

ASEAN+3

# Information on Transaction Flows and Settlement Infrastructures

ASEAN+3 Bond Market Forum  
Sub-Forum 2 (ABMF SF2)



# **ASEAN+3**

## Information on Transaction Flows and Settlement Infrastructures

---

**ASEAN+3 Bond Market Forum  
Sub-Forum 2 (ABMF SF2)**

December 2013

Asian Development Bank

© 2014 Asian Development Bank

All rights reserved. Published in 2014.

Printed in Philippines.

ISBN 978-92-9254-448-5 (Print), 978-92-9254-449-2 (PDF)

Publication Stock No. RPT146359-3

Cataloging-In-Publication Data

Asian Development Bank.

ASEAN+3: Information on Transaction Flows and Settlement Infrastructures

ASEAN+3 Bond Market Forum: Sub-Forum 2 (ABMF SF2)

Mandaluyong City, Philippines: Asian Development Bank, 2014.

1. Regionalism                      2. Subregional cooperation                      3. Economic development                      4. Asia  
I. Asian Development Bank.

The views expressed in this publication are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB) or its Board of Governors or the governments they represent.

ADB does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use.

By making any designation of or reference to a particular territory or geographic area, or by using the term "country" in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.

ADB encourages printing or copying information exclusively for personal and noncommercial use with proper acknowledgment of ADB. Users are restricted from reselling, redistributing, or creating derivative works for commercial purposes without the express, written consent of ADB.

**Note:**

In this publication, "\$" refers to US dollars.

Asian Development Bank

6 ADB Avenue, Mandaluyong City

1550 Metro Manila, Philippines

Tel +63 2 632 4444

Fax +63 2 636 2444

[www.adb.org](http://www.adb.org)

**For orders, please contact:**

Department of External Relations

Fax +63 2 636 2648

[adbpub@adb.org](mailto:adbpub@adb.org)

This report is the outcome of a regional technical assistance project, RETA 8049: Harmonization of Bond Standards and Market Practices in ASEAN+3: Support for ASEAN+3 Bond Market Forum, Phase 2 under the Asian Bond Markets Initiative. The project was managed by Seung Jae Lee, Advisor and Shinji Kawai, Senior Financial Sector Specialist of the Office of Regional Economic Integration. The co-authors of the report are Shinji Kawai and ADB Consultant Dr. Taiji Inui, together with ABMF members and experts.



# Statement from SF2 Chairs

The Chair and Vice-Chairs express their heartfelt gratitude to members and experts of ABMF SF2 for their contributions in making this initiative fruitful. The Chair and Vice-Chairs hope to enjoy the continuous support of the members and experts since this Report is only the first stage of bringing

the objectives of ABMF to fruition. The Chair and Vice-Chairs also express their heartfelt gratitude to the ADB Secretariat Team, in particular the ADB Consultant for ABMF SF2 and his team, for drafting this Report.

Mr. Jong-Hyung Lee  
Chair of ABMF SF2

Ms. Margeret Mutiara Tang  
Vice-Chair of ABMF SF2

Mr. Yuji Sato  
Vice-Chair of ABMF SF2

# Preface

There have been significant developments in bond markets in Asia since the early 2000s. The amount of local currency (LCY) bonds outstanding in emerging East Asia has grown sharply from less than US\$1.0 trillion at the end of 2001 to US \$6.5 trillion at the end of 2012.<sup>a</sup> LCY bond markets became an effective alternative source of financing for governments and corporations during the recent global financial crisis, and are characterized by increasingly diversified issuance and a broader investor base that includes non-residents. The regional channeling of regional resources to regional investment needs improved from 2.8% in 2001 to 8.4% in 2011, as measured by the relative share of the region's debt portfolio outflows being re-invested within the region.

However, there still remain various issues to be addressed. For example, the region's bond market is still small in size due to the continued dominance of the banking sector, regional resource channeling needs to be further enhanced, volatile capital flows must be appropriately managed, and there is a need to improve market efficiency through lower transaction costs by implementing cross-border, straight-through-processing (STP) by harmonizing and standardizing message flows and items, and by streamlining regulations and market practices.

For a more efficient discussion on implementing cross-border STP and streamlining regulations and market practices, the ASEAN+3 Bond Market Forum (ABMF) was established in 2010—and

endorsed by the ASEAN+3 Finance Ministers at the 13th ASEAN+3 Finance Ministers' Meeting on 2 May 2010 in Tashkent, Uzbekistan—as a common platform to foster standardization of market practices and harmonization of regulations relating to cross-border bond transactions in the region.

The members of ABMF appointed or endorsed by the Asian Bond Markets Initiative (ABMI) Task Force 3 (TF3) include regulatory bodies, stock exchanges, depositories, self-regulatory organizations (SROs), market associations, and international market institutions. The Asian Development Bank (ADB) serves as the Secretariat. ABMF is expected to contribute to bond market development by offering a regional platform to enhance standardization and incorporating both public and private entities.

Since the first meeting in September 2010 in Tokyo, Japan, ABMF members and experts have met quarterly in December 2010 in Manila, Philippines; February 2011 in Kuala Lumpur, Malaysia; June 2011 on Jeju Island, Republic of Korea; September 2011 in Bali, Indonesia; December 2011 in Beijing, People's Republic of China; February 2012 in Hong Kong, China; April 2012 in Manila, Philippines; September 2012 in Seoul, Republic of Korea; November 2012 in Bangkok, Thailand; February 2013 in Singapore; April 2013 in Jakarta, Indonesia; July 2013 in Tokyo, Japan; and November 2013 on Jeju Island, Republic of Korea. Fourteen meetings have been held in total.

ABMF consists of two forums: Sub-Forum 1 (SF1) and Sub-Forum 2 (SF2). The objective of SF1 is to

<sup>a</sup> Emerging East Asia comprises the 10 members of ASEAN plus the People's Republic of China, Japan, and the Republic of Korea.

close the information gap in regulations, market practices, and other areas in the region's bond markets. SF2 focuses on enhancing regional STP through the harmonization of transaction procedures and standardization of messages.

In its first phase of activity during 2010–11 (Phase1), SF1 worked on collecting legal and regulatory information for the individual ASEAN+3 markets, and SF2 identified detailed information on bond transaction flows.

As a key output of ABMF Phase1 activities, a comprehensive ASEAN+3 Bond Market Guide (the Guide) was published in April 2012, including individual bond market guides for ASEAN+3 member economies. The Guide consisted of Volume 1: Sub-Forum 1—Comparative Analysis and Bond Market Guides, and Volume 2: Sub-Forum 2—Information on Transaction Flows and Settlement. The Guide aimed to dispel persistent misperceptions about ASEAN+3 markets. The Guide was expected to narrow information gaps and establish a common understanding of how markets in the region operate.

The information and findings gathered during Phase1 became the foundation of the next phase of activities during 2012–13 (Phase2). In Phase2, SF1 has been working on developing a regionally standardized bond issuance framework called the ASEAN+3 Multi-Currency Bond Issuance Framework (AMBIF), and SF2 on enhancing survey practices to identify information about government and corporate bond transaction flows and delivery-versus-payment (DVP) flows, and interest payments and redemption procedures. Based on the survey results, SF2 provided policy recommendations to implement cross-border STP through the harmonization and standardization of transaction flows and message items. With continued discussions and consultations, ABMF members finalized the interim reports for both SF1 and SF2 during the 12th ABMF Meeting on 23–24 April 2013 in Jakarta, Indonesia, describing key policy recommendations for AMBIF on standardizing bond transaction flows and message items. The interim reports were submitted to the ASEAN+3 Finance Ministers' and Central Bank Governors' Meeting (AFMCGM) on 2 May 2013 through ABMI TF3.

This report, entitled ASEAN+3 Information on Transaction Flows and Settlement Infrastructure

and consisting of three parts, is the result of Phase2 studies of ABMF SF2 and enhances the findings of Phase 1. Part 1 provides an overview of ASEAN+3 bond markets and their infrastructure. Part 2 reports on the bond market-related issues of economies in the region. Part 3 contains diagrams of ASEAN+3 bond market infrastructures, domestic bond transaction flows, and cross-border bond transaction flows. The contents of the report are as follows.

## Overview

Part 1: Bond Markets and Their Infrastructures in ASEAN+3

Part 2: Bond Markets and Their Infrastructures in Individual Economies

Part 3: Bond Market Infrastructure Diagrams, Domestic Bond Transaction Flows, and Cross-Border Bond Transaction Flows

This report was completed through the joint efforts of national members and experts, and international experts participating in ABMF SF2, supported by the ADB Secretariat comprising Shinji Kawai of ADB's Office of Regional Economic Integration (ADB OREI), Seung Jae Lee (ADB OREI), and Taiji Inui (ADB Consultant).

Thanks also go to ABMF SF2 Chair, Jong-Hyung Lee (Korea Securities Depository) and the Vice-Chairs, Margaret Mutiara Tang (Indonesian Central Depository) and Yuji Sato (Japan Securities Depository Center), for their leadership in facilitating active discussions and guiding SF2 members and the ADB Secretariat.

The national members and experts kindly provided inputs by answering questionnaires and commenting on diagrams during market visits and the draft review process.

The international experts very kindly provided report inputs and freely shared their requirements and assessments, often from proprietary sources. In addition, the team thanks all interviewees who gave useful comments and responses during the Phase2 market visits. Therefore, the report should be regarded as a crystallization of region-wide collaborative efforts and knowledge sharing toward more harmonized and integrated ASEAN+3 bond markets.

Without such strong support and cooperation from ABMF members and experts, as well as from market experts in the region, this report could not have been published.

The team also thanks the national members and experts of Hong Kong, China; Indonesia; Japan; the Republic of Korea; the Philippines; Singapore; and Thailand for hosting ABMF meetings in Phase2. The smooth organization of the meetings made possible the conduct of intensive discussions in multiple sessions at each meeting. In addition, valuable advice, support, and guidance were provided by ABMF Japan members, in particular by the Ministry of Finance. Also, supporting teams at ADB and the NTT DATA Corporation helped the ADB Consultant for SF2.

The bond markets and infrastructures in the region are rapidly developing by adopting international standards and principles. However, the efforts toward harmonization and standardization of ASEAN+3 bond markets have just begun. Given large differences in the levels of economic and bond

market development in the region, the task will not be easy. The related work is inevitably gradual and step-by-step. The further harmonization and standardization of cross-border STP for bond transactions in the region will be a major challenge. There are no obvious low-hanging fruits in such an endeavor. As such, SF2 will continue to foster a region-wide understanding of the benefits of more harmonized and standardized bond transactions. This unique initiative will create momentum to push the region toward deeper, more liquid, and more integrated bond markets.

ABMF is expected to continue to function as a platform to realize and institutionalize regionalism by helping formulate regional views and opinions into a common policy framework.

Finally, it should be noted that no part of the report represents the official views of any of the institutions that participated as ABMF members or provided experts. The ADB team is responsible for the contents of the report.

ABMF Secretariat Team



# **Part 1**

## Bond Markets and Their Infrastructures in ASEAN+3



# Contents

<b>Executive Summary .....</b>	<b>5</b>
<b>Introduction .....</b>	<b>8</b>
Purpose of ASEAN +3 Bond Market Forum .....	8
Organizational Structure and Governance.....	9
Purpose and Position of ABMF Sub-Forum2.....	9
Settlement Barriers Based on the Survey on the GoE Report .....	10
Outline of Phase1 Studies by ABMF SF2.....	12
Schedule of Sub-Forum 2 during Phase 2.....	13
 <b>Methodology and Approach of the Survey.....</b>	 <b>15</b>
Possible Goals of SF2 .....	15
Methodology Overview .....	17
Survey Questionnaire .....	20
Fit and Gap Analysis .....	20
Background on Fit and Gap Analysis of Bond Transactions.....	20
Scope of Fit and Gap Analysis .....	21
 <b>Findings on Bond Market Infrastructures and Transaction Flows .....</b>	 <b>23</b>
Introduction.....	23
Bond Market Infrastructures .....	23
DVP Flows .....	27
Interest Payment Flows .....	29
Message Standards.....	29
Message Formats.....	29
Message Items.....	30
Numbering and Coding.....	32
International Securities Identification Number (ISIN).....	32
Business Identifier Code (BIC) .....	33
Securities Account .....	34

Character Code Set and Language .....	35
Market Practices and Others .....	39
Settlement Cycles .....	39
Operating Hours .....	43
Matching Types .....	43
Reporting Rules .....	43
Physical Certificates .....	44
Cross-Border DVP Flows and LCY Liquidity .....	45
Communications Protocol .....	46

## **Key Observations and Policy Recommendations ..... 48**

Bond Market Infrastructure .....	48
DVP Flows .....	49
Interest Payment Flows .....	49
Message Standards including Numbering and Coding .....	50
Market Practices and Other Issues .....	51
Cross-Border STP and LCY Liquidity .....	51

## **Knowledge Support..... 53**

## **Next Phase of ABMF SF2 Activities and Roadmap ..... 55**

Overview .....	55
Harmonizing Message Flows .....	56
Concept of Harmonizing DVP Flows .....	56
Initial Candidates of Reference Model DVP Flows .....	57
Scope of Harmonizing Message Flows .....	60
Standardizing Message Items for ISO 20022 Migrations .....	60
ISIN .....	60
Harmonization of Market Practices .....	61
Study on Cross-Border Collateral and Repo Services .....	62
Roadmap and Future Work Plan .....	62

## **Conclusion..... 64**

## **Appendixes**

1 Members and Experts including Observers and ADB Secretariat .....	66
2 Trade Matching and Settlement Matching .....	69
3 References .....	71
4 Information Sessions of ABMF SF2 .....	72
5 Respondent Institutions During Sub-Forum2 Country Visits .....	74
6 Abbreviations .....	76



# Executive Summary

The ASEAN+3 Bond Market Forum (ABMF) was established in September 2010 after being endorsed by the ASEAN+3 Finance Ministers' Meeting as a common platform to foster the standardization of market practices and harmonization of regulations relating to cross-border bond transactions in the region.<sup>1</sup> ABMF aims to discuss various bond market issues in order to enhance the mobilization of regional savings for regional investments, and to improve information flow in regional markets. ABMF consists of two forums: Sub-Forum 1 (SF1) and Sub-Forum 2 (SF2). The objective of SF1 is to close the information gap in regulations, market practices, and other areas in the region's bond markets.<sup>2</sup> SF2 focuses on enhancing regional straight-through-processing (STP) through the harmonization of transaction procedures and standardization of messages.

ABMF SF2 members and experts discussed how to enhance regional STP of bond transactions from trade to settlement. ABMF SF2 conducted a survey of delivery-versus-payment (DVP) flows and interest payment and redemption flows for both government and corporate bonds.

Survey findings on (i) bond market infrastructure, (ii) DVP flows, (iii) interest payment flows, (iv) message standards, (v) numbering and coding, (vi) market practices and other issues, and (vii) cross-border DVP flows are summarized in this report. Fit and gap analyses of DVP flows and interest payment flows were conducted to identify similarities and differences with an eye toward future harmonization in the region. Message format, numbering and coding, and market practices are also discussed with respect to standardization and harmonization. Some characteristics of cross-border DVP flows, such as additional messages to meet FX and cash controls in each economy, are also identified based on the survey results.

## Observations and Policy Recommendations

Based on our findings, the following observations and policy recommendations aimed at fulfilling the objectives of ABMF SF2 were compiled:

- (i) **Bond market infrastructure.** Robust and sound bond market infrastructure such as Central Securities Depository (CSD) and Real Time Gross Settlement (RTGS) systems have already been implemented

<sup>1</sup> Currently, ASEAN+3 Finance Ministers and Central Bank Governors' Meeting.

<sup>2</sup> SF1 is presently focusing on the ASEAN+3 Multi-Currency Bond Issuance Framework (AMBIF).

in the 10 economies that have developed bond markets in the region.<sup>3</sup> However, infrastructure to promote further efficiency and risk reduction purposes—such as Pre-Settlement Matching System (PSMS), Central Counterparty (CCP), Trade Repository (TR), and automated Trading System (TS)—have not yet been implemented in most economies. Such infrastructure may be introduced eventually depending upon a variety of market conditions, including trade values, trade volumes, and the number of market participants.

- (ii) **DVP flows.** Bond trade and settlement (DVP) flows in ASEAN+3 vary across different economies and CSDs. The flows for residents are in some cases different from those for non-residents. It is recommended that in discussing harmonizing trade and settlement flows the impact on both infrastructure and the connected participant systems be considered. Such harmonization could be utilized for defining the requirements of interlinking gateways and/or establishing a hub between CSD and/or RTGS systems in the region.
- (iii) **Interest payment flows.** Interest payments and redemption flows also vary across different economies and CSDs. One of key reasons for the different flows lies in the different tax regimes applied. Regarding interest payment flows, it will be difficult to simply standardize them into a single flow since there are so many fundamental differences owing to different tax regimes (e.g., capturing the tax status of investors, legal interpretation of tax withholding agent). In our survey, many market participants expected regulators to be able to exempt non-residents from withholding tax (WHT).
- (iv) **Message formats, including numbering and coding.** Message formats in most economies in ASEAN+3 are not yet compliant with international standards. It is recommended that the message format in all markets be made compliant with ISO 20022, and ABMF

members and ASEAN+3 authorities are expected to support the migration of message standards of bond market infrastructure to ISO 20022. The numbering and coding standards already registered as international standards—such as International Securities Identification Number (ISIN) and Business Identifier Code (BIC)—are recommended to be adopted in ASEAN+3.

- (v) **Market practices.** It is recommended that market practices be harmonized across ASEAN+3, which could lead to the smoother processing of cross-border trade and settlement. Also, it could increase the possibility for cross-border collateral, repurchases (repo), and DVP to be used more flexibly in the region. The harmonization of market practices might be discussed where possible considering the costs and benefits of implementation in ASEAN+3.
- (vi) **Cross-Border STP and LCY liquidity.** FX and cash controls are perceived as one of the key barriers to executing cross-border trade and settlement. During the ABMF SF2 survey, many market participants addressed the need for deregulation of such controls to promote cross-border trade and settlement, and the improved availability of local currency (LCY). On the other hand, with changing regulatory demands and collateral landscapes in recent years, demand for cross-border collateral and cross-border repo services has been increasing worldwide, including in ASEAN+3. Under such circumstances, it is recommended that ABMF SF2 further study cross-border collateral and repo from a technological perspective, including current market practices, regulatory aspects, and infrastructures. The study could also include linking CSDs in ASEAN+3 with the intent of utilizing central bank money.

<sup>3</sup> The 10 economies comprise the People's Republic of China (the PRC); Hong Kong, China (Hong Kong, China); Republic of Indonesia (Indonesia); Japan (Japan); Republic of Korea (the Republic of Korea); Malaysia (Malaysia); the Philippines (the Philippines); Singapore (Singapore); (Thailand); and Viet Nam (Viet Nam).

## Suggestions for the Next Phase of ABMF Activities

Considering the above observations and policy recommendations, the following are suggested topics for ABMF SF2 to tackle in its next phase.

- (i) **Harmonization of message flows.** Discuss best practices of message flows to identify commonalities and differences, including underlying requirements for critical messages, and propose reference models of message flows where practical.
- (ii) **Standardization of messages—migration to international standard.** Adopt ISO 20022 and ISIN as an ASEAN+3 standard to promote cross-border trade and settlement.
- (iii) **Harmonization of market practices.** Formulate a plan for the harmonization of market practices wherever it would be effective and possible.
  - Specific market practices to be discussed will be chosen from the viewpoint of promoting cross-border STP in ASEAN+3 and considering the costs and benefits of standardization.
  - Settlement cycles in line with foreign exchange (FX) spot dates and the time period between the record date and payment date could be candidates to be studied.
- (iv) **Study on cross-border collateral and repo services.** Study current market practices, related legal and regulatory aspects, and infrastructures with the goal of identifying best practices and providing policy recommendations for the benefit of further development in cross-border collateral and repo markets.
  - The study could include cross-border collateral and repo services linking CSD and RTGS systems.
  - Interest payment flows related to cross-border collateral and repo services linking CSD and RTGS systems could also be studied.

**Roadmap and Work Plan.** In relation to the suggested next phase of ABMF activities, ABMF SF2 would like to propose the following Roadmap and Work Plan, subject to approval by Asian Bond Markets Initiative (ABMI) Task Force 3 (TF3) members.

- (i) **Phase 3 activities (2014–15).** Provide proposals for the harmonization of ASEAN+3 bond markets, including a
  - proposal on a reference model of DVP flows,
  - proposal on ISO 20022 adoption of message items,
  - proposal on harmonizing market practices wherever possible, and
  - proposal on cross-border collateral and repo services.
- (ii) **Medium- to long-term (after 2015).** Implement international standards by
  - upgrading or redesigning bond market infrastructure in accordance with international standards (e.g., ISO 20022) in some economies,
  - progressing in harmonizing market practices such as the settlement cycle, and
  - progressing in discussing linkages among the region's bond market infrastructures.

**Submission of the report to ABMI TF3.** ABMF SF2 would like to submit this Phase 2 report to ABMI TF3 as the key findings of SF2. SF2 members expect that the information and data accumulated through ABMF SF2 activities will be utilized as substantial and practical references in pursuing the harmonization of transaction flows and market practices. ABMF SF2 members hope the suggested recommendations in this report can serve as a reference for authorities in the design and implementation of bond market policies.

A list of members and experts, including observers and the ADB Secretariat Team, is presented in Appendix 1.

# Introduction

## Purpose of ASEAN+3 Bond Market Forum

The ASEAN+3 Bond Market Forum (ABMF) was established in September 2010, based on the endorsement of the ASEAN+3 Finance Ministers' Meeting, as a common platform to foster the standardization of market practices and harmonization of regulations relating to cross-border bond transactions in the region.<sup>1</sup>

ABMF is expected to discuss various bond market issues to further develop liquid and well-functioning bond markets in order to make cross-border bond investment and settlement

both smoother and less expensive; hence, the region's abundant savings can be channeled more effectively to meet the region's increasing investment needs.

ABMF aims to (i) assess existing regulatory frameworks and identify recommendations on how to foster the harmonization of regulations and market practices to facilitate cross-border bond transactions in the region, (ii) enhance dialogue between the private sector and ASEAN+3 officials to develop bond markets in the region and promote harmonization, standardization, and integration; and (iii) provide opportunities to exchange knowledge, expertise, and experience between the region's private and public sectors.

ABMF also took stock of the Group of Experts (GoE) report<sup>2</sup> on Cross-Border Bond Transactions and Settlement Issues.

---

<sup>1</sup> The Joint Ministerial Statement of the 13th ASEAN+3 Finance Ministers' Meeting on 2 May 2010 in Tashkent, Uzbekistan states: "We [ASEAN+3 Finance Ministers] took note of the Group of Experts' findings and suggestions on facilitating cross-border bond transactions and settlement, and welcomed the establishment of the technical working group on Regional Settlement Intermediary (RSI) to further evaluate the policy recommendations. We endorsed the establishment of ASEAN+3 Bond Market Forum (ABMF) as a common platform to foster standardization of market practices and harmonization of regulations relating to cross-border bond transactions in the region."

---

<sup>2</sup> ASEAN+3 ABMI Task Force 4-Groups of Experts. <http://asean3goe.adb.org>



## Organizational Structure and Governance

ABMF is organized under Task Force 3 (TF3) of the Asian Bond Markets Initiative (ABMI). ABMF occasionally consults with the co-chairs of TF3 in undertaking regional activities, and reports to TF3 on a regular basis regarding the progress of its activities. The organizational structure of ABMF is shown in **Figure 1.1**.

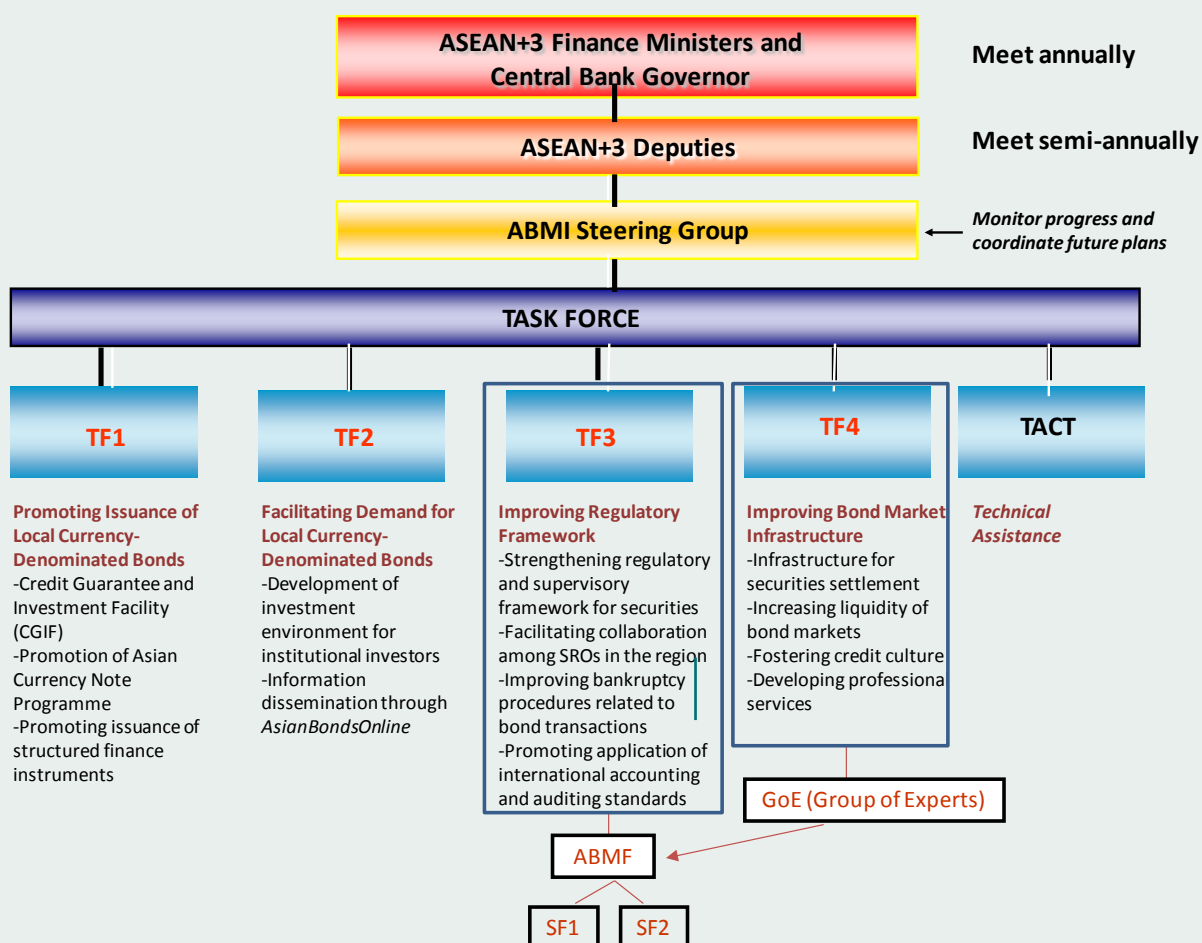
ABMF consists of two sub-forums: Sub-Forum 1 (SF1) and Sub-Forum 2 (SF2). The objective of SF1 is to close information gaps with respect to regulations, market practices, and other areas in the region's bond markets. SF2 focuses on

enhancing straight-through-processing (STP) in ASEAN+3. This report covers activities under SF2.

## Purpose and Position of ABMF Sub-Forum2

The GoE report identified various settlement barriers related to messaging formats, securities numbering, matching, and the settlement cycle. Thus, ABMF SF2 seeks to address these problems to enhance regional STP through the harmonization of transaction procedures and standardization of messages.

**Figure 1.1 Organizational Structure of the ASEAN+3 Bond Market Forum**



It is desirable to execute cross-border transactions without any manual processes or data conversion among market infrastructure in the region. This ideal situation can be realized if all transactions are operated through a system using common standards and consistent messaging. This is not currently possible because individual economies have their own practices and standards, which is inevitable because certain transaction procedures follow unique national requirements. In addition, some segments of a market may prefer ways of handling transactions, which creates differences in transaction procedures and, hence, requires additional conversion to international practices. Furthermore, differences in language remain a significant barrier as some ASEAN+3 economies use their own characters for payment systems and communications. Adopting international standards frameworks such as ISO20022 can mitigate impediments and barriers, which will enhance interoperability in ASEAN+3 bond markets.<sup>3</sup>

Phase1 studies of ABMF SF2 mainly discussed business flows by focusing on government bond transactions, which are larger and relatively simpler than corporate bond transactions. The studies identified and standardized the procedures in trades and settlements, particularly delivery-versus-payment (DVP) of government bonds. In addition, ABMF SF2 discussed other settlement-related barriers such as securities numbering, settlement cycle, and matching to improve settlement procedures. The Phase1 report is posted on ADB's website.<sup>4</sup>

Phase2 studies of ABMF SF2 have built upon the agenda of the GoE report and Phase1 studies of SF2. The GoE report pointed out barriers to promoting STP in ASEAN+3 bond markets. Phase2 studies have covered five barriers that are also discussed in the GoE report: (i) messaging format, (ii) pre-matching, (iii) securities numbering, (iv) settlement cycle, and (v) physical certificate. Moreover, both studies address DVP flows of corporate bonds, government bond

flows in BCLM countries,<sup>5</sup> flows of interest and redemption payments, message format and items, market practices, and FX and cash control in the implementation of STP (Figure 1.2).

## Settlement Barriers Based on the Survey on the GoE Report

The GoE report pointed out the barriers to implementing STP in bond markets in ASEAN+3. Settlement-related barriers, including messaging standards, pre-matching, securities numbering, settlement cycle, and physical certificates, are discussed in the succeeding section of this report. The identified barriers to implementation are shown in Figure 1.3.

### (i) Messaging standards

Messaging standards refer to the use (or non-use) of international standards for securities messaging in a local market. International standards, such as ISO20022, are regarded as necessary for enabling STP in securities post-trade processing. Where local proprietary practices are implemented, this revealed the need for interface and translation either at the level of the global custodian or the local custodian. This comes with associated costs of development and maintenance, as well as greater risk of error. In most cases, the local Central Securities Depository (CSD) does not use ISO messaging standards.

### (ii) Trade and settlement matching

This refers to the matching of trade details between counterparties. Matching may take two forms: trade matching and settlement matching.

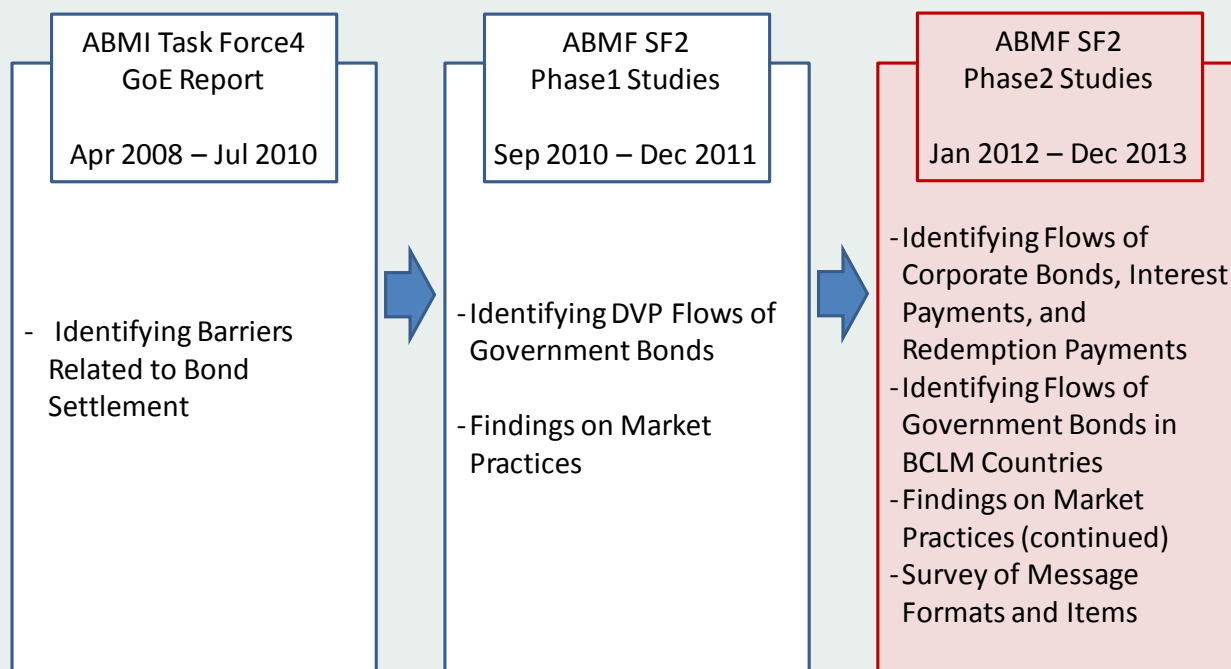
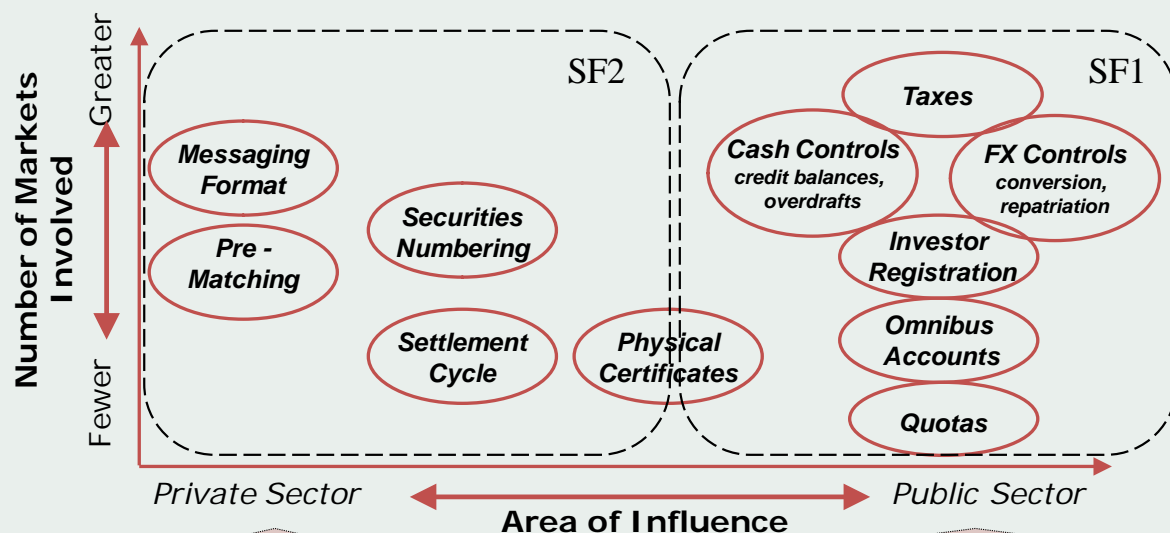
**(a) Trade matching.** There are two types of trade matching. Street-side matching is matching between counterparties. On the other hand, customer-side matching is matching between the execution agent (broker) and the order placing firm (investor). For more detail on matching, refer to Appendix 2.

