01. About the KSD / 04

02. Repo Markets in Korea / 06
   1. Institutional Repo Market
   2. Customer Repo Market
   3. BOK Repo Market

03. KSD Repo Service / 10
   1. Introduction
   2. Trade Matching
   3. Settlement Service
   4. Trade Management
   5. Risk Management
   6. Income Payment Management
   7. GCF Repo Service

04. Other Information / 24
   1. Tax
   2. Cross Currency Repo
   3. Business Hours and Charges
1. Central Depository & Settlement service provider

Securities depository and settlement infrastructure is required to execute large volumes of transactions in the capital market. As the nation's central securities depository, KSD aims to enhance efficiency in securities issuance and circulation, as well as in financial transactions, and help reduce social transactions costs for the economy.

2. Custodian for the Public's assets

The number of investors and scale of investment assets have increased on the back of capital market growth. Most investment assets are the property of the public held in the form of securities. As the securities depository, KSD safeguards the assets of the investing public by securely managing them in its custody.

KSD Business Portfolio

1. Securities deposit
2. Securities registration
3. Clearing and settlement
4. CA processing for deposited securities
5. Gold custody and settlement
6. Transfer agent
7. SLB intermediary
8. Repo agent
9. Collateral management
10. Substitute securities management
11. FundNet
   - Subscription and redemption
   - Redemption
   - Trade matching and instruction delivery
   - Fund administration (ETFs)
   - Voting rights exercise for funds
   - Retirement pension platform
12. Foreign securities deposit & settlement
13. CA processing for foreign investors
14. Local custodian
15. DR underlying share custodian
16. KDR depositary
17. CSD system consulting and implementation
18. E-voting
19. E-proxy solicitation
20. LEI-K
21. Indenture trustee
22. Securities information management

3. Core infrastructure of the capital market

KSD enhances the stability of security settlement processes and the efficiency of the financial industry by bridging the gap between security administration services and the financial sector in order to contribute to the development of the nation's economy as a social overhead capital infrastructure.

4. Provider of various services to the capital market

KSD provides domestic and overseas financial institutions including securities brokerages, banks, insurance companies, asset management companies, futures trading companies and pension funds with various financial services including securities depository, settlement, futures trading and derivative product services.
1. Institutional Repo Market

Participant
The regulations for Financial Investments prescribe the participants eligible to take part in the institutional repo market, most of which are financial institutions.
1. Commercial Banks in general
2. Korea Development Bank
3. Industrial Bank of Korea
4. Korea Exim Bank
5. National Agricultural Cooperative Federation
6. National Federation of Fisheries Cooperatives
7. National Agricultural Cooperative Federation
8. National Federation of Fisheries Cooperatives
9. Insurance Companies
10. Financial investment service providers
11. Securities Finance companies
12. Merchant banks
13. Money Brokerage companies
14. Financial holding companies
15. Credit finance companies
16. Mutual savings banks
17. National Forestry Cooperative Federation
18. Korea Federation of Community Credit Cooperatives
19. National Credit Union Federation of Korea
20. Foreign Financial Institutions according to Items 1 to 19
21. Korea Deposit Insurance Corporation
22. Korea Asset Management Corporation
23. Korea Housing Finance Corporation
24. Korea Investment Corporation
25. Collective investment vehicles
26. Credit Guarantee Funds
27. Korea Technology Finance Corporation

*The institutions are specified according to the Act.*
2. Customer Repo Market

Players
In the customer repo market, financial investment dealers including but not limited to banks authorized to carry out investment trading business, securities financial companies and merchant banks are eligible to conduct repo trades against corporations and individuals.

Securities traded
In the customer repo market, the tradeable securities are limited to investment grade bonds. "Investment grade bond" means 1) any bond that is marketable and for which the mark-to-market valuation is available on a daily basis, 2) any bond with a BBB credit rating, or higher, according to credit rating agencies. Such bonds must be issued / guaranteed by financial institutions designated by the Governor of the FSC or guaranteed by the central or local government. Such requirements are established to protect corporations and individuals who have relatively less access to financial information compared to financial institutions.

