1 JULY 2011

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<td>1 July 2011</td>
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<td>16:00 – 17:15</td>
<td><strong>Next step and work plan</strong>&lt;br&gt;- Structure of the SF2 final report: presentation by Dr. Inui, ADB consultant&lt;br&gt;- Workshops and public seminar; ABMF meeting schedule&lt;br&gt;- continued discussed on SF1 if necessary</td>
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<td>17:15 – 17:45</td>
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<td>17:45 – 18:00</td>
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<td><strong>Dinner</strong> (hosted by Korea Securities Depository (KSD))</td>
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Opening Remarks by SF2 Chair, Mr. Jong Hyung Lee
Structure of information collection and overall assessment
Information collection update
  9:10 China and Indonesia
  10:10 Malaysia and Thailand
  11:25 Viet Nam and Hong Kong
  13:30 Philippines and Korea
  14:30 Japan (Singapore)
Information session
  15:15 Presentation by Omgeo and Q&A
    ➢ How Omgeo can contribute standardization and harmonization
      by Mr. Hong-Gun Park and Mr. Yuji Tanaka
4th ABMF SF2 on 1st July 2011 (draft agenda)

16:00 Next step and work plan
   ➢ Structure of the SF2 final report
   ➢ Workshops and public seminar; ABMF meeting schedule
   ➢ Continued discussed on SF1 if necessary

17:15 Discussion: How to disseminate the information
   ➢ Structure and scope of information to publish
   ➢ Website management
   ➢ Linkage with national and international forums

Closing Remarks by SF2 Chair

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Bond Market infrastructure diagram, cross-border government bond transaction flow, and domestic government bond transaction flow in ASEAN+3 countries

Note:
1. Diagrams and flowcharts are drafted based on same template
2. Terminologies and expressions are kept as those which are used in each market
3. Only bond markets are shown in the Bond Market Infrastructure Diagram. Equity is out of the scope of the survey.
4. Only government bond transaction flows are shown in the cross-border and domestic flows.
5. ISO standard is used where possible such as Country code by ISO 3166-2
6. The diagrams and flows are written based on the answer for the questionnaire and discussion during the country visits. But, there still remain many misunderstandings and errors.
People’s Republic of China (CN)

**Bond market infrastructure diagram**

- **Trading**
  - China OTC Market
  - Inter-bank Bond Market
  - CFETS & NIFC

- **CCP**
  - SHCH (to provide CCP net clearing service)
  - CSDCC

- **Settlement match.**
  - SHCH
  - CCP
  - Govt. Bond

- **Bond settlement**
  - SCP
  - CCDC

- **Cash settlement**
  - PBoC (HVPS CNAPS)
  - Comm. banks

**Note:** Commercial Bank Counter Market is not shown here.

**Abbreviations:**
- CFETS & NIFC: China Foreign Exchange Trade System & National Interbank Funding Center
- SSE: Shanghai stock exchange
- SZSE: Shenzhen stock exchange
- NGTS: New Generation Trading System
- IEPFS: Integrated Electronic Platform for Fixed-income Securities
- INTS: Integrated Negotiating Trade System
- CCDC: China Central Depository and Clearing Corporation
- CSDCC: China Securities Depository and Clearing Corporation
- SHCH: Shanghai Clearing House
- SCP: Super Short-term Commercial Paper
- CNAPS: China National Automatic Payment System
1. Seller and buyer trade bond via China Foreign Exchange Trade System (CFETS). CFETS provides automatic trade matching function. But, most of the bonds are traded bilaterally in China OTC Market by telephone or some other ways. The trade data are entered to CFETS for price transparency.
2. CFETS sends trade data to China Central Depository &Clearing Co. Ltd. (CCDC). About 5% of trade data are entered to CCDC directly from seller and buyer (refer to 4. Settlement instruction).
3. CCDC sends trade data to seller and buyer for verification.
4. When seller and buyer received trade data from CCDC, seller and buyer verify the data. If the data are correct, seller and buyer send affirmative message to CCDC. The messages are regarded as “settlement instructions” to CCDC. About 5% of trades are directly entered to CCDC after traded in China OTC Market. In this case, one party (either seller or buyer) needs to send settlement instruction into CCDC system. The settlement instruction needs to contain full message items necessary for the settlement. CCDC system will automatically ask the other party to confirm. If not, CCDC won’t process settlement. After matching the order (local matching), CCDC will settle the trade in FOP or DVP as requested by customers.
5. CCDC matches settlement instructions from the seller and buyer and notifies matched result.
6. CCDC produces settlement contract.
7. On the settlement day, CCDC executes the settlement contract and notifies the status to the seller and buyer.
8. CCDC blocks seller’s bond to secure DVP transaction.
9. CCDC sends DVP fund settlement request to People’s Bank of China (PBoC).
10. PBoC executes fund settlement. Fund is transferred from buyer’s current account to seller’s current account by High Value Payment System (HVPS) of CNAPS.
11. PBoC sends fund transfer notice to the seller and buyer.
12. PBoC sends DVP fund settlement notice to CCDC.
13. CCDC executes bond delivery (release blocked bond).
14. CCDC sends settlement completion notice to the seller and buyer.
1. QFII Custodian sends cash projection report to Designated QFII Broker
2. QFII places order with Designated QFII Broker
3. Designated QFII Broker checks balance, executes trade on Shanghai Stock Exchange (SSE), or Shenzhen Stock Exchange (SZSE)
4. Designated QFII Broker receives trade confirmation
5. Designated QFII Broker sends trade confirmation to QFII, and to QFII Custodian
6. QFII Custodian downloads Report on Trade Obligations from CSDCC (Clearing function)
7. Only in the event of a discrepancy, QFII Custodian needs to contact CSDCC
8. CSDCC (Settlement function) sends confirmation of transfer of bonds to QFII Custodian (on T+1)
9. QFII Custodian sends status update or partial settlement confirmation to Global Custodian
10. QFII instructs Global Custodian on settlement details
11. Global Custodian instructs QFII Custodian on settlement details
12. QFII Custodian funds settlement clearing reserve account (CSDCC account at Payment Bank)
13. After cash settlement deadline (in effect completion of trade settlement), QFII Custodian sends settlement confirmation to Global Custodian
14. Global Custodian sends settlement confirmation to QFII
15. Payment Bank sends debit/credit information in form of cash statement to QFII Custodian
16. QFII Custodian sends securities statement to Global Custodian
17. QFII Custodian sends cash movement confirmation/cash statement to Global Custodian
18. Global Custodian sends cash movement confirmation/cash statement to QFII
The Qualified Foreign Institutional Investor scheme is, in principle, the only official avenue to invest into bonds in China; however, since late 2010, central banks and a number of typically HK or Macau based financial institutions have received permission to invest excess RMB balances into Interbank market.

General assumption: QFII using Global Custodian for all markets, including China

However, for QFII segment, typically trades are placed without an International Broker’s involvement.

QFII is denoted as a T+1 settlement cycle; but bonds move on T eve, cash on T+1 by 16.00 hours.

No cross-border funding flow, no FX, since funds/quotas needs to be maintained onshore, in RMB at QFII custodian as designated cash correspondent; Global Custodian or 3rd Party have no role in funding the trades.

There is no pre-matching or matching concept; QFII Custodian matches internally for reconciliation purposes only.

1. QFII Custodian sends cash projection report pro-active (either evening or early morning daily), before QFII’s trade order is received by Designated QFII Broker.

5. Without understanding QFII Broker processes, difficult to determine actual sequence of confirmation generation.

6. Dissemination of trade data, as individual transactions and net for cash obligation, from CSDCC via PROP (SSE) or DCOM (SHSE) access systems; typically downloaded by QFII Custodians.

7. QFII Custodian is not expected to affirm trades or upload settlement instructions; instead, only in case of a mistake in the trade, QFII Custodian will contact CSDCC, industry jargon: passive affirmation.

9. Depending on service level agreement between Global Custodian and QFII Custodian, QFII Custodian will either follow up the movement of bonds with a status update on the transaction (since cash final settlement pending), provide partial settlement confirmation (securities only), or send a settlement confirmation (since bonds transferred and are available for sale to buyer); all versions are practiced and may have pro and con arguments, respectively.

10,11. Due to short settlement cycle and market practice, QFII instruction to QFII Custodian (via Global Custodian) is expected to be received after bond transfer is effected; however, QFII’s are encouraged to send instructions, to be used for reconciliation and as messaging and processing trigger at both Global Custodian and QFII Custodian.

12. QFII Custodian may also be Payment Bank (e.g. 3 Payment Banks are also QFII Custodians), but funding is always into CSDCC account, via QFII Custodian’s nostro account, at the designated Payment Bank appointed by QFII Custodian.

13. Market practice to send confirmations of final settlement to Global Custodian/QFII after expiry of cash settlement deadline; critically typically associated with this step not evident in CH, since cash account already funded.

13,14. Sending of confirmation sequenced into flow at this stage for continuity.

16,17. Sequence based on typical process that individual business lines send product statements before cash statement sums up overall business activity for the day.

- Market Guides from International Experts (from ABMF Library)
- Representations from members from China at ABMF meetings
- ChinaClear (CSDCC) website [www.chinaclear.cn](http://www.chinaclear.cn)
- Review and validation by CSRC, PBOC
- Review and validation by CCDC, CFETS, CSDCC, SCH, SSE
- Review and validation by QFII and domestic custodians
- Feedback and input from NAFMII
1. The seller and the buyer trade via Shanghai Stock Exchange (SSE) or Shenzhen Stock Exchange (SZSE).
2. SSE/SZSE collates orders from the seller and the buyer.
3. SSE/SZSE sends notice of trade to the seller and the buyer. (to be confirmed)
4. SSE/SZSE sends trade data to China Central Depository &Clearing Co. Ltd. (CSDCC).
5. Clearing function in CSDCC executes clearing process.
6. Clearing function in CSDCC sends clearing result to the seller and the buyer.
7. Clearing function in CSDCC sends settlement data to CSD function in CSDCC.
8. CSD function in CSDCC sends notice of trade to be settled to the seller and the buyer.
9. The seller and the buyer send affirmation of Settlement.
10. CSD function in CSDCC execute bond settlement.
11. CSD function in CSDCC execute cash settlement.
12. CSDCC sends settlement report (bonds & cash) to the seller and the buyer.
Matching for bond settlement instruction

Local matching (need to be confirmed and discussed)

1. In case a trade takes place in CFETS platform, CCDC receives the data automatically. Then CCDC forward the data to seller and buyer. CCDC asks both parties (seller and buyer) to verify the traded order. If the traded data are correct, seller and buyer send back confirmation messages to CCDC individually. These messages are regarded as bond settlement instruction. Inside the CCDC actual matching process (comparing the bond settlement instructions from seller and buyer is not carried out). If both parties confirm the traded data are correct, it is regarded as matched.

2. When counterparties trade outside CFETS system, one party (for example seller) needs to input bond settlement instruction into CCDC system first. CCDC system automatically forwards the instruction (traded data) to the other party (for example buyer) and asks the party to verify the data and send the data back with confirmation message. If the traded data are not correct, CCDC does not start settlement process. If the party send back the affirmative message to CCDC, the traded data are regarded as matched.