**(b) Settlement matching.** Details of the agreed trade are compared between

<sup>3</sup> The International Standard Organization (ISO) is a worldwide federation of national standards bodies. ISO20022 provides the financial industry with a common platform for the development of messages in a standardized Extensible Markup Language (XML) syntax.

<sup>4</sup> Available at [https://wprqr1.adb.org/LotusQuickr/asean3abmf/Main.nsf/h\\_Toc/3B929170855F3F0E482579D4002E9940/?OpenDocument](https://wprqr1.adb.org/LotusQuickr/asean3abmf/Main.nsf/h_Toc/3B929170855F3F0E482579D4002E9940/?OpenDocument).

<sup>5</sup> The BCLM countries comprise Brunei Darussalam, Cambodia, Lao People's Democratic Republic (Lao PDR), and Myanmar. Bond markets in these countries are under-developed.

**Figure 1.2 Positions of Phase2 Studies of ABMF Sub-forum 2****Figure 1.3 Barriers Focused under ABMF****Improve Information Flows in ASEAN+3 Markets****SF1**

Timely information, uniform disclosure, price transparency, market statistics, information on corporate actions and legal information such as bankruptcy and insolvency laws

the counterparties' settlement agents (e.g., local custodians) to ensure that all information needed for settlement is in place. Prior to bond settlement, counterparties conduct pre-matching in many economies. Pre-matching is a process of comparing settlement instructions between counterparties before irrevocability to reduce settlement failure. Some markets in ASEAN+3 operate a form of automated matching systems for pre-settlement and settlement matching, while others do not. The absence of automated matching is likely to lead to increased settlement failures and make it more difficult to shorten the settlement cycle.

**(iii) Securities numbering**

This refers to the use (or non-use) of an International Securities Identification Number (ISIN) in accordance with ISO6166 for securities numbering in a local market. As with securities messaging, non-use of ISIN makes STP more difficult and increases the risk of error. Most ASEAN+3 markets now have established local agencies for issuing and administering ISIN for locally issued securities. The limitations may include:

- (a) ISINs are not available on the issue date of the bond, making trading and settlement more difficult.
- (b) ISINs are not widely used by local market participants.
- (c) ISINs are not used by local CSDs, instead local securities codes are widely used.

**(iv) Settlement cycle**

This refers to the number of days between the trade date and settlement date. Most markets operate on a standard settlement cycle. Typically this is trade date plus 1 (T+1) for government bonds, and T+2 or T+3 for corporate bonds. A short settlement cycle is better for local market participants, as it reduces counterparty risk. However, non-resident investors may find it difficult to settle on T+1 if they or their global custodian are located in a different time zone. For this reason, such investors look for the ability to negotiate a longer settlement period (T+2 or T+3 is the favored cycle). Settlement cycle as a market rule in the region is yet to be established.

**(v) Physical certificates**

Most bonds today are in dematerialized form held in book-entry at the local securities depository or central bank system. Some bonds are still in paper certificate form. The disadvantage of physical certificates are obvious—the need for manual examination, risk of loss, damage or forgery, and cost of storage. Typically, these remaining physical bonds are not of great interest to cross-border investors, and are unlikely to be traded at all. The ideal situation, clearly, is dematerialization. An intermediate step is to hold physical certificates, where they exist, in vaults of local securities depository for immobilization.

**Outline of Phase1 Studies by ABMF SF2**

ABMF SF2 has been discussing the survey results from the viewpoint of enhancing cross-border STP and standardization of messages.

The following are the preliminary conclusions of the Phase 1 studies.

**(i) Robust and sound bond infrastructure.**

Each surveyed market has its own robust and sound infrastructure. Operational risks associated with these systems are comparable with those of developed markets.

**(ii) Bonds are listed on exchanges and traded in over-the-counter (OTC) markets.**

Bonds are listed on stock exchanges in many markets; however, these are mostly traded over the phone or through other communication tools by negotiation among brokers and dealers. Bond markets in the region are generally OTC markets. This is common elsewhere since bond trading is mainly quote-driven, with brokers and dealers needing to negotiate the price. In contrast, exchange trading is order-driven, where all of the orders of buyers and sellers can be seen and matched by systems.

**(iii) Connection between trade system and CSD.** In some markets in ASEAN+3, trade data are directly transmitted to CSD from the trade system to be used for bond settlement, which is efficient and effective from an STP



perspective. In order to enhance STP in the region, each market is expected to automate and connect systems between the trade system and book-entry system of the CSD.

- (iv) **Cross-Border STP.** There are still a comparatively small amount of cross-border bond transactions in the region. Almost all trade data are entered in the CSD within the borders of individual markets. Both trade and book-entry systems are expected to be connected multilaterally to enhance cross-border bond transactions.
- (v) **Cross-Border DVP.** In order to enhance cross-border STP in ASEAN+3, increasing the liquidity of government bonds and currencies in the region is essential. From this perspective, ABMF SF2 members and experts are expected to further discuss fit-and-gap analysis of cross-border DVP transactions.
- (vi) **Matching.** All markets have matching at a trade or settlement level, and even at both levels in some cases. Some markets have adopted central matching and others local matching. In some markets, both central matching and local matching are used. Also, matching with additional features such as a reduction of input workloads has been implemented. Functions such as input of forward (future-dated) transactions for bond settlement book-entry systems and automated pre-settlement matching systems are expected to be implemented since manual pre-matching through facsimile and/or telephone in the region remains to be the mode of matching.
- (vii) **Settlement cycle.** Settlement cycle for local bond transactions in many markets is already realized at T+1, but market practices of cross-border bond transactions depend on each market player, which seem to be more than T+2 and negotiable. As such, there is no standard settlement cycle in ASEAN+3. A settlement cycle, which is a rule for all market participants to observe, is expected though not stipulated in regulation or law.

(viii) **Harmonization of terminologies and definitions.** Terminologies need to be standardized before harmonizing systems and messaging in the region.

(ix) **Institutional framework.** Fostering a mutual relationship among market actors and stakeholders is needed to implement a cross-border bond trade and settlement facility. To this end, there is a need to establish an institutional framework involving authorities and experts in the fields of policy, payment, information technology, and business operations to facilitate efficient communications, especially in emergencies such as system failures and other disasters.

(x) **Reporting facility.** Most markets in ASEAN+3 are developing and improving their facilities for reporting trade data to authorities and self-regulatory organizations (SROs). A data collection scheme will be very important in ASEAN+3 to make markets more sound and transparent. Also, this kind of initiative may be coordinated with the activities of the ASEAN+3 Macroeconomic Research Office (AMRO).

(xi) **Monitoring new issues.** Issues such as new technologies and new standards, including a Legal Entity Identifier, will be monitored to understand market trends and possible breakthrough practices.

## Schedule of Sub-Forum2 during Phase2

ABMF members and experts, with support from the ADB Secretariat and ADB Consultant for ABMF-SF2, have discussed issues of cross-border bond transactions at ABMF meetings, which were held eight times between February 2012 and November 2013, and six times before then. The schedule of SF2 is shown in **Table 1.1**.

Table 1.1 Schedule of Sub-Forum 2

		Meeting Schedule	Tasks	
2012	Jan	7th ABMF SF2 in Hong Kong, China	Preparation of Questionnaire	
	Feb			
	Mar	8th ABMF SF2 in Manila, Philippines	Reply to Questionnaire from each Economy	
	Apr			
	May			
	Jun	Economy Visits (MY, VN, TH, SG, KR, CN, JP, ID, HK, and PH)	Discussion of Bond Markets and Bond Transaction Flows with National and International Experts	
	Jul			
	Aug	9th ABMF SF2 in Seoul, Republic of Korea	Drafting Flows related to Corporate Bonds, Interest Payments, and Redemption Payments	
	Sep			
	Oct	10th ABMF SF2 in Bangkok, Thailand	Fact Finding on Market Practices and Message Formats and Items	
	Nov	BCLMV Knowledge Support in Shanghai, PRC		
	Dec			
2013	Jan	11th ABMF SF2 in Singapore, Singapore	Preparation for Technical Assistance	
	Feb			
	Mar	12th ABMF SF2 in Jakarta, Indonesia		
	Apr	Interim Report to Finance Ministers and Central Bank Governors		
	May	Technical Assistance in Cambodia		
		13th ABMF SF2 in Tokyo, Japan		
	Jun	Technical Assistance in Lao, PDR		
	Jul			
	Aug	Technical Assistance in Myanmar	Drafting the Report and Supplement Surveys	
	Sep	14th ABMF SF2 in Jeju, Republic of Korea		
	Oct		Finishing the Report	
	Nov			
	Dec			

# Methodology and Approach of the Survey

## Possible Goals of SF2

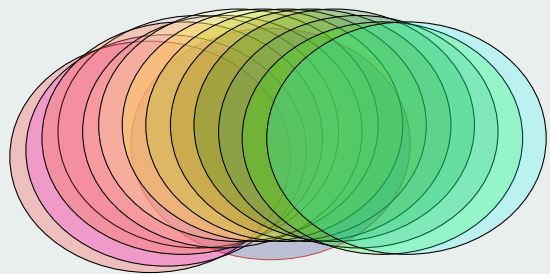
One of the possible goals of ABMF SF2 is to promote STP (**Figure 2.1**). In order to promote STP, SF2 has clarified the differences among ASEAN+3 economies over DVP and interest payment flows, message items, and market practices. Moreover, SF2 defines typical DVP and interest payment flows for the reference of operators of bond market infrastructure. Another goal is to promote ISO 20022 and related international standards, in particular ISIN and BIC, based on the survey results.

Through the Phase1 and Phase2 studies, SF2 has revealed that each ASEAN+3 economy has its own DVP flows and market practices. Differences in these matters could be a barrier to achieving STP. Not all ASEAN+3 economies have adopted the same rules since they each have unique legal and business requirements. To promote STP, ASEAN+3 economies are expected to adopt the same DVP and interest payment flows to the extent possible as they upgrade their existing bond

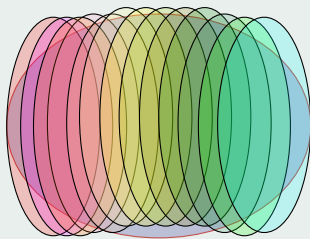
market infrastructure. If all ASEAN+3 economies were to comply with typical flows as defined by ABMF SF2, the barriers to promoting STP across the region would be reduced significantly.

Concerning message format and items, and numbering and coding, ASEAN+3 proprietary practices (local standards) show differences with international standards, including ISO20022. Also, proprietary practices differ across ASEAN+3 economies and markets.

Therefore, the proprietary practices of ASEAN+3 economies should be changed to meet international standards (**Figure 2.1**). It is important to harmonize practices in the region to make existing differences narrower. International standards such as ISO20022 should form the basis of local standards to make harmonization a reality. Also, practices in ASEAN+3 that have been identified as being on par with international standards should be considered as benchmarks (**Figure 2.2**).

**Figure 2.1 Possible Goals of Sub-Forum 2****ASEAN+3 Proprietary Practices****Current**

- Differences among Economies
- Differences from International Standards

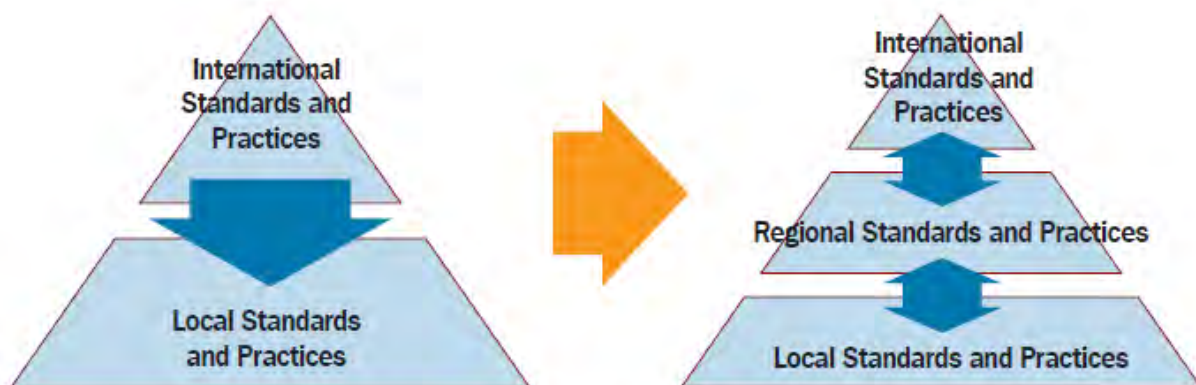


ISO 20022

**Future**

- Conform to International Standards and/or
- Be Registered as International Standards after Conforming in the Region

Note: International standards (e.g., ISO20022) will be the focal point and hub of local standards.

**Figure 2.2 Contribution of ASEAN + 3 to International Standard**

International standards (such as ISO20022) will be the focal point and hub of local standards.

Source: ABMF SF2.

## Methodology Overview

Phase2 activities of ABMF SF2 are divided into six stages as illustrated in **Figure 2.3**.

### (i) Stage A: Fact Finding

SF2 members agreed on the scope of the fact-finding survey questionnaire. Phase1 activities covered market practices and DVP flows in government bond markets, both for domestic and cross-border transactions. A generic model of cross-border bond transaction flows is shown in **Figure 2.4**.

In Phase2, SF2 has surveyed DVP flows for corporate bonds, interest and redemption payments, and other market practices. Details of these findings are presented in **Figure 2.5**.

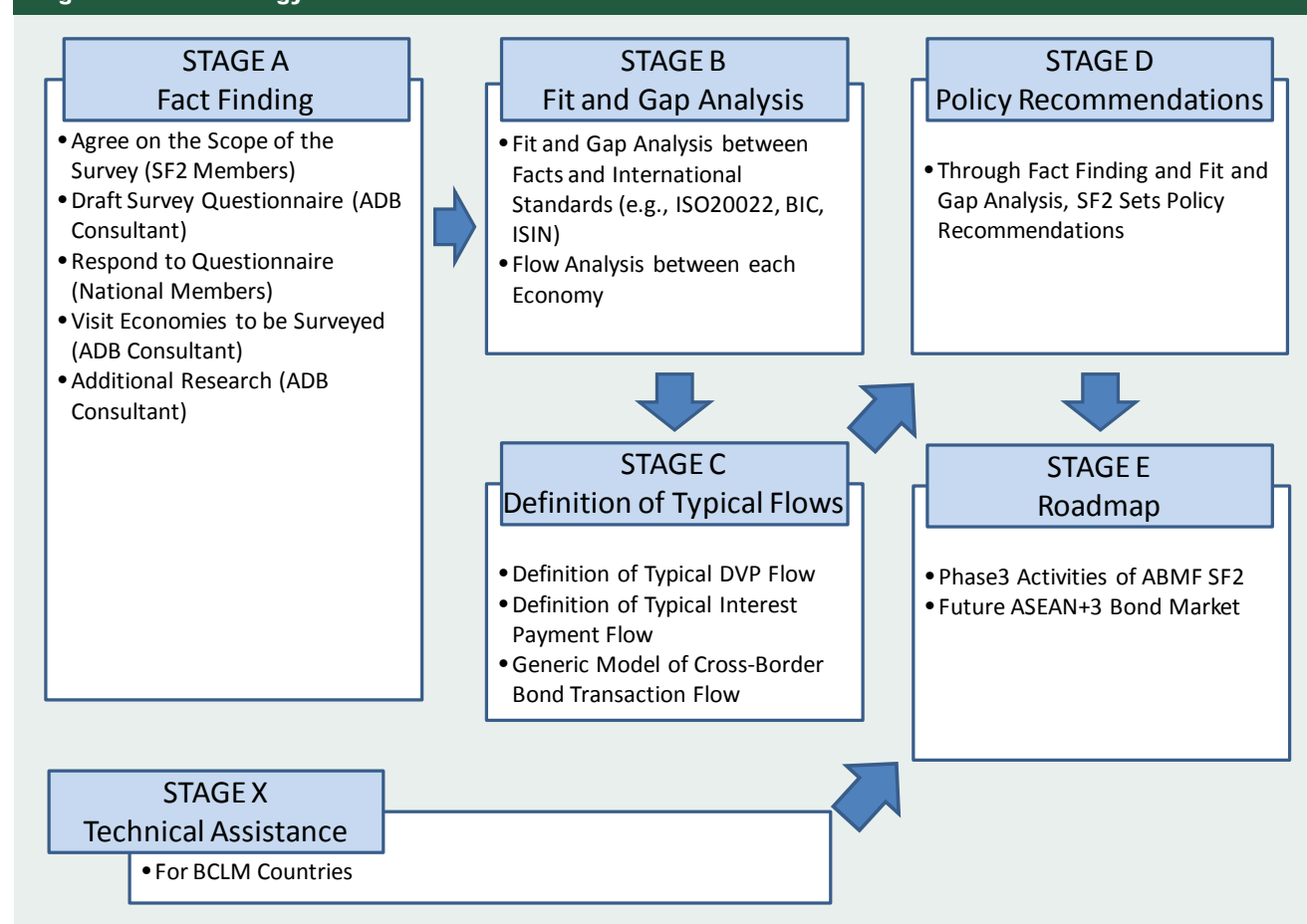
The ADB Consultant drafted the survey questionnaire for ASEAN+3 economies. It was then distributed to national ABMF members and experts for their responses.

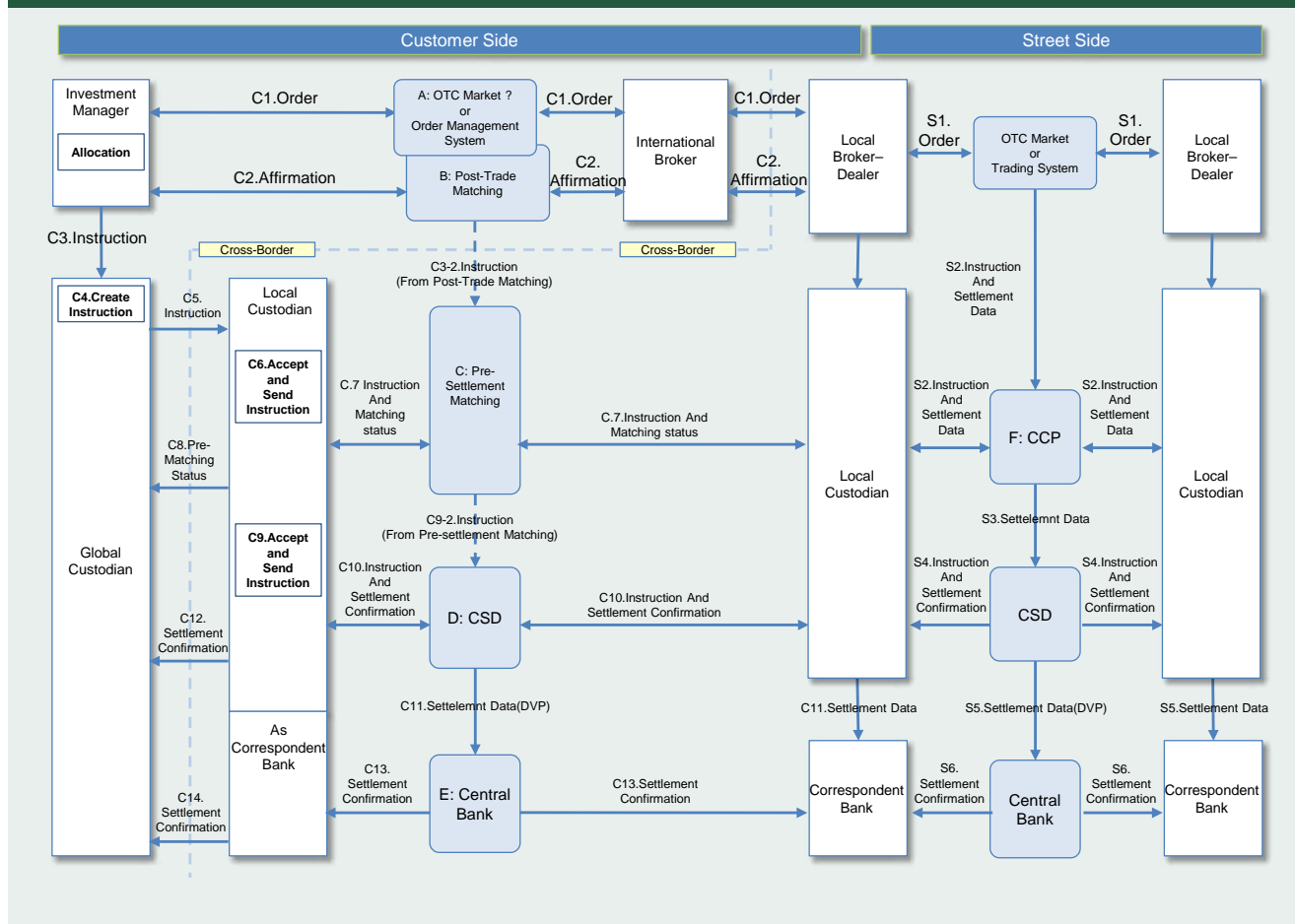
The ADB Secretariat and Consultant visited each economy to validate the information and data contained in the survey responses. During such visits, discussions with ABMF experts were held to collect more information.

### (ii) Stage B: Fit and Gap Analysis

ABMF SF2 conducted two types of fit and gap analysis: (a) gap analysis between proprietary practices and international standards such as message items and ISO20022; and (b) flow analysis between, for example, DVP flows and interest payment flows (**Figure 2.6**). The outcomes of the fit

**Figure 2.3 Methodology**



**Figure 2.4 Generic Model of Cross-border Bond Transaction Flow**

and gap analysis were divided into three types : (a) practices already standardized, (b) practices to be kept as status quo, and (c) practices to be standardized.

**(iii) Stage C: Definition of Typical Flows**

There is no international standard for transaction flows. SF2 has defined two types of typical transaction flows: (a) model DVP flow and (b) model interest payment flow.

**(iv) Stage D: Policy Recommendations**

Through the above stages, SF2 sets policy recommendations. Policy recommendations were submitted to ABMI TF3 members and then to the ASEAN+3 Finance Ministers and Central Bank Governors' Meeting in May 2013 as the interim report.

**(v) Stage E: Roadmap**

ABMF SF2 has set out a Roadmap for the future state of ASEAN+3 bond market infrastructures. The roadmap includes Phase3 activities under ABMF SF2.

**(vi) Stage X: Technical Assistance**

The ADB Secretariat and Consultant have sought to share knowledge with BCLM countries for fostering bond and cash settlement infrastructure. In addition, they visited Cambodia, Lao People's Democratic Republic (Lao PDR), and Myanmar to discuss the regulation and operation of bond market infrastructure.

Figure 2.5 Scope of Fact Findings

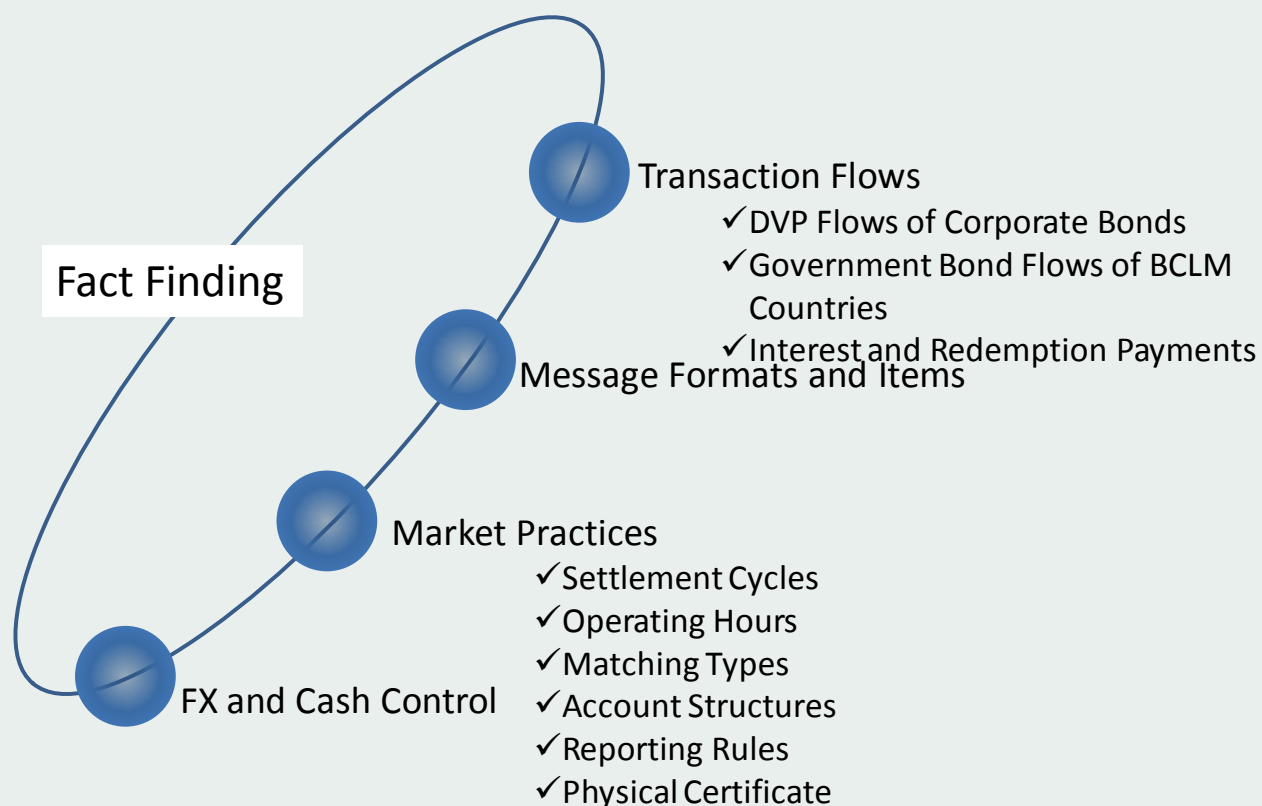
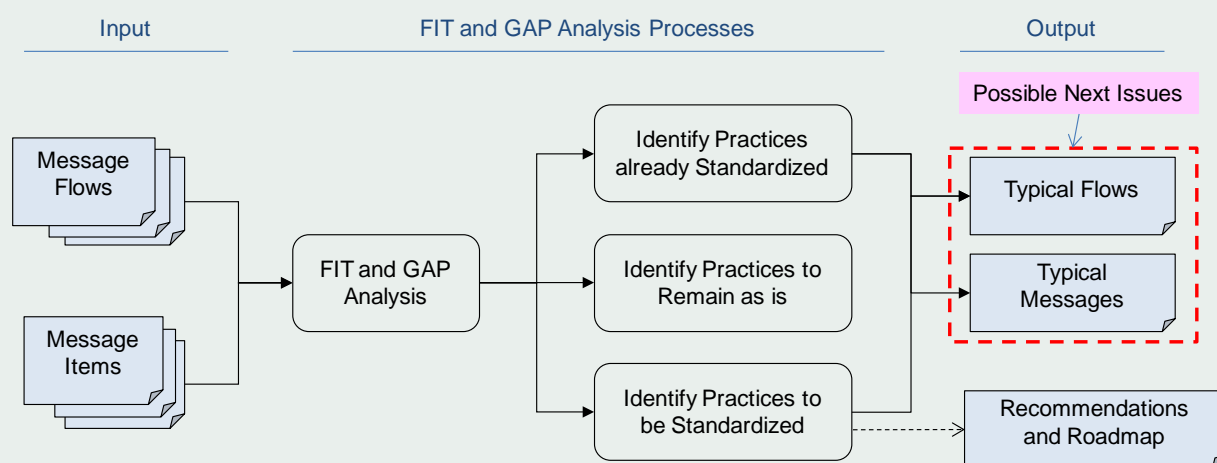


Figure 2.6 Fit and Gap Analysis and Policy Recommendation



Note: FIT and GAP analysis of proprietary practices with ISO 20022 is underway to harmonize bond trading and settlement in ASEAN+3.



## Survey Questionnaire

In order to try to reach its goals, ABMF SF2 conducted a survey on the issues related to barriers by sending a questionnaire to national members and international experts. The detailed questionnaire is presented in Part 2 of this report. The following are the primary categories of the questionnaire:

- (i) bond market infrastructures,
- (ii) DVP flows of corporate bonds in each market,
- (iii) interest payment and redemption,
- (iv) fit and gap analysis for channels using global custodians to settle cross-border trades,<sup>9</sup>
- (v) fit and gap analysis for government bond DVP transactions,
- (vi) cross-border transaction flows,
- (vii) Roadmap,
- (viii) follow-up of Phase1 surveys
- (ix) cross-border STP, and
- (x) other issues.

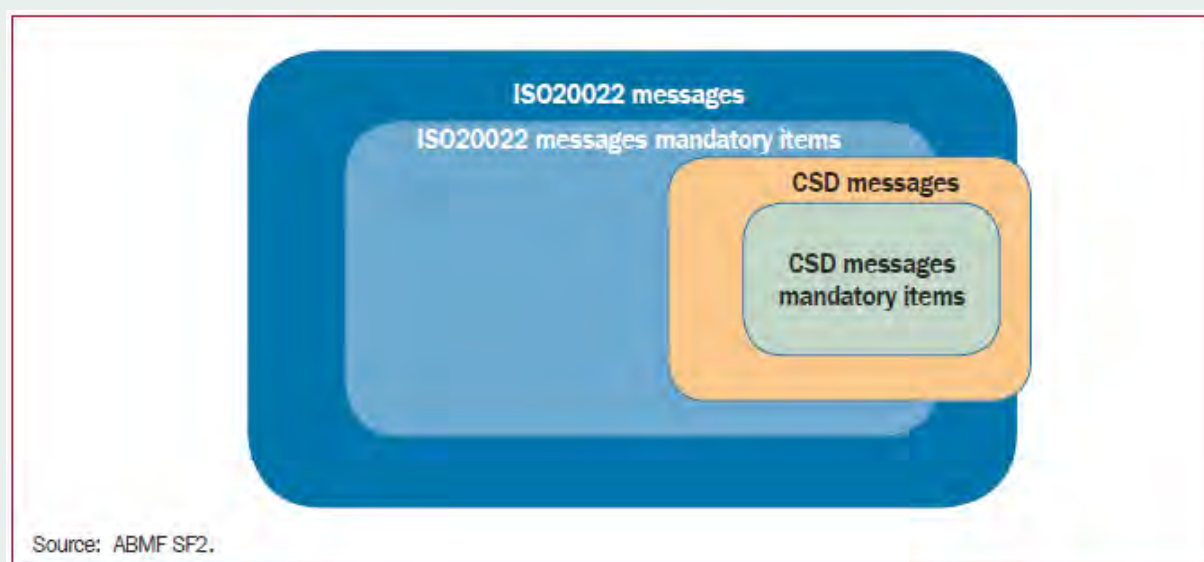
## Fit and Gap Analysis

### Background on Fit-and-Gap Analysis of Bond Transactions

Interoperability among bond trading and settlement systems is key to bringing the goal of regional STP for bond transactions to fruition. In fact, some CSDs in ASEAN+3 have already decided to adopt the ISO standard as their message standard when upgrading their bond settlement infrastructure. However, not all CSDs and bond trade and settlement-related infrastructures are compliant with the international standard yet. Also, there remain some differences among infrastructures in those markets that have already adopted the ISO standard for their message format.

