Exchange Act stipulates that KRX shall decide upon the details of settlements in the KOSDAQ market and it has entrusted this business to KSD. Consequently the clearing and settlement processes in the KOSDAQ market are the same as that of the securities market.

Settlement takes the form of multilateral netting with the securities being settled by book-entry at KSD, and the funds being settled through KSD's accounts with designated commercial banks. The settlement of securities and funds is scheduled to take place at 16:00 on the second business day following the trade date (T+2).

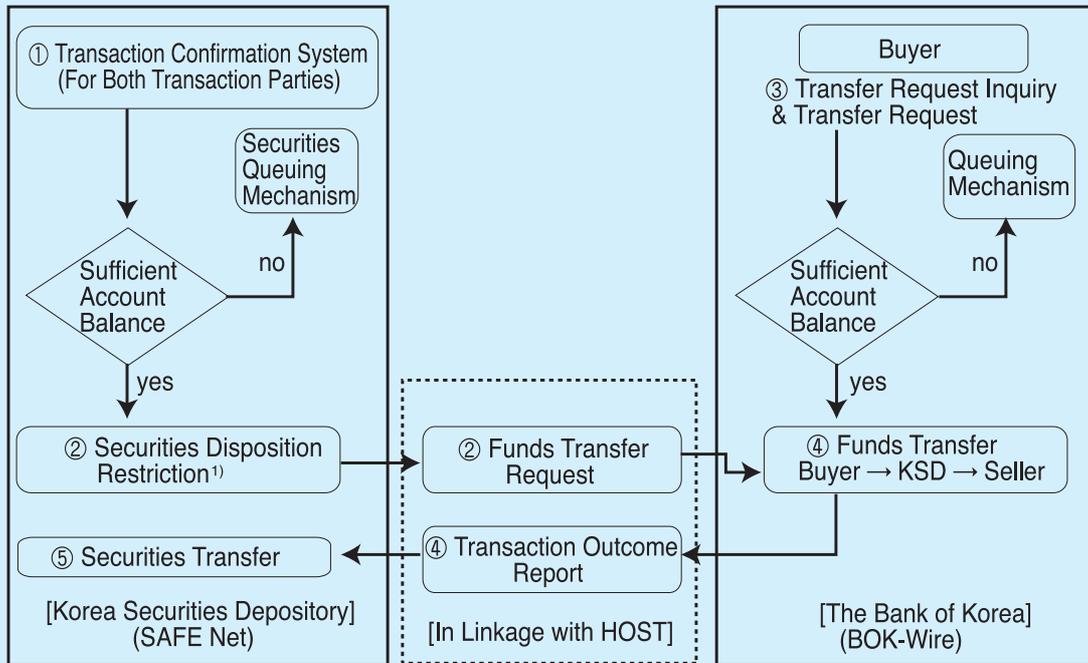
### 3.4 OTC Bond Market Settlement System

The OTC Bond Market Settlement System is run by KSD to process bonds and funds settlements arising from over-the-counter bond transactions. DvP Settlement of bonds and funds is conducted through RTGS during the business hours of the next business day after the trade date once the required bonds and funds have been secured. KSD takes no responsibility for unsettled transactions, which must be handled through direct negotiation between the parties involved.

Since November 1999, the BOK has linked BOK-Wire with the book-entry system of KSD for DvP of the OTC bond transactions. Accordingly, principal risk has been basically eliminated in OTC bond transactions.

Figure 8

### Mechanism of DvP



Notes : 1) For guarantee of simultaneous settlement, disposal from the depositor's account is limited, so that a seller can not handle the sold bonds again.

2) Procedures from ③ to ⑤ are run simultaneously when a buyer's current account has sufficient balance for settlement.

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## 4. Foreign Exchange Settlement System

In the past, the general method of closing out claims and obligations in foreign exchange transactions was by gross payments through foreign correspondent banks. As settlements took place at different times and places, however, the time lag between the settlements of the buying and selling currencies created foreign exchange settlement risk. In December 2004, the CLS System was introduced in Korea to provide PvP services for foreign exchange transactions involving the Korean won, as well as for those between foreign currencies, thus significantly reducing foreign exchange settlement risks.

### 4.1 Statutory Improvement

As a necessary first step for the introduction of the CLS System, the Regulation on Foreign Exchange Transactions, the Bank of Korea Monetary Policy Committee Rule and other elements of the relevant statutory framework had to be reviewed and amended.

The Regulation on Foreign Exchange Transactions was revised to permit the deposit and disposal of funds arising from CLS settlement through nonresident free-won accounts. Also, CLS Bank and its settlement members abroad were allowed to open multicurrency accounts and the Korean won accounts at domestic foreign exchange banks.

By an amendment of the Bank of Korea Monetary Policy Committee Rule, CLS Bank became eligible to open a current account at the BOK, and the CLS System was designated a Systemically Important Payment System.