Repo Settlement
Hold-in Custody repurchase transaction. Securities sold through the customer repo market are held by the relevant financial institution, and a bankbook is distributed to the individual customer. Financial institutions shall deposit customers’ securities with the KSD without transferring them to customers. The market price of the bonds deposited with the KSD shall be no less than 105 percent of the repurchase price.

3. BOK Repo Market

Players
The Bank of Korea selects and announces those institutions eligible to take part in the market in accordance with the open market operational regulations each year. As of the year 2017, 23 institutions participate in the BOK repo market.

Securities traded
Government bond, Government guaranteed bond, Monetary Stabilization bond, Mortgage Backed Securities

Repo Settlement
Delivery versus Payment through the KSD (same as the institutional repo market). The KSD provides trade management services after settlement.
# 03 KSD Repo Service

## 1. Introduction

The KSD, a Tri-party repo agent, delivers such services as settlement, custody and management of purchased securities, MTM, and income payment followed by repo transactions. The Tri-Party Repo service rendered by the KSD provides relatively high stability and efficiency in repo transactions particularly because they are conducted through an independent third party in a fair manner.

### Player
Institutions eligible to participate in the institutional repo market may use KSD service.

### Securities traded
Any securities prescribed in the FSCMA can be traded in the institutional repo market.

### Account
A participant can use securities depository account held with the KSD for deposit, withdrawal and transfer of purchased securities under repo trades. The settlement of securities under repo trades is transferred to the account of the purchaser from the securities account of the seller.

### Application for participation
Those who wish to use the KSD’s repo service shall open a securities account with the KSD service. Existing participants who have a securities account with the KSD would apply for participation to repo services. However, if a non-resident investor wishes to use the service, he/she shall submit a registration certificate of investment for the relevant foreign corporation together with a copy of a standing proxy agreement.

## 2. Trade Matching

### 1) Submission of Details of Repo Trade

When repo transactions are conducted, seller (for direct trades) or the brokerage firm (for brokered trades) shall submit the details of the repo trade to KSD. The KSD then checks the details furnished by the participants (for any discrepancy between the details submitted by the parties), distribute a written trade confirmation letter to each party and produces the settlement data.

### Business Hours and Charges

<table>
<thead>
<tr>
<th>Item</th>
<th>Content</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repo Position</td>
<td>Repo position</td>
<td>Buy / Sell</td>
</tr>
<tr>
<td>Type of Transaction</td>
<td>Term: Fixed Maturity(Enter transaction period) Open: No fixed maturity (No need to enter transaction period)</td>
<td>Term/Open</td>
</tr>
<tr>
<td>Transaction/Single Agreement</td>
<td>Choose whether to combine the transaction with other repo trades and form a single agreement. Transaction: separate from existing trades with the same counterparty and enter into a transaction Single agreement: combine with other repo transactions entered into with the same counterparty to form a single agreement.</td>
<td>Transaction / Single</td>
</tr>
<tr>
<td>Settlement Agent</td>
<td>If the party wishes settle through its settlement agent, the name of the settlement agent needs to be entered. (The details of the settlement agent shall be registered in advance.)</td>
<td>The number of securities account held with the settlement agent</td>
</tr>
<tr>
<td>Methods of Settlement</td>
<td>DVP: Simultaneous settlement through DVP system between BOK and KSD (except for foreign currency repo transaction) FOP: Separate settlement of securities and payment (the participant may choose the type of payment)</td>
<td>DVP/FOP</td>
</tr>
<tr>
<td>Base Currency</td>
<td>A range of currencies are available for purchase.</td>
<td>KRW/USD/JPY/EURO/AUD/CAD/CNY/GBP/HKD/SGD</td>
</tr>
<tr>
<td>Period</td>
<td>Termination date of repo trade (※ Information on termination date is required only in case of Term Repo)</td>
<td></td>
</tr>
<tr>
<td>Charges</td>
<td>Who pays the service charges to KSD Both parties / Seller / Buyer</td>
<td></td>
</tr>
<tr>
<td>Interval of Repo Interest Payment</td>
<td>Enter the interval in case it is agreed that the repo interest shall be paid/received on a regular basis Daily / Monthly / Yearly</td>
<td>Daily / Monthly / Yearly</td>
</tr>
<tr>
<td>Daily MTM (daily marking to market)</td>
<td>Whether to choose KSD’s MTM option Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Margin Ratio</td>
<td>To specify the ratio or amount of exemption from the obligation to maintain the margin(&quot;threshold&quot;) Margin amount or ratio</td>
<td>Margin amount or ratio</td>
</tr>
<tr>
<td>Purchased Securities Details</td>
<td>Enter the type and amount of the purchased securities</td>
<td></td>
</tr>
</tbody>
</table>
2) Transaction Matching