As such, there are some differences in proprietary CSD messages and ISO20022 messages in some markets that do not follow the international standard (**Figure 2.7**). Therefore, a fit-and-gap analysis between bond transactions of each market and international standards is one of the most important steps toward harmonizing bond markets in ASEAN+3. However, bond trade

Figure 2.7 ISO 20022 and Central Securities Depository Messages



<sup>9</sup> The terms "channels using global custodians" means that settlement processes go through both global and local custodians in each economy instead of directly connecting a CSD with an ICSD or other CSDs.

and settlement-related infrastructure, including CSDs that have already implemented the ISO standard as their message standard, may still have their own proprietary flows and processes in economies with a significant domestic bond market and therefore do not need to follow international standards (**Figure 2.8**).

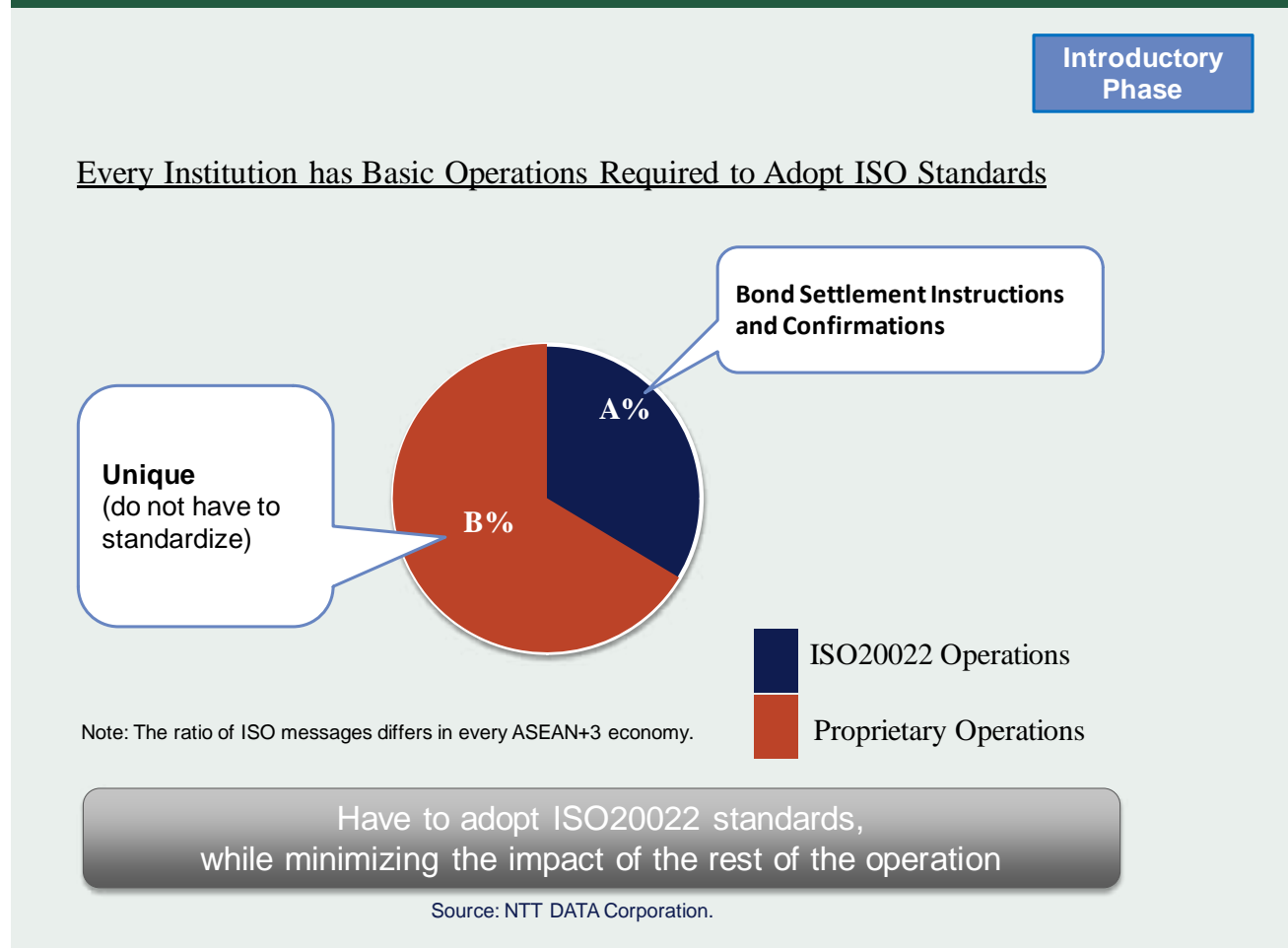
The mapping of ISO20022 with conventional standards is shown in **Figure 2.9**.

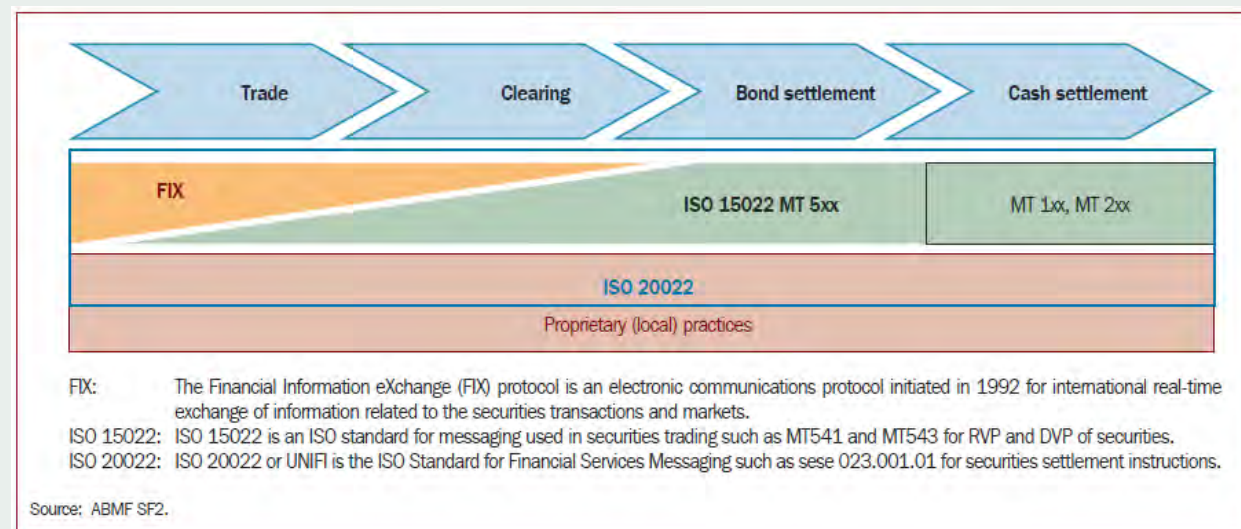
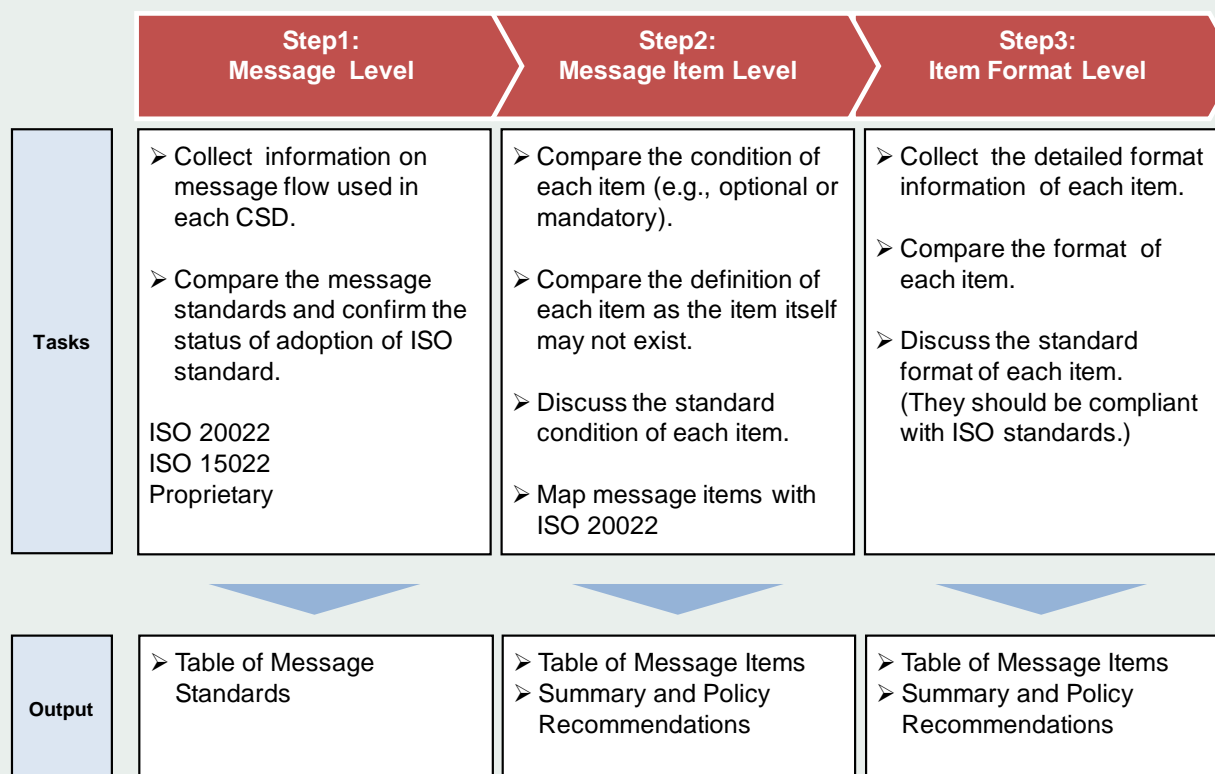
### Scope of Fit and Gap Analysis

There are different levels of fit-and-gap analysis for messages. A fundamental level is to check whether the business flow requiring a specific message exists. For fit-and-gap analysis, comparing bond transaction flows is also important. After conducting the basic fit-and-gap analysis, message items and formats may be compared and analyzed (**Figure 2.10**).

As a preliminary step, a fit-and-gap analysis of messages and their flow was conducted by surveying cross-border and domestic bond transaction flows.

**Figure 2.8 ISO 20022 and Proprietary Practices**



**Figure 2.9 Mapping ISO20022 with Conventional Local Standard****Figure 2.10 Process of Fit and Gap Analysis for Message Items**

# Findings on Bond Market Infrastructures and Transaction Flows

## Introduction

In-depth surveys on bond transaction flows were conducted for 10 of the 14 economies comprising ASEAN+3, including the People's Republic of China (PRC); Hong Kong, China; Indonesia; Japan; the Republic of Korea; Malaysia; the Philippines; Singapore; Thailand; and Viet Nam. Key findings are presented in this section with respect to (i) bond market infrastructures, (ii) DVP flows, (iii) interest payment flows, (iv) message standards, (v) numbering and coding, (vi) market practices and other issues, and (vii) cross-border DVP flows and LCY liquidity.

## Bond Market Infrastructures

Trade and settlement infrastructures in government and corporate bond markets in ASEAN+3 economies are depicted in **Figure 3.1** and **Figure 3.2**, respectively. In general, robust and sound bond market infrastructure such as CSD and RTGS systems are already in place in the 10 surveyed economies. However, infrastructure components that further promote efficiency and risk reduction—including Pre-Settlement Matching System (PSMS), Central Counterparty (CCP), Trade Repository (TR), and Automated Trading System (TS)—have not yet been implemented yet in most economies. Detailed findings of the survey include the following.



Figure 3.1b ASEAN+3 Government Bond Market Diagram

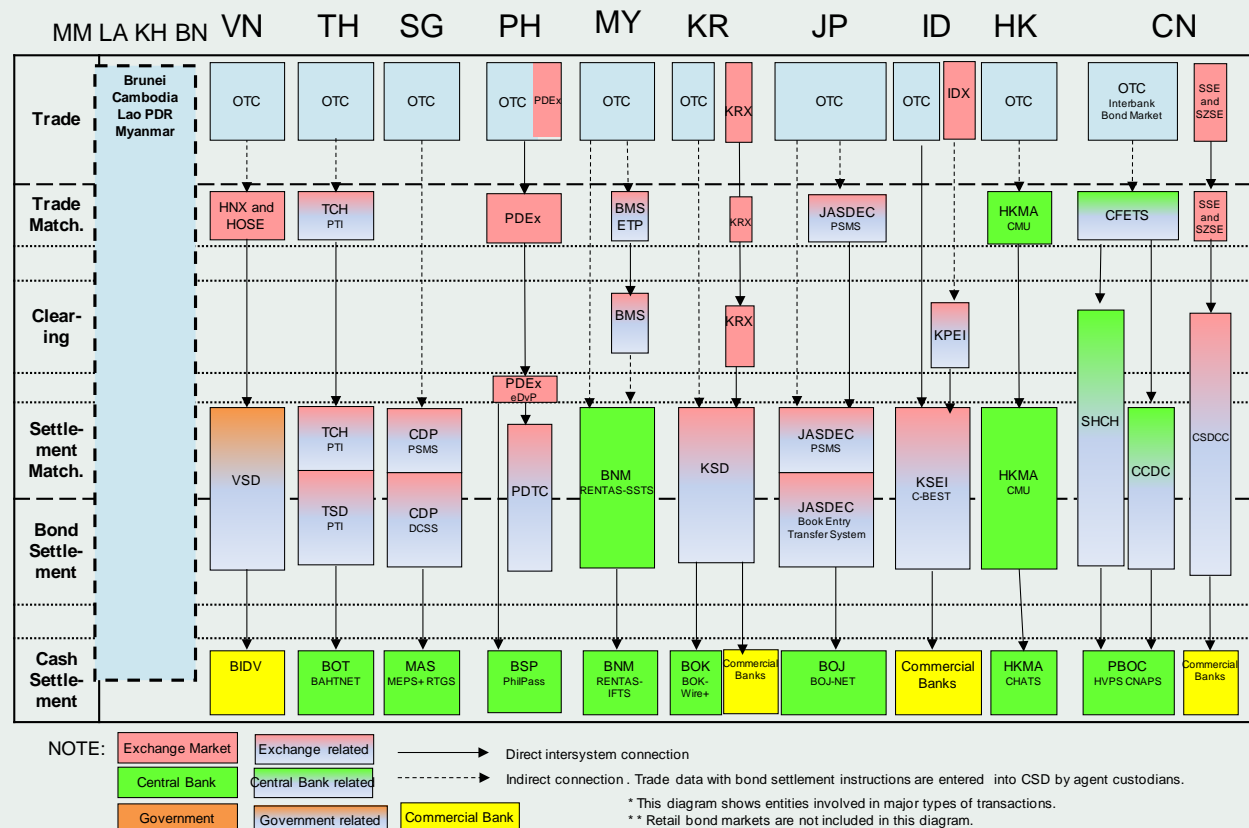
	CN	HK	ID	JP	KR	MY	PH	SG	TH	VN
Trade	OTC EX	OTC	OTC EX	OTC	OTC EX	OTC	OTC EX	OTC	OTC	OTC
Clearing	Y*	N	Y*	Y	Y*	Y*	N	N	N	N
Bond Settlement	Central Bank-Related CSD **	Central Bank-Owned CSD	Central Bank-Owned CSD	Central Bank-Owned CSD	Ex-change-Related CSD	Central Bank-Owned CSD	Bureau of Treasury, Ex-change-Related CSD	Central Bank-Owned CSD	Ex-change-Related CSD	Ex-change-Related CSD
Cash Settlement	Central Bank Money	Central Bank Money	Central Bank Money	Central Bank Money	Central Bank Money	Central Bank Money	Central Bank Money	Central Bank Money	Central Bank Money	Comm. Bank Money

EX = exchange, OTC = over-the-counter.

\* CCP exists as an exchange function, but transaction volumes and values are small.

\*\* There is an exchange related CSD, but transaction volumes and values are small.

Figure 3.2a ASEAN+3 Corporate Bond Market Diagram



**Figure 3.2b ASEAN+3 Corporate Bond Market Diagram**

	CN	HK	ID	JP	KR	MY	PH	SG	TH	VN
Trade	OTC EX	OTC	OTC EX	OTC	OTC EX	OTC	OTC EX	OTC	OTC	OTC
Clearing	Y*	N	Y*	N	Y*	Y*	N	N	N	N
Bond Settlement	CB-, EX-Related CSD	Central Bank -Owned CSD	EX -Related CSD	EX-Related CSD	EX-Related CSD	Central Bank -Owned CSD	EX-Related CSD	EX-Related CSD	EX-Related CSD	EX-Related CSD
Cash Settlement	Comm. and Central Bank Money	Central Bank Money	Comm. Bank Money	Central Bank Money	Comm. and Central Bank Money	Central Bank Money	Central Bank Money	Central Bank Money	Central Bank Money	Comm. Bank Money

EX = exchange, N = No, OTC = over-the-counter, Y = Yes.

\* CCP exists as an exchange function, but transaction volumes and values are negligibly small.

#### (iv) Bond settlement

- (a) Central bank-related CSDs<sup>10</sup> primarily settle government bonds in six of the 10 ASEAN+3 economies with developed bond markets: the PRC; Hong Kong, China; Indonesia; Japan; Malaysia; and Singapore. Exchange-related CSDs mainly settle government bonds in the Republic of Korea and Thailand. Government-related CSDs settle government bonds in the Philippines and Viet Nam. At the same time, exchange-related CSDs settle a significant portion of government bonds as a sub-registry in Indonesia and the Philippines.
- (b) Both central bank-related CSDs and exchange-related CSDs settle corporate bonds in the PRC, and central bank-related CSDs primarily settle them in Hong Kong, China and Malaysia. Exchange-related CSDs mainly settle them in Indonesia, Japan, the Republic of Korea,

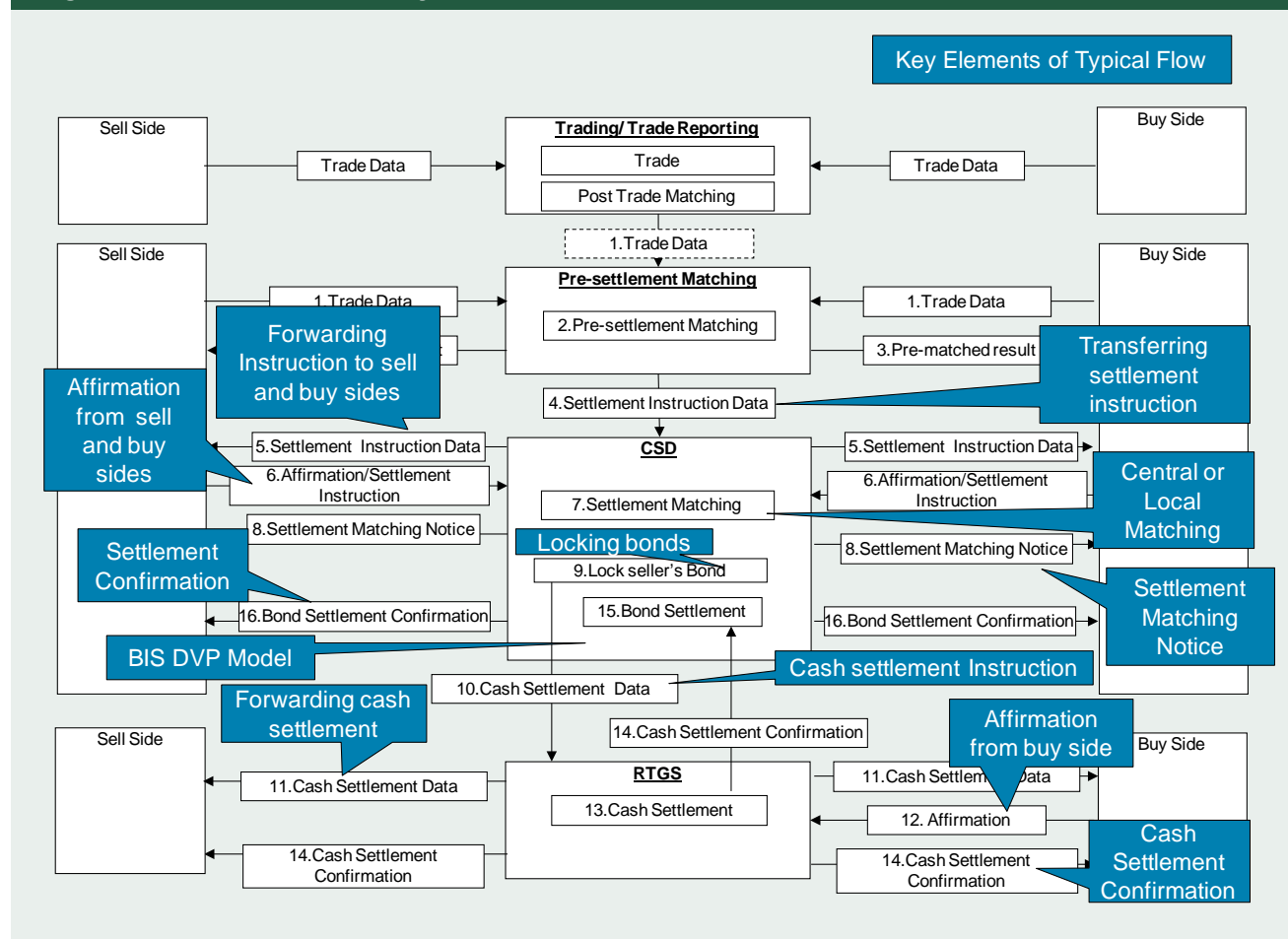
the Philippines, Singapore, Thailand, and Viet Nam. A significant percentage of bonds remain as physical certificates in all surveyed economies except the PRC and Japan.

#### (v) Cash settlement

- (a) With regard to government bonds, central bank money is used in all surveyed ASEAN+3 economies except Viet Nam. The State Bank of Viet Nam (SBV) is planning to migrate cash settlement from commercial bank money to central bank money. Commercial bank money can also be used in the PRC, though its percentage of total settlement value is very low.
- (a) With regard to corporate bonds, central bank money is used in eight of the 10 surveyed economies: the PRC; Hong Kong, China; Japan; the Republic of Korea; Malaysia; Singapore; and Thailand. Commercial bank money is used in the PRC, Indonesia, the Republic of Korea, and Viet Nam. In the PRC, central bank

<sup>10</sup> The word "related" here implies owned, operated, and/or governed depending on the specific structure of each CSD.



**Figure 3.3 A Model DVP Flow (Key Elements)**

money is mainly used, but commercial bank money is also used when bonds are settled in the exchange-related CSD.

## DVP Flows

Fit and gap analysis has been conducted in reference to a selected typical model DVP flow (**Figure 3.3**). More specifically, messages and the flows—including settlement instruction data, settlement confirmation, cash settlement instruction data, and cash settlement confirmation—were examined.

- (i) Settlement instruction data are transferred online from an upstream system such as PSMS or other systems, including TR and TS,

to the CSD. In the PRC, the Republic of Korea, Japan,<sup>10</sup> the Philippines, and Viet Nam,

each book-entry system receives and/or can receive settlement instructions or trade data (online) from other systems for both government and corporate bonds. In other economies, the sell side and/or the buy side enter the data.

- (ii) In cases when settlement instruction data are transferred from an upstream system to the CSD, the data are forwarded from the CSD to the sell side and buy side for affirmation. CSDs in the PRC, Japan, and the Philippines

<sup>10</sup> This connection will start operation when the new BOJ-NET is connected with PSMS.

forward the data to the sell side and buy side for both government and corporate bonds.

- (iii) In cases where settlement instruction data are forwarded from the CSD to the sell side and buy side, both sides affirm the data. In the PRC, Japan, and the Philippines, the data are affirmed and sent back to the CSD for both government and corporate bonds.
- (iv) Central matching and local matching are used as settlement matching for both government and corporate bonds. In Hong Kong, China; Indonesia; the Republic of Korea; Thailand; and Viet Nam; central matching is adopted for both government and corporate bonds. In Malaysia, local matching is adopted for both government and corporate bonds. In the PRC, the Philippines,<sup>10</sup> and Singapore, both types of matching are adopted for both government and corporate bonds. In Japan, local matching is adopted for government bonds and central matching is adopted for corporate bonds.
- (v) All CSDs adopting central matching send a matching notice to the sell side and buy side. The CSDs adopting local matching functionally do not have such a notice.
- (vi) Settlement confirmation is sent from the CSD to the sell side and buy side. CSDs send settlement confirmation in all surveyed economies, except the Philippines<sup>11</sup> and Viet Nam, for both government and corporate bonds.
- (vii) The definitions and ownership of locked, earmarked, or blocked seller's bonds may vary from CSD to CSD. A follow-up survey will be necessary to clarify the use of such definitions.
- (viii) The Bank for International Settlements (BIS) DVP Model 1 has been adopted with respect to OTC markets by all surveyed

economies except Viet Nam for government bonds, and all except Singapore and Viet Nam for corporate bonds.<sup>12</sup> There are three BIS DVP models in the region:

- Model 1 has been adopted in the PRC (OTC); Hong Kong, China (OTC); Indonesia; Japan; the Republic of Korea (OTC); Malaysia; the Philippines; Singapore; and Thailand for government bonds; and in the PRC (OTC); Hong Kong, China (OTC); Indonesia; Japan; the Republic of Korea (OTC); Malaysia; the Philippines; and Thailand for corporate bonds.
  - Model 2 has been adopted in the PRC (EX) for government bonds and in the PRC (EX) and Singapore for corporate bonds.
  - Model 3 has been adopted in Hong Kong, China (OTC);<sup>13</sup> the Republic of Korea (EX); and Viet Nam for both government and corporate bonds.
- (ix) Cash settlement instruction data are transferred online or directly to RTGS in all economies. In Japan<sup>14</sup> and Malaysia, CSD and RTGS systems are running on the same platform.
  - (x) Cash settlement instruction data are not forwarded from an RTGS system to the sell side and/or buy side after receiving the data from the CSD except in Japan and the Republic of Korea.
  - (xi) In cases when cash settlement instruction data are forwarded to the buy side, the data need to be affirmed. Only in the Republic of Korea do the sell side and buy side affirm the data for both government and corporate bonds.

<sup>10</sup> This only applies to free of payment (FOP). In the Philippines, central matching is mandatory for trades received from PDEX for both government and corporate bonds. But for FOP trades, the parties decide whether to use local or central matching.

<sup>11</sup> In the Philippines, settlement is notified to the counterparties via a change in the trade status, which parties can view online. Reports on settled trades can also be generated and printed from the settlement system.

<sup>12</sup> BIS DVP models are defined as follows: Model 1 are systems that settle transfer instructions for both bond and funds on a trade-by-trade (gross) basis, with final (unconditional) transfer of bonds from the seller to the buyer (delivery) occurring at the same time as final transfer of funds from the buyer to the seller (payment); Model 2 are systems that settle bond transfer instructions on a gross basis, with final transfer of bond from the seller to the buyer (delivery) occurring throughout the processing cycle, but settled funds are transferred on a net basis, with final transfer of funds from the buyer to the seller (payment) occurring at the end of the processing cycle; Model 3 systems settle transfer instructions for both bonds and funds on a net basis, with final transfers of both bonds and funds occurring at the end of the processing cycle.

<sup>13</sup> In Hong Kong, China, about 10% of transactions are settled by BIS DVP Model 1 and the rest are settled by BIS DVP Model 3.

<sup>14</sup> This applies only to government bonds

- (xii) Cash settlement confirmation is sent from an RTGS system to the sell side and buy side in almost all economies. In Malaysia and Viet Nam, the RTGS system does not send cash settlement confirmation for both government and corporate bonds. In Malaysia, the bond settlement confirmation and cash settlement confirmation are processed in the same message. In Viet Nam, there is no cash settlement confirmation.

Hong Kong, China and Malaysia. No WHT is imposed on non-residents in Japan and Singapore.<sup>10</sup> TWAs for interest payment and redemption differ in each of the remaining surveyed economies.

**Table 3.1** and **Table 3.2** present summaries of the findings on interest payment and redemption entities for government and corporate bonds, respectively.

## Interest Payment Flows

Typical interest payment flows, as well as the roles of the related entities such as the Paying Agent (PA), CSD, and Tax Withholding Agent (TWA), are shown in **Figure 3.4**. In general, interest payment flows differ in each economy, and the role of the related entities also differs.

- (i) Regarding government bonds, central banks are the PA of the issuer (e.g., Ministry of Finance) for interest payment and redemption in seven out of the 10 ASEAN+3 economies with developed bond markets: Hong Kong, China; Indonesia; Japan; the Republic of Korea; Malaysia; Singapore; and Thailand. CSDs are the PA in the PRC and Viet Nam. The Bureau of the Treasury (BTr) is the PA in the Philippines. As for corporate bonds, commercial banks are the PA of issuers for interest payment and redemption in Hong Kong, China; Japan; the Republic of Korea; Malaysia; the Philippines; Singapore; and Thailand. CSDs are the PA in the PRC, Indonesia, and Viet Nam.
- (ii) Account Management Agents (AMAs) of bond holders (investors) for interest payment and redemption are CSD participants (mainly custodians) for both government and corporate bonds. Commercial banks (custodians) manage accounts to receive interest payment and redemption from PAs on behalf of investors.
- (iii) With regard to government bonds, no withholding tax (WHT) is imposed in the PRC; Hong Kong, China; Malaysia; and Viet Nam. In Japan and Singapore, only non-residents are exempt from WHT. With regard to corporate bonds, no WHT is imposed in

## Message Standards

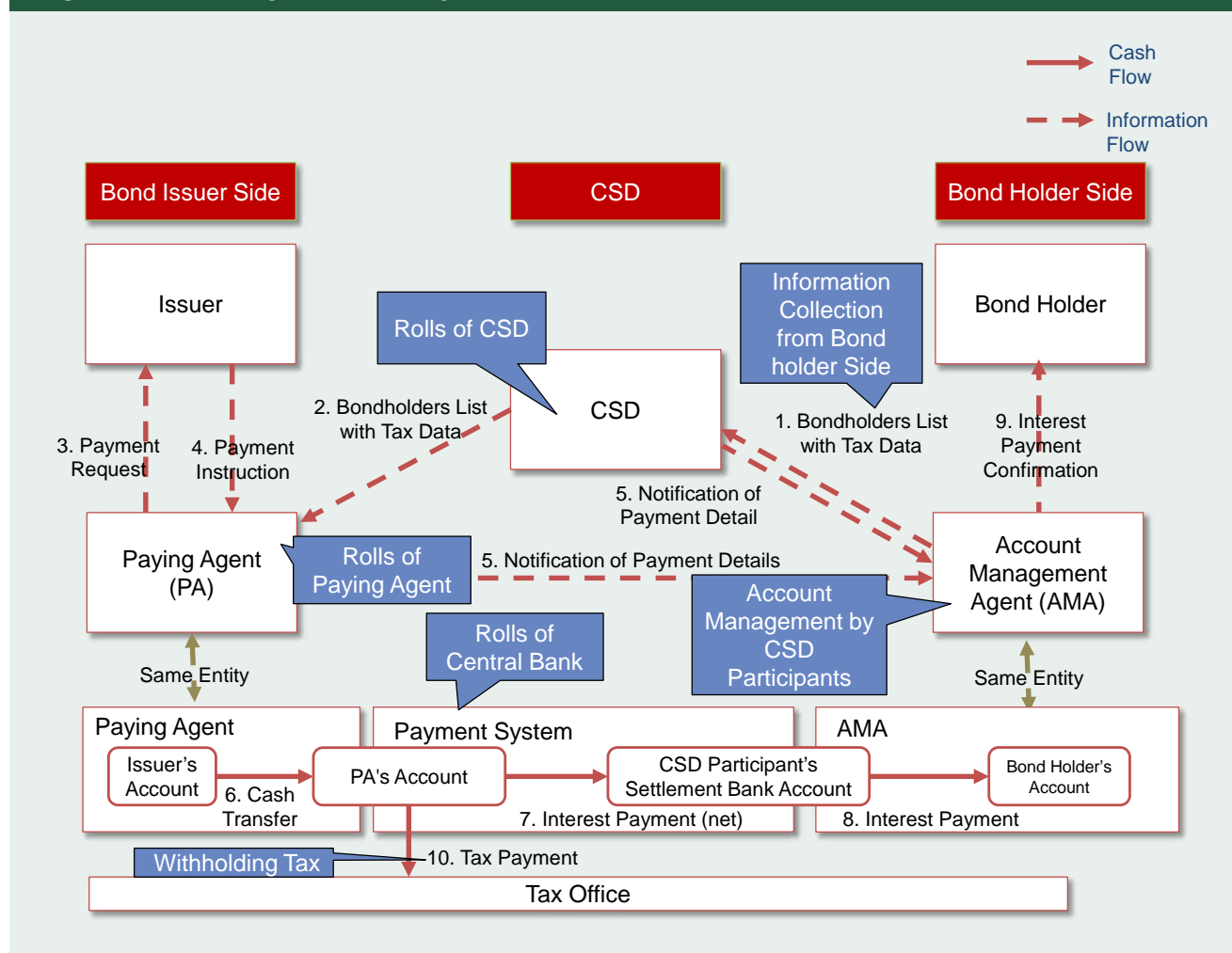
### Message Formats

A proprietary format is one of the critical factors of settlement barriers. Meanwhile, ISO15022 has replaced the proprietary formats of some ASEAN+3 economies. ISO15022 is the ISO standard for messaging used in securities trading. ISO15022 sets the principles necessary to provide the different communities of users with the tools to design message types to support their specific information flows. These tools consist of a set of syntax and message design rules, a dictionary of data fields, and a catalogue for present and future messages created by the industry with the above mentioned fields and rules.