Note: this description is for Inter-bank bond market (China OTC Market)
IDX – Indonesian Stock Exchange
e-BOCS – Electronic Bond Clearing System (PT Kliring Penjaminan Efek Indonesia)
C-BEST – Central Depositary and Book Entry Settlement (PT Kustodian Sentral Efek Indonesia’s system)
BI-SSSS – Bank Indonesia Scripless Securities Settlement System

OTC Bond Transaction Flow for Foreign Investors
(incl. cross-border, payments, reporting, tax components)
General assumptions: flow shows representative sequence of interactions between market participants, T+2 as most typical settlement cycle
While 3rd party FX is principally possible, the need to evidence underlying trades for inbound FX tends to command Custodian and FX/Payment Bank be the same institution
4. Important; both trade counterparties need to capture trade in IDX system within 30 minutes of conclusion; this step yields 'CTP number', a 6-digit code without which later capture, settlement of trade in BI-SSSS not possible
7, 8, or 13/14 – FII has ability to identify specific buy trades for CGT calculation; info could be contained in original or amended instruction; in absence, agent will calculate on FIFO principle
8. a/b – Global Custodian would typically receive instruction for both securities and cash but tends to onward send separate instructions to Domestic Custodian/Sub-registry, depending on funding situation
9. Step would allow Domestic Custodian/Sub-registry to obtain CTP number which is required for downstream BI-SSSS settlement
11-14 – Steps necessary pursuant to calculation of CGT (on trade basis); seller’s agent calculates, buyer’s agent has to advise tax component; agents require FII to amend original instruction
17. Domestic Custodian/Sub-registry sends statement of securities to Global Custodian (at end of day)
18. Domestic Custodian/Sub-registry sends debit/credit information in cash statement (at end of day) to Foreign Institutional Investor
20. Upon settling securities, BI-SSSS sends settlement confirmation for securities to Domestic Custodian/Sub-registry
21. Upon settling securities, BI-SSSS sends settlement confirmation for securities to Domestic Custodian/Sub-registry
22. Domestic Custodian/Sub-registry sends statement confirmation to Foreign Institutional Investor
23. Global Custodian sends settlement confirmation to Foreign Institutional Investor
24. Global Custodian sends fund account with Domestic Custodian/Sub-registry
25. Domestic Custodian/Sub-registry sends statement of securities to Global Custodian (at end of day)
26. Domestic Custodian/Sub-registry sends debit/credit information in cash statement (at end of day)
27. Global Custodian sends debit/credit information in cash statement (at end of day) to Foreign Institutional Investor
28. Foreign Institutional Investor sends amended settlement instruction to Global Custodian
13. Foreign Institutional Investor sends amended settlement instruction to Global Custodian
14. Global Custodian sends amended settlement instruction to Domestic Custodian/Sub-registry
15. Domestic Custodian/Sub-registry and Counterparty pre-match again on amended settlement amount (via phone or email)
16. Domestic Custodian/Sub-registry confirms actual settlement amount to Global Custodian
8. Global Custodian instructs Domestic Custodian/Sub-registry on (a) securities settlement details, (b) FX request or funding details
9. Domestic Custodian/Sub-registry confirms actual settlement details to IDX/SSSA system (within 30 mins of receipt of instruction), obtains CTP number
10. Domestic Custodian/Sub-registry pre-matches with Counterparty (via phone or email); CGT calculated and agreed
11. Domestic Custodian/Sub-registry advises Global Custodian on required amendment of settlement amount for CGT
OTC Market (Direct Connection to BI-SSSS)

1. The seller and buyer trade government bonds over-the-counter. Most of trades are done by telephones.
2. Both seller and buyer send pre-settlement matching instructions over the SWIFT or pre-match the traded data for settlement over the telephone. Before the pre-settlement matching two components of bond taxes which are capital gain tax and interest (withholding) tax need to be calculated. Pre-settlement matching is performed via telephone or swift.
3. Participants have to report trade data to Centralized Trading Platform (CTP) of Indonesia Stock Exchange (IDX) within 30 minutes of trade.
4. Both seller and buyer key in the DVP instruction to BI-SSSS.
5. BI-SSSS performs the matching.
6. BI-SSSS reports the matching results to the seller and the buyer.
7. Bond is earmarked to secure the DVP.
8. Payment message for DVP is sent to Bank Indonesia Real Time Gross Settlement (BI-RTGS).
9. When the funds are available, the amount is debited from the buyer’s cash account and credited to the seller’s cash account. Then, BI-RTGS sends the cash settlement statements to the seller and buyer.
10. BI-RTGS notifies the Irrevocable debit/credit status to BI-SSSS.
11. BI-SSSS completes bond settlement.
12. BI-SSSS reports the settlement status to both seller and buyer.
Matching for bond settlement instruction

Central matching

Seller enter DVP instruction as bond settlement instruction and buyer enter RVP instruction to BI-SSSS. BI-SSSS compares DVP and RVP instructions. When the message items of the instructions are completely same, the status is regarded as matched. If there is discrepancy between the instructions, the status is regarded as mismatched. If one of the instructions is not entered yet, the status is regarded as unmatched.

Note: this description is for government bonds traded in OTC market.

INDONESIA - Sources/References

- Representations from ID members at ABMF KL Meeting
- Response from ID for SF2 questionnaire (by KSEI)
- (Jasdec) Market Matrix update for ID (by KSEI)
- Market Guides from International Experts (from ABMF Library)
- Feedback from team members, via email
- Indonesia Stock Exchange (IDX) [www.idx.co.id](http://www.idx.co.id)
- Kliring Penjaminan Efek Indonesia (KPEI) [www.kpei.co.id](http://www.kpei.co.id)
- Kustodian Sentral Efek Indonesia (KSEI) [www.ksei.co.id](http://www.ksei.co.id)
- Review and validation by Bapepam, BI
- Review and validation, clarifications by IDX, KPEI, KSEI
- Review and validation, additional information by domestic custodians
Malaysia (MY)

Trading

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Trade matching

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<td>BMSC (BCS)</td>
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Settlement match.

Bond settlement

| Bank Negara Malaysia (RENTAS-SSDS) |
| Govt. bond, BNM and corporate papers |
| BMD (CDS) |

Cash settlement

| Bank Negara Malaysia (RENTAS-IFTS) |

ETP – Electronic Trading Platform  
CDS – Central Depository System  
RENTAS – Real-time Electronic Transfer of Funds and Securities  
BMS – Bursa Malaysia Securities  
BTS – Bursa Trade System  
BMSC – Bursa Malaysia Securities Clearing  
BCS – Bursa Clearing & Settlement System  
SSDS – Scripless Securities Depository System  
BMD – Bursa Malaysia Depository  
CDS – Central Depository System  
IFTS – Interbank Funds Transfer System
**OTC Bond Transaction Flow for Foreign Investors**

**Description of Steps**

1. Foreign Institutional Investor places order with International Broker
2. International Broker/Domestic Investor places order with Domestic Broker/Bank
3. Domestic Broker/Bank and Counterparty agree on OTC trade (e.g. via phone or Bloomberg)
4. Domestic Broker/Bank sends trade confirmation to International Broker
5. Foreign Institutional Investor receives trade confirmation
6. Domestic Broker/Bank and Counterparty capture trade in ETP, by end of trading day
7. Foreign Institutional Investor instructs Global Custodian, on securities settlement and cash/funding details
8. Global Custodian instructs Domestic Custodian/ADI on (a) securities settlement details, (b) FX request or funding details (since 3rd Party FX possible)
9. Domestic Custodian/ADI and Counterparty pre-match settlement details, via phone
10. Domestic Custodian/ADI sends pre-matching result information (e.g. missing instructions) to Global Custodian
11. Domestic Custodian/ADI provides confirmation of FX booked (in case of earlier FX request)
12. Domestic Custodian/ADI captures settlement details into SSDS and receives SSDS acknowledgment of receipt of data (selling side), OR receives alleged trade notice (advice of unconfirmed trade) from SSDS and confirms settlement details in SSDS (buying side)
13. Domestic Custodian/ADI retrieves settlement matching status
14. Domestic Custodian/ADI effects funding of its account at Bank Negara Malaysia (BNM) via RENTAS (IFTS)
15. Upon settling securities, SSDS sends settlement confirmation for securities to Domestic Custodian/ADI
16. Upon settling cash, RENTAS sends debit/credit confirmation to Domestic Custodian/ADI
17. Domestic Custodian/ADI sends settlement confirmation to Global Custodian
18. Global Custodian funds account with Domestic Custodian/ADI (before end of day)
19. Global Custodian sends settlement confirmation to Foreign Institutional Investor
20. Domestic Custodian/ADI sends statement of securities to Global Custodian (at end of day)
21. Domestic Custodian/Sub-registry sends debit/credit information in cash statement (at end of day)
22. Global Custodian sends debit/credit information in cash statement to FII (at end of day)
Assumption for representative settlement cycle = T+2, in particular relative to FII
SSDS = Scripless Securities Depository System (within RENTAS), operated by MyClear
RENTAS = Real Time Electronic Transfer of Funds and Securities
MyClear = Malaysian Electronic Clearing Corporation Sdn Bhd
BPAM (Bond Pricing Agency Malaysia, until 2008 known as or Bondweb Malaysia (BWM)) does not directly receive traded prices from OTC market participants, but instead via ETP operated by Bursa Malaysia
6 – Important: both trade counterparties need to capture trade in ETP (Electronic Trading Platform, operated by Bursa Malaysia) for price discovery, by end of day
7, 8 a/b – Global Custodian would typically receive instruction for both securities and cash but tends to onward send separate instructions to Domestic Custodian/ADI, depending on funding situation
12 – Distinction of activities depending on whether seller or buyer side; ADI for seller initiates capture of trade/settlement details into SSDS, buyer ADI needs to confirm details
15,16 – RENTAS sends out separate settlement confirmations for securities (SSDS) and cash near-simultaneously; since securities settlement effectively happens first, then cash settlement, sequence reflected accordingly
18 – Funding of trades (i.e. payment domestically after 3rd Party FX, or into ADI’s FCY nostro) can be effected by end of day, since Intra-day facility available in market

Confirmation of matching status in SSDS (after buyer confirms alleged trade) – need to ascertain how ADI gets to know about matching result – via terminal/online enquiry, messaging item, timeline? [not conclusively established, yet]
1. The seller and the buyer trade over the counter by telephone (direct dealing or through Money Broker).
2. Seller and buyer report the trade detail in ETP.
3. The seller initiate unconfirmed settlement advice in RENTAS.
4. RENTAS route the unconfirmed settlement advice to the buyer. The buyer confirm the settlement advice in RENTAS.
5. Acknowledgement is automatically send to both Buyer and Seller.
6. On settlement date, bond and cash are settled on DvP basis.
7. Completion advice are immediately sends to buyer and seller after the DvP settlement.
### Matching for bond settlement instruction

#### Local matching

The seller initiate unconfirmed settlement advice in RENTAS. RENTAS route the unconfirmed settlement advice to the buyer. The buyer confirm the settlement advice in RENTAS. Acknowledgement is automatically send to both Buyer and Seller RENTAS terminal.

Note: this description is for government bonds traded in OTC market.