If there is no discrepancy between the details of repo trades submitted by both parties, KSD would give the trade a repo number and send a written confirmation letter to each party by electronic means to prepare for the settlement.

3. Settlement Service

1) Start-leg Settlement

① DVP : Delivery versus Payment

The delivery-versus-payment system functions through a direct link between the securities settlement system of the KSD and Bank of Korea (BOK) Wire. This allows real time and simultaneous settlement on a gross, trade-by-trade basis.

If the trade details from each of the trade parties are matched, the KSD repo system checks whether there are sufficient numbers of securities for the transactions in the seller's securities account. If there are securities sufficient to cover the purchased securities in the account, the KSD system locks securities balance to prevent them from being used for other purposes and instructs the buyer to transfer the funds. Upon the buyer's completion of the payment, based on such instruction, the settlement of the purchased securities is executed.

② FOP : Free of Payment

If the details submitted by each of the trade parties exactly match, the KSD repo system checks the number of securities in the seller's securities account and (if the number is sufficient) locks securities balance for settlement. The trade parties then make payment for settlement using the agreed-upon payment means, and the seller needs to notify that settlement has been made through the KSD repo system. Upon such notice by the seller, the settlement of the purchased securities is completed.

<N.B.> Settlement Process of the Purchased Securities

Settlement of securities in repo trades is done by book entry transfer from the seller's securities account to the buyer's account. For close-leg settlement, settlement is achieved by book entry transfer from the buyer's securities account to the seller's account.
2) Close-leg Settlement
Repo trades are principally terminated on the repurchase date. However, if the trade parties agreed otherwise, or in the event of either party's breach of contract, repo trades may be terminated. Settlement of the close-leg goes through the settlement of in the opposite direction of the start-leg on the termination date with the reverse party transferring securities to and receiving the principal and interest from the repo party.

4. Trade Management
1) Rollover
The parties may apply for roll-over on the termination date. In this case, only the outstanding transactions are terminated on the day when such an adjustment is made and the parties engage in a new transaction. The settlement may be completed by making payment of the repo interest. Conditions other than the termination date would consistently apply to the new transaction.

2) Substitution of Purchased Securities
The seller in a repo transaction may substitute the purchased securities in whole or part, for other securities with the consent of the buyer. Meanwhile, if the issuer of the purchased securities is under suspension of transactions, adjudication of bankruptcy, etc., the buyer shall demand repo adjustment by replacing such purchased securities with other securities. The seller should comply with such a request.

3) Change in Repo Trade Conditions
The parties may change part of trading conditions if necessary. In this case, the new conditions will apply only to the changed part and all other terms and conditions will remain constant.

Change in Repo Transaction Conditions :
Interval of repo interest payment, next payment date, repo interest, applicable exchange rate, margin securities pool, use of purchased securities, automatic payment of margin, threshold amount/ratio, method of settlement
5. Risk management

1) Evaluation of Purchased Securities
The KSD gathers information on the price of securities, on a daily basis, from four bond pricing companies designated by the Governor of the FSS. In this way, it can evaluate the purchased securities in a fair manner and uses the arithmetic means of those prices as the price of the purchased securities.