ISO20022 is currently being discussed in ASEAN+3 economies broadly as a replacement for ISO15022. The ISO20022 standard provides the financial industry with a common platform for the development of standardized messages by using

- (i) a modeling methodology (based on UML) to capture in a syntax-independent way financial business areas, business transactions, and associated message flows;
- (ii) a set of design rules to convert the messages into schemas; and
- (iii) a predominant syntax that is flexible and modern (currently XML).

<sup>10</sup> Identifying an investor based on whether he is a resident or non-resident is an issue that could influence the WHT payment process.

**Figure 3.4 Interest Payment Flow (Key Elements)**

Existing global trends in the adoption of ISO20022 are presented in **Figure 3.5** and **Figure 3.6**.

Bond settlement-related message (ISO20022, ISO15022, or proprietary format) of individual CSDs were surveyed and the results are presented in **Table 3.3**. Highlights include:

- (i) China Central Depository and Clearing (CCDC) and Shanghai Clearing House (SHCH) in the PRC, the Indonesian Central Securities Depository (KSEI) in Indonesia, and the Bank of Japan (BOJ) and the Japan Securities Depository Center (JASDEC) in Japan have adopted or will adopt ISO20022 for their message formats.
- (ii) Hong Kong Monetary Authority (HKMA) in Hong Kong, China, the Monetary Authority

of Singapore (MAS) in Singapore, and the Thailand Securities Depository (TSD) in Thailand have adopted or will adopt ISO15022.

- (iii) CSDs in the Republic of Korea, Malaysia, the Philippines, and Viet Nam use proprietary formats.

### Message Items

Typical message items of a settlement instruction and a settlement confirmation are compared with those of ISO20022 in order to study differences among ASEAN+3 economies. An image of the mapping of message items to ISO20022 is shown in **Table 3.4**.

**Table 3.1: Government Bond Interest Payment-Related Entities**

	PA of Issuer	CSD	Payment System	TWA Resident	TWA Non-Res.
CN	CCDC CCDC	CCDC CSDCC	CNAPS Commercial Bank	None None	None None
HK	HKMA	HKMA	CHATS	None	None
ID	BI	BI	BI-RTGS	CSD Participant	CSD Participant
JP	BOJ	BOJ	BOJ-Net	BOJ or CSD participant	None
KR	BOK	KSD	BOK-Wire+	KSD	CSD Participant
MY	BNM	BNM	RENTAS-IFTS	None	None
PH	BTr	BTr	PhilPaSS	BTr	BTr
SG	MAS	MAS	MEPS+	CSD Participant	None
TH	BOT	TSD	BAHTNET	BOT	BOT
VN	VSD	VSD	BIDV System	None	None

PA = paying agent, TWA = tax withholding agent.

Notes:

1. CSD participant includes a corresponding bank, which has an account in the payment system, designated by a bond holder.
2. BOJ and CSD participant are withholding agents for national and local taxes, respectively, in Japan .

Typical message items of DVP flows—such as (i) instruction identification, (ii) trade date, (iii) settlement date, and (iv) place of settlement—were chosen based on 10 common elements proposed by Securities Market Practice Group (SMPG) (**Table 3.5**) and are compared with that of ISO20022 (**Table 3.6**).

- (i) In ISO15022 and ISO20022, Instruction Identification refers to the sender's message reference, but there are some exceptions. For instance, in the Philippines, the TS of the Philippine Dealing and Exchange Corporation (PDEx) assigns unique numbers as Instruction Identification to individual transactions. Also, in Japan, the CSD system for government bonds (BOJ-NET) assigns unique numbers, known as *Torihiki*-Number, as Instruction Identification to individual transactions. (The new BOJ-NET will adopt

a new “*Torihiki* Identification” in accordance with ISO standards.) The message reference number is essential (mandatory) to identify individual messages.

- (ii) Some CSDs—such as KSD, MAS, BTr, PDTC, TSD, and VSD—specify the Trade Date as mandatory. In contrast, BOJ does not regard the Trade Date even as an input item. Trade Date is not necessary for settlement, but is necessary to acquire details of a transaction and tax-related information.
- (iii) Settlement Date is mandatory for all CSDs. VSD calculates the settlement date within their system on the basis of Trade Date instead of entering it as an input item.<sup>10</sup>

<sup>10</sup> The definition of Trade Date in Viet Nam is the trade data capturing date.

**Table 3.2: Corporate Bond Interest Payment-Related Entities**

	PA of Issuer	CSD	Payment System	TWA Resident	TWA Non-Res.
CN	CSDCC SHCH CCDC	CSDCC SHCH CCDC	Comm. Bank System CNAPS CNAPS or Commercial Bank System	CSDCC Bond Holder Bond Holder	CSDCC Bond Holder Bond Holder
HK	Commercial Bank	HKMA	CHATS	None	None
ID	KSEI	KSEI	KSEI's Bank System	KSEI	KSEI
JP	Commercial Bank	JASDEC	BOJ-Net	PA/CSD partic.	None
KR	Commercial Bank	KSD	BOK-Wire+ Com. Bank system	KSD	CSD partic.
MY	Commercial Bank	BNM	RENTAS-IFTS	None	None
PH	Commercial Bank	PDTC	PhilPaSS	Issuer	Issuer
SG	Commercial Bank	CDP	MEPS+	CSD Participant	None
TH	Commercial Bank	TSD	BAHTNET	Commercial Bank	Commercial Bank
VN	VSD	VSD	BIDV System	Issuer	Issuer

PA = paying agent, TWA = tax withholding agent.

Notes:

1. CSD participant includes a corresponding bank, which has an account in the payment system, designated by a bond holder.
2. PA and CSD participant are withholding agents for national and local taxes, respectively, in Japan .

(iv) Place of Settlement (PSET) is mandatory for PDEX, MAS, and TSD, but not for BOJ, KSD, and VSD. PSET is not required in cases when participants of a CSD can access only the specific CSD. But, PSET may be necessary from a cross-border STP perspective.

## Numbering and Coding

It is important to standardize numbering and coding to promote STP of bond settlement. Numbering and codes related to bond transaction flows are (i) financial instrument identification (ISIN), (ii) party identification (BIC), (iii) safekeeping account, and (iv) language and character code set (**Figure 3.7**). Numbering and

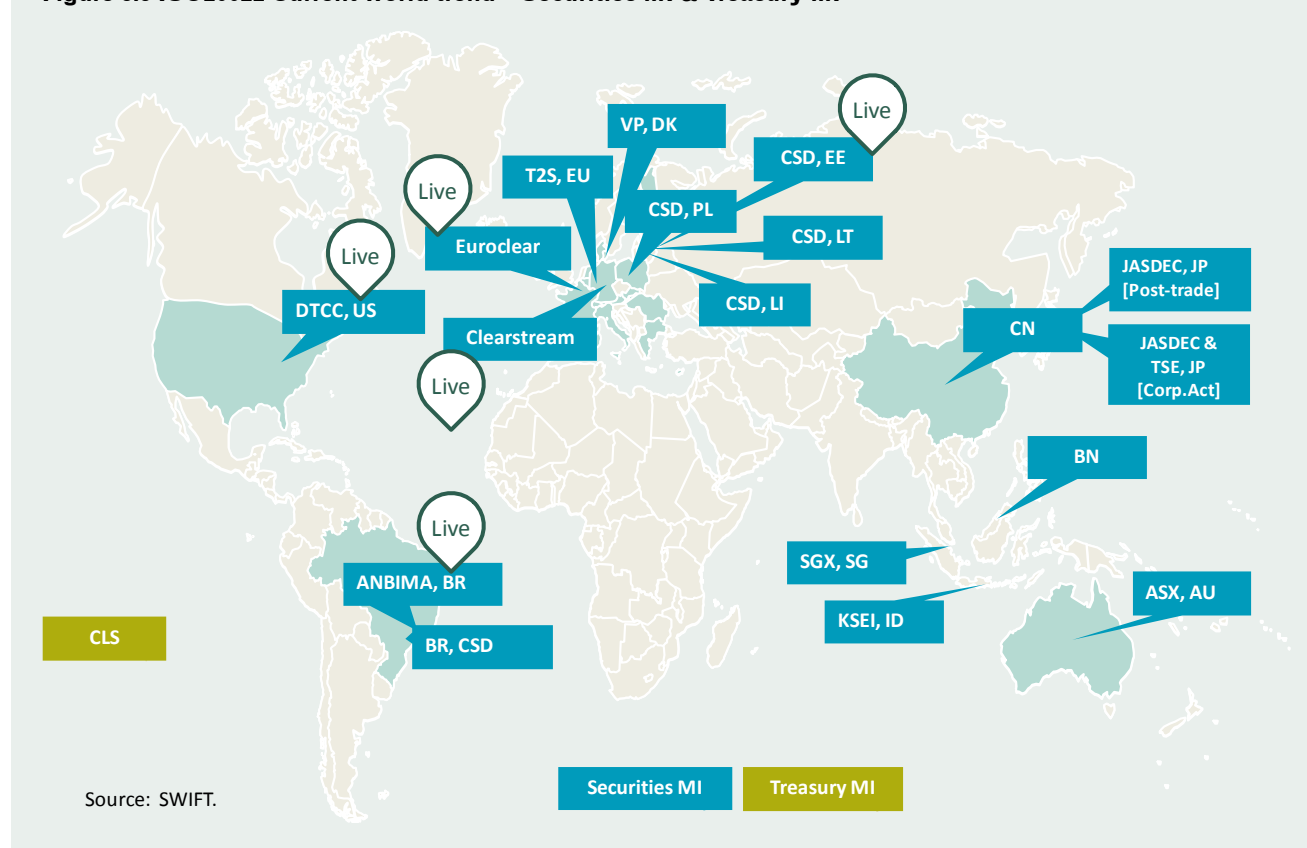
coding as practiced in ASEAN+3 economies is presented in **Table 3.7**.

### International Securities Identification Number (ISIN)

One of the most important aspects of numbering in bond settlement is the International Securities Identification Number (ISIN).

ISIN, as defined in ISO6166, uniquely identifies securities such as bonds. ISIN is a 12-character alpha-numerical system that does not contain information characterizing financial instruments, but serves for uniform identification of securities at trading and settlement. **Figure 3.8** illustrates the ISIN code structure of Japanese government bonds. Conversion is also possible between proprietary numbering and ISIN.



**Figure 3.5 ISO20022 Current world trend – Securities MI & Treasury MI**

ISIN is not actually used yet in many economies for securities numbering. Also, numbering conventions and some other practices such as the allocation of numbers and use of ISIN are not standardized yet. Japan and Thailand will adopt or have adopted ISIN as securities numbering. Hong Kong, China; Indonesia; the Republic of Korea; Singapore; and Viet Nam partly use ISIN (mainly proprietary numbering). ISIN and proprietary numbering do not match uniquely in Hong Kong, China. Proprietary numbering is used in other economies.

All ASEAN+3 economies that have bond markets are full members of the Association of National Numbering Agencies (ANNA). ANNA and national numbering agencies (NNAs) allocate ISINs in accordance with ISO6166. The ANNA recommendations state that NNAs should allocate ISINs within 24 hours following the request and also make the ISIN available to users at the same time. However, actual securities numbers are based on domestic proprietary

numbering in many markets for the time being. It will be important to promote ISIN in ASEAN+3, including timely operational procedures.

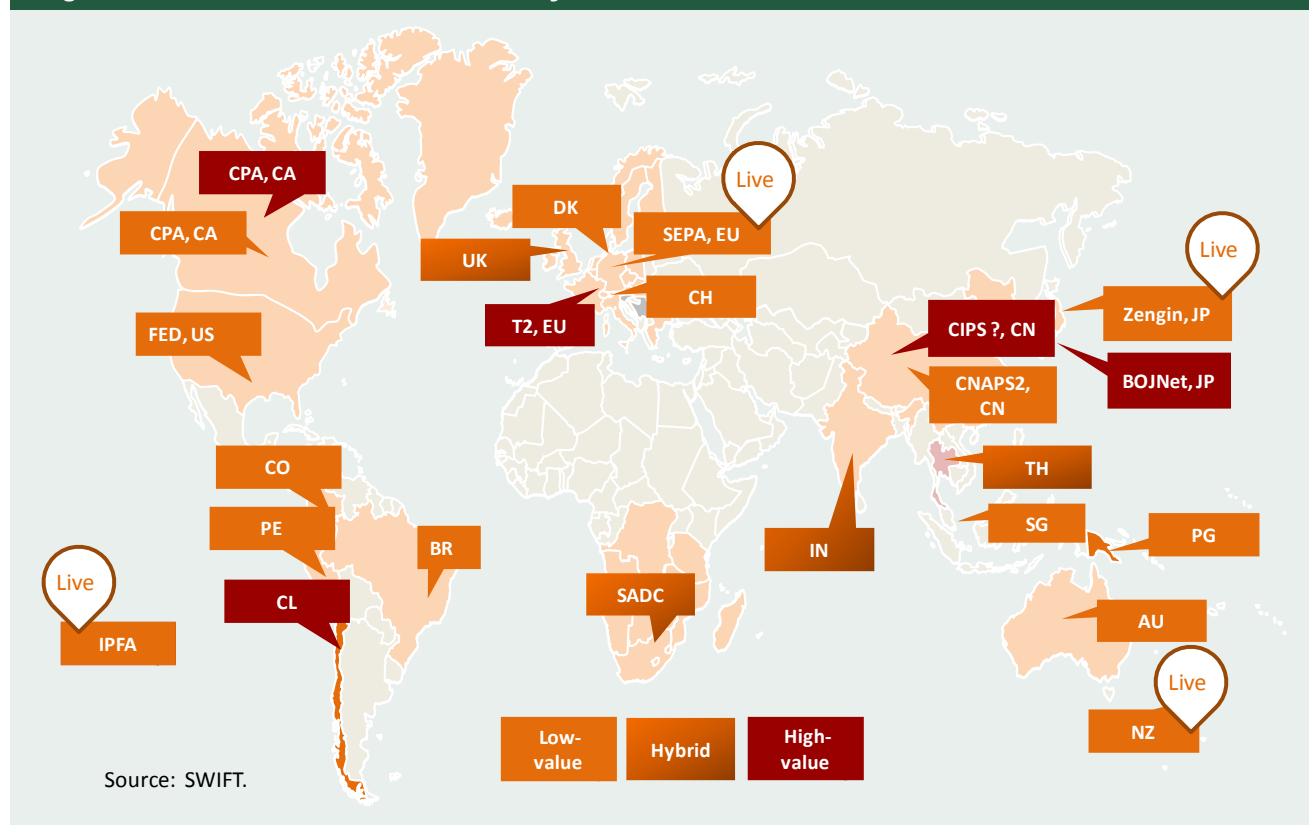
### Business Identifier Code (BIC)

The Business Identifier Code (BIC) is a unique identification code for both financial and non-financial institutions. Its structure is defined in ISO9362. BIC is an 8- or 11-digit code that indicates a specific financial institution, with the last three digits being an optional branch code. **Figure 3.9** illustrates the code structure of ISO9362.

Many economies do not use BIC yet for financial institution identification. Local proprietary codes are used instead. Indonesia, Japan, Singapore, and Thailand use or will eventually use BIC as financial institution identification. A conversion table between BIC and the relevant local code is available in the PRC; Hong Kong, China; and



Figure 3.6 ISO20022 Current world trend – Payments MI &amp; initiatives



the Philippines. In the Philippines, BIC is used only for cash settlement instructions sent to the central bank's RTGS system.

## Securities Account

All markets in ASEAN+3 use proprietary numbering for securities (safekeeping) accounts. There is currently no code structure for securities numbering as defined in ISO 20022. Securities account identification is defined as text format with a maximum of 35 texts. **Figure 3.10** is an example of a securities account. Because code structures of securities accounts are influenced by the taxation structure of each country, it will be a great challenge to standardize securities account structures and numbering in the region; thus, there is also a need to harmonize the tax structure for non-residents before account structures can be standardized. When discussing standardization of securities accounts, standardization of cash accounts must also be taken into consideration.

Securities account structure is proprietary in all economies in ASEAN+3. A proprietary code is used in all economies with respect to securities and cash accounts.

There are two types of account structures for CSD: (i) omnibus account structure and (ii) segregated account structure.

An omnibus account is an account opened in the name of an account provider, where securities or collateral belonging to some or all customers of a particular participant are co-mingled and held in a single account. A segregated account is where the securities or collateral of each customer are segregated in their names. In several cases, the legal and regulatory framework, or existing market practice, require accounts to be segregated on an investor or beneficial owner level.

While a segregated account structure has more transparency and protection, it has difficulty in terms of operations and systems. It requires every asset to be tagged by the CSD member

**Table 3.3 Current Status of Adoption to ISO 20022**

Economy	CSD	Instrument	Proprietary	ISO15022	ISO20022
CN	CCDC	G/C			○
CN	CSDCC	G/C	○		
CN	SHCH	C			○
HK	HKMA(CMU)	G/C		○	
ID	BI	G	○	○ (2014)	To be determined when ISO20022 is implemented in 2015 (expected in 2018)*
ID	KSEI	C	○		○ (2014)
JP	BOJ	G	○		○ (FY2015)
JP	JASDEC	C		○ **	○ (2014)
KR	KSD	G/C	○		
MY	BNM(RENTAS)	G/C	○	○ (by 2017 )	○ (2019)
PH	BTr(RoSS)	G	○		
PH	PDTC	G/C	○		
SG	MAS	G		○	
SG	CDP	C	○		○*** (2015)
TH	TSD	G/C		○	
VN	VSD	G/C	○		

C = corporate bond, G = government bond.

\* This represents the perspective of ABMF SF2 Consultant.

\*\* JASDEC plans to parallel ISO15022 and ISO20022 until December 2018.

\*\*\* CDP plans to adopt ISO20022 in 2014-15 with phased approach.

Note: Migration projects to ISO 20022 in which the implementation year has already been announced are included in the table.

and placed in a separate account under that customer's name. Therefore, in general, setting up omnibus accounts is a common market practice in ASEAN+3, and a segregated account structure is adopted only by the PRC and the Republic of Korea. In other words, there are also two types of account layers. A single layer is an arrangement in which each beneficial or direct owner of the security is known to the CSD or the issuer. Investors are either recorded in the issuer's register or are in physical possession of bearer securities certificates. Multi-layer is an arrangement that consists of one or more tiers of intermediaries between the issuer and investor. Thus, investors are identified only at the level of their custodian or intermediary. Multi-layer is broadly used in ASEAN+3 economies, and only the PRC and the Republic of Korea adopt single-layer (**Table 3.9**).

## Character Code Set and Language

All CSDs in ASEAN+3 with bond markets accept UTF-8 except the Republic of Korea.

Local languages are still dominant as payment system languages in ASEAN+3. A local language is used for bond settlement systems in all ASEAN+3 economies except Hong Kong, China; Malaysia; the Philippines; and Singapore (**Figure 3.11**). (English is partly used in Indonesia and Thailand.)

Table 3.4 An image of mapping with ISO 20022

Index	Message Item	Code	Or	Min Occ	Max Occ	Type	10 common elements
	SecuritiesSettlementTransactionInstructionV03			1	1	sese.023.001.03	
	SctiesSttlnTxInstr			1	1	SecuritiesSettlementTransactionInstructionV03	
1.0	TransactionIdentification			1	1	Max35Text	1. Instruction Identification
2.0	SettlementTypeAndAdditionalParameters			1	1	SettlementTypeAndAdditionalParameters1	
2.1	SecuritiesMovementType	DELI/ RECE		1	1	ReceiveDelivery1Code	
2.2	Payment	APMT		1	1	DeliveryReceiptType2Code	
3.0	NumberCounts			0	1	NumberCount1Choice	
4.0	Linkages			0	n	Linkages17	
5.0	TradeDetails			1	1	SecuritiesTradeDetails1	
5.5	TradeDate			0	1	TradeDate1Choice	
	Date		or	1	1	DateAndDateTimeChoice	2. Trade Date
	Date		or	1	1	ISODate	
5.6	SettlementDate			1	1	SettlementDate1Choice	
	Date		or	1	1	DateAndDateTimeChoice	3. Settlement Date
	Date		or	1	1	ISODate	
	DateTime		or	1	1	ISODateTime	
6.0	FinancialInstrumentIdentification			1	1	SecurityIdentification14	5. Financial Instrument
	ISIN			0	1	ISINIdentifier	
	OtherIdentification			0	n	OtherIdentification1	
	Identification			1	1	Max35Text	
7.0	FinancialInstrumentAttributes			0	1	FinancialInstrumentAttributes35	
8.0	QuantityAndAccountDetails			1	1	QuantityAndAccount25	
8.1	SettlementQuantity			1	1	Quantity6Choice	4. Quantity of Financial Instrument
	Quantity		or	1	1	FinancialInstrumentQuantity1Choice	
	Unit		or	1	1	DecimalNumber	
	FaceAmount		or	1	1	ImpliedCurrencyAndAmount	
8.4	SafekeepingAccount			1	1	SecuritiesAccount13	7. Safekeeping Account
	Identification			1	1	Max35Text	
9.0	SettlementParameters			1	1	SettlementDetails42	
	SecuritiesTransactionType			1	1	SecuritiesTransactionType9Choice	
	Code		or	1	1	SecuritiesTransactionType7Code	
	Proprietary		or	1	1	GenericIdentification20	
	Identification			1	1	Exact4AlphaNumericText	
	Issuer			1	1	Max35Text	
10.0	StandingSettlementInstructionDetails			0	1	StandingSettlementInstruction4	
11.0	DeliveringSettlementParties			0	1	SettlementParties11	
11.1	Depository			0	1	PartyIdentification48	
	Identification			1	1	PartyIdentification44Choice	8. Place of Settlement
	AnyBIC		or	1	1	AnyBICIdentifier	
11.2	Party1			0	1	PartyIdentificationAndAccount42	
	Identification			1	1	PartyIdentification43Choice	9. Receiving/Delivering Agent
	AnyBIC		or	1	1	AnyBICIdentifier	
	ProprietaryIdentification		or	1	1	GenericIdentification19	
	Identification			1	1	Max35Text	
	Issuer			1	1	Max35Text	
	SafekeepingAccount			0	1	SecuritiesAccount13	
	Identification			1	1	Max35Text	

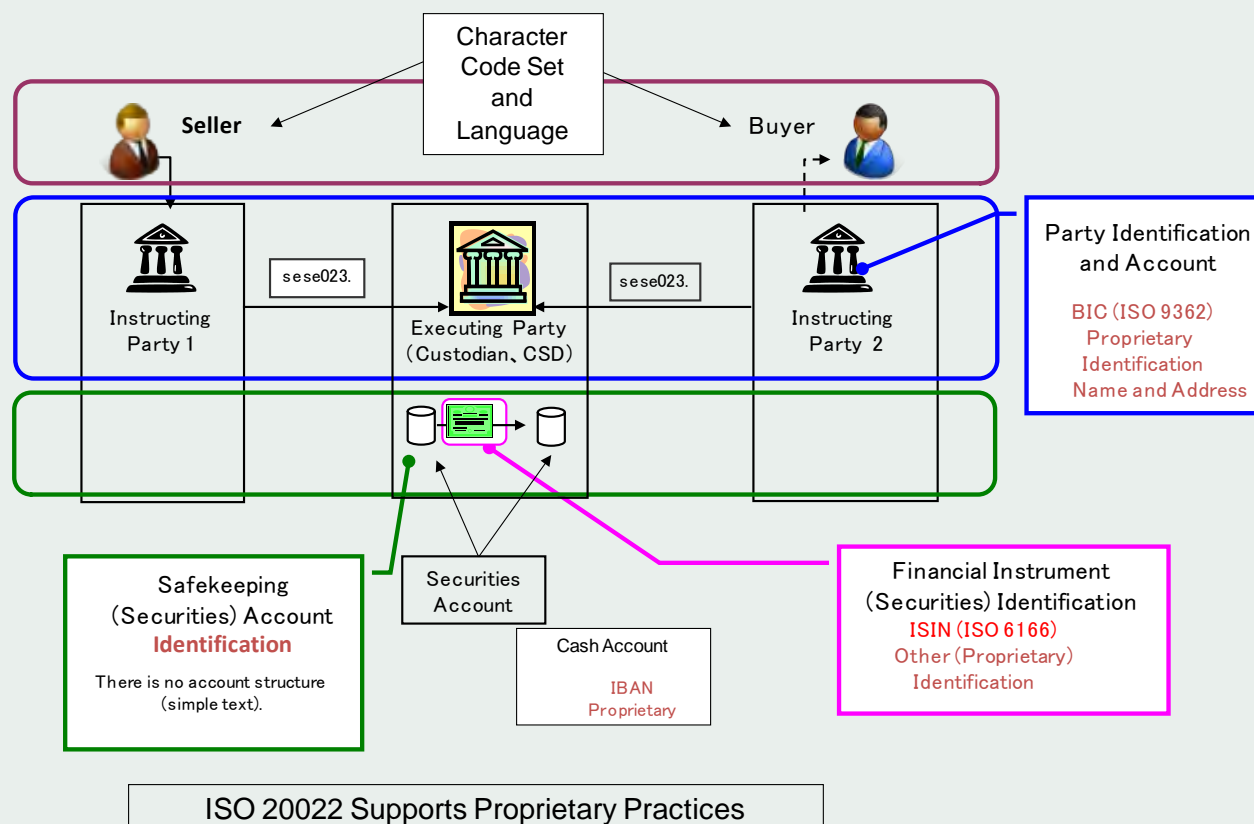
Table 3.5 10 common elements for settlement instruction

	ISO 15022 definition	ISO 20022 definition
1.	Instruction Identification ➢ Sender's Message Reference	1.0 TransactionIdentification ➢ Unambiguous identification of the transaction as know by the instructing party
2.	Trade Date	5.5 TradeDate ➢ Specifies the date/time on which the trade was executed
3.	Settlement Date	5.6 SettlementDate ➢ Date and time at which the securities are to be delivered or received
4.	Quantity of Financial Instrument ➢ Original face amount	8.1 SettlementQuantity ➢ Total quantity of securities to be settled
5.	Financial Instrument ➢ Identification of the financial instrument	6.0 FinancialInstrumentIdentification ➢ Financial instrument representing a sum of right of the investor vis-à-vis the issuer
6.	Settlement Amount	14.0 SettlementAmount ➢ Total amount of money to be paid or received in exchange for the securities
7.	Safekeeping Account	8.4 SafekeepingAccount ➢ Account to or from which a securities entry is made
8.	Place of Settlement	11.1, 12.1 Depository ➢ First party in the settlement chain. In a plain vanilla settlement, it is the Central Securities Depository where the counterparty requests to receive the financial instrument or from where the counterparty delivers the financial instruments
9.	Receiving/Delivering Agent	11.2, 12.2 Party1 ➢ Party that, in a settlement chain interacts with the depository
10.	Client of Receiving/Delivering agent Buyer/seller	11.3, 11.4, 11.5, 11.6, 12.3, 12.4, 12.5, 12.6 Party2, Party3, Party4, Party5 ➢ Party that, in a settlement chain interacts with Party1, Party2, Party3, or Party4

**Table 3.6 Message Items of Settlement Instruction (10 common elements)**

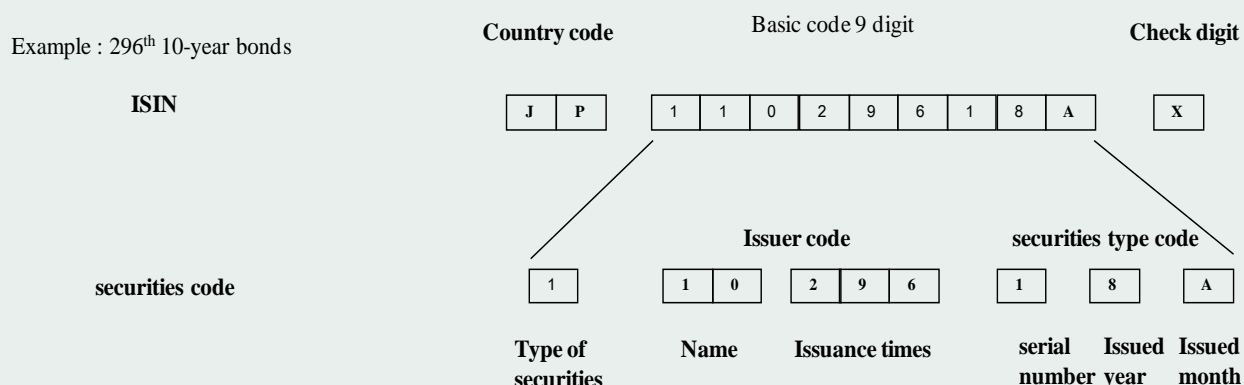
Elements	CSDCC (CN)	CCDC (CN)	CMU (HK)	BI (ID)	KSEI (ID)	BOJ (JP)	KSD (KR)	PDEX (PH)	MAS (SG)	TSD (TH)	VSD (VN)
1. Instruction Identification	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. Trade Date			✓*	✓			✓	✓	✓	✓	✓
3. Settlement Date	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
4. Quantity of Financial Instrument		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓**
5. Financial Instrument		✓**	✓	✓	✓	✓		✓	✓	✓	✓
6. Settlement Amount	✓	✓**	✓*	✓	✓	✓	✓	✓	✓	✓	✓
7. Safekeeping Account		✓	✓*	✓	✓	✓	✓	✓	✓	✓	
8. Place of Settlement	✓		✓*	✓				✓	✓	✓	
9. Receiving or Delivering Agent		✓**	✓*	✓	✓	✓	✓	✓	✓	✓	
10. Client of Receiving or Delivering Agent			✓*	✓				✓	✓	✓	

✓\* Conditional  
✓\*\* Optional

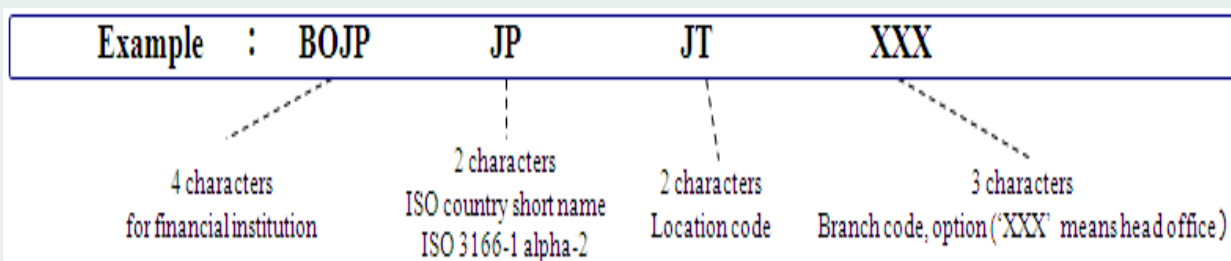
**Figure 3.7 Outline of Numbering and Coding Standards**

**Table 3.7 Numbering and Coding in ASEAN+3**

Economy	Securities Numbering	Financial Institution Identification	Encoding Scheme and Language
CN	Proprietary <ul style="list-style-type: none"> <li>All securities registered on the interbank bond market for CCDC are given ISIN.</li> <li>Local code is adopted by CSDCC.</li> </ul>	Proprietary <ul style="list-style-type: none"> <li>Proprietary participant code is used by CCDC.</li> <li>Local code is adopted by CSDCC.</li> </ul>	Unicode (UTF-8) EBCDIC
HK	ISIN/Proprietary <ul style="list-style-type: none"> <li>ISIN is used for all securities numbering of bond transactions.</li> <li>A CMU system supports CMU Issue Number and Common Code.</li> </ul>	Proprietary <ul style="list-style-type: none"> <li>A CMU Member Account Number is assigned by an internal coding scheme in CMU.</li> </ul>	Code Supported by SWIFT
ID	ISIN/Proprietary <ul style="list-style-type: none"> <li>An ISIN code is issued by KSEI.</li> <li>Local code is commonly used in the local market.</li> </ul>	Proprietary <ul style="list-style-type: none"> <li>Local code, the Single Investor Identification (SID), is used.</li> </ul>	
JP	ISIN/Proprietary <ul style="list-style-type: none"> <li>BOJ-NET uses a proprietary code and New BOJ-NET will adopt ISIN.</li> <li>JASDEC has already adopted ISIN.</li> </ul>	BIC/Proprietary <ul style="list-style-type: none"> <li>Only a proprietary code is used in the CSDs for JGBs.</li> <li>New BOJ-NET will adopt BIC in addition to the current proprietary code.</li> <li>JASDEC has adopted BIC.</li> </ul>	Unicode (UTF-8)
KR	ISIN/Proprietary <ul style="list-style-type: none"> <li>ISIN is adopted as the numbering standard by KRX.</li> <li>Short code is also used to identify bond name composed of nine digits domestically.</li> </ul>	Proprietary <ul style="list-style-type: none"> <li>Each institution such as KSD, KRX and BOK has proprietary code for each financial entity.</li> </ul>	KSC5601 for Korean
MY	ISIN/Proprietary <ul style="list-style-type: none"> <li>ISIN is used for securities numbering, but local securities codes prevail.</li> </ul>	BIC/Proprietary <ul style="list-style-type: none"> <li>BIC is used as a part of a unique identifier code (UIC) for the participants.</li> </ul>	
PH	ISIN/Proprietary <ul style="list-style-type: none"> <li>ISIN is used by BTr-RoSS for government securities, except for special purpose Treasury bonds and multi-currency retail Treasury bonds.</li> <li>Local numbering is also used for most of bond transactions.</li> <li>Proprietary code is commonly used in PDTC.</li> </ul>	BIC/Proprietary <ul style="list-style-type: none"> <li>Both BIC and local code are used in BTr-RoSS.</li> <li>PDS-assigned firm codes are used for depository and settlement systems.</li> <li>PDTC adopts proprietary code to identify financial institutions, which are PDS-assigned firms.</li> </ul>	Unicode (UTF-8)
SG	ISIN/Proprietary <ul style="list-style-type: none"> <li>ISIN is used in the Singapore bond market.</li> <li>SGX proprietary stock code is used.</li> </ul>	BIC/Proprietary <ul style="list-style-type: none"> <li>MEPS+ SGS and MEPS+ RTGS adopt BIC.</li> <li>MEPS+ SGS and MEPS+ RTGS non-participant member code can either use its BIC or an eight-character code assigned by MAS.</li> </ul>	Unicode (UTF-8)
TH	ISIN/Proprietary <ul style="list-style-type: none"> <li>ISIN and local code are used for bond trading.</li> <li>PTI uses ISIN.</li> </ul>	BIC/Proprietary <ul style="list-style-type: none"> <li>Both BIC and proprietary code are used.</li> </ul>	Unicode (UTF-8)
VN	ISIN/Proprietary <ul style="list-style-type: none"> <li>VSD issues ISIN for all bonds registered with VSD and listed in the stock exchanges.</li> <li>Local code is used domestically and needs to be converted to ISIN.</li> <li>The market allows investors the option of using ISIN code and local code.</li> </ul>	Proprietary <ul style="list-style-type: none"> <li>Local code is used domestically.</li> </ul>	Unicode (UTF-8)

**Figure 3.8 ISIN Code Structure of Government Bonds (example)**

Source: NTT DATA Corporation.