### MALAYSIA - Sources/References

- Presentation from MyClear at ABMF KL Meeting
- Market Guides from International Experts (from ABMF Library)
- Bursa Malaysia (BM) [www.bursamalaysia.com](http://www.bursamalaysia.com)
- MyClear [www.myclear.org.my](http://www.myclear.org.my)
- Bond Pricing Agency Malaysia (BPAM) [www.bpam.com.my](http://www.bpam.com.my)
- Review and validation by Bank Negara Malaysia, incl. MyClear
- Review and validation, additional information by domestic custodians
- Subsequent clarifications by domestic custodian
Kingdom of Thailand (TH)

Trading
- OTC Market
- TCH (PTI)

CCP

Settlement match.
- TCH PTI

Bond settlement
- TSD
- PTI (Gov. & Corporate Bond)

Cash settlement
- BOT (BAHTNET)

BEX – The Bond Electronic Exchange (The Stock Exchange of Thailand)
SET – Stock Exchange of Thailand
PTI – Post Trade Integration (The Stock Exchange of Thailand)
TSD – Thailand Securities Depository (The Stock Exchange of Thailand)
TCH – Thailand Clearing House (The Stock Exchange of Thailand)
BAHTNET – The Bank of Thailand Automated High-value Transfer Network
MNS – Multilateral Netting System
OTC Bond Transaction Flow for Foreign Investors (incl. cross-border, liquidity, payments, reporting, components)

1. Foreign Institutional Investor places order with International Broker
2. International Broker places order with Domestic Broker/Bank
3. Domestic Broker/Bank trades OTC with Counterparty (via phone or Bloomberg)
4. Domestic Broker/Bank and Counterparty report trade to Thai BMA within 30 minutes of trade (web input or, e.g., via Bloomberg)
5. Domestic Broker/Bank sends trade confirmation to International Broker
6. Foreign Institutional Investor receives trade confirmation
7. Foreign Institutional Investor instructs Global Custodian on securities settlement and cash/funding details
8. Global Custodian instructs Domestic Custodian on (a) securities settlement details, (b) FX request or funding details (since 3rd Party FX possible)
9. Domestic Custodian pre-matches with Counterparty, typically via phone
10. Domestic Custodian sends pre-matching results to Global Custodian
11. Domestic Custodian sends FX confirmation to Global Custodian
12. Domestic Custodian captures settlement results in PTI
13. Domestic Custodian retrieves matching results, via TSD terminal
14. Domestic Custodian sends funding report to Global Custodian
15. Global Custodian sends, if so required, request to use THB balance to Foreign Institutional Investor
16. Foreign Institutional Investor sends, if so required, FX instruction (or additional securities purchase trade) to Global Custodian
17. Global Custodian, if so required, sends FX instruction to Domestic Custodian, as FX bank
18. Domestic Custodian, as FX bank, confirms FX deal
19. Domestic Custodian funds clearing account at Bank of Thailand
20. Upon cash settlement/transfer, BAHTNET II sends credit/debit confirmation to Domestic Custodian (as BAHTNET II participant)
21. Upon cash settlement confirmation, TCH/TSD transfers securities and sends settlement confirmation to Domestic Custodian
22. Domestic Custodian sends settlement confirmation to Global Custodian
23. Domestic Custodian reports clients’ NRBS account balances to Bank of Thailand (prior to end of day)
24. Global Custodian sends settlement confirmation to Foreign Institutional Investor
25. Global Custodian sends statement of securities to Foreign Institutional Investor
26. Domestic Custodian sends statement of securities to Global Custodian (end of day)
27. Domestic Custodian sends cash credit/debit information in cash statement to Global Custodian (end of day)
28. Global Custodian sends cash credit/debit information to FI in cash statement (end of day)
OTC Counterparties must be Thai Bond Market Association (BMA) members (by BOT decree).

According to Thai BMA, representative settlement cycle = T+2 (80% of trades); however, involvement of US FII may require T+3 due to time zone difference.

TCH is contractual party for post-trade operations, but TSD operates settlement platform PTI (Post Trade Integrated System); despite designation as clearing house, no clearing function for OTC bond market at this point.

Real-demand principle, i.e. inbound FX requires underlying securities transaction(s).

FIIs need to maintain specific NRBS account for securities related cash transactions.

Liquidity cap in place, (max day-end balance in NRBS account THB 300 mil), necessitates constant daily monitoring, management of cash balance; drives funding report and need for matching accuracy; resulting messaging not specific to individual bond trade, due to omnibus accounts, but may be required even in event of single trade; BOT can extend liquidity cap upon request.

7, 8 ab – Global Custodian would typically receive instruction for both securities and cash but tends to onward send separate instructions to Domestic Custodian, depending on funding situation; here more critical due to need to manage cash balance.

9 – Pre-matching critical, done via phone, fulfills two important functions: a) to determine client funding needs, b) to determine expected client day-end THB balance, in view of THB liquidity limitations.

10 – Domestic Custodian reports on pre-matching status to allow Global Custodian to watch cash balance.

13 – Matching results crucial to accurately predict SD cash balance.

14 – Funding report needs to include other relevant transactions impacting NRBS cash balance, such as corporate actions receivables and fees.

15-18, optional but typical steps in case of NRBS balance exceeding daily long balance cap; Global Custodian will aim to manage account balance but may require FH to use account balance for outbound FX, Swap, or securities purchase, will need to instruct Domestic Custodian on use of balance.

23 – Domestic Custodian will have to report daily NRBS balances to BOT; clients are expected to finalise their NRBS balance (i.e. conclusion of debits and credit, before use of balance entries) by 3.30pm.

24 – Global Custodian can effectively fund daily trades across omnibus account at end of day, either into domestic THB account or into Domestic Custodian’s FCY nostro, due to availability of intra-day facilities in market.
OTC Market

1. Seller and Buyer trade via OTC market.
2. Seller and Buyer perform pre-matching process with counterparty manually via phone.
3. Seller and Buyer send the transaction details to TCH via PTI System.
4. TCH checks trade data from Seller and Buyer.
5. TCH sends matching results to Seller and Buyer via PTI System. (to be confirmed)
6. TCH checks availability of securities in member account.
7. TCH sends clearing results to Seller and Buyer via PTI System. (to be confirmed)
8. TCH sends settlement details to TSD and BOT. Actually, TSD seems to get automatically the details because TSD is also connected to PTI System. (to be confirmed)
10. TSD sends settlement report to Seller and Buyer via PTI System. (to be confirmed)
11. BOT executes cash settlement.
12. BOT sends settlement report to Seller, Buyer and TCH. (to be confirmed)

Matching for bond settlement instruction

Central matching

Seller enter DVP instruction as bond settlement instruction and buyer enter RVP instruction to PTI. PTI compares DVP and RVP instructions. When the message items of the instructions are completely same, the status is regarded as matched. If there is discrepancy between the instructions, the status is regarded as mismatched. If one of the instructions is not entered yet, the status is regarded as unmatched.

Note: this description is for government bonds traded in OTC market.
Sources/References

- Representations from TH members (BMA, SEC) at ABMF KL Meeting
- Response from TH for SF2 questionnaire (by BMA, SET)
- Market Guides from International Experts
- The Stock Exchange of Thailand (TSE) [www.set.co.th](http://www.set.co.th)
- Thai Clearing House [www.thaiclearing.com](http://www.thaiclearing.com)
- Thai Securities Depository [www.tsd.co.th](http://www.tsd.co.th)
- The Thai Bond Market Association (BMA) [www.thaibma.co.th](http://www.thaibma.co.th)
- Review and validation by Bank of Thailand
- Input, confirmation by Thai BMA
- Review and validation by SET, TCH, TSD
- Review and validation, additional information by domestic custodians
- Further input from International Expert

Bond Market Infrastructures and business process flowchart

Socialist Republic of Viet Nam (VN)
ADB  Bond settlement infrastructure diagram

<table>
<thead>
<tr>
<th>Trading</th>
<th>OTC market</th>
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<tbody>
<tr>
<td>Trade matching</td>
<td>HNX Gov. and Corp. bonds</td>
</tr>
<tr>
<td>CCP</td>
<td>HOSE</td>
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<tr>
<td>Settlement match.</td>
<td>VSD</td>
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<tr>
<td>Bond settlement</td>
<td>All Bond</td>
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<tr>
<td>Cash settlement</td>
<td>BIDV</td>
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</tbody>
</table>

HNX – The Hanoi Stock Exchange
HOSE – Ho Chi Minh Stock Exchange
VSD – Vietnam Securities Depository
BIDV – Bank for Investment and Development of Vietnam

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ADB  OTC Bond Transaction Flow for Foreign Investors (incl. cross-border, funding, reporting components)

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<tbody>
<tr>
<td>International Broker</td>
<td>Domestic Bank</td>
<td>Domestic Broker</td>
<td>Counterparty</td>
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<tr>
<td>Global Custodian</td>
<td>Domestic Custodian</td>
<td>As FX Bank</td>
<td>HNX (eBond)</td>
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<td>As Cash Correspondent</td>
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### OTC Bond Transaction Flow for Foreign Investors

<table>
<thead>
<tr>
<th>Description of Steps</th>
<th>VN ABMF SF2</th>
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<tbody>
<tr>
<td>T-1</td>
<td>T: trade capture date</td>
</tr>
<tr>
<td>1. Foreign Institutional Investor sends FX/funding instruction to Global Custodian (for planned bond trades)</td>
<td><strong>OTC</strong></td>
</tr>
<tr>
<td>2. Global Custodian sends FX/funding instruction to Domestic Custodian (to ensure timely availability of VND)</td>
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<tr>
<td>3. Domestic Custodian sends FX confirmation to Global Custodian and to Investor</td>
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<tr>
<td>4. Foreign Institutional Investor places order with International Broker</td>
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<tr>
<td>5. International Broker places order, typically with Domestic Bank</td>
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<tr>
<td>6. Domestic Broker/Bank trade OTC with Counterparty (via phone), both parties sign trade agreement (contract)</td>
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<td>7. Domestic Broker/Bank sends trade confirmation to International Broker, and to Domestic Custodian</td>
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<tr>
<td>8. International Broker sends trade confirmation to Foreign Institutional Investor</td>
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<tr>
<td>9. Foreign Institutional Investor sends securities settlement instruction to Global Custodian</td>
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<tr>
<td>10. Global Custodian instructs Domestic Custodian on securities settlement details</td>
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<tr>
<td>11. Domestic Bank relays trade details to Domestic Broker (as HNX member) for trade capture</td>
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<tr>
<td>12. Domestic Broker checks available funds/bonds with Domestic Custodian</td>
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<tr>
<td>13. Domestic Broker captures trade details on HNX, typically via eBond front-end system</td>
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<tr>
<td>14. VSD provides Settlement Report to Domestic Custodian (at end of &quot;Trade Date&quot;)</td>
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<tr>
<td>15. Only in the event of a discrepancy, does Domestic Custodian need to contact VSD (hence dashed arrow)</td>
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<tr>
<td>16. Domestic Custodian provides settlement/matching status to Global Custodian</td>
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<tr>
<td>17. Domestic Custodian effects funding of BIDV account</td>
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<tr>
<td>18. After settlement deadline, Domestic Custodian retrieves settlement confirmation from VSD (hardcopy, or online)</td>
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<tr>
<td>19. After settlement deadline, Domestic Custodian retrieves cash debit/credit confirmations from BIDV (hardcopy)</td>
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<tr>
<td>20. Domestic Custodian sends settlement confirmation to Global Custodian</td>
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<tr>
<td>21. Global Custodian effects funding of account with Domestic Custodian, or into FCY nostro account (before end of day)</td>
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<tr>
<td>22. Global Custodian sends settlement confirmation to Foreign Institutional Investor</td>
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<tr>
<td>23. Domestic Custodian effects securities statement to Global Custodian</td>
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<tr>
<td>24. Domestic Custodian sends debit/credit information in cash statement to Global Custodian</td>
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<tr>
<td>25. Global Custodian sends cash statement to Foreign Institutional Investor</td>
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</tbody>
</table>

### Additional Comments

The bond market in Viet Nam is OTC, but all bond trades will need to be captured in HNX system (ETS) eventually. Official settlement cycle = T+1; but T equals trade capture date, hence effective settlement cycle at least = T+2. In addition to brokers, banks and other FIs can participate in bond trading; official participation judged by eBond (ETS front-end system) membership; typical bond dealers are banks. Domestic Bank in diagram often equals Domestic Custodian. Government and corporate bonds are nowadays only traded on HNX; however, some residual bonds (both government and corporate) remain on HOSE until maturity.