2) Mark-to-Market
Mark-to-Market (MTM) means the act of revaluing securities to current market values. In order to minimize market risk, the KSD repo service carries MTM. The KSD compares the market value of the purchased securities to base margin [repurchase price x margin ratio], on a daily basis, during the period of repo, calculates the exposure for each party and sets an additional margin for either party, if necessary. Since the purchased securities could be used as collateral in repo trades, the value of the purchased securities in a repo transaction must be monitored on a daily basis to ensure that it does not drop below a certain range. The parties minimize exposure to the risk arising from price fluctuation and enhance the stability of the repo trade through MTM. When the repo transaction is terminated, the KSD repo system returns any margin involved in the transaction to each paying party.

1. Margin Ratio
The margin ratio means the market value of purchased securities, on the initial date of a repo transaction, divided by purchased price. This figure is used as a base ratio in calculating MTM.

Margin Ratio = (Market value of purchased securities on the initial date) / (purchased price)
If otherwise agreed on by the parties, the margin ratio can be determined in different ways.

2. Threshold
The change in the market value of the purchased securities and the repurchase price results in exposure on a daily basis. For this reason, the parties need to pay the margin to limit such exposure. However, the parties may agree, in advance, to specify a threshold for exemption from the margin maintenance requirement.

The range of the threshold could be established either in ratio or amount. If the exposure falls within the range of the predetermined threshold, the margin maintenance requirement would not be applicable. The range of the threshold is subject to change by the mutual agreement of the parties.
### 3) MTM Procedure

#### Calculation of Exposure

The risk arising from a movement of the market value of the purchased securities is called "exposure". The party needs to pay the margin to the counterparty suffering exposure.

* exposure = the market value of the purchased securities - base margin (repurchase price x margin ratio)

#### Calculation of Margin Shortage and The Range of Threshold

In case the exposure exceeds the threshold, the amount of margin shortage should be calculated. If there is any margin already paid and the amount thereof is less than the exposure, the difference would be considered as the margin shortage.

In cases the exposure falls within the range of the threshold, there would be no margin call regardless of the amount of the margin already paid.

#### Margin Call

If there is any margin shortage as a result of MTM, the KSD will notify the relevant party of such a fact and require them to pay the margin.

<table>
<thead>
<tr>
<th>Case in Point (MTM)</th>
<th>T</th>
<th>T+1</th>
<th>T+2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valuation of Bond</td>
<td>105</td>
<td>108</td>
<td>115</td>
</tr>
<tr>
<td>{purchased price}</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>(repurchase price)</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Base Margin</td>
<td>105</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>Exposure</td>
<td>3(Seller)</td>
<td>10(Seller)</td>
<td>15(Seller)</td>
</tr>
<tr>
<td>Threshold</td>
<td>100-110</td>
<td>100-110</td>
<td>100-110</td>
</tr>
<tr>
<td>Margin Shortage</td>
<td>0</td>
<td>10(Buyer)</td>
<td>15(Buyer)</td>
</tr>
<tr>
<td>Margin already paid</td>
<td>0</td>
<td>0(Buyer)</td>
<td>10(Buyer)</td>
</tr>
<tr>
<td>Margin Call</td>
<td>0</td>
<td>10(Buyer)</td>
<td>5(Buyer)</td>
</tr>
</tbody>
</table>

### 4) Margin Transfer

#### Margin Transfer

Any participant who receives the notice of margin call shall pay the relevant amount (in cash or margin securities) to the KSD no later than 14:00 of the same day.

When securities are delivered for the margin, the securities are transferred to the securities account of the counterparty. When cash is used for the margin transfer, the counterparty in receipt the margin will manage the paid amount and would pay the interest accrued on the cash margin to the payer on the repurchase date.

#### Deferment of Margin Payment

Following the margin call, the margin payment in whole could be deferred if the party entitled to receive the relevant margin wishes to do so. However, the party may withdraw such an intention at any time and require the counterparty to pay the margin.