**Figure 3.9 Code Structure of ISO 9362**

Source: NTT DATA Corporation.

**Table 3.8 ANNA Members in ASEAN+3**

	Full Member
CN	China Securities Regulatory Commission
HK	Hong Kong Exchanges and Clearing Ltd.
ID	PT Kustodian Sentral Efek Indonesia (Indonesian Central Securities Depository)
JP	Tokyo Stock Exchange
KR	Korea Exchange – KRX
MY	Bursa Malaysia
PH	Philippine Stock Exchange, Inc.
SG	Singapore Exchange Limited
TH	Thailand Securities Depository Co., Ltd.
VN	Viet Nam Securities Depository

## Market Practices and Others

The survey revealed that some market practices, which could result in smoother cross-border trade and settlement, differ across economies in ASEAN+3. The key findings are discussed below.

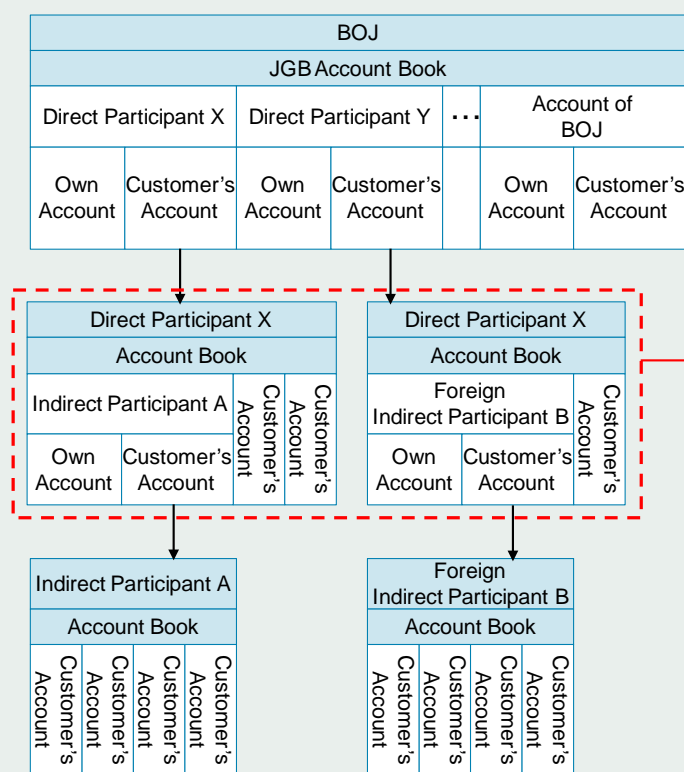
### Settlement Cycles

The settlement cycles of government bond transactions vary from T+1 to T+30 in ASEAN+3. Settlement cycles are mainly determined by negotiation based on the proprietary business practices of market participants and restrictions of payment infrastructure.

Figure 3.10 Account Structure of Government Bond (example)

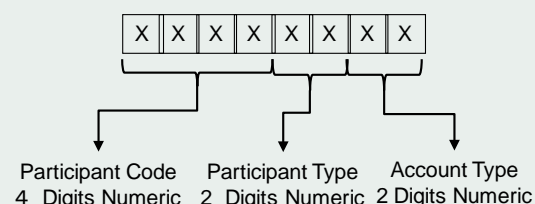
JP

## Account Structure



## Code Structure

## Account code of JGB Account Book (8Digits)



## Example of Participant's Account

Participant Account 1234				Participant Account 2345			
Participant type 01				Participant type 02			
Customer I	Customer II	Proprietary I	Proprietary II	Proprietary III	Customer I	Proprietary IV	
11	12	01	02	03	11	04	

Table 3.9 Securities Account of Each Economy

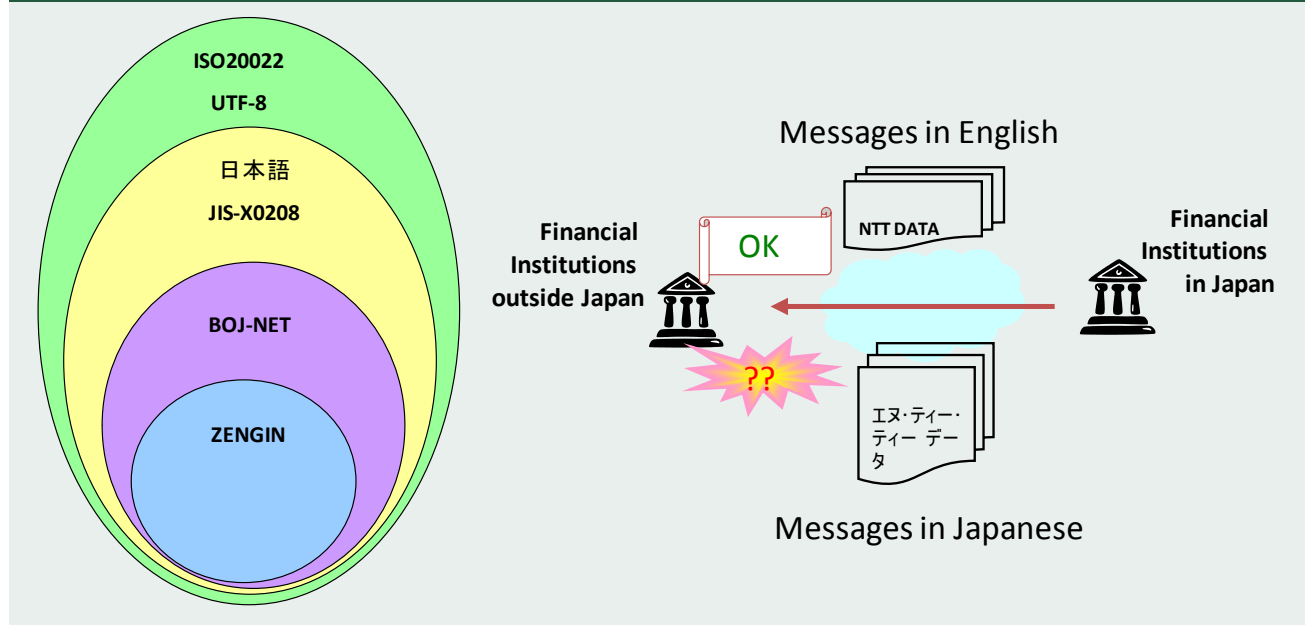
Economy	Account Structure	Layer
CN	Segregated	Single-Layer
HK	Omnibus	Multi-Layer
ID	Omnibus	Multi-Layer
JP	Omnibus	Multi-Layer
KR	Segregated	Single-Layer
MY	Omnibus	Multi-Layer
PH	Omnibus	Multi-Layer
SG	Omnibus	Multi-Layer
TH	Omnibus	Multi-Layer
VN	Omnibus	Multi-Layer

In general, the settlement cycle is a common rule in the market. The rule may not be stipulated in regulation or law but should be observed by market participants. For example, if the settlement cycle of bond trades in a market is T+3, investors must settle their government bond transactions in 3 business days. This means that when you buy government bonds, the broker must receive your payment no later than 3 business days after the trade is executed. When you sell a government bond, you must deliver to your broker your bond no later than 3 days after the sale.<sup>10</sup>

As such, the settlement cycle of the market means that the majority of market participants need to follow the practice as a rule, although there is no such rule in every ASEAN+3 market. Thus, it

<sup>10</sup>Based on a description provided by the US Securities and Exchange Commission (modified by the author).



**Figure 3.11 Standardization of Character Codes and Languages**

would be beneficial for all market participants to have a common settlement cycle in ASEAN+3.

Some markets are trying to shorten their settlement cycles. The purpose of shortening the settlement cycles of bonds is mainly the reduction of settlement risks, and the stabilization and activation of short-term financial markets. Unsettled bonds are exposed to settlement risks and the longer a settlement cycle, the more unsettled positions accumulate. The reasons for shortening the settlement cycle are listed below:

**(i) Reduction of settlement risks**

- eliminating the risk of not receiving securities or cash on schedule
- reducing the size and cost of fundraising associated with a counterparty's default
- mitigating replacement risks
- preventing a chain reaction of settlement failures

**(ii) Stabilization and activation of short-term financial markets**

- opportunities for raising funds and managing liquidity
- mitigating market malfunctioning by speeding up the replacement of unsettled positions and the resolution of settlement failures

- improving liquidity of government bonds to make these more attractive as financial products

To shorten the settlement cycle in a market, STP facilities among similar infrastructures, such as an online connection between trade systems and CSDs, need to be implemented. At the same time, all market participants need to automate individual internal systems.

Considering the settlement cycle in ASEAN+3, there is not yet an institutional framework in which to discuss such an issue among stakeholders in the region. Thus, it is imperative that an institutional framework be established to have common rules and processes for the settlement cycle in the region. **Table 3.10** illustrates the typical settlement cycles of domestic and cross-border transactions in ASEAN+3.

The settlement cycle of domestic bond transactions in the PRC, the Republic of Korea, and the Philippines are T+1, which is shorter than that in other markets. In these markets, the trading system is directly linked with the CSD, and transmitting trade data to the CSD requires an online network. STP may contribute to shortening the settlement cycle in these markets.

**Table 3.10 Settlement Cycle in ASEAN+3**

Economy	Domestic	Cross-Border
CN	T+1 (negotiable, market practice)	T+1 (market practice)
HK	T+2 (negotiable, market practice)	According to the standard cycle of the respective market
ID	T+2 (negotiable, market practice)	T+2
JP	Gov. T+2	T+2~T+4
	Corp. T+3	T+2~T+4
KR	T+1 (negotiable, market practice) T+1-T+30 is possible	T+1-T+3 (in-bound transaction) Depends on the settlement cycle of designation country for investment.(out-bound transaction)
MY	T+1/T+2 (negotiable, market practice)	T+2
PH	T+1 (negotiable, market practice)	T+1 (same as domestic transaction)
SG	T+3 (negotiable, market practice)	T+1 (government bond), T+3 (corporate bond)
TH	T+2 (negotiable, market practice)	T+3 (US investor)
VN	T+1 ※T=trade data capturing date	No cross-border transaction

**Table 3.11 Operating Hour in ASEAN+3**

	CSD	Operating Hour (local time)		
		Open	Cut-Off Time	Close
CN (+1)	CCDC/SHCH	9:00	-	17:00
	CSDCC	8:00	-	16:00
HK (+1)	CMU	8:30	16:00	18:30
ID (0)	BI	6:30	16:00	19:00
	KSEI	4:00	15:10 (cash settlement)	17:10
JP (+2)	BOJ	9:00	14:00	16:30
	JASDEC	9:00	15:00	17:00
KR (+2)	KSD	9:00	16:00	17:00
MY (+1)	MyClear	8:00		18:00 (13:00 on Sat)
PH (+1)	BTr-RoSS	9:30	14:00	15:00
	PDTC	8:00	16:00	18:00
SG (+1)	MAS	9:00	15:30	19:00
	CDP	8:30	12:00	17:30
TH (0)	TSD	7:00	17:00	20:30
VN (0)	VSD	8:00	9:00 (bond settlement) 11:00 (cash settlement)	17:00

Note: Time difference from Jakarta is shown after country code.

**Table 3.12 Matching Types in ASEAN+3 Markets**

	Trade Matching	Pre-Settlement Matching	Settlement Matching
CN	CFETS	-	Central and Local
HK	CMU		Central and Local
ID	-	telephone, facsimile	Central
JP	PSMS	PSMS	Local
KR	B-Tris	-	Central and Local
MY	(BMS ETP)	RENTAS	Local
PH	FI Trading System /RoSS	telephone, facsimile	Central and Local
SG	-	PTI, telephone	Local
TH	-	telephone, facsimile	Central
VN	HNX	-	Central

Although the cycle in Viet Nam is generally regarded as T+1, the definition of T in Viet Nam is not the trade date but the date when trade data is entered into the trade system of the Hanoi Stock Exchange (HNX). Before entering the trade data into the system, an actual trade agreement should be made between a sell side and a buy side in the OTC market. Therefore, the settlement cycle based on the trade date generally accepted in ASEAN+3 is either T+2 or T+3 in Viet Nam.

## Operating Hours

Having a common settlement cycle in ASEAN+3 will be related to the operating hours in each market, particularly the cut-off time in the market.<sup>10</sup> Operating hours and cut-off times for DVP transactions in each market are shown in **Table 3.11**.

<sup>10</sup> According to JSDA's definition, the cut-off time is the deadline for bond settlement prior to the closing time for the book-entry system as decided by market participants for the purpose of recognizing fails and completing all settlements each day.

## Matching Types

The process of matching, particularly settlement matching, is categorized as either central matching or local matching (**Table 3.12**). Also, please refer to Appendix 2.

**Central matching.** Both market participants (sell side and buy side) or trading systems send the trade data to the CSD. Then, the CSD matches the data and sends back the matching confirmation to the sell side and buy side.

**Local matching.** One side of the bond settlement, either a sell side or buy side, inputs the trade data to the CSD and the CSD forwards the data to the counterparty. The counterparty checks the data and sends back affirmation to the CSD if the data are deemed to be acceptable.

## Reporting Rules

Some markets in ASEAN+3 have rules that market participants have to report trade data to authorities and SROs for trade transparency. Examples of such rules in the region are given in this section.

In Indonesia, the Indonesia Stock Exchange (IDX) functions as a bond transaction reporting center.

The sell side or buy side is obliged to report trade data to the centralized trading platform (CTP) of the IDX within 30 minutes of a trade; or, if a trade is done without involving any intermediary–broker, the custodians need to report within 30 minutes after the settlement instruction is received by the custodian.

In the Republic of Korea, the Korea Financial Investment Association (KOFIA) is an SRO. Financial investment companies engaged in bond trading should report the details of a trade to KOFIA, and KOFIA discloses this information on its website.

In Malaysia, Bursa Malaysia (BM) is an SRO responsible for improving trade transparency in the Malaysian bond market. BM runs an electronic trading platform where the sell side and buy side have to input all trades.

In Thailand, all debt securities transactions, wherever they are traded, must be reported to the Thai Bond Market Association (ThaiBMA). ThaiBMA monitors the reported price data to ensure that disseminated prices are efficient as the market reference.

Trade data collection and reporting are very important issues that need to be addressed to make ASEAN+3 markets more sound and transparent. This kind of initiative may also be related to the activities of the ASEAN+3 Macroeconomic Research Office (AMRO).

## Physical Certificates

There are several different ways for beneficial owners to hold securities. In some economies, physical securities still circulate, particularly for corporate bonds, and beneficial owners may keep securities in their possession. Generally, beneficial owners employ a custodian to hold them to reduce risks and safekeeping costs.

Bonds are completely dematerialized in the PRC and Japan.

The disadvantages of physical certificates include the need for manual examination, risk of loss, damage or forgery, and cost of storage. They prevent cross-border investors from trading.

Thus, the immobilization or dematerialization of securities should be considered. Immobilization of physical securities involves concentrating the location of physical securities in a depository (or CSD). The costs and risks associated with owning and trading securities may be reduced considerably through immobilization. A global note, which represents the whole issue, is issued for immobilization. A further step away from circulating physical securities is full dematerialization of a securities issue. In this approach, there is no global note issued, as the rights and obligations stem from book entries in an electronic register.

The immobilization or dematerialization of securities and their transfer by book-entry within a CSD significantly reduces the total costs associated with securities settlements and custody. By centralizing the operations associated with custody and transfer within a single entity, costs can be reduced through economies of scale. In addition, efficiency gains can be achieved through increased automation, which reduces the errors and delays inherent in manual processing. By reducing costs and improving the speed and efficiency of settlement, book-entry settlement also supports the development of securities lending markets, including markets for repurchase agreements and other economically equivalent transactions. These activities, in turn, enhance the liquidity of securities markets and facilitate the use of securities collateral to manage counterparty risks, thereby increasing the efficiency of trading and settlement.

The immobilization or dematerialization of securities also reduces or eliminates certain risks such as the destruction or theft of certificates. The transfer of securities by book-entry is a precondition for the shortening of the settlement cycle for securities trades, which reduces replacement cost risks. Book-entry transfer also facilitates DVP settlement, thereby eliminating principal risks.

**Table 3.13 Reporting Rules in ASEAN+3 Markets**

Economy	Entity Receiving a Report	Reporting Rule
CN	China Foreign Exchange Trade System (CFETS)	Trade data are entered into CFETS for price transparency.
HK	-	-
ID	Indonesia Stock Exchange (IDX)	IDX functions as a bond transaction reporting center. The sell side or buy side is obliged to report trade data to the centralized trading platform of IDX within 30 minutes of a trade. If a trade is conducted without an intermediary or broker, the custodian needs to report within 30 minutes after the settlement instruction is received.
JP	-	-
KR	Korea Financial Investment Association (KOFIA)	A financial investment company engaged in bond trading should report the details to KOFIA.
MY	Bursa Malaysia(BM)	BM runs Electronic Trading Platform (ETP) and the seller and buyer have to input all trades into ETP.
PH	Philippine Dealing and Exchange Corporation (PDEX)	The seller or buyer have to report trade data to PDEX.
SG	-	-
TH	ThaiBMA	All debt securities trading transactions, wherever conducted, must be reported to the ThaiBMA. The ThaiBMA monitors the reported price data to ensure that disseminated prices are efficient enough to be used as market reference.
VN	-	-

**Table 3.14 Exchangeability of Scripless Bonds to Physical Bonds**

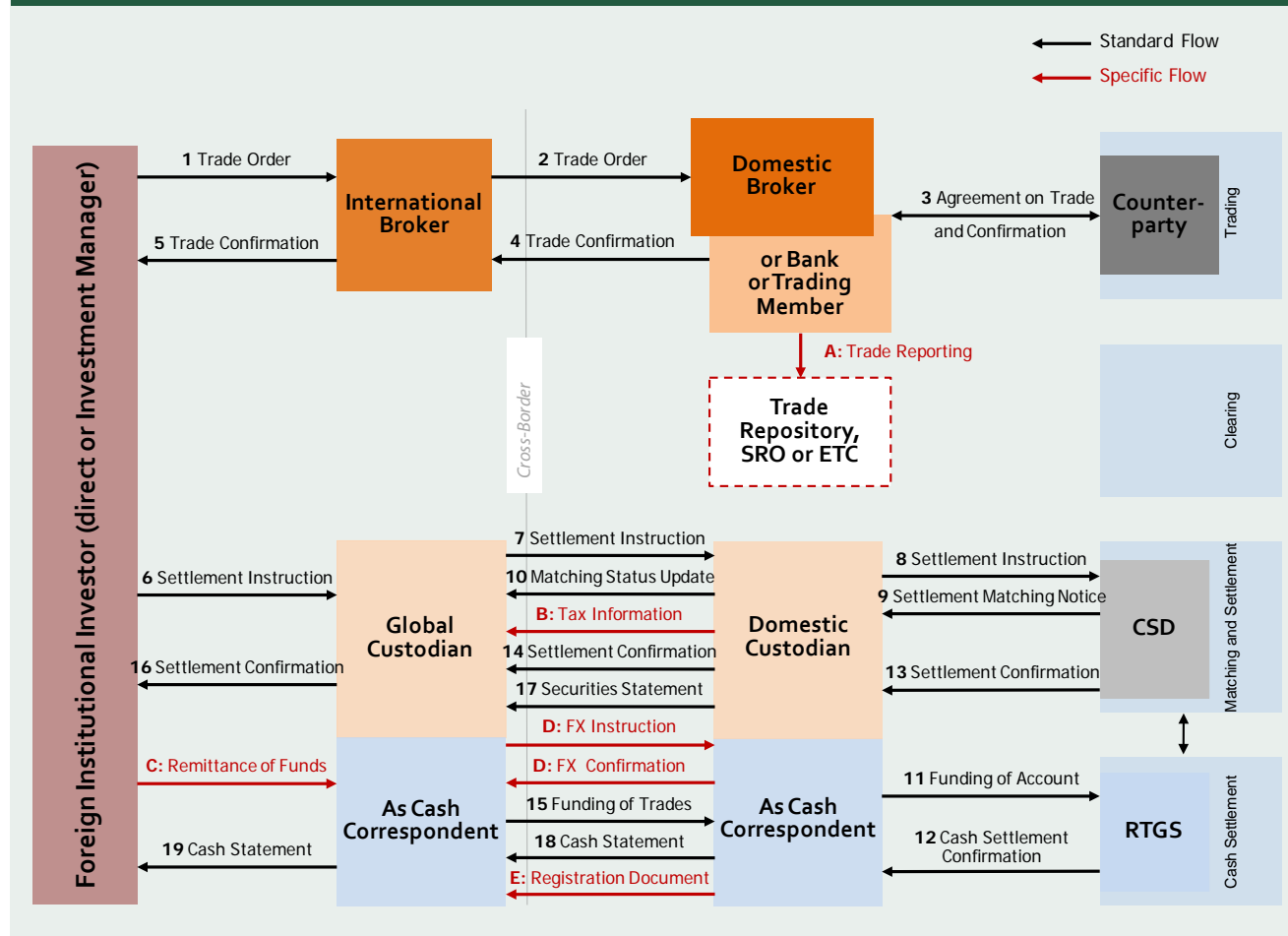
	Exchangeability of Scripless Bonds to Physical Bonds
CN	No
HK	Yes
ID	Yes
JP	No
KR	Yes
MY	Yes
PH	Yes
SG	Yes
TH	Yes
VN	Yes

Source: ABMF Sub-Forum 1 Part 1 Report.

## Cross-Border DVP Flows and LCY Liquidity

Specific characteristics of cross-border DVP flows in ASEAN+3 were studied and the key findings in reference to typical types of cross-border flows are depicted in **Figure 3.12**. These include:

- (i) To comply with trade reporting requirements, domestic brokers and/or banks send trade details to authorities in order to ensure transparency in Indonesia, the Republic of Korea, Malaysia, and Thailand.
- (ii) For the purpose of obtaining relevant tax information, extra messages may need to be exchanged in order to calculate appropriate capital gains tax in Indonesia.
- (iii) Related to the “Remittance of Funds”, foreign institutional investors may need to remit funds before settlement in the PRC and Viet Nam due to pre-funding requirements.

**Figure 3.12: Typical DVP Flows for Foreign Institutional Investors**

- (iv) Global custodians and local custodians need to send additional FX instruction and confirmation messages in Indonesia, the Republic of Korea, Malaysia, the Philippines, Thailand, and Viet Nam. Typical FX and cash controls in ASEAN+3 are summarized in **Table 3.15**.
- (v) A specific registration document needs to be issued for capital repatriation and/or remittance of interest payments in the Philippines.

## Communications Protocol

The communications protocol between market participants and CSDs in each market is mostly Transmission Control Protocol/Internet Protocol (TCP/IP), while message formats vary from market to market and there is no de facto standard. Most of the protocols between market participants and cash settlement infrastructures also use TCP/IP. Protocols and message formats in each market are showed in **Table 3.16**.

Some CSDs have direct linkages with market participant's systems. In the future, ABMF SF2 can promote the establishment of an environment for cross-border transactions by standardizing the message format of the linkages based on international standards.

**Table 3.15 Typical FX and Cash Control in ASEAN+3**

	FX Trades with Underlying Investment	Pre-Funding	Prohibition of Third-Party FX	FX Reporting	Prohibition of Overdraft by Non-Residents	Prohibition of Offshore FX Trading for Investment	Limitation on Repatriation
CN	Y	Y	Y	Y	Y	Y	Y
HK	N	N	N	N	N	N	N
ID	Y	N	N	Y	Y	Y	Y
JP	N	N	N	N	N	N	N
KR*	N	N	N *	Y	Y	Y	N
MY	Y	N	N	N	Y	N	N
PH	N	N	N	Y	Y	N	Y
SG	N	N	N	N	N	N	N
TH	Y/N	N	N	Y	N	N	N
VN	Y	Y	N	Y	Y	Y	Y/N

\* In the Republic of Korea, third-party FX is legally possible but not used in practice.

**Table 3.16 Protocols and Message Formats in ASEAN+3 Bond Markets**

	Market	Between CSD and Seller or Buyer			Between Cash Settlement System and Seller or Buyer	
		Linkage	Protocol	Message Format	Protocol	Message Format
CN	OTC	Direct Link	TCP/IP HTTP, SOAP	ISO20022 XML and Text	TCP/IP	ISO20022
HK	OTC	Direct Link	TCP/IP	ISO15022	TCP/IP	ISO15022
ID	OTC	Terminal Access	TCP/IP	ISO15022/ ISO20022	TCP/IP	ISO15022
JP	OTC	Direct Link	TCP/IP	Proprietary: ISO20022	TCP/IP	Proprietary: ISO20022 will be adopted
KR	OTC	Direct Link	TCP/IP	-	TCP/IP	-
MY	OTC	Terminal Access	TCP/IP	Proprietary: ISO20022 will be adopted	TCP/IP	Proprietary: ISO20022 will be adopted
PH	OTC GSED	Terminal Access	TCP/IP HTTPS	Proprietary	TCP/IP	ISO15022
SG	OTC	Terminal Access	TCP/IP	ISO15022/ ISO20022 will be adopted	TCP/IP	ISO15022/ ISO20022 will be adopted
TH	OTC	Terminal Access	TCP/IP HTTPS	ISO15022	TCP/IP	ISO15022
VN	OTC	Terminal Access	TCP/IP	XML	-	-



# Key Observations and Policy Recommendations

Based on the key findings described in Section 3, ABMF SF2 members discussed policy recommendations on bond market regulations and the practices of individual economies, as well as mutual cooperation among the economies in the region. The policy recommendations are categorized in this section according to (i) bond market infrastructures, (ii) DVP flows, (iii) interest payment flows, (iv) message standards (numbering and coding), (v) market practices and other issues, and (vi) cross-border STP and LCY liquidity.

## Bond Market Infrastructure

Robust and sound bond market infrastructure such as CSD and RTGS systems are already in place in the region's 10 economies with developed bond markets. However, infrastructure that further promotes efficiency and risk reduction, such as PSMS, CCP, TR, and TS are not fully implemented yet. Such infrastructure can be introduced when taking into account a variety of conditions, including trade values, trade volumes, and number of market participants. When

implementing bond market policies, ABMF SF2 also suggests that Principles for Financial Market Infrastructures (PFMI) and related principles and recommendations published by CPSS/IOSCO be observed.

### (i) **Implementation of automated pre-settlement matching infrastructure**

Most economies have not yet developed an automated PSMS and pre-settlement matching is conducted manually. As utilizing an automated PSMS would be conducive to STP, with decreased workload and failures compared to manual processes, it is recommended to implement automated pre-settlement matching infrastructure in each economy in a standardized manner. Pre-settlement matching utilizing forward (future-dated) transactions could also be an option. Pre-settlement matching systems may be considered as one of the cornerstones in improving STP in the region.

### (ii) **Discussion on CCP with market development**

It is generally held that developing CCP for bond transactions is not an urgent priority considering the limited need for risk reduction

through CCP compared to OTC derivatives, and the relatively low trading and settlement volumes in the region's bond markets. In this respect, it is advisable to consider discussions on CCP for the OTC market after trade volumes increase to a more significant level. At the same time, the introduction of CCP in exchanges might be also considered in relation with other instruments such as equity.

**(iii) Central and local matching as standard**

Both central matching and local matching are common in ASEAN+3. Considering market practices and other factors, it is recommended that both central and local matching types be clearly regarded as standard.

**(iv) Bond settlement using central bank money**

In most ASEAN+3 economies, central bank money is used to settle government and corporate bonds. In economies where this is not the case, it is recommended that central bank money be used for bond settlement, including cross-border bond settlement, and in particular for government bonds to reduce settlement risk associated with relatively high trade values.

**(vi) Strengthening price discovery and transparency**

TRs have been established in some economies to secure price discovery and transparency and so enhance information flows, which could contribute to cross-border bond trades in the region. For those economies without TR, it is advisable to consider establishing one after the market develops more significantly.

gateways and/or a hub between CSD and/or RTGS systems.

**(i) Enhancing STP in CSD-related data flows**

Entering settlement instruction data into a CSD is not an automated process in many ASEAN+3 economies. It is recommended that CSDs be connected with upstream infrastructures such as PSMS in order to promote STP throughout the region. In such cases, redundant message flows may be identified and removed wherever possible.

**(ii) Developing a reference model for DVP flows for gradual harmonization of the flows**

DVP flows differ in every economy and CSD. Thus, standardizing DVP flows into a unique model is not practically feasible since infrastructures, legal systems, and tax systems vary across economies. In this respect, it is recommended that ABMF SF2 discuss best practices of DVP flows and propose a reference model with possible variations. When an individual economy is developing bond market infrastructures, the model DVP flow should be referenced as much as possible. When developing model DVP flows, the impacts on core infrastructure such as CSD and RTGS systems should be minimized. At the same time, conversions between international standards and proprietary practices among intermediaries are also to be minimized. More harmonized DVP flows could contribute to defining the requirements for interlinking gateways and/or a hub between CSD and/or RTGS systems in the future.

## DVP Flows

Bond trade and settlement (DVP) flows in ASEAN+3 vary across different economies and different CSDs. The flows for residents are different from those for non-residents in some economies. It is recommended to discuss the harmonization of these flows considering the impact to both the infrastructures themselves and participant systems connected with them. Such harmonization could be utilized for defining business and system requirements of interlinking

## Interest Payment Flows

Interest payment and redemption flows also differ across economies and CSDs. One of the major reasons for these discrepancies is the differences in the applicable tax regime. It will be difficult to expect that these flows could simply be standardized to a single model since there are fundamental differences based on tax regimes, including the process of capturing the tax status of investors and the legal interpretation of TWA, among others. Meanwhile, exemption from WHT for non-residents is one of the key expectations of market participants.

**(i) Survey on the roles of PA, AMA, and TWA across economies**

In the process of interest payment from an issuer to an investor, the PA that is designated by the issuer transfers interest to an AMA. The AMA is generally a custodian except in those economies adopting a segregated account system where all investors need to open accounts with the CSD. The TWA is responsible for payment of WHT to the tax office on behalf of issuers. Central banks, commercial banks, CSDs, issuers, and the Bureau of the Treasury (in the Philippines) act as the TWA. However, the specific roles of the PA, AMA, and TWA vary across ASEAN+3. The different roles may not be defined uniformly since there are fundamental differences in legal systems and infrastructures in the region. In respect to cross-border STP, it is recommended that the basic roles of the PA, AMA, and TWA be surveyed to identify common elements and gaps in order to make cross-border interest payment more efficient.