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## 4.2 Establishment of the CLS Linkage System and Interbank Network

The BOK established the CLS Linkage System to connect BOK-Wire with the CLS system via the SWIFT network in order to facilitate continuous linked settlement of foreign exchange transactions involving the Korean won, which account for approximately 85% of total foreign exchange transactions in Korea. At the same time, KFTC established the Interbank Network for processing information related to CLS settlements among domestic banks. The participants in this CLS Network, which links domestic banks with CLS Bank, include the two settlement member banks in Korea, namely Kookmin Bank and Korea Exchange Bank, as well as their third-party customers.

## 4.3 Designation of the Korean Won as a CLS Eligible Currency

The Board of Directors of CLS Bank designated the Korean won as a CLS eligible currency in November 2004, as all prerequisites in terms of legal and institutional environment had been satisfied. As end of 2004, there were 15 CLS settlement currencies including the Korean won, the US dollar, the euro, the Japanese yen, and the British pound.

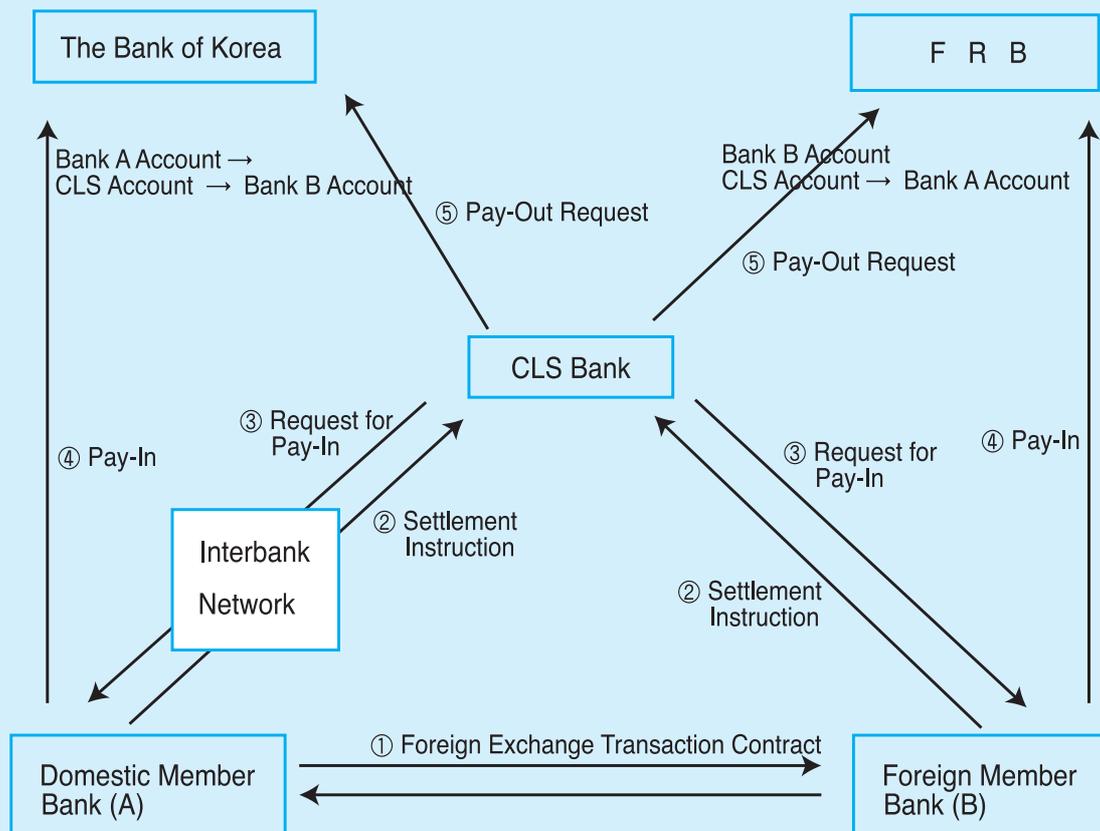
## 4.4 Settlement Procedures

The process of CLS settlement involves the simultaneous settlement of foreign exchange transactions in two currencies in a system of payment versus payment. CLS Bank simultaneously debits and credits the accounts of the two settlement members concerned in accordance with their payment instructions and actual payment transfers (pay-in and pay-out of funds) are then accomplished between CLS Bank's accounts

and those opened with the central banks concerned for each eligible currency, thereby giving settlement finality in the continuous linked settlement.

Figure 9

### Simplified Settlement Procedures of the CLS System



- ① Domestic settlement member bank A signs a transaction contract with foreign settlement member bank B (for dollar sales and won purchase).
- ② The transaction details (settlement instructions) are transmitted to CLS Bank.
- ③ CLS Bank makes pay-in requests to banks A and B after multilateral netting.
- ④ Banks A and B deposit the funds in the currency they are selling with the BOK and FRB respectively.
- ⑤ CLS Bank makes pay-out requests to the BOK and FRB respectively for A and B to complete the settlement.