#### Adjustment of Transaction

The parties may adjust the size of the purchased securities or the purchased price. For such an adjustment, the parties need to apply to the KSD with the details of the purchased securities or the purchased price subject to the adjustment. In this case, as the existing trade is considered as terminated and the parties as engaging in a new transaction, only netted amount of securities and cash are settled (but repo interest accrued till the adjustment date should be paid). All other conditions of the transaction remain the same.
5) Default

Either party can default if they fail to perform the following specified duties: the existing transaction goes through to settlement of the close-leg. If the settlement of close-leg is practically impossible, the KSD would terminate the relevant transaction by deleting it from the system. Default is generally categorized into non-performance of settlement, failure to pay a margin, failure to substitute purchased securities and failure to transfer the proceeds. In case where a single agreement is entered into, a default occurring in a separate transaction would constitute termination of the entire repo trades.

① Event of Default

<table>
<thead>
<tr>
<th>Non-performing of settlement</th>
<th>Should either party fails to meet the settlement requirements at maturity. [The seller fails to pay the repurchase amount or the buyer fails to repurchase the purchased securities.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to pay a margin</td>
<td>Either party fails to transfer a margin after margin call is triggered.</td>
</tr>
<tr>
<td>Failure to replace purchased securities</td>
<td>Should the seller fails to comply with the buyer’s request for replacement of the purchased securities.</td>
</tr>
<tr>
<td>Failure to pay the proceeds</td>
<td>The buyer can use the purchased securities until the termination date. However, the buyer is obliged to pay the interest accrued on the relevant securities to the seller. In this case, the KSD requires the buyer to notify the seller of the interest accrued and to pay the proceeds. [Failure to pay the proceeds implies the failure of the buyer to perform their aforementioned duty.]</td>
</tr>
</tbody>
</table>

② Compulsory Termination as a result of Default

In the event of default by either party, the transaction must continue through the settlement of the close-leg. However, if settlement is not executed for some reason, the KSD will delete the relevant transaction from the repo system, which leads to compulsory termination. In this case, the parties need to settle the transaction based on the Master Agreement between them.

* Compulsory Termination

In cases of default by the seller, the KSD would deliver the margin and purchased securities to the buyer, and in case of default by the buyer, the margin would be delivered to the seller and the relevant repo transaction would be forcibly terminated. Following such a termination by the KSD, the parties need to settle the transaction based on the Agreement (KOFIA Agreement/OMRA) between them.
6. Income Payment Management

1) Interest accrued on the purchased securities

In repo trades, securities are transferred to the buyer as settlement, and the buyer is obliged to return the interest accrued on the securities to the seller. So, on the interest payment date, during the life of the repo trade, the buyer would have to pay the interest to the seller.

The KSD assists the buyer’s interest payment process in order to enhance the convenience for the participants.

As shown by the «Picture 1», the settlement of the purchased securities is done by book-entry transfer from the seller’s securities account to the buyer’s account. The methods of the interest payment would vary depending on whether the buyer holds the relevant securities in the buyer’s account.

Case 1
In case the buyer holds the securities in the buyer’s account, the interest would be automatically paid to the seller.

As shown by «Picture 2», if the buyer holds the securities in the buyer’s account, the KSD Repo system would directly pay the interest to the seller on the relevant interest payment date.

In this case, the KSD would pay the interest to the seller after withholding tax at the source from the interest proceeds.

Case 2
In case the buyer disposes of the securities from the account, the buyer would pay the interest to the seller on the interest payment date (through KSD).

As shown by «Picture 3», in case the buyer disposes of the securities from securities account, the KSD would receive the interest from the buyer and provide it to the seller. This is called “substitution payment”.

In this case, the KSD would pay the interest to the seller after withholding tax at the source from the interest proceeds.
2) Interest accrued on the margin securities
The margin securities are held in the securities account of the counterparty. Therefore, if any interest is accrued on the margin securities, the KSD will directly pay the interest to the party who paid the margin securities the same as Case 1 or Case 2 above.

3) Exchange of the purchased securities at maturity
The KSD notifies the parties concerned of the impending maturity date a full five days in advance of the maturity of the purchased securities. The buyer should request substitution of the purchased securities until one business day before the maturity date and the seller should comply with such a request.