**(ii) Continued study of interest payment flows with a view to gradual harmonization**

In addition to the survey on roles of related institutions, it is recommended that ABMF SF2 continue to discuss the differences in interest payment flows with respect to gradual harmonization. ABMF SF2 will continue to discuss commonalities and differences of interest payment flows related to cross-border collateral and repo. Also, business processes may be gradually standardized, starting with less critical ones such as documentation to be submitted to the authorities.

## Message Standards including Numbering and Coding

Message formats in most economies in ASEAN+3 are not fully compliant with international standards yet. It is recommended that the message format be compliant with ISO20022. ABMF SF2 members and ASEAN+3 authorities are expected to support the migration of message standards of bond market infrastructures to

ISO20022. The numbering and coding standards that are already registered as international standards such as ISIN and BIC are recommended to be duly adopted in ASEAN+3.

**(i) Migration to ISO20022**

Considering the trend of ISO20022 implementation in major bond markets, including the European Union (EU), 2015–16 could be a turning point in the migration to ISO20022 in the region. It is recommended for ASEAN+3 economies to adopt ISO20022 as the standard message format, whenever an upgrade opportunity exists.

**(ii) Standardization of message items**

The definitions of message items differ across economies and CSDs. It is recommended that essential messages, including settlement instruction and settlement confirmation, be standardized in compliance with ISO20022 in order to facilitate and enhance cross-border STP.

**(iii) Utilizing ISIN as a unique number and establishing common rules on ISIN**

Ten ASEAN+3 economies which already have bond markets have NNAs with full membership in the ANNA. However, ISIN is not yet widely used in the region as a standard. There remain differences in numbering conventions and the period of allocating and disseminating ISINs. For example, in some economies an NNA allocates an ISIN after receiving bond information from a CSD that makes the ISIN available to trustees and CSD participants on the same day by notifying it, whereas, it takes a number of additional days in other economies. There are two different ISINs for a single domestic securities number in an economy. In this respect, it is recommended that ISIN be used as a unique numbering system to identify bonds in each economy and that common rules be established for the allocation and notification of ISINs. Cooperation with ANNA should also be discussed.

**(iv) Promotion of BIC**

Some market infrastructures still use a proprietary code for financial institution identification. It is recommended that BIC be adopted to take the opportunity to reconstruct their systems. In addition, it is desirable that

each economy has a common recognition of the numbering, notification, and maintenance of BIC.

## Market Practices and Other Issues

There exist differences in market practices and in other areas such as investor identification and account structure. It is recommended that market practices and other issues related to bond trade and settlement continue to be discussed in order to enhance the efficiency of the market even though market practices are not easy to standardize and some practices do not have a specific standard.

### (i) Harmonization of market practices

Some market practices such as the settlement cycle differ across economies. The standardization of different market practices could be an important issue in enhancing cross-border STP. In this respect, it is recommended that the policy authorities, SROs, and market participants continue to discuss different market practices for the purpose of harmonization.

### (ii) Investor identification

Identifying investors, either as residents vs. non-residents or professional investors vs. retail investors, is an important issue in some markets due to regulations on taxation and foreign exchange, and other legal and regulatory provisions. Currently, such regulations differ across the region and it represents one of underlying complicating bond transaction flows across economies. With respect to STP and market efficiency, it is important to review such regulations gradually with a long-term perspective and in line with market developments.

### (iii) Account structure

Due to differences in a bond holder's right to claims on assets, there are different types of account, including own account, customer account, pledge account, trustee account. In addition, taxation has an influences on account structures (e.g., non-taxable account vs. taxable account). An omnibus account

vs. segregated account and the separation of own account and customer account are also important issues. It would be difficult to standardize account structures that are stipulated according to underlying laws and regulations, including tax regimes, in the short-term. However, with respect to cross-border STP, it is important to review account structures gradually with a long-term perspective and in line with market developments.

### (iv) Language for bond settlement infrastructures

English is not yet a common language throughout ASEAN+3 bond markets. Some economies are using a local language for settlement messages. It is advisable that English be used whenever possible.

## Cross-Border STP and LCY Liquidity

FX and cash controls are perceived as one of the key barriers in the region to executing cross-border bond trades. During the ABMF SF2 market survey, many market participants addressed the need for de-regulation of the controls to promote cross-border trade and settlement, including the improved availability of LCY. On the other hand, with changing regulatory demands and collateral landscapes in recent years, demands for cross-border collateral and cross-border repo services have been increasing. Under such circumstances, it is recommended that ABMF SF2 further study cross-border collateral and repo from a technological perspective, including current market practices, regulatory aspects, and infrastructures. The study could also include linking CSD and RTGS systems in ASEAN+3 with the aim of utilizing central bank money.

### (i) Promoting cross-border collateral and repo services

Obtaining and maintaining LCY balances is critical to non-resident investors in cross-border bond investment. As a tool for accessing LCY liquidity, the importance of cross-border collateral and repo has been increasing in recent years. In this respect, it is recommended that policy measures be

considered to promote cross-border collateral and repo services. It is also recommended that ABMF SF2 conduct a study about cross-border collateral and repo services.

**(ii) FX and cash controls**

Except for Hong Kong, China; Japan; and Singapore; FX and cash controls for bond trade and settlement remain in all ASEAN+3 economies. Although it would not be practical to expect significant regulatory changes in the short-term, it is recommended that some of the regulations could be reviewed in the context of bond market development with a long-term perspective. Such regulations might include FX quotas, limitations on off-shore trades, prefunding rules, regulations on overdraft, and FX reporting requirements subject to the discretion of the policy authorities.

# Knowledge Support

**K**nowledge support is provided to the countries that are now trying to develop bond markets in ASEAN+3 by cooperating with the ABMI Technical Assistance Coordination Team (TACT).

There is a need to provide tailor-made knowledge support to those economies that have less developed capital markets or are at the initial stage of developing capital markets. The interest areas and the focus of knowledge support will be quite different for these economies and those with more developed capital markets.

It is suggested that tailor-made knowledge support be provided to the ASEAN+3 economies with less developed capital markets, including Brunei Darussalam, Cambodia, Lao PDR, Myanmar, and Viet Nam (BCLMV countries). The support could be provided in a phased approach subject to specific assistance requests from each of the targeted economies:

- **Phase 1 (Kick-Off Seminar, December 2012).** Key participants in this knowledge sharing opportunity were officials and staff from the ministries of finance, central banks, and regulatory authorities of BCLMV countries. The agenda and course design focused on the fundamental infrastructures, both software and

hardware, needed for developing government bond markets. Resource persons presented the broader perspective of existing networks and included ADB staff and consultants, ABMF Members and Experts, and professionals involved in various ABMI technical assistance projects.

- **Phase 2 (On-Site Knowledge Support, 2013).** This involved conducting individual market visits to provide demand-specific knowledge support to each economy. Although the Kick-Off Seminar covered the general concerns of the participating economies at the early stages of developing bond markets, the specific needs and the focus of interest differ across economies depending on the status of market development and policy objectives. To serve such needs, a team consisting of members with relevant expertise visited the individual economies, provided in-depth knowledge support, and helped to develop feasible policy action plans. The visits were considered one of planned market visits under Phase2 activities. The visits were organized only when requests were made by ASEAN+3 economies that included the specific assistance being sought.
- **Phase 3 (Follow-up Program Support).** Through Phase1 and Phase2, the need for continued support to help individual

economies in developing their bond markets was identified. Stand-alone ADB technical assistance and ASEAN+3 projects can be considered under Phase3 as needed. Phase3 support would be provided only when the target economy has strong interest in and commitment to the assistance program.

The knowledge support activities described above are currently being implemented through the middle of Phase2 and target Cambodia, Lao PDR, and Myanmar. The programs already provided a wide range of issues related to bond market development and are not limited to bond market infrastructures. Further knowledge support may be necessary in line with the necessity and request of the target countries.



# Next Phase of ABMF SF2

## Activities Support and Roadmap

### Overview

The following are Phase3 activities of ABMF SF2 approved by ABMI TF3 members in April 2013 and endorsed by ASEAN+3 Finance Ministers and Central Bank Governors at the Annual Meeting on 2 May 2013 in New Delhi. Phase3 of ABMF SF2 is scheduled to start in January 2014 and be completed in December 2015.

The work items approved by ABMI TF3 are as follows.

(i) **Harmonizing message flows.** ABMF SF2 will develop a reference DVP model flow resulting from the discussions of best practices in ASEAN+3. The scope of the DVP flow to be proposed as the reference model is to cover pre-settlement matching through bond and cash settlement. When discussing harmonization of message flows, regulatory barriers preventing STP of DVP flows will also be identified.

(ii) **Standardizing message items.** ABMF SF2 will discuss the standardization of basic message items for critical messages such as settlement instruction and settlement confirmation, in accordance with ISO 20022. Message items of bond trade and settlement infrastructures are to be studied in order to develop a common understanding of each message.

(iii) **Discussion on harmonization of market practices.** ABMF SF2 will be engaged in a study to promote harmonization of market practices in ASEAN+3. Specific market practices to be discussed will be chosen from the viewpoint of promoting cross-border STP. Settlement cycles in line with FX spot dates and the time period between the record date and payment date are candidates to be studied. In carrying out the study, an institutional framework for the cooperation with SROs and other related organizations would be explored.

(iv) **Study on cross-border collateral and repo services.** For the benefit of further development of cross-border collateral and repo markets, ABMF SF2 will study current

market practices, related legal and regulatory aspects, and infrastructures, with the goal of identifying best practices and providing policy recommendations. The study could also include cross-border collateral and repo services linking CSD and RTGS systems. Interest payment flows related to cross-border collateral and repo services linking CSD and RTGS systems will also be studied.

## Harmonizing Message Flows

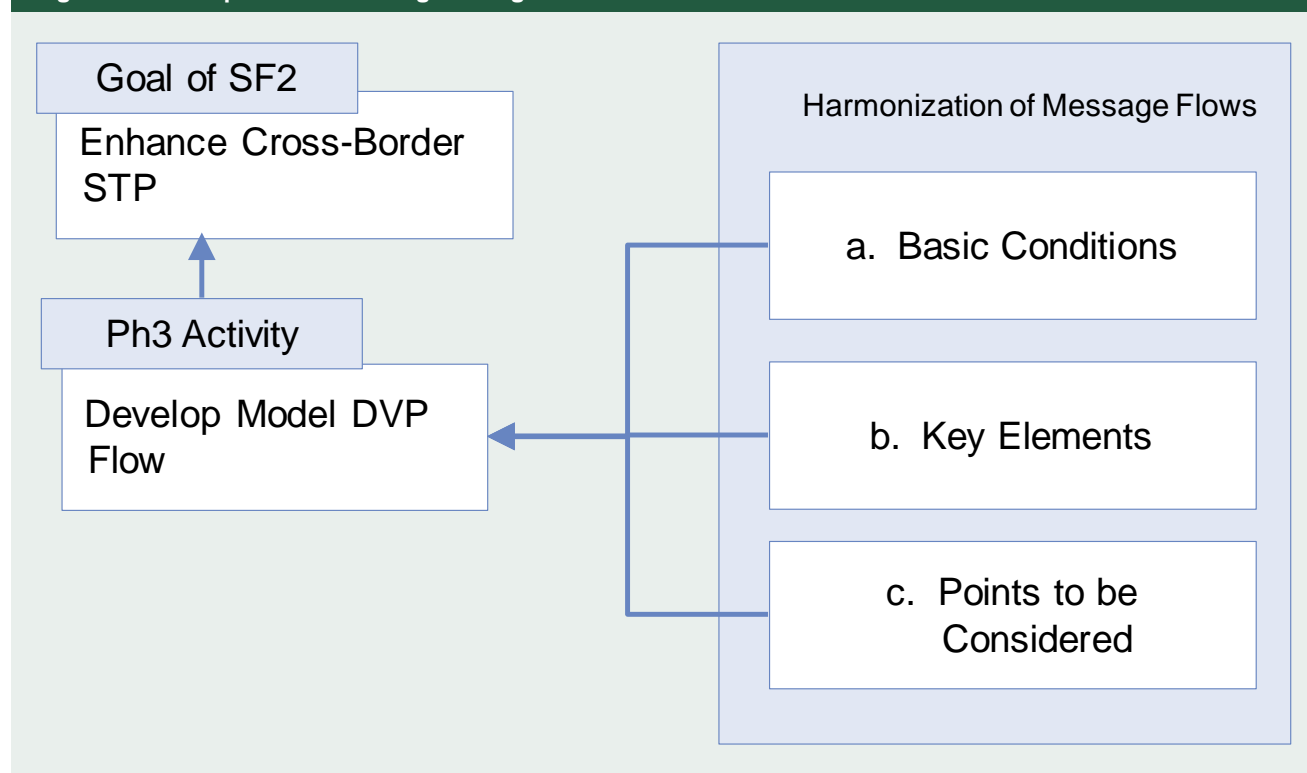
One of the most important objectives of harmonizing message flows is to develop a reference model of DVP flows of ASEAN+3 bond settlement. Bond and cash settlement flows for both government and corporate bonds are expected to be harmonized by sharing reference model DVP flows as operators of bond and cash settlement infrastructures upgrade their systems and processes. In other words, each market infrastructure owner and operator is expected to follow the model flows when planning and developing new infrastructure.

### Concept of Harmonizing DVP Flows

In order to discuss the reference model DVP flows, basic principles of DVP flows must first be discussed. A preliminary draft of the principles (basic conditions) proposed by the ADB Consultant is presented below (**Figure 6.1**).

- (i) RTGS is to be used for both bond settlement and cash settlement.
- (ii) DVP is to be secured.
- (iii) Central bank money is to be used for cash settlement.
- (iv) Data are to be transferred from upstream infrastructure to downstream infrastructure whenever possible.
- (v) The results of infrastructure upgrades are to be shared with participants as appropriate.
- (v) The quality of data transferred and processed is to be confirmed when the data are entered by different parties.

**Figure 6.1 Concept of Harmonizing Message Flows**



## Initial Candidates for Reference Model DVP Flows

As a starting point of discussion, ADB Consultant for SF2 proposed three types of DVP flows as initial candidates for reference model DVP flows as shown in **Figures 6.2, 6.3, and 6.4**.

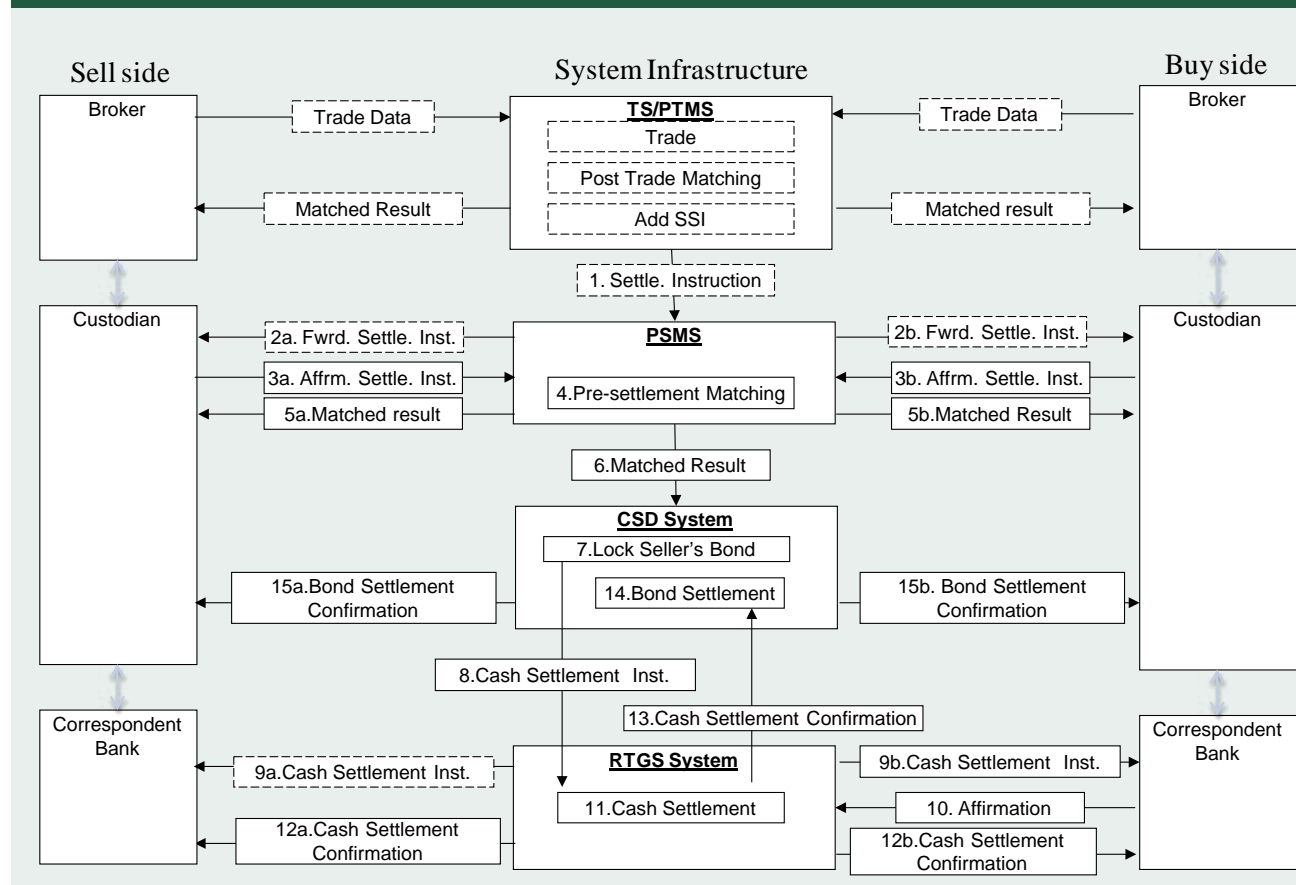
In order to discuss the reference model DVP flows, key elements of the flows to be discussed are also proposed as shown earlier in Figure 3.3. The following elements will be scrutinized by ABMF members and experts before discussions:

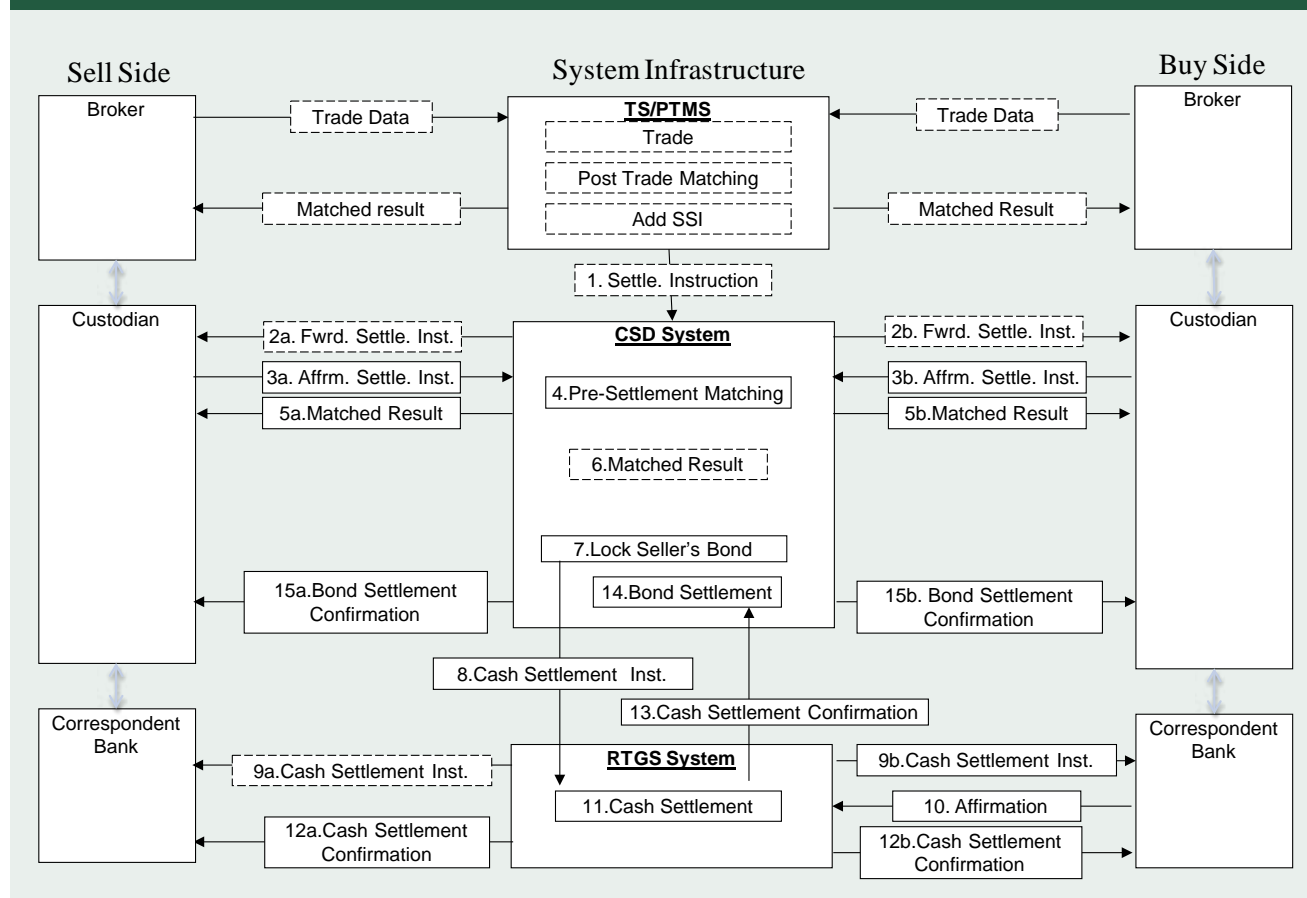
- (i) Transferring settlement instruction from an upstream system to PSMS
  - (a) Direct online linkages between upstream systems and PSMS is desired whenever possible. If a broker automates its system and has direct connection with custodians, a custodian can enter

settlement instructions into PSMS by adding the necessary information to trade data sent from the broker.

- (ii) Forwarding instruction to the sell and buy sides, then affirmed by both sides; enter settlement instruction when there is no transfer from an upstream system
  - (a) Settlement instruction data transferred from upstream infrastructure to the PSMS need to be forwarded to the sell side and/or buy side since the party (broker) that entered the data to PSMS is different for the party (custodian) that is supposed to receive the forwarded data. Message items for settlement instructions need to be standardized.
  - (b) Maximum limit of time to return affirmation to CSD may be agreed as a market practice; how to return the affirmation, including message items,

**Figure 6.2 Draft Reference Model DVP Flow (Central Matching with PSMS)**



**Figure 6.3 Draft Reference Model DVP Flow (Central Matching without PSMS)**

needs to be harmonized; practices when data are not correct may also need to be harmonized

(iii) Matching method and items

- (a) Pre-settlement matching for cross-border transactions need to be completed by settlement data -1 (S-1).
- (b) Message items to be pre-matched need to be discussed. Integrity of data matched needs to be guaranteed. Also, adoption of tolerance matching needs to be discussed and harmonized.
- (c) Status controls such as matched, unmatched, and mismatched need to be harmonized.
- (d) Both central matching and local matching for PSMS need to be accepted.
- (e) Using forward (future-dated) transaction CSD instead of developing PSMS may need to be discussed.

(iv) Settlement Matching Notice to the sell side and buy side

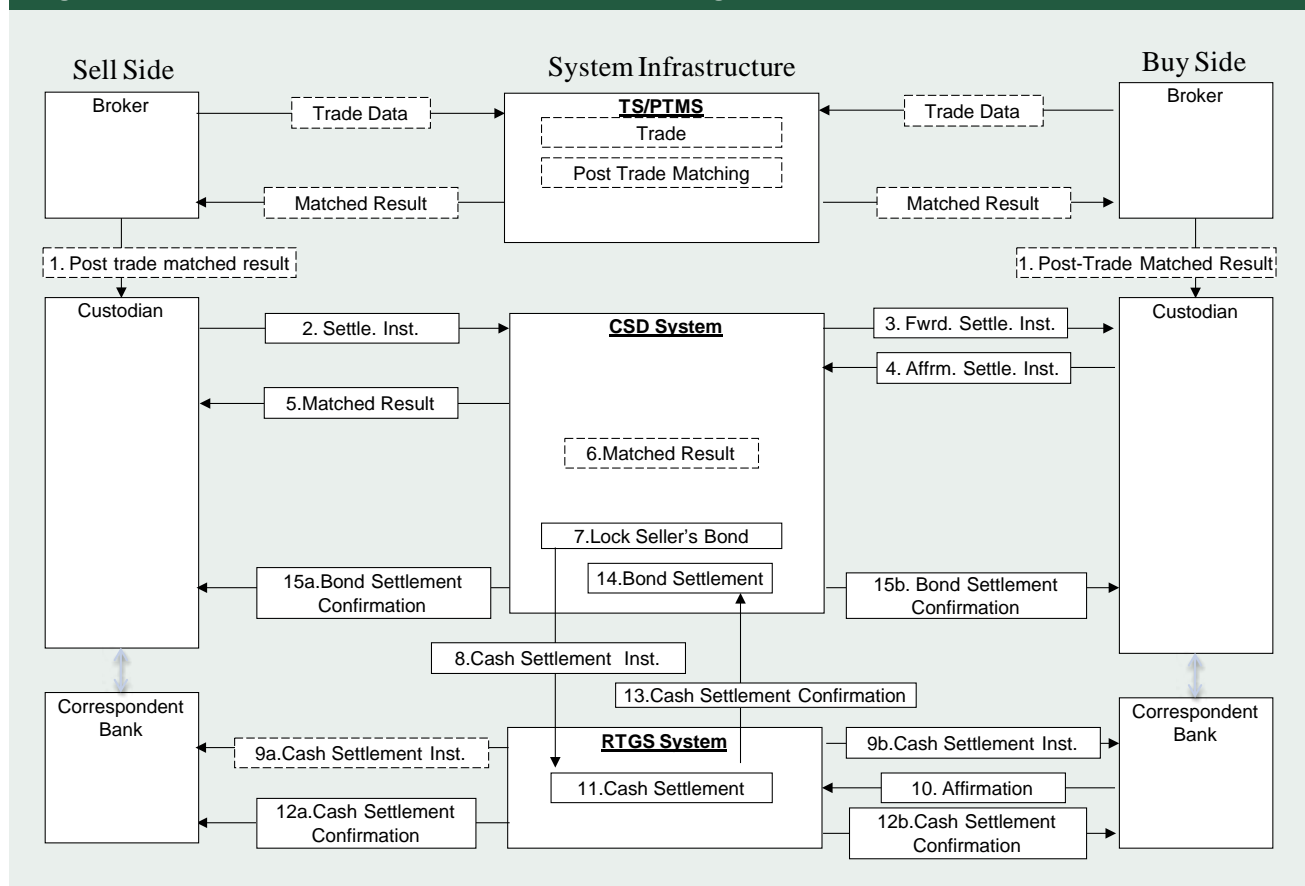
- (a) Message items of settlement matching notice need to be standardized.

(v) Transferring matched results from PSMS to CSD system

- (a) Message items of matched results may need to be standardized when PSMS and CSD are operated in different platforms.
- (b) Processes—such as queuing functions and partial settlement when the balance of a bond in sell side account is insufficient—need to be harmonized.

(vi) Forwarding the result to neither the sell side nor buy side

- (a) Since the participants of PSMS and CSD are the same custodians, it may not be necessary to forward matched results transferred from PSMS to either the sell side or buy side.

**Figure 6.4 Draft Reference Model DVP Flow (Local Matching)****(vii) Locking bond**

- (a) The ideal manner of DVP settlement is when bonds and funds are settled simultaneously. But, when CSD and RTGS systems are operated in different platforms, it is not realistic to settle the securities leg and cash leg simultaneously from a technological perspective. Therefore, traded bonds first need to be locked (earmarked) by debiting the seller's account and securing it in a neutral account, then by transferring funds from the buyer's account to the seller's account.
- (b) When locking bond of sell side, legal status such as who owns the bond as well as how it is processed such as blocking and earmarking may need to be discussed and harmonized.

**(viii) Transferring cash settlement instruction**

- (a) Message items of cash settlement transactions from CSD to RTGS need to be standardized. Message items for settlement instruction need to be standardized.
- (ix) Forwarding the instruction and affirmation from the buy side
  - (a) Cash settlement instruction transferred from CSD to RTGS need to be forwarded to the buy side for affirmation. How to send back affirmation, including the maximum time limit for affirmation (market practice), needs to be harmonized. Queuing when the balance of the cash account of the buy side is insufficient needs to be provided. Message items for the cash settlement instruction need to be standardized.

- (x) Cash settlement (transfer fund from buy side to sell side)
  - (a) Settlement processes when the balance is insufficient need to be harmonized.
- (xi) Cash settlement confirmation to sell side and buy side
  - (a) Whether the cash settlement confirmation is necessary or not needs to be decided.
  - (b) Message items for settlement instructions need to be standardized. The latest cash balance needs to be included in the message items.
- (xii) Cash settlement confirmation to CSD system
  - (a) Message items for settlement instructions need to be standardized.
- (xiii) Bond settlement
  - (a) After completing cash settlement, a locked bond is to be credited to the buy side account. DVP settlement is to become final.
- (xiv) Bond settlement confirmation
  - (a) A completing notice of DVP settlement will be sent to the sell side and buy side. Message items for settlement confirmation need to be standardized.

## Scope of Harmonizing Message Flows

The trade and settlement of bonds involves market infrastructures such as TS, PTMS, CCP, PSMS, CSD, and RTGS. As a first step, the harmonization of flows from PSMS to settlement (both bond and cash settlement) will be discussed.

## Standardizing Message Items for ISO20022 Migrations

Fit and gap analyses conducted during Phase2 revealed that there are significant differences in the definitions and handling of message items for settlement instruction and confirmation

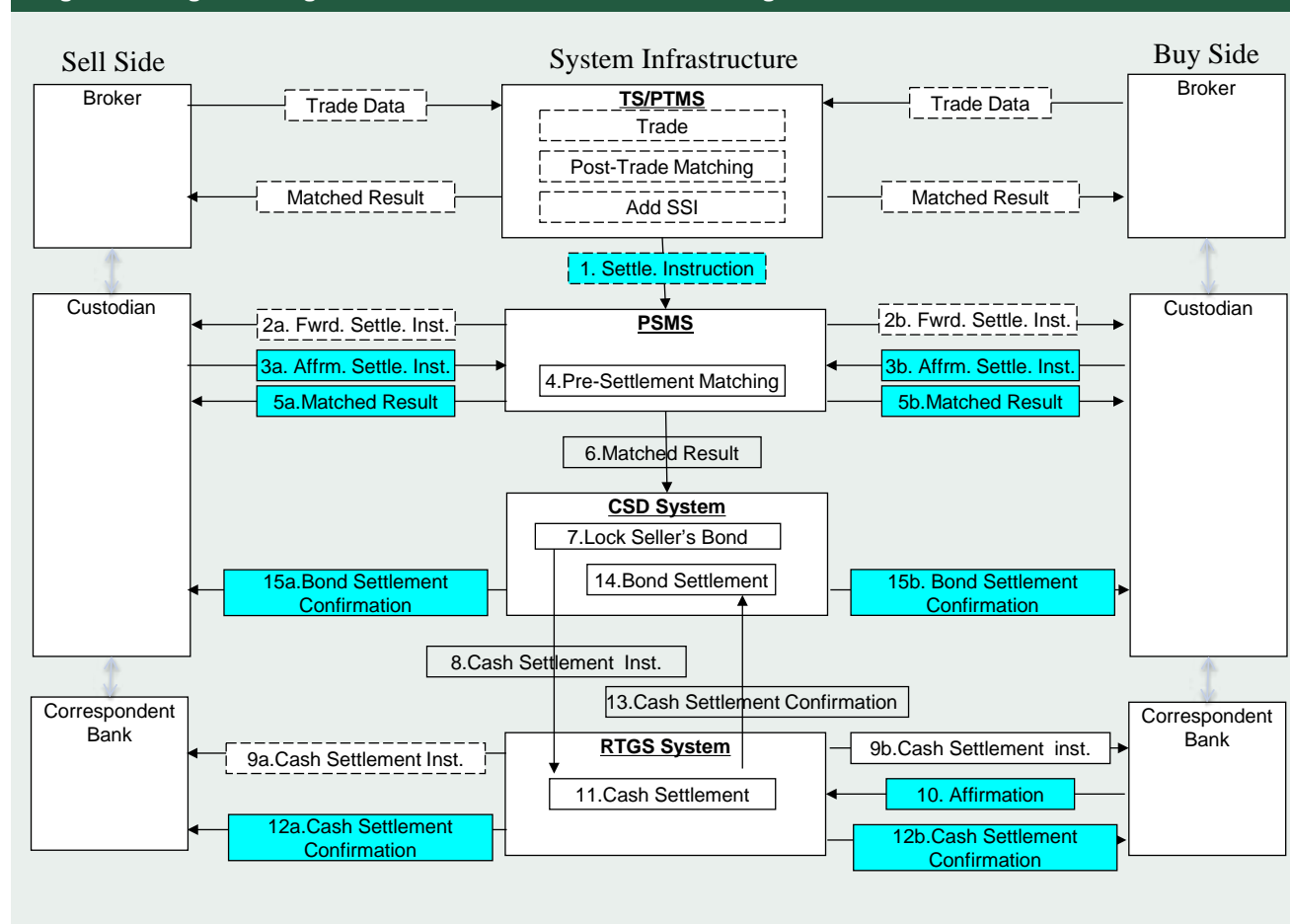
messages in ASEAN+3. Considering the results of the fit and gap analyses, each economy is expected to use the opportunity of reconstructing its market infrastructures to ensure compliance with international standards. In such cases, ISO20022 may be adopted as a message standard. Essential messages consisting of the model DVP flow will be identified. Message items comprising the messages will be standardized and this standardization of message items will be a good reference for planning ISO20022 migration. **Figure 6.5** presents target messages to discuss standardization of the message items.