- Pre-matching, in effect, is done at the custodian, based on broker confirmation and client instructions received.
- In addition to brokers, banks and other FIs can participate in bond trading; official participation judged by eBond (ETS front-end system) membership; typical bond dealers are banks. Domestic Bank in diagram often equals Domestic Custodian.
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- Government and corporate bonds are nowadays only traded on HNX; however, some residual bonds (both government and corporate) remain on HOSE until maturity.
Proprietary matching

The seller and buyer enter traded data into HNX (Hanoi Stock Exchange) and forward the data to VSD after matched. Seller and buyer access to VSD system and check the stored data are correct. Seller and buyer check the data and change the status of the data in VSD. If both seller and buyer confirm that the traded data are correct, it means bond settlement instructions are matched.

Note: this description is for government bonds traded in OTC market. In Vietnam, since seller or buyer does not send the bond settlement instruction to VSD, confirmation of traded data stored in VSD to be correct by both seller and buyer is regarded as settlement instructions are matched.
• Market Guides, flows from International Experts (from ABMF Library)
• SF2 questionnaire response by VSD
• Ha Noi Stock Exchange (HNX), e.g. http://en.hnx.vn/default.asp?actType=1&menuup=602000&TypeGrp=1&menuid=103120&menuLink=600000&menuPage=&stocktype=2, or http://bond.hnx.vn/default.aspx?tabIndex=1&tabid=35
• Hochiminh (or HoChiMinh) Exchange (HOSE) www.hsx.vn/hsx_en/Default.aspx
• Review and validation by State Securities Commission, SBV
• Review, validation, additional feedback and material provided by VSD
• Feedback from VBMA, input from BIDV
• Review and validation, additional information by domestic custodians
CMU – Central MoneyMarkets Unit
CHATS – Clearing House Automated Transfer System (HKD, USD, EUR and RMB)

Note: There is no CCP for bonds in Hong Kong
### OTC Bond Transaction Flow for Foreign Investors

**Description of Steps**

1. Foreign Institutional Investor places order with International Broker
2. International Broker places order with Domestic Broker/Bank
3. Domestic Broker/Bank trades OTC with Counterparty (via phone or, e.g., Bloomberg)
4. Domestic Broker/Bank sends trade confirmation to International Broker
5. Foreign Institutional Investor receives trade confirmation
6. Foreign Institutional Investor instructs Global Custodian, on securities settlement and cash funding details
7. Global Custodian instructs Domestic Custodian on securities settlement
8. Domestic Custodian captures (eCMT or upload) settlement instructions into CMU
9. Domestic Custodian receives transaction matching confirmation from CMU, or status updates
10. Domestic Custodian sends matching status update to Global Custodian, either as report or, typically, per individual transaction
11. Global Custodian advises funding details to Domestic Custodian
12. Domestic Custodian effects funding of HKMA account via CHATS
13. Upon transfer of cash, HKMA sends cash settlement confirmation to Domestic Custodian
14. Upon transfer of bonds, CMU sends bond settlement confirmation to Domestic Custodian
15. Domestic Custodian sends settlement confirmation to Global Custodian
16. Foreign Institutional Investor receives settlement confirmation from Global Custodian
17. Global Custodian funds trades into Domestic Custodian HKD account, or into FCY nostro
18. Domestic Custodian sends securities statement to Global Custodian
19. Domestic Custodian sends debit/credit confirmation as cash statement to Global Custodian
20. Global Custodian sends debit/credit confirmation in cash statement to Foreign Institutional Investor

### Additional Comments

HK bond market is OTC in nature; bond listings on HKEx are for profiling, CCASS is a participant in CMU

T+2 seen as representative settlement cycle, in particular when involving FII; government bonds may otherwise typically settle T+1, and Exchange Fund papers are on T+0 settlement cycle

eCMT is CMU front-end tool, for viewing and data capture

CHATS = HKMA RTGS

Due to the matching feature in CMU, there is no specific need for pre-matching between counterparties and/or custodians

HK is a very open market, 3rd Party FX is entirely possible and well utilised, and HKD liquidity is available in most financial markets; also, Global Custodian may have own treasury function based in HK; hence, assumption that trades are funded on SD

15,16 – assumed to happen in quick succession, since HKD can be funded same day, even by FII or FM directly on same day, hence sequence shown
1. Seller and buyer trade over the counter.
2. The seller and buyer send instructions to Central Money Markets Unit (CMU) via CMT, SWIFT, Fax, AFT or by hand. Participants need to send the message instructions before the cutoff time (4:00 p.m.) settlement day after trade day.
3. CMU performs validation and matching. Either seller or buyer enter trade data to be forwarded to the counterpart (buyer or seller). The counterpart can utilize the trade information as a message instruction to be sent to the CMU.
4. CMU sends matching result to the seller and buyer.
5. CMU holds the bond.
6. CMU sends settlement data to HKMA.
7. HKMA executes cash settlement.
8. HKMA sends settlement report to CMU. (HKMA sends settlement report to the buyer and CMU.)
9. CMU executes bond settlement.
10. CMU sends settlement confirmation to the seller and buyer.
Matching for bond settlement instruction

Central matching

1. The seller and buyer send instructions to Central Moneymarkets Unit (CMU). CMU performs validation and matching.

2. Either seller or buyer can enter trade data which are forwarded to the counterpart (buyer or seller) to save data input workload. The counterpart also send the traded data as a bond settlement instruction to the CMU. CMU check the instructions (matching). CMU sends matching result to the seller and buyer.

Note: this description is for government bonds traded in OTC market.

HONG KONG - Sources/References

- Market Guides from International Experts (from ABMF Library)
- Trade flow charts by International Experts
- KL presentation by HKMA
- SF2 questionnaire response by HKMA, incl. diagrams provided
- Hong Kong Exchange Ltd. (HKEx) [www.hkex.com.hk](http://www.hkex.com.hk) (incl. CCASS/3)
- Hong Kong Monetary Authority (HKMA) [www.hkma.com.hk](http://www.hkma.com.hk)
- CMU website [www.cmu.org.hk](http://www.cmu.org.hk)
- Review and validation by HKMA
- Review and validation by domestic custodian
Republic of the Philippines (PH)

Bond settlement infrastructure diagram

- Trading
  - OTC market
  - PDEEx (Fixed Income Trading System)
- CCP
- Settlement match.
- Bond settlement
  - Corporate bond
  - Govt. bond
  - PDEEx (eDvP)
  - PDTC
- Cash settlement
  - Settle. banks
  - Bangko Sentral ng Pilipinas (PhilPaSS)

PDEEx – Philippine Dealing & Exchange
eDvP – Expanded Delivery vs. Payment System
PDTC – Philippine Depository & Trust Corporation
RoSS – Registry of Scripless Securities
PhilPaSS – Philippine Payments and Settlement System

Cash settlement by settlement banks is for government and corporate bonds.
1. Foreign Institutional Investor places order with International Broker
2. International Broker places order with Domestic Broker/GSED
3. Domestic Broker or Dealer trades OTC with Counterparty
4. Domestic Broker or Dealer captures trade in PDEEx system, for price discovery, within 10 mins
5. International Broker receives trade confirmation
6. Foreign Institutional Investor receives trade confirmation
7. Foreign Institutional Investor instructs Global Custodian, on securities settlement and FX/cash funding details
8. Global Custodian instructs Domestic Custodian on securities settlement details
9. Domestic Custodian conducts phone pre-matching with Counterparty
10. Domestic Custodian enters settlement data into RoSS (typically via 3rd Party front-end)
11. Domestic Custodian retrieves transaction matching status
12. Domestic Custodian reports matching status update to Global Custodian
13. Global Custodian sends FX instruction for projected funding requirements
14. Domestic Custodian sends FX confirmation
15. Domestic Custodian funds BSP accounts, via PhilPASS (RTGS)
16. Upon transfer of cash (after prompting from RoSS), PhilPaSS sends cash settlement confirmation to Domestic Custodian
17. Upon confirmation of cash settlement, RoSS effects bond settlement, sends confirmation to Domestic Custodian
18. Domestic Custodian sends settlement confirmation to Global Custodian
19. Global Custodian funds account with Domestic Custodian in PHP, or into FCY nostro (before end of day)
20. Global Custodian sends settlement confirmation to Foreign Institutional Investor
21. Global Custodian issues BSRD (Bangko Sentral Remittance Document), certifying FCY inflow for ability to repatriate at later stage without consideration of FX limitations
22. Domestic Custodian sends securities statement to Global Custodian
23. Domestic Custodian sends debit/credit confirmations, in form of cash statement, to Global Custodian
24. Global Custodian sends cash statement to Foreign Institutional Investor
Market participants consider T+3 settlement cycle typical for trades involving FIIs; settlement date can be agreed between CPs for negotiated trades, though that is not visible in the PDEx system.

Settlement mode chose: custodian, directly accessing RoSS; this to stay comparable to other markets and because alternative eDvP not accessible for custodian transactions; FII are observed to typically make use of the custodian route.

3rd Party FX is possible, but inefficient because of FX reporting requirements (BSRD); BSRD would have to travel with FCY that inflows through another FX bank to Domestic Custodian, for future use against repatriation request from FII.

Depending on individual institutions processes and levels of sophistication, sequence of some of the steps (in particular confirmations and statements) may differ.

13 – In T+3 market, Global Custodian tends to arrange funding/FX upon indication of matching status (on T+1), firming up actual funding needs ahead of booking FX spot.

16, 17 – RoSS requests debit/credit at PhilPaSS before it settles bonds, hence logical sequence determined to have cash confirmation before securities confirmation, even if timing may not be distinguishable.

21 – Nowadays, Domestic Custodians typically issue BSRD for FIIs FX inflow; alternatively, Operations Dept opf BSP will issue BSRD; takes about 2 days for both versions.
Exchange Market GSEDs

1. The seller and the buyer trade via PDEx (FI Trading System).
2. PDEx (FI Trading System) collates orders from the seller and the buyer. (to be confirmed)
3. PDEx (FI Trading System) sends matching result to the seller and the buyer. (to be confirmed)
4. PDEx (PDEx-RoSS STP Facility) sends settlement details to the seller and the buyer.
5. The seller and the buyer authorize the settlement instruction for DVP.
6. PDEx (PDEx-RoSS STP Facility) sends settlement data to Bureau of Treasury Registry of Scripless Securities (BTR-RoSS).
7. BTR-RoSS holds bonds before cash settlement. (to be confirmed)
8. BTR-RoSS sends settlement data to Bangko Sentral ng Pilipinas (BSP). (to be confirmed)
9. BSP executes cash settlement.
10. BSP sends cash settlement report to Seller, Buyer and BTR-RoSS. (to be confirmed)
11. BTR-RoSS executes bond settlement.
12. BTR-RoSS sends bond settlement report to the seller and the buyer. (to be confirmed)
Exchange Market Non-GSEDs

1. The seller and the buyer trade via PDEx (FI Trading System).
2. PDEx (FI Trading System) collates orders from the seller and the buyer. (to be confirmed)
3. PDEx (FI Trading System) sends matching results to the seller and the buyer. (to be confirmed)
4. PDEx (PDEx-DVP System) sends settlement details to the seller and the buyer.
5. The seller and the buyer authorize the settlement instruction for DVP.
6. PDEx (PDEx-DVP System) sends settlement data to Philippine Depository & Trust Corp (PDTC).
7. PDTC holds bonds before cash settlement. (to be confirmed)
8. PDTC sends settlement data to Bangko Sentral ng Pilipinas (BSP). (to be confirmed)
9. BSP executes cash settlement.
10. BSP sends cash settlement report to the seller, the buyer and BTr-RoSS. (to be confirmed)
11. PDTC executes bond settlement.
12. PDTC sends bond settlement report to the seller and the buyer. (to be confirmed)

Matching for bond settlement instruction

Central matching

1. The seller and buyer send instructions to PDEx. PDEx (FI Trading System) collates orders from the seller and the buyer. (to be confirmed). PDEx (PDEx-RoSS STP Facility) sends settlement data to Bureau of Treasury Registry of Scripless Securities (BTr-RoSS).
2. Traded data (bond settlement instructions) are entered to RoSS by both parties (seller and buyer) in their respective trading terminals using their confidential identification and password and to activate the system and authorize every transfer instruction between 9:30 a.m. to 1:30 p.m. The instructions are matched by RoSS for settlement.