4) Exchange of the margin securities at maturity
When the margin securities mature, the relevant margin must be returned to the paying party in the morning upon opening of business. If any exposure arises to either party as a result of the return of the securities margin, the KSD will request the margin transfer to the relevant party.

7. GCF Repo Service
GCF (General Collateral Financing) is a Repo transaction which is executed based on the type of securities—government bonds, monetary stabilization bonds, special bank bonds, government-guaranteed bonds, and mix of the above, not specifying the specific security at the time of execution.

One of the features of Korean GCF Repo is that there is an option on ‘comprehensive consent on collateral substitution’ which makes it possible for repo sellers to change posted securities (collateral) easily without getting approval from repo buyers by each transaction.

By replacing their securities on time, repo sellers can have stable long-term financing plan. It could help repo buyers as well, by getting corresponding repo interests which enables them to achieve higher repo returns.

KSD has been in operation of GCF Repo system since 2013, and reorganized the system to support the government’s policy to activate money market by boosting term repo in July 2017.
04 Other Information

1. Tax

1) Interest related Tax (including coupons)
   The party who pays the interest accrued on the securities needs to withhold tax at the source from the interest amount accrued for the holding period of the securities. If the securities are sold before the interest payment date, such tax would be deducted when the securities are sold.

* Exception for Repo Transactions: When the securities are sold under a repo transaction, withholding tax imposed based on the holding period would not be deducted. However, if the repo buyer sells the purchased securities, the withholding tax imposed during the holding period (from the purchase date to the date of sale on the market) would be deducted. The buyer may apply for a tax return the following month.

2) Repo interest related Tax
   Repo interest is considered to be interest income and is subject to taxation. For repo interest, withholding tax is deducted at the time of the interest payment. However, this shall not apply to domestic financial institutions. Withholding tax for foreign investors is deducted according to the tax rate prescribed in the relevant tax law.

2. Cross Currency Repo
   The seller can take cash in other currencies (USD, JPY, EURO) other than KRW. The parties should select a currency for the transaction when they submit details of the repo trade to the KSD, which will convert the transaction amount denominated in foreign currency into KRW to apply to the MTM.

* Cross currency repo refers to a repo in which securities have been denominated in a different currency to the collateral transaction.

* Foreign exchange rate option available
  - Fixed Rate : The parties mutually fix the exchange rate.
  - Base Rate : The base rate at the preceding date as notified by the Seoul Money Brokerage Service
  - Closing Rate : The closing rate at the preceding date notified by Shinhan Bank

3. Business hours and Charges
   Closing time for each business is as follows.

<table>
<thead>
<tr>
<th>Business</th>
<th>Closing Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin Payment</td>
<td>14:00</td>
</tr>
<tr>
<td>Institutional Repo</td>
<td>17:00</td>
</tr>
<tr>
<td>Customer Repo</td>
<td>21:40</td>
</tr>
<tr>
<td>BOK Repo</td>
<td>17:30</td>
</tr>
</tbody>
</table>

A charge of KRW20 on the first day and KRW18 from the second day will be imposed on every KRW100 million in a daily balance. The KSD calculates the charges from the first day through to the last day of each month and notifies each participant that payment must be made for such no later than the 20th of the following month.
Overnight Repo
Term Repo
Hold-in-Custody Repo
Open Repo
Delivery Repo
Tri-party Repo

REPO
Repurchase Agreement

PUBLISHER
Korea Securities Depository

ADDRESS
Repo Team, Securities Financing Department
Korea Securities Depository
Seoul Office : 401-23 Yoinaru, Youngdeungpo-gu, Seoul 07330, Korea
Tel. 82-2-3774-3340, 3278 / Email. repo@ksd.or.kr

DATE
2018. 2. 28

DESIGN
KOREA BLIND UNION

COMPLETION OF RISK REVIEW [RISK-233, 2018. 1. 29]
CONTACT
repo@ksd.or.kr

NOTICE
The purpose of this guidebook is to facilitate our participants' understanding of KSD's Repo Service. Please consult the applicable laws and regulations when carrying out business operations. KSD hereby declares that we are not legally responsible for this guide.