- (i) Settlement instruction messages need to be standardized, including message items and communication protocols. Settlement instructions, both from upstream infrastructures such as PTMS and TS, as well as the instructions from participants (buy side and sell side), will be discussed.
- (ii) The message informing matching results from PSMS to CSD participants (sell side and buy side) needs to be standardized.
- (iii) Cash settlement instructions from buy side to RTGS need to be standardized, including message items.
- (iv) Cash settlement confirmation from RTGS to participants (sell side and buy side) will be standardized.
- (v) Bond settlement confirmation messages will be standardized.

## ISIN

Establishing common rules on ISIN as well as utilizing ISIN as unique numbering is one of the most important issues for cross-border STP. Considering the key observations of the Phase2 report, the following issues need to be addressed:

- (i) ISIN is not widely used as a standard in ASEAN+3 economies.

**Figure 6.5 Target Messages to Discuss Standardization of Message Items**

(ii) There remain differences in numbering convention and the period of disseminating the ISIN across ASEAN+3 economies. For example, it takes a number of days in some economies and only 1 day in others.

(iii) There are two different ISINs for a single domestic securities number in an economy.

ABMF SF2 may need to cooperate with NNAs in ASEAN+3 and possibly ANNA. **Table 6.1** presents the current status of ISIN operations in ASEAN+3.

## Harmonization of Market Practices

Harmonization of market practices is an important issue in the promotion of cross-border STP in ASEAN+3. ABMF members and experts are expected to propose market practices to be discussed in the context of standardization.

Cooperation with SROs and other related organizations should be explored. Furthermore, best practices as proposed by organizations such as the International Securities Association for Institutional Trade Communication (ISITC) and SMPG may need to be reviewed and utilized.



**Table 6.1 Securities Numbering (ISIN: International Securities Identification Number)**

	National Numbering Agency (NNA)	Allocation and availability of ISIN
CN	China Securities Regulatory Commission	(to be confirmed)
HK	Hong Kong Exchanges and Clearing Ltd.	(to be confirmed)
ID	Indonesian Central Securities Depository (KSEI)	Yes
JP	Tokyo Stock Exchange	Yes
KR	Korea Exchange	(to be confirmed)
MY	Bursa Malaysia	(to be confirmed)
PH	Philippine Stock Exchange, Inc.	(to be confirmed)
SG	Singapore Exchange Limited	(to be confirmed)
TH	Thailand Securities Depository	Yes
VN	Vietnam Securities Depository	No

Note: National Numbering Agency (NNA) should allocate ISIN within 24 hours following the request and making the ISIN available to users at the same time in each economy. Proprietary securities number is generally allocated by each CSD.

## Study on Cross-Border Collateral and Repo Services

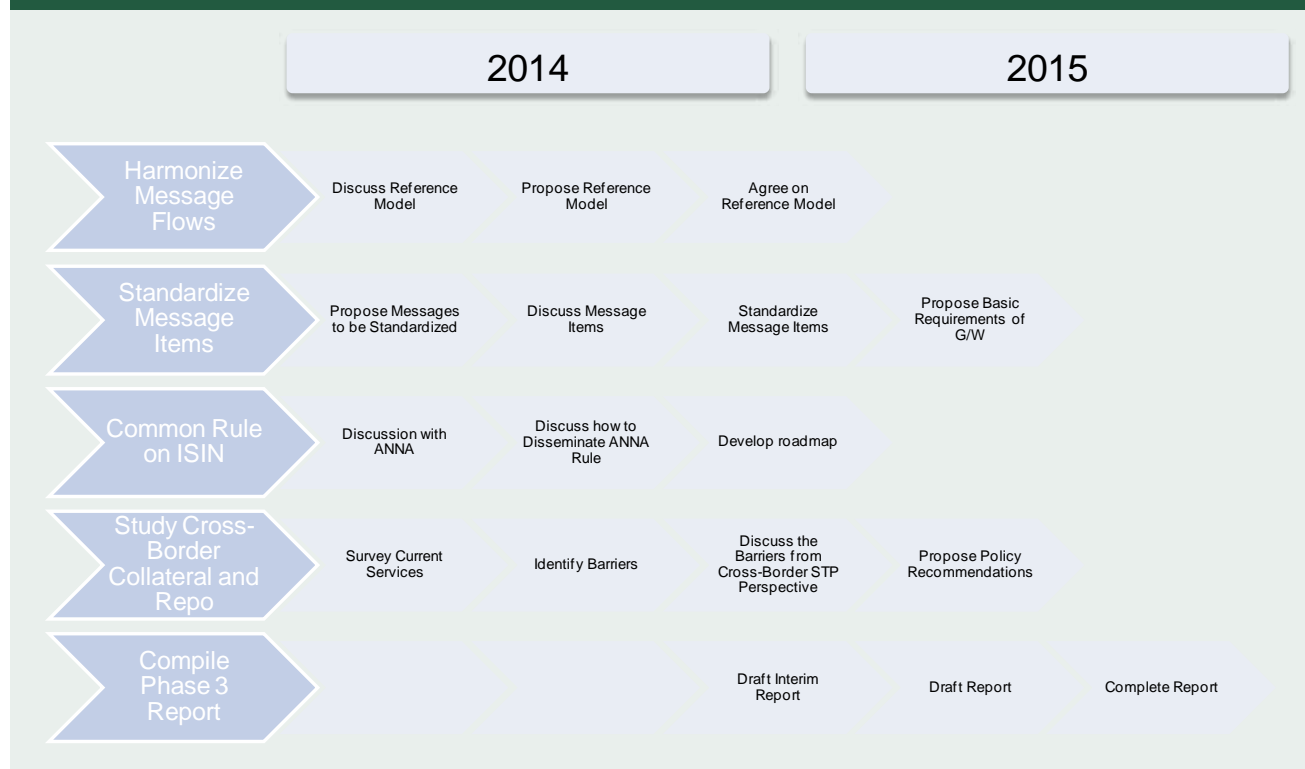
Cross-border collateral and repo are common, important services with respect to cross-border STP. Cross-border collateral and repo services that are currently available in ASEAN+3 markets and possible future services directly linking bond market infrastructures will be studied.

Current market practices, related legal and regulatory aspects, and infrastructures will be studied with an aim to identify best practices and provide policy recommendations. The main services provided by the private sector may need to be surveyed; then, barriers to the implementation of these services, if any, may be identified.

Cross-border collateral and repo services linking CSD and RTGS systems will also be studied, as well as interest payment flows related to cross-border collateral and repo services linking CSD and RTGS systems and different roles and functions of PAs.

## Roadmap and Future Work Plan

For the next phase of ABMF activities, ABMF SF2 has proposed a Roadmap and Work Plan, which has been approved by ABMI TF3 members. The Roadmap comprises:

**Figure 6.6 Possible Roadmap of Phase 3**

- **Proposals for the Harmonization of ASEAN+3 Bond Markets, 2014–15**

- proposal on a reference model of DVP flows
- proposal on ISO 20022 adoption of message items
- proposal on harmonizing market practices wherever possible
- proposal on cross-border collateral and repo services

- **Implementation of International Standards, post-2015**

- Upgrade or reconstruct bond market infrastructures in accordance with international standards (e.g., ISO 20022) in some economies
- Progress in the harmonization of market practices (e.g., settlement cycle)
- Progress in the discussion of linkages of bond market infrastructures in the region

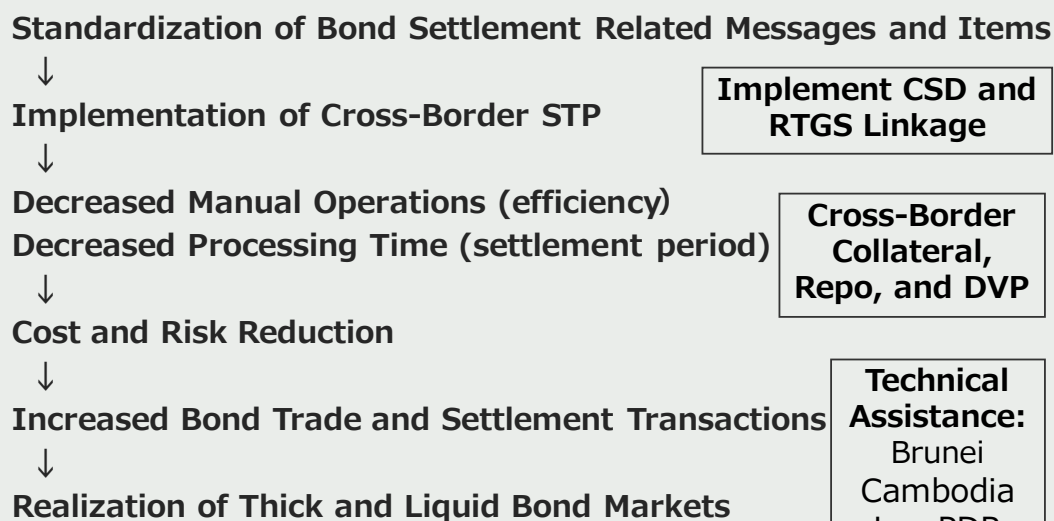
**Figure 6.6** presents a schedule of potential Phase3 activates in 2014–15.

# Conclusion

With a long-term vision of enhancing STP in the region, ABMF SF2 has continued working on identifying bond transaction flows and collecting related information and data. Through Phase1 and Phase2 activities, comprehensive information on DVP transaction flows, interest payment and redemption flows, messaging format and items (e.g., numbering and coding), and market practices were collected. In addition, fit and gap analysis was conducted on typical transaction flows to see the differences between current flows and international standards.

The information and data accumulated through Phase1 and Phase2 activities will be utilized as a practical reference in pursuing the harmonization of transaction flows and market practices. As an immediate output of the collected information and the fit and gap analysis, ABMF SF2 members identified policy recommendations in the area of bond market infrastructures, DVP flows, interest payment flows, message standards, numbering and coding, market practices and other issues, LCY liquidity, and cross-border STP. ABMF SF2 members hope the suggested recommendations will serve as a reference for the relevant policy authorities in designing and implementation bond market reforms. **Figure 7.1** presents a possible future state of bond market infrastructures in ASEAN+3.

As a reference, an outline of activities under ABMF SF2 Phase1 and Phase2, and proposed activities under Phase3, are given in **Figure 7.2**.

**Figure 7.1 Possible Future Image of Bond Markets in ASEAN+3****Figure 7.2 Outline of Activities of ABMF SF2**

### Implementation of Cross-Border STP in ASEAN+3

#### Phase 1

- ① Survey of Bond Market Infrastructure in ASEAN+3
- ② Survey of DVP Flows from Trade to Settlement of Government Bonds

#### Phase 2

- ① Survey of Government and Corporate Bond Markets
- ② Add Interest Payment and Redemption Flows in Addition to DVP Flows
- ③ Conduct Fit and Gap Analyses Based on International Standards
- ④ Propose Policy Recommendations and Roadmap

#### Phase 3

- ① Harmonize and Standardize Bond Trade and Settlement Flows and Message Items in ASEAN+3
- ② Survey of Cross-Border DVP, Collateral, and Repo Markets

# Appendixes

## Appendix 1: Members and Experts including Observers and ADB Secretariat

### Membership and Participants

ABMF consists of (i) national members, (ii) national experts, and (iii) international experts. Members and experts were selected based on issues adopted by TF3, and must have extensive knowledge of and expertise in the relevant issues. Members and experts were selected from among those actively involved in bond markets in the region including, but not limited to

- (i) financial industry associations such as bankers' associations, securities dealers' associations, and SROs;
- (ii) institutional investors such as pension services, fund managers, and insurance companies;
- (iii) commercial banks and brokers;
- (iv) custodians and CSDs;
- (v) rating agencies;
- (vi) financial services providers, including information technology vendors;

(vii) financial regulators, including securities commissions;

(viii) central banks;

(ix) law firms; and

(x) academics.

### National members

The national members (NM) were nominated by each member country of TF3. In principle, the number of national members was limited to one or two persons from each country for effective communication. National members represented the opinions of their respective home markets, as opposed to the opinions of the institution to which they belonged. National members were encouraged to form a preparatory working group within their respective markets.

### National experts

With the consent of other national members and the endorsement of TF3, a national member nominated national experts (NE) as participants.

The national experts provided insight on specific issues related to their respective markets.

### International experts

With the consent of other national members and the endorsement of TF3, a national member nominated international experts as participants in ABMF. The international experts contributed to discussions related to cross-border transactions in the region.

### ASEAN+3 Officials

ASEAN+3 officials participated in all ABMF meetings as observers. The chairpersons of ABMF invited ASEAN+3 officials from finance ministries, regulatory agencies, security commissions, central banks, and debt management offices and/or relevant sections for issuing public debt.

### ADB

ADB contributed to ABMF as the Secretariat of the forum.

## Member and Expert List

### Member and Experts List

COUNTRY/ ECONOMY	MEMBERSHIP CATEGORY	ORGANIZATION
BN	NM	Autoriti Monetari Brunei Darussalam (AMBD)
CN	NE	China Central Depository and Clearing Co. Ltd. (CCDC)
	NE	China Foreign Exchange Trade System / National Interbank Funding Center (CFETS)
	NE	China Securities Depository and Clearing Corporation Limited Shanghai (CSDCC)
	NM	China Security Regulatory Commission (CSRC)
	NM	Hong Kong Monetary Authority (HKMA)
	NM	National Association of Financial Market Institutional Investors (NAFMII)
	NE	Shanghai Clearing House (SHCH)
ID	NM	Financial Services Authority, Ministry of Finance (OJK)
	NE	Indonesian Central Securities Depository (KSEI)
	NE	Indonesia Clearing and Guarantee Corporation (KPEI)
	NE	Indonesia Stock Exchange (IDX)
	NM	Ministry of Finance, Indonesia
JP	NM	Japan Securities Depository Center, Inc. (JASDEC)
	NE	Mizuho Corporate Bank, Ltd.
KH	NM	Securities & Exchange Commission of Cambodia (SECC)
KR	NE	Korea Exchange (KRX)
	NM	Korea Securities Depository (KSD)
	NE	KOSCOM
LA	NM	Ministry of Finance
	NM	Securities and Exchange Commission Office, Bank of the Lao PDR
MY	NM	Bond Pricing Agency Malaysia (BPAM)
MM	NM	Central Bank of Myanmar (CBM)
PH	NM	Bankers Association of the Philippines (BAP)
	NE	OMGEO
	NM	Philippine Dealing System Holdings Corp/PDS Group (PDS)
SG	NM	Singapore Exchange (SGX)
TH	NM	The Stock Exchange of Thailand (SET)
VN	NM	Hanoi Stock Exchange (HNX)
	NM	Vietnam Securities Depository (VSD)
International Experts		BNP Paribas
		Clearstream
		Citibank
		Deutsche Bank AG
		Euroclear
		HSBC
		J.P. Morgan
		State Street Bank and Trust
		State Street Global Advisor
		SWIFT
		The Bank of Tokyo Mitsubishi UFJ Ltd (BOTM-UFJ)
		The Bank of New York Mellon (BNY Mellon)

### International Experts

ECONOMY	MEMBERSHIP CATEGORY	ORGANIZATION
International Experts		BNP Paribas
		Clearstream
		Citibank
		Deutsche Bank AG
		Euroclear
		HSBC
		J.P. Morgan
		State Street Bank and Trust
		State Street Global Advisors
		SWIFT
		The Bank of Tokyo Mitsubishi UFJ Ltd.

### Observers

Economy	Institution	Economy	Institution
BN	Ministry of Finance	MY	Ministry of Finance
KH	Ministry of Economy and Finance	MY	Bank Negara Malaysia
KH	National Bank of Cambodia	MY	Securities Commission Malaysia
CN	Ministry of Finance	PH	Department of Finance
ID	Bank Indonesia	PH	Bangko Sentral ng Pilipinas
JP	Ministry of Finance	SG	Ministry of Finance
JP	Bank of Japan	SG	Monetary Authority of Singapore
KH	Ministry of Economy and Finance	TH	Ministry of Finance
KH	National Bank of Cambodia	TH	Bank of Thailand
KR	Ministry of Strategy and Finance	VN	Ministry of Finance of Vietnam
KR	Bank of Korea	VN	State Bank of Vietnam



## Appendix 2: Trade Matching and Settlement Matching

Matching is classified in **Figure A1** below. Mainly, matching may take two forms, trade matching and settlement matching.

### (i) Trade matching (street-side matching and customer-side matching)

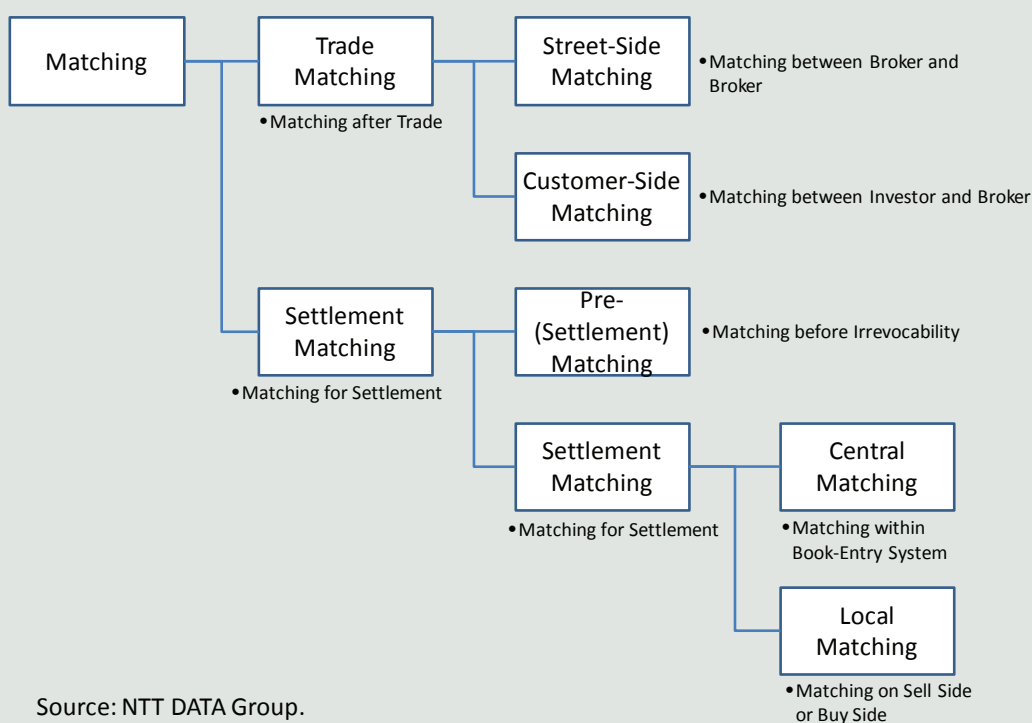
There are two types of trade matching (**Figure A2**). Street-side matching is matching between counterparties. On the other hand, customer-side matching is matching between the execution agent (broker) and the order placing firm (investor).

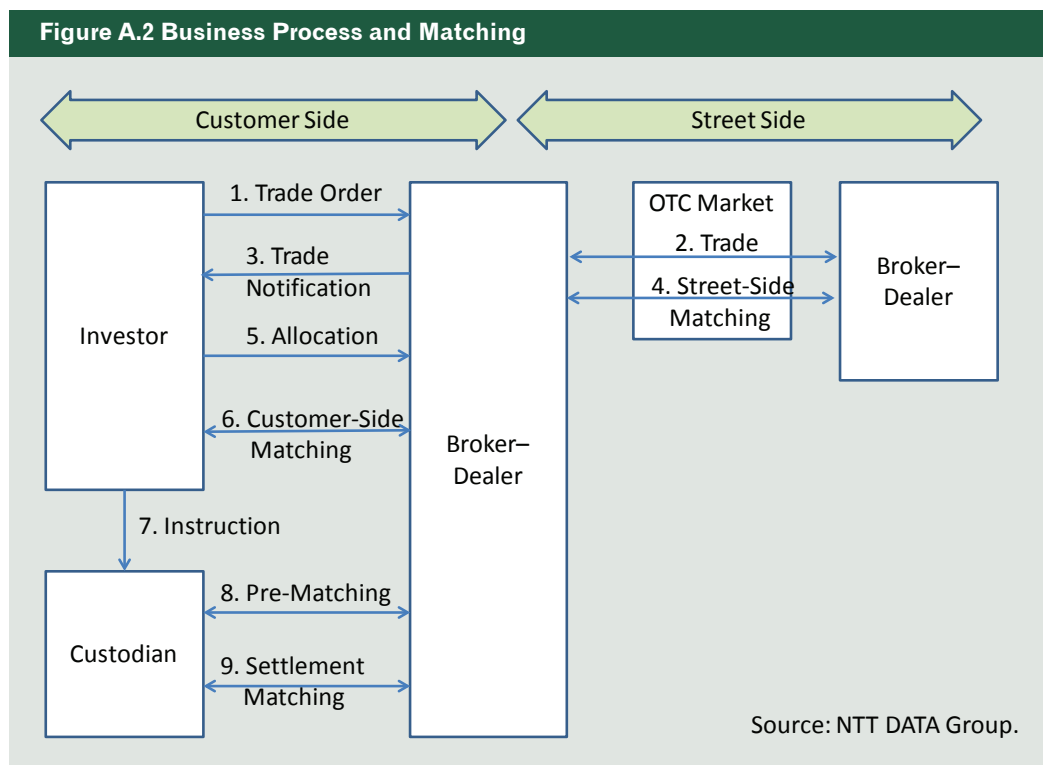
In the former pattern, details of the trade (quantity; bond number and name, price, and fees) are compared between the counterparties to ensure that there is no misunderstanding of the terms of the trade. This should be performed as soon as the trade

is executed, and, in any event, before the end of the business day. With automated trading systems (e.g., exchange systems or electronic OTC systems) matching is done at the time of trade, so there is no need for subsequent trade matching. However, many bond trades are done by telephone.

In the second pattern, an order is placed to the execution agent via Bloomberg terminal or phone. After execution, a trade confirmation is sent via fax, email, SWIFT, or Omgeo CTM. This would include the basic detail of the execution. The order placing firm (investment firm) checks the confirmation and calls back to execution agent if there are any differences. If there is no difference, the investor allocates the bond trade to various funds. Afterward, the investor sends allocated trade data to the execution agent, and the execution agent

**Figure A1. Matching Classification**





checks the data. This process is referred to as customer-side matching. In some economies, customer-side matching is automated (e.g., PSMS is used in Japan).

## (ii) Settlement matching (pre-matching)

There are some Standing Settlement Instructions (SSI) databases that convert trade data into settlement instructions in ASEAN+3 economies.<sup>12</sup> If there is no database, the sell side and/or buy side enter some information into the allocated and agreed trade data in order to make settlement instruction. In some markets, pre-matching processes are introduced. The pre-matching process is a process of comparing settlement instruction between counterparties before irrevocable bond settlement. The advantages of introducing pre-matching processes are to reduce settlement failure and to decrease the workload of settlement agents (e.g., local custodian). Some economies are equipped with a pre-settlement matching system, and other economies establish market practices

that the sell side and buy side input settlement instruction into book-entry system a day before settlement day to avoid settlement failure. However, in many economies, there is no system infrastructure for pre-matching.

## (iii) Settlement matching

Settlement matching is matching between counterparties prior to settlement, to ensure they agree on the terms of transaction. The process of matching is categorized into two types, central matching and local matching.

- **Central matching.** Both market participants (sell side and buy side) or trading systems send the trade data to the CSD. Then, the CSD matches the data and sends back the matching confirmation to the seller and buyer.
- **Local matching.** One side of the bond settlement, either a seller or a buyer, inputs the trade data into the CSD, and the CSD forwards the data to the counterparty (the other seller or buyer). The counterparty checks the data and sends back affirmation to the CSD if the data is deemed as acceptable.

<sup>12</sup> Omgeo and JASDEC provide an SSI database for bond settlement.

## Appendix 3 References

- Bank for International Settlements and International Organization of Securities Commissions CPSS-IOSCO—Principles for Financial Market Infrastructures
- Bank for International Settlements, Committee on Payment and Settlement Systems - New Developments in Large-Value Payment Systems (May 2005)
- ADB—Asian Bonds Markets Initiative Group of Experts (GoE) Report for Task Force 4
- ADB—ASEAN+3 Bond Market Guide (April 2012)
- European Commission [http://ec.europa.eu/atoz\\_en.htm](http://ec.europa.eu/atoz_en.htm)
- European Central Bank <http://www.ecb.europa.eu/home/html/index.en.html>
- ISO20022 [www.iso20022.org](http://www.iso20022.org)
- ISO15022 [www.iso15022.org](http://www.iso15022.org)
- SWIFT—Implementing ISO20022 (March 2010)
- Japan Securities Dealers Association—Ippansai Furikae Youkou Ver. 1.1 (October 2004)
- International Securities Services Association—Global Corporate Actions Principles (May 2010)
- ISO 20022 Securities Settlement and Reconciliation/Maintenance Cycle 2010-2011, Approved by the Securities SEG on 1 February 2011, Message Definition Report
- DTCC—Following A Trade, A Guide to DTCC's Pivotal Roles in How Securities Change Hands
- Gartner—Hype Cycle for Financial Services Payment Systems, 2012
- Citi Bank—Market Infrastructure Developments Impacting Asian Bond Markets (April 2013)
- SWIFT for High-Value Payment Market Infrastructures—End-to-End Solutions for Payment Clearing and Settlement
- Bank for International Settlements Committee on Payment and Settlement Systems—Cross-Border Collateral Arrangements (January 2006)
- In-Seok Shin, Jong-Hyuung, and Eui-Jin Kwon – Reassessing Business Feasibility of RSI options (November 2012)
- Clearstream – Triparty Collateral Management Service (Cmax) (October 2012)
- Pierre-Hugues Verdier – Mutual Recognition in International Finance, Harvard International Law Journal Vol.52
- Securities Market Practice Group – Settlement Common Elements (November 2010)
- European Commission – Expert Group on Market Infrastructures (EGMI) Report (October 2011)
- ASEAN Central Banks' Working Committee on Payment and Settlement Systems (WC-PSS) - Strategic Report to the ASEAN Central Bank Governors Meeting (April 2011)
- ISO 20022 Customer-to-Bank Message Usage Guide Customer Credit Transfer Initiation, Customer Direct Debit Initiation, and Payment Status Report Version 3.0 (January 2009)
- Executives' Meeting of East Asia-Pacific Central Banks – PAYMENT, CLEARING AND SETTLEMENT SYSTEMS IN EMEAP ECONOMIES (August 2012)

## Appendix 4 Information Sessions of ABMF SF2

### 7<sup>th</sup> ABMF SF2 on 9 February 2011 in Hong Kong

- *RSI Options given by GoE Report*. Presentation by Mr. Shinji Kawai, ADB Secretariat.
- *Pan-Asian CSD Alliance Pilot Platform and Add-on Services*. Presentation by Mr. Shu-Pui Li, Hong Kong Monetary Authority.
- *Cross-border Collateral Management Working with Market Infrastructures to Enhance Global Liquidity*. Presentation by Mr. Masayuki Tagai, J.P. Morgan
- *Increasing the Number of Settlement Currencies*. Mr. Lynn Mathews, CLS
- *Valuation: the Role and Importance in Emerging Bond Market*, Presentation by Mr. Mohd Shaharul Zain, Bond Pricing Agency Malaysia

### 8<sup>th</sup> ABMF SF2 on 18 April 2012 in Manila, Philippines

- *Database for Managing Standards and Market Practice, MyStandards, How Can It Help ABMF*, Presentation by Mr. Alexander Kech, SWIFT
- *Direction and Implementation of Legal Entity Identifier (LEI)*. Presentation by Mr. Taketoshi Mori, Bank of Tokyo-Mitsubishi UFJ.
- *Supplementary Information on LEI for 8<sup>th</sup> ASEAN+3 Bond Market Forum (ABMF) Meeting*, Presentation by Ms. Rebecca Turner, Asia Securities Industries and Financial Markets Association (ASIFMA).

### 9<sup>th</sup> ABMF SF2 on 5 September 2012 in Seoul, Korea

- *CCP Clearing Service for OTC Derivatives in Korea*, Presentation by Dr. Sukho Jung.
- *Bond Market and Bond Information in Korea*, Presentation by Kwon Su Ju, Korea Securities Depository.

- *Update of Legal Entity Identifier (LEI)*, Presentation by Mr. Taketoshi Mori, Bank of Tokyo-Mitsubishi UFJ.

*LEI Initiative and Implementation of the CFTC Compliant Interim Identifier (CICI)*, Presentation by Ms. Rebecca Turner, Asia Securities Industries and Financial Markets Association (ASIFMA).

### 10<sup>th</sup> ABMF SF2 on 22 November 2012 in Bangkok, Thailand

- *Progress Report on Reassessing Business Feasibility of RSI Options*, Presentation by Dr. Inseok Shin.

### 11<sup>th</sup> ABMF SF2 on 6 February 2013 in Singapore

- *Collateral Management*, Presentation by Mr. Pierre Mengal, Citi Bank.
- *The New Normal for the ASEAN Securities Services Industries*. Presentation by Mr. Mrugank Paranjape, Deutsche Bank.
- *Function of CCP*. Presentation by Mr. Taketoshi Mori, Bank of Tokyo-Mitsubishi UFJ.
- *Foreign Issuers in LCY Bond Market in Malaysia and Thailand*. Presentation by Mr. Mohd Shaharul Zain, BPAM & Thai BMA
- *AsiaBondsOnline (ABO) – current development and cooperation with ABMF*. Presentation by Mr. Thiam Hee Ng, Asian Development Bank.

### 12<sup>th</sup> ABMF SF2 on 24 April 2013 in Jakarta, Indonesia

- *ISO20022 – Adoption in Asia-Pacific and the rest of the world*. Presentation by Mr. Alexander Kech and Ms. Mireia Guisado Parra, SWIFT.