Note: this description is for government bonds traded in OTC market.
PHILIPPINES - Sources/References

- Market Guides, flows from International Experts (from ABMF Library)
- Subsequent feedback from, discussion with International Experts
- PDS presentation at KL Meeting
- SF2 questionnaire response by PDS/ING, incl. diagrams provided
- Substantial feedback from PDS and Deutsche Bank
- Philippines Dealing and Exchange Corp. (PDEEx) [www.pdex.com.ph](http://www.pdex.com.ph)
- Bangko Sentral ng Pilipinas (BSP) [www.bsp.gov.ph](http://www.bsp.gov.ph)
- Review and validation by BSP, PDEEx
- Review and validation by domestic custodians

Bond Market Infrastructures

Korea (KR)
The image contains two diagrams related to bond market infrastructure and OTC bond transaction flow for foreign investors.

**Bond market infrastructure diagram**

- **Trading**
  - OTC Market
  - KRX

- **Trade matching BO**
  - CCP
  - KRX

- **Settlement match**
  - Bond settlement
    - KSD
    - Government bonds & equity-linked corporate bonds
  - Cash settlement
    - BOK (BOK-Wire+)

**Key**

- KRX – The Korea Exchange
- KSD – The Korea Securities Depository
- BISS – Bond Institutional Settlement System
- BOK-Wire+ – The Bank of Korea Financial Wire Network

---

**OTC Bond Transaction Flow for Foreign Investors**

(incl. cross-border, funding, reporting components)

1. Trade Order
2. Trade Order
3. Agreement on Trade & Confirmation
4. Sending of Trade Details
5. Trade Confirmation
6. International Broker
7. Trade Confirmation
8. Settlement Instruction
9a. Settlement Instruction
10. Transaction Status Update
11. Settlement Confirmation
12. Affirmation of Status
13. Domestic Custodian
14. 47\% Confirmation
15. Domestic Custodian
16. Funding of Trades
17. 23 Cash Statement
18. As Cash Correspondent
19. 22 Cash Statement
20. Settlement Confirmation
21. Domestic Custodian
22. As FX Bank
23. As Cash Correspondent
24. Transmission of Settlement Details
25. Affirmation of Settlement Details
26. Settlement Confirmation
27. KSD
28. BOK (BOK-Wire+)
## OTC Bond Transaction Flow for Foreign Investors

### Description of Steps

1. Foreign Institutional Investor places order with International Broker
2. International Broker places order with Domestic Broker/Bank
3. Domestic Broker/Bank trades OTC with Counterparty (via phone or e.g. Bloomberg)
4. Domestic Broker/Bank and Counterparty report trade to KOFIA within 15 minutes of trade
5. Domestic Broker/Bank sends trade confirmation to International Broker
6. Domestic Broker/Bank sends trade details to KSD
7. Foreign Institutional Investor receives trade confirmation
8. Foreign Institutional Investor instructs Global Custodian on securities settlement details, and FX/funding
9. Global Custodian instructs Domestic Custodian on (a) securities settlement details, and (b) FX/funding requirements
10. KSD sends Preliminary Settlement Data to Domestic Custodian, via SAFE
11. Domestic Custodian affirms settlement details
12. KSD sends settlement data to Domestic Broker/Bank
13. Domestic Custodian confirms settlement data
14. KSD sends settlement confirmation to Foreign Institutional Investor
15. Domestic Custodian sends securities statement to Global Custodian
16. Domestic Custodian sends cash credit/debit confirmation in cash statement to Global Custodian
17. Global Custodian funds BOK account
18. Upon transfer of cash, BOK sends settlement confirmation to Domestic Custodian
19. Domestic Custodian sends future settlement details to Domestic Custodian, and
20. Global Custodian sends settlement confirmation to Foreign Institutional Investor
21. Domestic Custodian sends securities statement to Global Custodian
22. Domestic Custodian sends cash credit/debit confirmation in cash statement to Global Custodian

### Additional Comments

Bond transactions in the OTC market have been subject to mandatory book-entry settlement (at KSD) since 1995. Market participants pre-match through KSD’s InSet system

OTC market participants have option to negotiate settlement date between T+1 and T+30. Assumption of T+2 is more representative for FII trades

4 – Trade reporting by all trading counterparties to KOFIA within 15 mins
6 – Here, trading counterparties actually send trade details into KSD
10 – KSD sends future settlement details to Domestic Custodian, and
11 – Domestic Custodian only needs to affirm/confirm details, based on client instructions received
12 – Subsequently, KSD sends affirmation status back to trading counterparty
16,17 – Sequence set based on typical sequence in other markets, where CSD sends request for funding, cash then settles first, upon which securities side settles; whether sequence of actual sending confirmations is as expected, would need to be confirmed
Outstanding Questions

Need to confirm assumption of T+2 settlement cycle; on exchange trades have max. T+1, KOFIA mentions T+1 as standard but also refers to T+1 to T+30

Need to confirm: pre-matching at KSD - InSet system as mentioned in market guides?

Need to confirm whether brokers and banks participate in OTC; most market guides make reference to brokers only, even for OTC trades

On website, KSD mentioned clearing/netting function; is this applicable to OTC bond segment as well?

Need to establish functionality of SAFE (front-end or feature rich)?
OTC Market

1. Seller and buyer trade over the counter.
2. The seller and buyer send trade data to Korea Securities Depository (KSD).
3. KSD collates trade data from the seller and buyer.
4. KSD sends matching status advise to the seller and the buyer.
5. The seller and the buyer sends settlement instructions for DVP to KSD.
6. KSD holds bonds before cash settlement.
7. KSD sends settlement data to Bank Of Korea (BOK).
8. BOK executes cash settlement.
9. BOK sends settlement report to the seller, the buyer and KSD.
10. KSD executes bond settlement.
11. KSD sends settlement report to the seller and the buyer.

Matching for bond settlement instruction

Central matching
The seller and buyer send trade data to Korea Securities Depository (KSD). KSD collates trade data from the seller and buyer. KSD sends matching status advise to the seller and buyer.

Note: this description is for government bonds traded in OTC market.
Sources/References

- Representations from KR members (KOFIA, KRX, KSD) at ABMF KL Meeting
- Market Guides from International Experts
- Korea Securities Depository [www.ksd.or.kr/eng/html/](http://www.ksd.or.kr/eng/html/)
- Korea Financial Investment Association (KOFIA) [www.kofia.or.kr/kofia/index.cfm?event=eng.main](http://www.kofia.or.kr/kofia/index.cfm?event=eng.main)

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Bond Market Infrastructures and business process flowchart

Japan (JP)
TSE: Tokyo Stock Exchange, OTC: Over the Counter, PSMS: Pre-Settlement Matching System
JGBCC: Japanese Government Bond Clearing Corporation, JSCC: Japan Securities Clearing Corporation
JASDEC: Japan Securities Depository Center, Inc., JGB: Japanese Government Bond
BOJ: Bank of Japan

Note: Non fixed income bonds such as convertible bonds are not included here.
OTC Bond Transaction Flow for Foreign Investors

Description of Steps

1. Foreign Institutional Investor places order with International Broker
2. International Broker places order with Domestic Broker/Bank
3. Domestic Broker/Bank trades OTC with Counterparty (via phone or e.g. Bloomberg)
4. Domestic Broker/Bank and Counterparty report trade to JSDA, by 4.30pm on trade date
5. Domestic Broker/Bank send trade confirmation to International Broker
6. Foreign Institutional Investor receives trade confirmation
7. Foreign Institutional Investor instructs Global Custodian on securities settlement details
8. Global Custodian instructs Domestic Custodian on securities settlement details
9. Domestic Custodian inputs trade details into PSMS
10. PSMS responds with matching status
11. Domestic Custodian reports transaction status update to Global Custodian
12. Domestic Custodian, as Direct Participant, captures settlement details into BOJ-Net, specifying DVP settlement (selling side) OR Domestic Custodian receives notification from BOJ-Net of pending receipt and accepts details after checking (buying side)
13. Domestic Custodian/Direct Participant sends BOJ account, via BOJ-Net
14. Upon transfer of cash, BOJ-Net sends cash settlement confirmation to Domestic Custodian/Direct Participant
15. Upon transfer of securities, BOJ-Net (JGB Services) sends bonds settlement confirmation to Domestic Custodian/Direct Participant
16. Domestic Custodian sends settlement confirmation to Global Custodian
17. Global Custodian sends cash settlement confirmation to Domestic Custodian/Direct Participant
18. Domestic Custodian sends cash settlement confirmation to Foreign Institutional Investor
19. Global Custodian sends cash settlement confirmation to Domestic Custodian/Direct Participant
20. Domestic Custodian sends cash settlement confirmation to Foreign Institutional Investor
21. Global Custodian sends credit/debit confirmation in cash statement to Foreign Institutional Investor

Assumptions:
- Focus on Japanese Government Securities (JGS), since highest OTC volume; pre-matching via PSMS as typical option; DVP settlement
- Bond Settlement is prescribed as T+3
- PSMS (Pre-Settlement Matching System) operated by Jasdec, although Jasdec does not cover JGS as depository or settlement infrastructure
- Japan is an open market, third-party FX is entirely possible and used frequently; JPY is available in international financial markets; also, Global Custodian or even large FI or their Investment Managers may have own treasury function based in Tokyo; thus, assumption that trades are funded into Domestic Custodian a/c in JPY on SD
- Trade reporting to JSDA shown at this stage, as it is required by 4.30pm; likely that broker confirmation would have been sent by then
- Market materials attribute this step to either T+1 or T+2; assumed that PSMS input and matching would be desirable from T+1
- Market materials attribute this step to either T+1 or T+2; assumed that PSMS input and matching would be desirable from T+1
- Significantly more complex than shown, involves multiple steps for buyer’s and seller’s agents, respectively
- Sequence based on typical sequence in other markets, where CSD sends request for funding, cash then settles first, upon which securities side settles; BOJ may send both confirmation at (near-)same time
- Sequence assumed based on typical processing concept; confirmation from Domestic Custodian triggers cash payment at Global Custodian; settlement to be confirmed to FI thereafter
- Funding assumed as JPY into Domestic Custodian’s account, or into FCY nostro, before end of day, or applicable cut-off times
OTC Bond Transaction Flow for Foreign Investors

Outstanding Questions

OTC market participants: need to confirm whether brokers and banks participate in OTC;
JSDA member list shows mostly securities firms, but also custodians, though typically no
banks; currently shown as Broker or Bank in line with other markets
Market guides mention JGBCC as clearing house, but not its exact role in the custodian/FII
settlement process, i.e. does it feature after PSMS, or before (like CHs in other markets)?
Level 2 flow chart indicates significant activity between JGBCC and buyer/seller sides;
need to ascertain which activities are for custodian/agent

Sources/References

- Representations from Japan members (Jasdec, JSDA) at ABMF meetings
- Market Guides from International Experts
- The Bank of Japan (BOJ) [www.boj.or.jp/en/](http://www.boj.or.jp/en/)
- Japan Securities Depository Center (Jasdec) [www.jasdec.com/en/](http://www.jasdec.com/en/)
Business Process Flowchart
JGB Market/ DVP with Matching and CCP (1/2)

1. Trade
2. Trade report
3. Trade report
4. Notice Data of Trade Matching Status
5. Matched Trade Report

Pre-Settlement Matching System (PSMS)

Seller
Buyer

6. Approval of Obligation
7. Notice Data of Approval of Obligation
8. Notice
9. Notice Data of Novation
10. Netting
11. Notice Data of Netting
12. DVP Order
13. 1. JGB Transfer Instruction for DVP
14. 1. Notice of Acceptance of JGB Transfer Instruction for DVP
15. Notice of credit to current account for DVP

CSD (The BOJ-NET)

CCP (JGBCC)

For Deliverer of JGB
13. JGB Transfer Instruction for DVP
16. Notice of JGB Transfer Instruction for DVP
19. Notice of DVP Settlement
23. Notice of Acceptance of DVP Request
24. Notice of DVP Settlement (Fund)

For Receiver of JGB
14. Notice of Acceptance of JGB Transfer Instruction for DVP
17. DVP Request Data
20. DVP Request Data
21. Notice of Acceptance of DVP Request
22. DVP Request Data
25. Notice of Acceptance of DVP Request
26. Notice of DVP Settlement (Fund)

For Deliverer of Funds
14. Notice of Acceptance of JGB Transfer Instruction for DVP
18. Notice of DVP Settlement
24. Notice of DVP Settlement (Fund)

For Receiver of Funds
14. Notice of Acceptance of JGB Transfer Instruction for DVP
19. Notice of DVP Settlement
24. Notice of DVP Settlement (Fund)

Buyer's agent for securities
Buyer's agent for funds

Seller's agent for securities
Seller's agent for funds

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Business Process Flowchart
JGB Market/ DVP with Matching and CCP (2/2)

14.1. Notice of Acceptance of JGB Transfer Instruction for DVP
15. DVP Request Data
18. Notice of Acceptance of DVP Request
19. Notice of DVP Settlement
10. Notice of credit to current account for DVP

For Deliverer of JGB
13-1. JGB Transfer Instruction for DVP
14-1. Notice of Acceptance of JGB Transfer Instruction for DVP
15-1. DVP Request Data
18-1. Notice of DVP Settlement

For Receiver of JGB
14-2. Notice of Acceptance of JGB Transfer Instruction for DVP
17-1. Notice of Acceptance of DVP Request by Deliverer of JGB
19-1. Notice of JGB Transfer Instruction for DVP
24-1. Notice of DVP Settlement (Fund)

For Deliverer of Funds
14-1. Notice of Acceptance of JGB Transfer Instruction for DVP
16-1. Notice of Acceptance of DVP Request by Deliverer of JGB
19-1. Notice of JGB Transfer Instruction for DVP
24-1. Notice of DVP Settlement (Fund)

For Receiver of Funds
14-2. Notice of JGB Transfer Instruction for DVP
17-1. Notice of DVP Request by JGBCC
20-1. DVP Request Data
26-1. DVP Request Data
25-1. Notice of Acceptance of DVP Request
28-1. Notice of Acceptance of DVP Request

ABMF SF2
T+3
OTC Market (PSMS, JGBCC, BOJ-NET)

1. The seller and buyer trade government bonds over-the-counter. (to be completed later)
Republic of Singapore (SG)

-- Bond market infrastructure diagram --

<table>
<thead>
<tr>
<th>Trading</th>
<th>OTC Market</th>
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</thead>
<tbody>
<tr>
<td>Trade matching</td>
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<td>CCP</td>
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<tr>
<td>Settlement match.</td>
<td></td>
</tr>
<tr>
<td>Bond settlement</td>
<td>MAS (MEPS+ SGS) Singapore Govt. Securities</td>
</tr>
<tr>
<td>Cash settlement</td>
<td>MAS (MEPS+ RTGS)</td>
</tr>
</tbody>
</table>

SGX – Singapore Exchange Ltd.,
CDP – Central Depository (Pte.) Ltd,
MAS - Monetary Authority of Singapore
DCSS – Debt Securities Clearing and Settlement System
MEPS – MAS Electronic Payment System
OTC Bond Transaction Flow for Foreign Investors (incl. cross-border, funding components)

1. Trade Order
2. Trade Confirmation
3. Agreement on Trade & Confirmation
4. Trade Confirmation
5. Settlement Instruction
6. Settlement Confirmation
7. Settlement Instruction
8. Settlement Confirmation
9. Cash Statement
10. Settlement Status Update
11. Funding of Trade
12. Funding of MAS Account
13. Confirmation of Debit/Credit
14. Settlement Confirmation
15. Securities Statement
16. Funding of SGD Account
17. Confirmation of Debit/Credit
18. Cash Statement
19. Cash Statement
20. Global Custodian sends cash statement to Foreign Institutional Investor
Settlement cycle for Singapore Government Bonds (SGS) is officially prescribed as T+1.

In possible contrast to other ASEAN+3 markets, SGS were not listed on the Exchange; however, a selection of SGS will be listed and traded on SGX’ fixed income segment from 8 July 2011.

Singapore is an open market, 3rd Party FX is entirely possible and used frequently; SGD may also be available through international financial markets; also, Global Custodian or even large FII or their Investment Managers may have own treasury function based in Singapore; thus, assumption that trades are funded in SGD on SD.

Since intra-day and overdraft facilities are readily available in Singapore (subject to individual institutions credit assessment and client agreements), funding of account may in effect happen later than actual SGS settlement.

As a result of the typical intra-day availability, funding reports from Domestic Custodian to FII are a representative feature (in order to allow FII to make funding adjustments).

9 – Transaction status update report necessary to allow FII/Global Custodian to plan funding requirements for same or following settlement day.

11 – Settlement status updates may be crucial to determine whether settlement will happen in time.

13,14 – Based on MAS description of settlement process, cash logically settles firsts, thus assumption that cash settlement confirmation gets sent earlier than securities settlement confirmation.

While MAS/SGS websites point to T+1 settlement cycle, some pages of related sites also mention settlement cycle is negotiable – need to ascertain whether that is fact.

Available materials, print and online, appears to use terms like ‘Debt Securities Clearing Settlement System (DCSS, locally attributed to CDP)’, ‘MAS Electronic Payment System plus (MEPS+)’ and ‘MAS Book Entry System’ both synonymously and as distinct names for specific features – need to establish official naming of infrastructure components; for current version, MAS/SGS websites recurring terms used.

There is no specific mention about reporting of bond prices/SGS trades in available material; need to establish whether such process exists.

Similarly to other markets, it would be necessary to confirm whether trading counterparties send trade confirmations to Domestic Custodian for FII trades.

11 – Assumed as online viewing to monitor settlement progress; however, MEPS+ is SWIFT compliant and may send status messages on time or event based triggers; to be confirmed.
Market Guides from International Experts (from ABMF Library)
- Presentation slides provided by DBS Bank
- Monetary Authority of Singapore (MAS) [www.mas.gov.sg](http://www.mas.gov.sg)
- Excerpt from publication on Singapore market by EMEAP, the Executives' Meeting of East Asia-Pacific Central Banks [www.emeap.org/emeapdb/upload%5CWGMeeting%5CSingapore_Redbook_(Mar_2010).pdf](http://www.emeap.org/emeapdb/upload%5CWGMeeting%5CSingapore_Redbook_(Mar_2010).pdf)
1. SGS (Singapore government securities) is done on an over-the-counter basis.
2. Trades are matched among seller and buyer.
3. The bond seller keys in the agreed trade details into MEPS plus SGS.
4. The bond buyer confirms the same trade in the system.
5. MEPS Plus SGS performs settlement matching.
6. MEPS Plus SGS sends the notice of settlement matching status to seller and buyer.
7. MEPS Plus SGS sends the DVP order to MAS’ SGS Book-entry clearing system.
8. SGS Book-entry clearing system sends the notice of recording to both sides.
9. When the seller’s SGS account has sufficient SGS, the SGS are earmarked for transfer to the buyer.
10. Settlement data for DVP is sent to MAS RTGS network.
11. When the funds are available, the amount is debited from the buyer’s RTGS account and credited to the seller’s RTGS account.
12. MEPS plus notifies simultaneously SGS Book-entry clearing system to transfer the securities and reports the cash settlement status to the both sides of trade.
13. SGS Book-entry clearing system transfer the bonds to the buyer’s account.
14. SGS Book-entry clearing system reports the settlement status to both seller and buyer.
1. All economies have OTC markets for bond trading.
2. In some economies, bonds are listed to stock exchanges. Also, trade data are reported to stock exchanges and/or SRO (self regulatory organization) to secure price transparency (profiling).
3. Many economies are trying to establish CCP (central counterparty).
4. Regarding settlement matching, some adopt central matching and others adopt local matching. Also, some additional proprietary functions such as forwarding data to counterparty to save input workload are implemented.
5. Cash settlements are carried out mainly using central bank money except one economy.
Primary categories of questionnaire

1. Bond market infrastructures
2. CSDs in each country
3. Typical business flowchart
4. Matching
5. Settlement cycles
6. Standards including numbering and coding
7. ISO and the local practices
8. Transaction cost
9. Medium to long term strategy
10. Any other information
### CSDs in each country

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<th>Country</th>
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<th>Standards including numbering and coding</th>
<th>Language</th>
<th>Country</th>
<th>CSDs</th>
<th>Standards including numbering and coding</th>
<th>Language</th>
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</table>

### Standards including numbering and coding

<table>
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<th>Country</th>
<th>CSDs</th>
<th>Standards including numbering and coding</th>
<th>Language</th>
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</table>
Title: Survey of government bond markets in ASEAN+3 and possible road maps to implement straight through processing in the region (draft)

Part 1 Bond markets and their infrastructures in ASEAN+3
Part 2 Bond markets and their infrastructures in each economy

1. Introduction
   ➢ Background and work plan of ABMF Subforum2 will be described. Regarding background, GoE report will be quoted. Decision made by the ASEAN+3 Finance Ministers will be referred. Purposes and meanings to enhance STP and to reduce cost of ASEAN+3 will be explained.

2. Methodology and Approach of the Survey
   ➢ Methodology and Approach of the Survey including questionnaire will be explained.

3. Overview of the ASEAN+3 Bond Markets and their Infrastructures
   ➢ Bond markets in ASEAN+3 as a whole will be explained. Also, salient characteristics of the ASEAN+3 bond markets will be discussed.

4. Cross-border Bond Transaction Flow
   ➢ Cross-border issues including area to be standardized will be discussed.

5. Typical Business Flowchart
   ➢ Salient features of the business flowcharts of DVP transactions will be discussed.
Part 1 Bond markets and their infrastructures in ASEAN+3

9. Matching
10. Settlement cycles
11. Standards including numbering and coding
12. Possible next step of ABMF SF2
13. Conclusions
14. Acknowledgement

Appendix

- Topics presented as information sessions
- Situation of European and North American Bond Markets
- List of Abbreviations (glossary)

Part 2 Bond markets and their infrastructures in each economy

1. Bond markets and their infrastructures
   i. Overview of bond markets
   ii. Trading
   iii. CCP
   iv. Bond settlement
   v. Cash settlement
2. Cross-border bond transaction flows
3. Typical business flows
4. Matching
5. Settlement cycle
6. Numbering and coding
   i. Securities numbering
   ii. Financial institution identification
   iii. Securities account
   iv. Cash account
   v. Character code and language
7. Current status of STP
8. Problems and challenges (wish list)
9. Medium to long term strategy
10. ISO and local practices

1. Brunei Darussalam
2. Cambodia
3. People’s Republic of China
4. Hong Kong, PRC
5. Indonesia
6. Japan
7. Republic of Korea
8. Lao, PDR
9. Malaysia
10. Myanmar
11. Philippines
12. Singapore
13. Thailand
14. Vietnam
8. Cross border issues

Salient points of bond transaction flows will be discussed.

Source: J.P. Morgan (Mr. Tagai)
Example in Japan (FUTURE2014)
1. DVP business flowcharts of a government bond trade in member countries are collected as a typical bond transaction. Message items of the DVP transactions may be surveyed. **Fit & gap analysis with the ISO 20022** will be made for the typical transactions.

2. Not only typical business transactions such as DVP, but also other processes including issuance, interest payment, and redemption may also be surveyed.

3. Not only government bonds but also other securities such as corporate bonds may be surveyed.

4. Based on the survey and results, straight through processing and standardization of cross-border bond transactions in ASEAN+3 may be discussed. **Some possible roadmaps and scenarios** to make the STP in the region more efficient may be proposed.

5. Some fundamental practices may be proposed to support the countries who are trying to develop bond markets in the region. **Technical assistance** program may be proposed if necessary.

6. The survey results and possible roadmaps may provide some useful information for the RSI (regional settlement intermediaries) discussions of TF4.

7. Bilateral connections between countries which have already established bond market infrastructures may be discussed as a first step of STP of cross-border transactions.

---

**ADB**

Fit & Gap Analysis (for example)
1. Business processes such as message transactions themselves and message flows need to be surveyed
2. MT (ISO 15022) to MX (ISO 20022) reverse engineering will be required. But, before that fit and gap analysis between local standard and international standard (MT) needs to be carried out.

---

**MT messages to be used later in this slides**
- MT540 Receive Free
- MT541 Receive Against Payment
- MT542 Deliver Free
- MT543 Deliver Against Payment
- MT544 Receive Free Confirmation
- MT545 Receive Against Payment Confirmation
- MT546 Deliver Free Confirmation
- MT547 Deliver Against Payment Confirmation
- MT548 Settlement Status and Processing Advice

---

**Image of ISO and the local practices**

FIX: The Financial Information eXchange (FIX) protocol is an electronic communications protocol initiated in 1992 for international real-time exchange of information related to the securities transactions and markets.

ISO 15022: ISO 15022 is an ISO standard for messaging used in securities trading such as MT541 and MT543 for RVP and DVP of securities.

ISO 20022: ISO 20022 or UNIFI is the ISO Standard for Financial Services Messaging such as sese 023.001.01 for securities settlement instructions.
Securities related messages have information to be used for cash settlement.

From STP point of view, each country has its own message item depending on market practice. Making analysis with proprietary message and ISO standard message is useful for next step of ABMF standardization.

Refer to: ISO 20022 Securities Settlement and Reconciliation
Message Definition Report
Approved by the Securities SEG on 14 December 2009
**Message Elements**

**10 Common Elements in Settlement Instruction**

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<tr>
<th>Business elements</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
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<td>Message reference</td>
<td>16x / Max 35 text</td>
</tr>
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<td>Trade Date</td>
<td>ISO 8601 Date/Time</td>
</tr>
<tr>
<td>Settlement Date</td>
<td>ISO 8601 Date/Time</td>
</tr>
<tr>
<td>Quantity of Financial Instrument</td>
<td>Expressed as units (equities) or face amount (Fixed Income)</td>
</tr>
<tr>
<td>Financial Instrument</td>
<td>ISO 6166 International Securities Identification Number [ISIN]</td>
</tr>
<tr>
<td>Settlement Amount</td>
<td>Currency and amount</td>
</tr>
<tr>
<td>Safekeeping Account to be credited or debited</td>
<td>35x / Max 35 text</td>
</tr>
<tr>
<td>Place of Settlement</td>
<td>ISO 9362 Business Identifier Codes [BIC] taken from the list of PSET’s BIC published on <a href="http://www.smpg.info">www.smpg.info</a>. See also Place of Settlement MP.</td>
</tr>
<tr>
<td>Receiving/Delivering Agent</td>
<td>ISO 9362 Business Identifier Codes [BIC] or CSD Local Code</td>
</tr>
<tr>
<td>Client of Receiving/Delivering Agent</td>
<td>ISO 9362 Business Identifier Codes [BIC]</td>
</tr>
<tr>
<td>Country specifics as per local market practice (if any)</td>
<td>Country specifics as per local market practice (if any)</td>
</tr>
</tbody>
</table>

Source: SWIFT (Ms. Morioka), original source SMPG

---

**Message Elements**

**10 common elements in Settlement confirmation**

<table>
<thead>
<tr>
<th>Data</th>
<th>ISO 15022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction Identification</td>
<td>20C::SEME/16x</td>
</tr>
<tr>
<td>Trade Date</td>
<td>98A::TRAD/YYYYYMMDD</td>
</tr>
<tr>
<td>Effective Settlement Date</td>
<td>98A::ESTT/YYYYYMMDD</td>
</tr>
<tr>
<td>Effectively Settled Quantity of Financial Instrument</td>
<td>36B::ESTT/FA0T/154 for fixed income 36B::ESTT/UNIT/15d for equities</td>
</tr>
<tr>
<td>Financial Instrument</td>
<td>35B:ISIN+1e12/c</td>
</tr>
<tr>
<td>Effective Settled Amount</td>
<td>19A::ESTT/[NJ33]a15d</td>
</tr>
<tr>
<td>Safekeeping Account to be credited or debited</td>
<td>97A::SAFE/55x</td>
</tr>
<tr>
<td>Place of Settlement</td>
<td>95P::PSET/4a2a2x</td>
</tr>
<tr>
<td>Receiving/Delivering Agent</td>
<td>95P::REAG/4a2a2a2c or 95R::REAG/8c34x</td>
</tr>
<tr>
<td>Client of Receiving/Delivering Agent</td>
<td>95P::BUYR/4a2a2a2c or 95P::SELL/4a2a2c</td>
</tr>
<tr>
<td>* if more than two parties are provided, the client of the REAG/DEAG is the REC/DEC, see Common Elements MP and Standards for clarification.</td>
<td></td>
</tr>
<tr>
<td>Country specifics as per local market practice (if any)</td>
<td>See country MP.</td>
</tr>
</tbody>
</table>

Source: SMPG (Settlement Common Elements)
DVP settlement type No. 1

DVP settlement is completed in the CSD since both securities account and cash account are within the CSD. Therefore, cash settlement related messages do not come out of the CSD. Some local CSD may have different message flows compared to that of ISO 15022.

DVP settlement type No. 2

CSD and cash settlement system are operated by different parties.
CSD and Cash settlement parties are different.

This slide is prepared by ADB consultant based publicly available information and may not reflect actual situation.

Bond settlement infrastructure diagram (Philippines)

Trading
- OTC market
- Ex. mkrt
- PDEx (Fixed Income Trading System)

Trade matching

CCP

Settlement match.

Bond settlement
- Corporate bond
- Govt. bond
- PDEx (eDvP)
- PDTC
- Govt. bond
- PDEx (Ross STP Facility)
- Bureau of Treasury (BTr-RoSS)

Cash settlement
- Settle. banks
- Bangko Sentral ng Pilipinas (PhilPaSS)

PDEx – Philippine Dealing & Exchange
eDvP – Expanded Delivery vs. Payment System
PDTC – Philippine Depository & Trust Corporation
RoSS – Registry of Scripless Securities
PhilPaSS – Philippine Payments and Settlement System
Cash settlement by settlement banks is for government and corporate bonds.
Detailed Business Process Flowchart
DVP with Matching and CCP (2/3)

Buyer

Notice Date of Approval of Obligation
Notice Date of Novation
Notice Date of Netting

Clearing System
(Japan Government Bond Clearing Corporation– JGBCC)

Approval of Obligation
Notice Data of Approval of Obligation

PSMS
(Pre-Settlement Matching System)

Notice Date of Approval of Obligation
Notice Date of Novation
Notice Date of Netting

PSMS
(Pre-Settlement Matching System)

Novation
Netting

CSD
(The BOJ-Net)

DVP
Transfer Instruction
for DVP (For Deliverer and Receiver of JGB)

Receiver of Funds

Notice of Acceptance of JGB Transfer Instruction for JGB
Notice of Acceptance of JGB Transfer Instruction for DVP
Notice of Acceptance of JGB Transfer Instruction for DVP

Buyer

Notice Date of Approval of Obligation
Notice Date of Novation
Notice Date of Netting

Settlement

S - 1

DVP Request Data

Notice of DVP Settlement

Sendor of Funds

Notice of JGB Transfer Instruction for DVP

Receiver of JGB

Notice of JGB Transfer Instruction for JGB

CSD
(The BOJ-Net)

Notice of JGB Transfer Instruction for JGB

Acceptance of DVP Request Data

Clearing System
(For Receiver of JGB)

Notice Date of Approval of Obligation
Notice Date of Novation
Notice Date of Netting

Clearing System
(For Delieverer of JGB)

Notice Date of Approval of Obligation
Notice Date of Novation
Notice Date of Netting

Delieverer of JGB

Notice of JGB Transfer Instruction for DVP

Receiver of Funds

Notice of JGB Transfer Instruction for DVP

Notice of JGB Transfer Instruction for DVP

Notice of JGB Transfer Instruction for DVP

Notice of Acceptance of DVP Request Data

Notice of credit to current account for DVP

Notice of credit to current account for DVP

Notice of credit to current account for DVP
Scope of FIT&GAP analyses of local and ISO standards

1. Fit and gap analysis of message transactions themselves
   ① Message mapping: Corresponding messages between local standard and ISO standard are to be surveyed
   ② Message flow: Transaction flows not only for securities messages but also for payment messages as well as other messages such as notice messages including interlinking messages with other related organizations are to be considered
   ③ Securities transactions (issuances, investor registration, trades, repo, interest payments, and redemptions) are to be considered

2. Message format: Fit and gap analysis of each message between local and ISO standards are to be conducted

3. Code scheme: Code schemes such as ISIN, cash and securities accounts, and character codes between local and ISO standards are to be surveyed

<table>
<thead>
<tr>
<th>Type of transaction</th>
<th>Message mapping</th>
<th>Message flow</th>
<th>Message format</th>
<th>Code scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>securities</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>payment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>collateral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inquiry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fit & gap analysis of terminologies
1st ABMF SF2 (28 September 2010): discuss work plan and schedule of the SF2

Phase 1 (between 1st and 2nd SF2)
- Bond transactions to be surveyed were selected
- Questionnaires (items) for the survey were drafted

2nd ABMF SF2 (13-14 December 2010): discuss bond transactions and questionnaire for the survey (first reporting to TF3)

Phase 2 (between 2nd and 3rd SF2)
- Questionnaire survey was filled in by the members

3rd ABMF SF2 (16-17 February 2011): present draft results and discuss how to compile them

Phase 3 (between 3rd and 4th SF2)
- Survey results were interpreted and compiled
- Contents of the report to TF3 were drafted
- Further survey was carried out (Country visit)
- Seminars to support the countries which are developing bond market were arranged.
- Supplemental survey was carried out

4th ABMF SF2 (1st July 2011): discuss contents of the report to TF3

Phase 4 (between 4th and 5th SF2)
- Additional survey will be carried out
- The report will be drafted

5th ABMF SF2 (September 2011): discuss the draft report to TF3 (second reporting to TF3)

Phase 5 (between 5th and 6th SF2)
- The report will be completed

6th ABMF SF2 (December 2011): discuss the report to TF3

Report to TF3 by the end of 2011
Preaching to Buddha

Thank you so much
Omgeo and Solution in Asia
The critical importance of an automated trade process

Yuji Tanaka, Representative Director Omgeo K.K.
June 30, 2011

Agenda

• Changing Global Landscape and Operational Risk
• Omgeo Solution
• Who is Omgeo
• Same Day Affirmation
• Links to Market Infrastructure
• Asset Classes and Instruments
Global Financial Crisis

After a period of uncertainty directly following the GFC, regulators, governments and industry bodies are now beginning to get down to the business of making changes to the financial system that they believe will make it more robust going forward.

• New laws are being brought into play to overhaul the banking industry
• Politics is increasing its influence
• Transparency is a key motivator

The long term impact is just beginning……

US – Fragility and Agility

The many challenges facing the USA:

- High levels of unemployment and personal debt
- Public Mistrust of Wall Street
- Erosion of traditional market structures
- Fractured political landscape

Real impact from new regulation currently being introduced
Europe faces some significant challenges

The Greek debt crisis has knocked Europe off its pedestal

Questions are being asked about Europe’s ability to operate as a union.
Other European economies are under increased scrutiny.
The common currency leaves countries less room to steer their economies out of danger
Who will bear the brunt of any bailouts?

Asia

- Asia has generally recovered well
- Concerns about over-heating
- New economic powers are emerging
- Fractured approach to regulation – no one body with oversight
- Political instability stresses some of the regions’ economies
- Japan’s economy remains a source of concern
What is operational risk? Is it properly understood?

- Efficiency of the downstream clearing and settlement process is determined by the speed and accuracy of middle-office process
- Pervasive operational risk can become systemic – especially in volatile markets
- Broker/Dealers: high focus
- Global Custodians: high focus
- Buy-side: low-medium focus

“…….operational risk is defined as any risk where there’s no reward, only downside.”

Omgeo:
Automating post-trade lifecycle events
Investors are beginning to realize that the days of deploying spreadsheets and emails to manage trade information are over. Post global financial crisis there is an increased focus on independent regulation.………..."
Benefits of automation

• Reduce operational risk, trade failures
• Improve audit trail capabilities
• Benefit from market and volume-insensitive, scalable solutions
• Proactively support evolving trading strategies, across asset classes and new markets
• Increase SDA rates to reduce operational risk (fails) and shorten settlement cycles.
• Identify errors and mismatches sooner; manage exceptions only.
• Ensure accuracy of SSI data and compliance with local market standards.
• Use resources efficiently: reallocate current staff or maintain staff levels even as trade volumes rise.

Partnership

• Global OMS partnerships include:
  - Bloomberg, Fidessa, CRD, SunGard, Eze Castle, BlackRock & Hundsun (China)
• Global accounting system/PMS interfaces include:
  - Simcorp, Sophis, SunGard, Tradar, Paladyne & DST
• Global middleware partnerships include:
  - FiServ, Singularity, SmartStream & OGIS (Japan)
• Total partner relationships total over 80 across the globe
Who is Omgeo?

At Omgeo, we are the operations experts, automating trade life cycle events between global counterparties.

• We provide flexible solutions that enable over 6,000 clients and 80+ technology providers in 46 countries to seamless connect and interoperate.
• Our greatest strength is our global community and our ability to adapt our solutions so that clients can realize clear returns on investment strategies, while responding to changing market and regulatory conditions.

We have a track record of innovation, based on a unique partnership between a global utility and the commercial sector. Our priorities are inspired by the industry and delivered across borders and asset classes.

• Global joint venture (2001); Equally owned by the Depository Trust & Clearing Corporation and Thomson Reuters
• Rich heritage in delivering standard-setting solutions – the first electronic allocation engine, first settlement instruction database, and first central matching service
• Industry-driven entity with US SEC oversight & regulation on a number of offerings; FSA & MiFID compliance in the UK
• Over 30 years of experience servicing the financial markets

Omgeo Global Community
Same Day Affirmation

SDA is the agreement of all trade details on trade date (T+0)

There is a direct correlation between high SDA and high settlement rates – thus trade failures are reduced if trades are affirmed sooner in the process*

By affirming trade details on trade date, firms have more time to identify and resolve any potential errors – the chances of a trade failing are reduced.

*Omgeo Industry Discussion Paper on SDA - 2010

Legend:
- T+0 or 1
- T+2
- T+3
- >T+3

Source: World Federation of Exchanges

Global Settlement Cycles
Domestic Equity Trades

Exceptions to T+3:
- Israel (T+0)
- Chile (T+1)
- Saudi Arabia (T+1)
- China (T+1)
- Germany (T+2)
- Turkey (T+2)
- Egypt (T+2)
- Korea (T+2)
- Russia (T+4)

Source: World Federation of Exchanges
### Same Day Affirmation Rates With Omgeo CTM

<table>
<thead>
<tr>
<th>Region</th>
<th>SDA rates by region</th>
<th>SDA rates by asset class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>48% of CTM volume</td>
<td>Equity</td>
</tr>
<tr>
<td></td>
<td>SDA rate = 91.73%</td>
<td>SDA rate = 94%</td>
</tr>
<tr>
<td></td>
<td>Significant variation nationally</td>
<td>Fixed Income</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SDA = 84%</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>15% of CTM volume</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SDA rate = 96.64%</td>
<td></td>
</tr>
<tr>
<td>Americas</td>
<td>37% of CTM Volume</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SDA rate = 93.56%</td>
<td></td>
</tr>
</tbody>
</table>

### Links to market infrastructures

- **Canada**: CDS
- **Europe**: EuroCCP
- **USA**: DTCC
- **Japan**: JASDEC
- **Korea**: KSD
- **Chile**: DCV
Market Infrastructure Strategy: Depository Workflow (KSD Model)

Market Infrastructure Strategy: Depository Workflow (JASDEC Model)
<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Instruments</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td></td>
<td>Ownership interest in a corporation in the form of common stock or preferred stock.</td>
</tr>
<tr>
<td></td>
<td>Common Stock</td>
<td>As a part of ownership, common stock typically carries voting rights that can be exercised by shareholders.</td>
</tr>
<tr>
<td></td>
<td>American Depositary Shares (ADS)</td>
<td>Represents a specific number of underlying shares of a foreign company issued in the United States, allowing the investor to hold and vote shares through a depository.</td>
</tr>
<tr>
<td></td>
<td>Warrants</td>
<td>Rights to acquire a specific number of shares of a company at a predetermined price.</td>
</tr>
<tr>
<td></td>
<td>Exchange-Traded Funds (ETF)</td>
<td>Shares representing a portfolio of assets, such as stocks or bonds, designed to track a particular index.</td>
</tr>
<tr>
<td></td>
<td>Preferred Shares</td>
<td>Shares that give the holder preferential rights over common shareholders.</td>
</tr>
<tr>
<td>Fixed Income</td>
<td></td>
<td>Any type of investment that yields a regular fixed payment.</td>
</tr>
<tr>
<td></td>
<td>Asset Backed Securities (ABS)</td>
<td>代表特定数量的母公司股票，允许投资者通过存托凭证持有和投票，通过存托凭证。</td>
</tr>
<tr>
<td></td>
<td>Collateralized Mortgage Obligations (CMO)</td>
<td>资产支持证券 (ABS) 代表特定数量的母公司股票，允许投资者通过存托凭证持有和投票，通过存托凭证。</td>
</tr>
<tr>
<td></td>
<td>Participation Certificates</td>
<td>参与凭证代表一个投资组合的资产，如股票或债券，设计用于跟踪特定指数。</td>
</tr>
<tr>
<td></td>
<td>Trusts</td>
<td>代表特定数量的母公司股票，允许投资者通过存托凭证持有和投票，通过存托凭证。</td>
</tr>
<tr>
<td></td>
<td>U.S. Treasury Notes</td>
<td>代表特定数量的母公司股票，允许投资者通过存托凭证持有和投票，通过存托凭证。</td>
</tr>
<tr>
<td>Asset Class</td>
<td>Instruments</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Corporate Bonds</td>
<td></td>
<td>Bonds issued by corporations.</td>
</tr>
<tr>
<td>Domestic</td>
<td></td>
<td>Domestic refers to issuers located within the country.</td>
</tr>
<tr>
<td>International</td>
<td></td>
<td>International refers to issuers located outside the country.</td>
</tr>
<tr>
<td>Emerging Markets</td>
<td></td>
<td>Emerging markets refer to developing economies.</td>
</tr>
<tr>
<td>Fixed Income</td>
<td></td>
<td>Fixed income refers to securities with a fixed interest rate.</td>
</tr>
<tr>
<td>Floating Rate</td>
<td></td>
<td>Floating rate securities have an interest rate that adjusts periodically.</td>
</tr>
<tr>
<td>Government</td>
<td></td>
<td>Government securities are issued by government entities.</td>
</tr>
<tr>
<td>High Yield</td>
<td></td>
<td>High yield refers to securities with lower credit ratings.</td>
</tr>
<tr>
<td>Investment Grade</td>
<td></td>
<td>Investment grade refers to securities with higher credit ratings.</td>
</tr>
<tr>
<td>Municipal</td>
<td></td>
<td>Municipal securities are issued by local governments.</td>
</tr>
<tr>
<td>Structured Products</td>
<td></td>
<td>Structured products are complex financial instruments.</td>
</tr>
</tbody>
</table>

Each row in the table corresponds to a specific asset class, and the columns represent the different instruments associated with each class. The definition column provides a brief explanation of each instrument type.
<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Instruments</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Entitlements**

- A security that provides the holder with rights or privileges, such as voting or receiving dividends or interest.
- A right to receive or benefit from a particular asset or future event.

**Warrants**

- A security that entitles the holder to purchase a specified number of shares at a specified price within a specified time.
- Exercise is typically done within a defined time period, often referred to as the ‘exercise period’.

**Options**

- A contract that gives the holder the right, but not the obligation, to buy or sell an underlying asset at a specified price within a specified time.
- The holder has the right to either buy (call option) or sell (put option) the underlying asset at the strike price.

**Derivatives**

- Financial instruments whose value is derived from or related to another underlying asset.
- Types include futures, options, swaps, and warrants.
- Used for hedging risk, speculation, and arbitrage.

**Equity**

- Shares representing ownership in a company.
- Entitles the holder to participate in the company's profits, represented by dividends or capital gains.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

**Asset Class**

- Equity, Fixed Income, Commodities, Derivatives.

**Instruments**

- Stocks, Bonds, Commodities, Derivatives.

**Definition**

- A comprehensive overview of the asset class, instruments, and related terms.

**DTCC Thomson Reuters Company**
### Omgeo Asset Class Coverage

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Instruments</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange Traded Futures</td>
<td>Exchange traded futures: contracts on assets known as “futures” that obligate the holder to purchase or sell an asset at the stated price on the stated date of delivery.</td>
<td>-</td>
</tr>
<tr>
<td>OTC Swaps &amp; Other Derivatives</td>
<td>OTC swaps and other derivatives: contracts which do not exist on an exchange, but are negotiated directly between two parties.</td>
<td>-</td>
</tr>
<tr>
<td>FX Derivatives</td>
<td>FX derivatives: contracts that involve the exchange or sale of one currency for another at a specified future date at a predetermined future price.</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Exchange (FX)</td>
<td>Instruments, such as paper currency, notes, and checks, used to make payments or settle.</td>
<td>-</td>
</tr>
<tr>
<td>All Other</td>
<td>Includes derivatives which buy one currency and sell a different currency for immediate delivery.</td>
<td>-</td>
</tr>
</tbody>
</table>
Thank you