### **13th ABMF SF2 on 25 and 26 July 2013 in Tokyo, Japan**

- *Key Note Speech by Mr. Taro Aso, Deputy Prime Minister, Japan*
- *Speech on Japan Exchange Group's Contribution to Asia's Economic Development by Mr. Atsushi Saito, Japan Exchange Group*
- *Speech on Activating Tokyo Financial and Capital Market by Mr. Yasuhiro Sato, Mizuho Financial Group*
- *Approach to Asian Bond Market –Focusing on TOKYO PRO-BOND Market by Mr. Koji Ito, Tokyo Stock Exchange*
- *How have Japanese bond investors reached to Abenomics by Mr. Matsuzaki, Nomura Securities*
- *Trade/Settlement Matching and Implementation Plan of ISO20022 by Mr. Jun Sugie, Japan Securities Depository Center*

- *Importance of Developing Institutional Investors in Asia Region by Mr. Satoshi Shimizu, The Japan Research Institute*

### **14th ABMF SF2 on 6 November 2013 in Jeju, Korea**

- *Cross-border collateral services for financial collateral by Mr. Erwin Nierop, Asian Development Bank*
- *Challenges in developing Cross-border collateral in the region by Mr. Hiroshi Kawagoe, Sumitomo Mitsui Banking Corporation*
- *Discussion on T2S and implications for Asia by Mr. Jean-Michel Godeffroy, European Central Bank*
- *Role and function of ANNA and ISIN by Mr. Alton Chan, Ms. Vivian Kwan, Clearstream*
- *The experience of Japan on securities numbering by Mr. Yuji Sato, JASDEC*

## Appendix 5 Respondent Institutions During Sub-Forum2 Country Visits

### People's Republic of China (the PRC)

Bank of China  
China Central Depository & Clearing  
China Construction Bank  
China Foreign Exchange Trade System  
China Securities Depository and Clearing Corporation  
China Securities Regulatory Commission  
Citibank  
Deutsche Bank  
HSBC  
National Association of Financial Market Institutional Investors  
People's Bank of China  
Shanghai Clearing House  
Shanghai Stock Exchange  
Zhong Lun Law Firm

### Hong Kong Special Administrative Region (Hong Kong, China)

BNP Paribas Securities Services  
Hong Kong Exchanges and Clearing Limited  
Hong Kong Investment Funds Association  
Hong Kong Monetary Authority  
J.P. Morgan  
Slaughter and May  
State Street Bank and Trust Company  
HSBC

### Republic of Indonesia (Indonesia)

Bank Indonesia  
BAPEPAM-LK  
Citibank  
Deutsche Bank  
Indonesia Bond Pricing Agency  
Indonesia Stock Exchange  
Ministry of Finance of the Republic of Indonesia  
Mochtar Karuwin Komar  
PT Bahana Securities  
PT Kliring Penjaminan Efek Indonesia  
PT Kustodian Sentral Efek Indonesia  
PT. Schroders Investment Management Indonesia  
HSBC

### Japan (Japan)

Bank of Tokyo Mitsubishi UFJ  
Barclays Securities  
Credit Suisse  
Daiwa Securities  
Financial Agency  
Japan Bond Trading  
Japan Securities Dealers Association  
Japan Securities Depository Center  
J.P. Morgan  
Mitsubishi UFJMS Securities  
Mizuho Corporate Banking  
Mizuho Securities  
Mori Hamada & Matsumoto  
Nagashima Ohno & Tsunematsu  
Nomura Securities Co. Ltd  
NTT Data Group  
Omgeo  
Sumitomo Mitsui Banking Corporation  
SWIFT  
The Tokyo Tanshi  
Tokyo Stock Exchange Group  
Waseda University

### Kingdom of Cambodia (Cambodia)

Ministry of Economy and Finance  
Securities and Exchange Commission of Cambodia  
National Bank of Cambodia  
Tong Yang Securities  
HBS Law Firm  
Cambodia Securities Exchange  
Securities and Exchange Commission in Cambodia

### Republic of Korea (the Republic of Korea)

Citibank  
Deutsche Bank  
Financial Services Commission  
Financial Supervisory Service  
HSBC  
J.P. Morgan  
Korea Exchange  
Korea Financial Association  
Korea Securities Depository  
Lee & Ko

**Lao People's Democratic Republic (Lao PDR)**

Ministry of Finance  
 Bank of Lao PDR  
 Lao Securities Commission Office  
 Lao Stock Exchange  
 BCEL-KT Securities Company  
 BCEL Bank  
 LS Horizon

**Republic of the Union of Myanmar (Myanmar)**

Central Bank of Myanmar  
 Market Visit to Ministry of Finance  
 Myanmar Economic Bank  
 Myanmar Securities Exchange Centre

**Malaysia (Malaysia)**

AM Investment Bank Group  
 Bank of Tokyo Mitsubishi UFJ  
 Bond Pricing Agency Malaysia  
 CIMB  
 CIMB-Principal Asset Management  
 Deutsche Bank  
 Deutsche Trustees  
 HSBC  
 Rahmat Lim & Partners  
 Securities Commission Malaysia

**Republic of the Philippines (the Philippines)**

Bangko Sentral ng Pilipinas  
 Bankers Association of the Philippines  
 Bureau of Treasury  
 Deutsche Bank  
 HSBC  
 ING Bank N.V.  
 OMGEO  
 Philippines Dealing System Holding  
 Securities and Exchange Commission  
 SyCip Salazar Hernandez & Gatmaitan

**Republic of Singapore (Singapore)**

Allen & Gledhill LLP  
 Central Depository  
 Clearstream  
 DBS Bank Ltd  
 Fullerton Fund Management  
 HSBC  
 Monetary Authority of Singapore  
 Nikko AM Asia Limited  
 Omgeo  
 Singapore Exchange  
 State Street Global Advisors  
 SWIFT

**Kingdom of Thailand (Thailand)**

Bank of Thailand  
 BBL Asset Management  
 HSBC  
 Securities and Exchange Commission  
 Siam Premier International Law Office Limited  
 Standard Chartered Bank  
 Stock Exchange of Thailand  
 Thai Bond Market Association  
 Thailand Clearing House  
 Thailand Securities Depository

**Socialist Republic of Viet Nam (Viet Nam)**

Bank for Investment and Development of Viet Nam  
 Citibank  
 Hanoi Stock Exchange  
 Ho Chi Minh City Securities Corporation  
 HSBC  
 State Securities Commission of Viet Nam  
 The State Bank of Viet Nam  
 Viet Nam Bond Market Association  
 Viet Nam International Law Firm  
 Viet Nam Securities Depository



## Appendix 6 Abbreviations

ABMF	– ASEAN+3 Bond Market Forum
ABMI	– Asian Bond Markets Initiative
ABS	– asset-backed securities
ACS	– alternate cash settlement
ADB	– Asian Development Bank
ADI	– authorized depository institution
AFT	– auto-feeding of concluded transactions on electronic trading platform at Bloomberg
AITs	– automated interbank trading system
AMA	– account management agent
AMBD	– Autoriti Monetari Brunei Darussalam
AMBIF	– ASEAN+3 Multi-Currency Bond Issuance Framework
AMI	– account management institution
AMRO	– ASEAN+3 Macroeconomic Research Office
ANBIMA	– Brazilian Financial and Capital Markets Association
ANNA	– Association of National Numbering Agencies
AOM	– automatic order matching
APB	– Agriculture Promotion Bank
ARMS	– advance resilience matching system
ASEAN	– Association of Southeast Asian Nations
ASEAN+3	– ASEAN plus the People's Republic of China, Japan, and the Republic of Korea
ASX	– Australian Securities Exchange
BAHTNET	– Bank of Thailand Automated High Value Transfer Network
BAP	– Bankers Association of the Philippines
Bapepam	– Capital Market Supervisory Agency
Bapepam-LK	– Badan Pengawas Pasar Modal Bapepam and Lembaga Keuangan
BBCA	– PT Bank Central Asia Tbk.
BCEL	– Banque Pour Le Commerce Extérieur Lao
BCLM	– Brunei Darussalam, Lao PDR, Cambodia, and Myanmar
BCLMV	– Brunei Darussalam, Lao PDR, Cambodia, Myanmar, and Viet Nam
BCS	– bursa clearing and settlement system
BES	– book-entry system
BETS	– Book-Entry Transfer System
BEX	– Bond Electronic Exchange
BI	– Bank Indonesia
BIC	– business identifier code
BIDV	– Bank for Investment Development of Viet Nam
BI-RTGS	– Bank Indonesia Real-Time Gross Settlement
BIS	– Bank for International Settlements
BISS	– Bond Institutional Settlement System
BI-SSSS	– Bank Indonesia-Scripless Securities Settlement System
BI-SOSA	– Bank Indonesia-Sentralisasi Otomasi Sistem Akuntansi
BM	– Bursa Malaysia
BMA	– Thai Bond Market Association
BMD	– Bursa Malaysia Depository
BMRI	– PT Bank Mandiri Tbk
BMS	– Bursa Malaysia Securities
BMSC	– Bursa Malaysia Securities Clearing Sdn Bhd
BN	– Brunei Darussalam

BNGA	– PT Bank CIMB Niaga Tbk
BNLI	– PT Bank Permata Tbk
BNM	– Bank Negara Malaysia
BOC	– Bank of China
BOJ	– Bank of Japan
BOJ-NET FTS	– BOJ-NET Funds Transfer System
BOK	– The Bank of Korea
BOK-Wire+	– New Bank of Korea Financial Wire Network System
BOL	– Bank of the LAO PDR
BOT	– Bank of Thailand
BPAM	– Bond Pricing Agency Malaysia
BQS	– OTC Bond Quotation System
BR	– Brazil
BSP	– Bangko Sentral ng Pilipinas
BSRD	– Bangko Sentral Registration Document
BTS	– Bursa Trade System
BTr	– Bureau of the Treasury
B-TRiS	– Bond-Trade Report and Information Service
BTr-RoSS	– BTr-Registry of Scripless Securities
CA	– Canada
CAR	– cost-at-risk
C-BEST	– Central Depository and Book-Entry Settlement
CBGS	– Central Bond General System
CBM	– Central Bank of Myanmar
CCDC	– China Central Depository and Clearing Co., Ltd.
CCP	– clearing and central counterparty
CD	– certificate of deposit
CDP	– Central Depository (Pte.) Limited
CDS	– central depository system
CFETS	– China Foreign Exchange Trade System
CFETS/NIFC	– The China Foreign Exchange Trade System/National Interbank Funding System
CGT	– capital gains tax
CHATS	– Clearing House Automated Transfer System
CIPS	– China International Payment Platform
CL	– Chile
CLS	– Continuous Linked Settlement
CMDC	– Capital Market Development Committee
CMP2	– Capital Market Masterplan 2
CMU	– Central Moneymarkets Unit
CMUP	– Central Moneymarkets Unit Processor
CN	– People's Republic of China
CNAPS	– China National Automatic Payment System
CNY	– Chinese Yuan
CO	– Columbia
COINS	– Corporate Information Superhighway
CORBA	– Common Object Request Broker Architecture
CP	– commercial paper
CPA	– Canadian Payments Association
CRM	– credit risk mitigation
CSD	– central securities depository
CSDCC	– China Securities Depository and Clearing Corporation
CSRC	– China Securities Regulatory Commission

CSSO	– Clearing and Settlement Systems Ordinance
CSV	– comma separated value
CSX	– Cambodia Securities Exchange
CTM	– Central Trade Manager
CTP	– Centralized Trading Platform
DA	– Depository Agent
DCSS	– Debt Securities Clearing and Settlement System
DDFI	– Department of Domestic and Foreign Investment
DF	– deliver free
DFOP	– delivery free of payment
DGT	– Double Taxation Convention
DGT	– Director General of Taxation
DIFB	– Deposit Insurance Fund Bonds
DJLK	– Directorate General of Financial Institution
DK	– Denmark
DTCC	– Depository Trust & Clearing Corporation
DVP	– delivery versus payment
EA	– external account
EBCDIC	– Extended Binary Coded Decimal Interchange Code
e-BOCS	– Electronic Bond Clearing System
eDvP	– electronic delivery versus payment
EE	– Estonia
EFT	– electronic fund transfer
ETBS	– exchange traded bonds and sukuk
ETF	– exchange traded fund
ETP	– electronic trading platform
EU	– European Union
EUR	– euro
EX	– exchange
FA	– facility agent
FAST	– Fully Automated System for Issuing/Tendering
FCY	– foreign currency
FED	– Fedwire
FI	– fixed income
FIE	– fixed income fxchange
FIFO	– first-in, first-out
FII	– foreign institutional investor
FIMS	– Foreign Investment Management System
Firsts	– Fixed Income and Related Securities Trading System
FISCMA	– Financial Investment Services and Capital Markets Act
FITS	– Fixed Income Trading System
FIX	– Financial Information Exchange
FOP	– free of payment
FSA	– Financial Services Agency
FSC	– Financial Services Commission
FSS	– Financial Supervisory Service
FTP	– File Transfer Protocol
FX	– eoreign exchange
GII	– Government Investment Issues
GoE	– Group of Experts

GSBS	– Government Securities Book-entry System
GSEDs	– Government Securities Eligible Dealers
HK	– Hong Kong, China
HKAB	– Hong Kong Association of Banks
HKCC	– Hong Kong Clearing Corporation
HKE <sub>x</sub>	– Hong Kong Exchanges and Clearing Limited
HKFE	– Hong Kong Futures Exchange Limited
HKICL	– Hong Kong Interbank Clearing Limited
HKMA	– Hong Kong Monetary Authority
HKSCC	– Hong Kong Securities Clearing Company
HNX	– Hanoi Stock Exchange
HOSE	– Ho Chi Minh Stock Exchange
HSBC	– Hongkong and Shanghai Banking Corporation
HTTP	– Hyper Text Transfer Protocol
HVPS	– High Value Payment System
IBAN	– International Bank Account Number
IBPA	– Indonesia Bond Pricing Agency
ICSDs	– International Central Securities Depository
ID	– Indonesia
IDIB	– International Development Institute Bond
IDX	– Indonesian Stock Exchange
IFTS	– Interbank Funds Transfer System
IN	– India
ILF	– Intra-Day Liquidity Facility
IPFA	– International Payments Framework Association
IP-VPN	– Internet Protocol-Virtual Private Network
IRC	– Investment Registration Certificate
ISDN	– Integrated Services Digital Network
ISIN	– International Securities Identification Number
ISITC	– The International Securities Association for Institutional Trade Communication
ISO	– International Organization for Standardization
ISS	– Institutional Settlement Service
JASDEC	– Japan Securities Depository Center Inc.
JGB	– Japanese Government Bond
JGBCC	– Japan Government Bond Clearing Corporation
JIS	– Japanese Industrial Standards
JP	– Japan
JPY	– Japanese Yen
JSCC	– Japan Securities Clearing Corporation
JSDA	– Japan Securities Dealers Association
JSX	– Jakarta Stock Exchange
KFTC	– Korea Financial Telecommunications and Clearings Institute
KGB	– Korean Government Bond
KH	– Cambodia
KOFEX	– Korea Futures Exchange
KOFIA	– Korea Financial Investment Association
KOSCOM	– Korea Securities Computing Corporation Korean
KOSDAQ	– Korean Securities Dealers Automated Quotations
KPEI	– Indonesia Clearing and Guarantee Corporation

KR	– Korea
KRX	– Korea Exchange
KSD	– Korea Securities Depository
KSD SAFE +	– Korean Securities Depository Speedy, Accurate, Faithful, Efficient
KSE	– Korea Stock Exchange
KSEI	– PT Kustodian Sentral Efek Indonesia
KTB	– Korea Treasury Bonds
KTS	– KRthe Republic of KoreaX Electronic Trading System for Government Bonds
LA	– Lao People's Democratic Republic
LCY	– Local Currency
LDB	– Lao Development Bank
LEI	– Legal Entity Identifier
LI	– Liechtenstein
LSX	– Lao Securities Exchange
LT	– Republic of Lithuania
MAS	– Monetary Authority of Singapore
MBS	– Mortgage-Backed Securities
MCB	– Minimum Cash Balance
MEB	– Myanma Economic Bank
MEF	– Ministry of Economy and Finance
MEPS+	– Monetary Authority of Singapore Electronic Payment System plus
MGS	– Malaysian Government Securities
MITB	– Malaysian Islamic Treasury Bills
MLA	– Minimum Liquid Assets
MM	– Myanmar
MMK	– Myanmar Kyat
MNS	– Multilateral Netting System
MOF	– Ministry of Finance
MOSF	– Ministry of Strategy and Finance
MOU	– Memorandum of Understanding
MPLS	– Multi-Protocol Label Switching
MSB	– Monetary Stabilization Bonds
MSEC	– Myanmar Securities Exchange Centre Co., Ltd
MTB	– Malaysian Treasury Bills
MY	– Malaysia
Myanmar	– Republic of the Union of Myanmar
MyClear	– Malaysian Electronic Clearing Corporation Sdn Bh
MYR	– Malaysian Ringgit
NAFMII	– National Association of Financial Market Institutional Investors
NBC	– National Bank of Cambodia
NIFC	– National Inter-bank Funding Center
NNA	– National Numbering Agencies
NRBA	– Non-resident Baht Account
NRBS	– Non-resident Baht Account for Securities
NZ	– New Zealand
OJK	– Otoritas Jasa Keuangan
OTC	– Over-the-Counter

PA	– Paying Agent
PE	– Peru
PBOC	– People's Bank of China
PD	– Payment Date
PD	– Principal Dealer
PDEX	– Philippine Dealing and Exchange Corporation
PDEX-RoSS	– PDEX-Registry of Scripless Securities
PDS	– Private Debt Securities
PDS Group	– Philippine Dealing System Holdings Corporation
PDTC	– Philippine Depository and Trust Corporation
PG	– Papua New Guinea
PH	– Republic of the Philippines
PhilPaSS	– Philippine Payments and Settlement System
PI	– Principal and Interest
PL	– Poland
PPN	– Private Placement Notes
PRC	– People's Republic of China
PSET	– Place of Settlement
PSMS	– Pre-Settlement Matching System
PT	– Put-Through
PTI	– Post Trade Integration
PTS	– Private Trading System
PTS	– Proprietary Trading System
PVP	– Payment Versus Payment
QFII	– Qualified Foreign Institutional Investors
QL	– Qualifying Liabilities
RD	– Receipt Date
RDDA	– Regular Demand Deposit Account
RENTAS	– Real-time Electronic Transfer of Funds and Securities
RENTAS-IFTS	– RENTAS-Interbank Funds Transfer System
RENTAS-SSDS	– RENTAS-Scripless Securities Depository System
RF	– Receive Free
RMDS	– Reuters Monitor Dealing System
RoSS	– Registry of Scripless Securities
RPS	– Retail Payment System
RSI	– Regional Settlement Intermediaries
RTGS	– Real Time Gross Settlement
RTB	– Retail Treasury Bond
RVP	– Receive Versus Payment
SADC	– Southern African Development Community
SAFE	– State Administration of Foreign Exchange of the People's Republic of China
SB	– Settlement Bank
SBV	– State Bank of Vietnam
SC	– Securities Commission of Malaysia
SCCP	– Securities and Clearing Corporation of the Philippines
SCCS	– Securities Clearing and Computer Services Pte. Ltd
SCH	– Shanghai Clearing House
SCP	– Short-term Commercial Paper
SD	– Settlement Day
SEC	– Securities and Exchange Commission
SECC	– Securities and Exchange Commission of Cambodia

SEHK	– Stock Exchange of Hong Kong
SEOCH	– SEHK Options Clearing House
SEPA	– Single Euro Payments Area (SEPA)
SES	– Stock Exchange of Singapore
SET	– The Stock Exchange of Thailand
SF1	– Sub-Forum 1
SF2	– Sub-Forum 2
SFC	– Securities and Futures Commission
SFCO	– Securities and Futures Commission Ordinance
SFO	– Securities and Futures Ordinance
SG	– Singapore
SGD	– Singapore Dollar
SGS	– Singapore Government Securities
SGX	– Singapore Exchange
SHCH	– Shanghai Clearing House
SI	– Settlement Institution
SICDA	– Securities Industry (Central Depositories) Act, 1991
Simex	– Singapore International Monetary Exchange
SIPS	– Systemically Important Payment System
SMPG	– Securities Market Practice Group
SNA	– Systems Network Architecture
SOE	– state-owned enterprise
SPEEDS	– Sistem Pemindahan Elektronik Dana dan Sekuriti
SRC	– Securities Regulation Code
SRO	– self-regulatory organization
SSC	– State Securities Commission
SSE	– Shanghai Stock Exchange
SSI	– Standing Settlement Instruction
SSTS	– Scripless Securities Trading System
SSX	– Surabaya Stock Exchange
STFB	– Short-Term Financial Bill
STP	– Business Identifier Code
SWIFT	– Society for Worldwide Interbank Financial Telecommunication
SZSE	– Shenzhen Stock Exchange
T	– Trade Date
T2S	– TARGET2
TACT	– technical assistance
T-bills	– Treasury Bills
T-Board	– Trading-Board
TCH	– Thailand Clearing House
TCP/IP	– Transmission Control Protocol/Internet Protocol
TEI	– Tax Exempt Entity
TF1	– Task Force 1
TF2	– Task Force 2
TF3	– Task Force 3
TF4	– Task Force 4
TFEX	– Thailand Futures Exchange
TFIIC	– Thailand Financial Instruments Information Center
TH	– The Kingdom of Thailand
ThaiBMA	– Thai Bond Market Association
THB	– The Thai Baht
TR	– Trade Repository
TS	– Trading System
TSD	– Thailand Securities Depository



TSE	– Tokyo Stock Exchange
TWA	– Tax Withholding Agent
UK	– United Kingdom
UML	– Unified Modeling Language
US	– United States of America
USD	– US Dollar
UTF	– Unicode Transform Format
VN	– Viet Nam
VND	– Viet Nam Dong
VP	– VP SECURITIES A/S
VPN	– Virtual Private Network
VSD	– Vietnam Securities Depository
WHT	– withholding tax
XML	– Extensible Markup Language



# Part 2

## Country Reports



# Contents

Brunei Darussalam (BN) .....	89
People's Republic of China (CN) .....	94
Hong Kong, China (HK) .....	108
Indonesia (ID) .....	121
Japan (JP) .....	134
Cambodia (KH) .....	157
Republic of Korea (KR) .....	166
Lao PDR (LA) .....	186
Myanmar (MM) .....	194
Malaysia (MY) .....	203
Philippines (PH) .....	216
Singapore (SG) .....	229
Thailand (TH) .....	241
Viet Nam (VN) .....	254
Questionnaire .....	265



# Brunei Darussalam (BN)

## Bond Market Infrastructure

### Overview of Bond Market

Brunei Darussalam's (Brunei) debt market consists of a selected number of *sukuk* adhering to Islamic or *shari'a* principles. *Sukuk Al-Ijarah* are Islamic bonds whose issuance is backed by the buying, selling, and leasing of tangible properties. The certificates are issued on existing assets on the balance sheet of the issuing entity. The assets can be equipment, parcels of land, or planned buildings.

As an initial step to develop its domestic capital markets, Brunei launched its first short-term government *sukuk* on 6 April 2006. The program included the offering of BND150 million (USD92 million) in 91-day commercial paper, which was the first of a series of planned offerings from the government. Following the initial issue of 3-month short-term *sukuk*, Brunei has subsequently extended the maturity from time-to-time depending on its suitability. *Sukuk* issuance has become a regular activity of the government. The Ministry of Finance (MOF) issues *sukuk* on behalf of the government to primary dealers. Eight banks operating in Brunei are the primary dealers. Autoriti Monetari Brunei Darussalam (AMBD) has acted as the agent for

these issuances since 24 March 2011. MOF and AMBD are spearheading initiatives aimed at deepening Brunei's capital markets.

In regard to corporate *sukuk*, there are only a few companies issuing *sukuk* at present. Corporate *sukuk* have either 6- or 7-year maturities. Large companies still depend on banks for funding due to the lack of understanding of the benefits of *sukuk*, lack of technical knowledge on *sukuk* issuances, and perception of being able to obtain easy access bank loans. Brunei encourages institutions and business entities, especially corporates, to issue their own *sukuk* in order to reduce their dependency on banks as a source of financing.

There is no settlement system in Brunei. AMBD is currently working on the establishment of the National Payment and Settlement System.

Please refer to **Part 3 BN01 (Government Bond Market Infrastructure Diagram)**.

### Description of Related Organizations

#### Ministry of Finance (MOF)

MOF is responsible for the control and management of the public finances of Brunei. MOF is also responsible for the supervision, control, and direction of all matters relating to the financial affairs of Brunei such as the consolidated



fund, consolidated revenue account, consolidated loan account, and consolidated trust account, including the preparation of annual statements for all of these accounts.

#### **Autoriti Monetari Brunei Darussalam (AMBD)**

AMBD was established on 1 January 2011. It is a statutory body acting as the central bank of Brunei with several core functions, including the formulation and implementation of monetary policy, the regulation and supervision of financial institutions, and the management of the currency. Four divisions that were previously under the MOF merged to create AMBD: (i) Financial Institutions Division, (ii) Brunei Currency and Monetary Board, (iii) Brunei International Financial Center, and (iv) part of the Research and International Division.

## Overview of Government Bond Market

The government bond market is limited to the issuance of *sukuk*. A secondary market has not developed yet.

### Trading

#### **Over-the-Counter Trading**

There is no secondary market in Brunei.

#### **Exchange Trading**

There is no secondary market in Brunei. In addition, Brunei does not have an exchange.

#### **Clearing and Central Counterparty**

Brunei does not have clearing and central counterparty (CCP).

#### **Bond Settlement**

Brunei does not adopt delivery-versus-payment (DVP) settlement for government bonds. The clearing and settlement of *sukuk* generally fall under the facilitation of AMBD.

#### **Cash Settlement**

Cash settlement can generally be conducted through appointed settlement banks.

## Overview of Corporate Bond Market

The corporate bond market is limited to the issuance of *sukuk*. A secondary market has not developed yet.

### Trading

#### **OTC Trading**

There is no secondary market in Brunei.

#### **Exchange Trading**

There is no secondary market in Brunei. In addition, Brunei does not have an exchange.

### CCP

Brunei does not have CCP.

### Bond Settlement

Brunei does not adopt DVP settlement for corporate bonds. The clearing and settlement of *sukuk* generally falls under the facilitation of AMBD.

### Cash Settlement

Cash settlement can generally be conducted through appointed settlement banks.

## Profit Payment and Redemption

### Profit Payment and Redemption of Government Bonds

*Sukuk* accrue profit in place of interest, in accordance with *shari'a*. Although the terms of government *sukuk* are 3 months or 1 year, the government pays profit to investors.

## Profit Payment and Redemption of Corporate Bonds

There are several terms of *sukuk* in Brunei from depending on the issuer's suitability. In most cases, the profit is paid on a semi-annually basis.

## Typical Business Flows

### DVP Flow of Government Bond for Domestic Trade

Brunei does not adopt DVP settlement for government bonds.

Regarding current flow, please refer to **Part 3 BN02 (Government Bond Transaction Flow for Domestic Trades)**.

### DVP Flow of Corporate Bond for Domestic Trades

Brunei does not adopt DVP settlement for corporate bonds.

### DVP Flow of Cross-Border Bond Transactions

There is no DVP flow for cross-border transactions in Brunei. Brunei sets no specific regulation on cross-border portfolio investments in the country. The import and export of Brunei dollars and foreign currencies are permitted without restrictions. Residents and non-residents can maintain both domestic and foreign currency accounts. There are no restrictions on domestic or foreign currency borrowing or lending among residents and nonresidents. Foreign investors may use all banking services provided by the seven commercial banks operating in the country.

## Profit Payment and Redemption of Government Bonds

### (i) Paying Agent

AMBD acts as the Paying Agent (PA) in requesting payment approval from MOF when AMBD receives notification of a profit payment from an appointed custodian. Once AMBD receives the approval from MOF, AMBD notifies the appointed cash settlement bank of the payment details.

### (ii) Central Securities Depository

Commercial banks are appointed as a custodian for government *sukuk*, and act as the Central Securities Depository (CSD). The appointed custodian sends notification of redemption and profit payments to AMBD, which acts as a PA.

### (iii) Payment Flow

Money transfers can be conducted through appointed settlement banks. An appointed cash settlement bank transfers cash from MOF's account to a settlement bank's account. Then, the appointed cash settlement bank credits the fund to the *sukuk* holders' accounts for profit paid by MOF.

### (iv) Tax

There is no tax for profit from *sukuk*.

For more details about profit and redemption Flow, please refer to **Part 3 BN03 (Profit Payment Flow of Government Sukuk Al-Ijarah)** and **Part 3 BN04 (Redemption Payment Flow of Government Sukuk Al-Ijarah)**.

## Profit Payment and Redemption of Corporate Bonds

### (i) PA

The profit payment and redemption for corporate *sukuk* in Brunei is via check.

### (ii) CSD

There is no system in Brunei.

**(iii) Payment Flow**

There is no system in Brunei.

**(iv) Tax**

There is no tax for profit from *sukuk*.

## Message Standard

**Message Format**

There is no settlement system in Brunei.

**Message Items**

There is no settlement system in Brunei.

## Market Practices

**Operating Hours**

There are no particular operating hours in Brunei.

**Settlement Cycle**

There is no particular settlement cycle in Brunei.

**Fails**

There is no particular rule related to fails in Brunei.

**Bilateral Netting**

There is no particular rule related to bilateral netting in Brunei.

**Taxation**

There is no taxation on profits from *sukuk*.

## Numbering and Coding

**Numbering and Coding for OTC and Exchange Markets****Securities Numbering**

There is no system for *sukuk*.

**Financial Institution Identification**

There is no system for *sukuk*.

**Securities Account**

There is no system for *sukuk*.

**Cash Account**

There is no system for *sukuk*.

**Character Code and Language**

There is no system for *sukuk*.

## Medium- to Long-Term Strategies

There is no settlement system in Brunei. AMBD is currently working on the establishment of the National Payment and Settlement System. AMBD is also pursuing a number of initiatives, including infrastructure and legal reforms to further develop the financial market and establish Brunei as an international financial center. Specific actions include

- (i) encouraging potential issuers,
- (ii) issuing government *sukuk* with different maturities,
- (iii) exploring and introducing other type of *sukuk*,
- (iv) increasing the volume of *sukuk* to cater to eligible investors,
- (v) facilitate trading in the secondary market, and
- (vi) designing clear legislation and infrastructure.

The government is considering an increase in the volume and maturity of issuances. This is aimed at extending the yield curve to include longer maturities and developing the domestic capital market.

## References

ADB. *ASEAN+3 Bond Market Guide*

ADB. *AsianBondsOnline*.

<http://asianbondsonline.adb.org/brunei/structure/overview.php>

Autoriti Monetari Brunei Darussalam.  
<http://www.ambd.gov.bn/>

Brunei Darussalam Ministry of Finance.

<http://www.mof.gov.bn/English/Pages/default.aspx>

Baiduri Bank Group. *An Overview of the Economic Environment*.

[http://www.blog-export.fr/medias/press/presentation-to-ubifrance-23.10\\_24\\_10\\_2012\\_27\\_45.pdf](http://www.blog-export.fr/medias/press/presentation-to-ubifrance-23.10_24_10_2012_27_45.pdf)

Note: Some parts of this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

# People's Republic of China (CN)

## Bond Market Infrastructure

### Overview of Bond Market

**T**he People's Republic of China's (PRC) bond market comprises the interbank bond market and the exchange bond market.<sup>1</sup>

In 2001, more than 98% of trades (by value) took place in the interbank bond market, which is a wholesale market known as the PRC's over-the-counter (OTC) market. The China Foreign Exchange Trade System (CFETS), also known as the National Interbank Funding Center (NIFC), provides the electronic platform for the interbank bond market. The OTC market does not have a single owner and is operated by CFETS. Participants in the interbank bond market are institutional investors. It is a quote (price)-driven market trading government bonds, corporate bonds, central bank bills, enterprise bonds, policy bonds, other financial bonds, subordinate bonds, short-term financial bills, USD-denominated bonds, international development institution bonds, medium-term notes (MTNs), mortgage-backed securities (MBS), and asset-backed securities (ABS). The People's Bank of

China (PBOC) supervises and regulates the interbank bond market. In recent years, with market-oriented guidelines the PBOC, together with the relevant departments and the industry, implemented a series of measures to promote the development of the interbank bond market. Toward this end, the PBOC also supervises and guides the National Association of Financial Market Institutional Investors (NAFMII). Interbank bond market-traded bonds are settled through either the China Central Depository and Clearing (CCDC) or the Shanghai Clearing House (SHCH). Currently, government bonds, policy bank bonds, central bank bills, and other conventional instruments are settled by CCDC, while new instruments such as super and short-term commercial paper (SCP), commercial paper, and private placement notes (PPN) are settled by SHCH.

Cash is transferred through the high-value payment system (HVPS) of the China National Automatic Payment System (CNAPS), a type of Real Time Gross Settlement (RTGS) system, which is operated by the PBOC. SHCH is designated to provide centralized clearing services in the interbank bond market, and started production operations at the end of 2011. The PBOC is opening the interbank bond market for cross-border trade.

The stock exchanges started government bond trading in 1992, and all government bonds

<sup>1</sup> There is a retail bond (OTC) market called the commercial bank counter market. Since the size of the market is negligible compared with the interbank bond market, it is not included in this survey.

were traded on the stock exchanges by 1995. Corporate bonds are also traded in the stock exchanges. Data traded on the exchange markets are transmitted to China Securities Depository and Clearing Cooperation (CSDCC) and settled using commercial bank money.

Non-residents need to access the exchange markets—the Shanghai Stock Exchange (SSE) and/or Shenzhen Stock Exchange (SZSE)—as a qualified foreign institutional investor (QFII). The PBOC is in the process of opening the interbank bond market to QFIIs.

According to the Asian Development Bank's (ADB) *AsianBondsOnline* website, the absolute amount of local currency (LCY) bonds outstanding in the PRC at the end of 1Q13 was USD2.827 trillion for government bonds and USD1.110 trillion for corporate bonds.<sup>2</sup>

Please refer to **Part 3 CN01 (Government Bond Market Infrastructure Diagram)** and **Part 3 CN02 (Corporate Bond Market Infrastructure Diagram)**.

## Description of Related Organizations

### Ministry of Finance (MOF)

MOF manages the central government's finances, as well as the structuring and balancing of the government debt portfolio. The issuance of treasury bonds falls under the purview of MOF.

### China Securities Regulatory Commission (CSRC)

CSRC was mandated to regulate the PRC's securities and futures market in October 1992. It is an independent regulatory body and supervises and regulates the operations of the entire capital market, stock exchanges, and CSDCC.

### People's Bank of China (PBOC)

The PBOC is the PRC's central bank with the responsibility to supervise and regulate financial markets. The PBOC was established on 1 December 1948 and started its function as the central bank of PRC in 1983. The PBOC operates HVPS.

### China Foreign Exchange Trade System and National Interbank Funding Center (CFETS/NIFC)

CFETS, founded on 18 April 1994, is a sub-institution of the PBOC. It is also referred to as "Chinamoney" and its main functions include

- (i) organizing and providing systems for foreign exchange (FX) trading, CNY lending, bond trading, and exchange-rate and interest-rate derivatives trading;
- (ii) providing clearing, information, risk management, and surveillance services in interbank bond markets; and
- (iii) engaging in other businesses authorized by the PBOC.

### Shanghai Stock Exchange (SSE)

SSE was founded on 26 November 1990 and began operations on 19 December 1990. It is a membership institution directly governed by CSRC. The membership of SSE includes domestic brokers and a small number of foreign brokers. SSE deals with A-Shares; B-Shares; government, corporate, and convertible bonds; and securities investment funds.

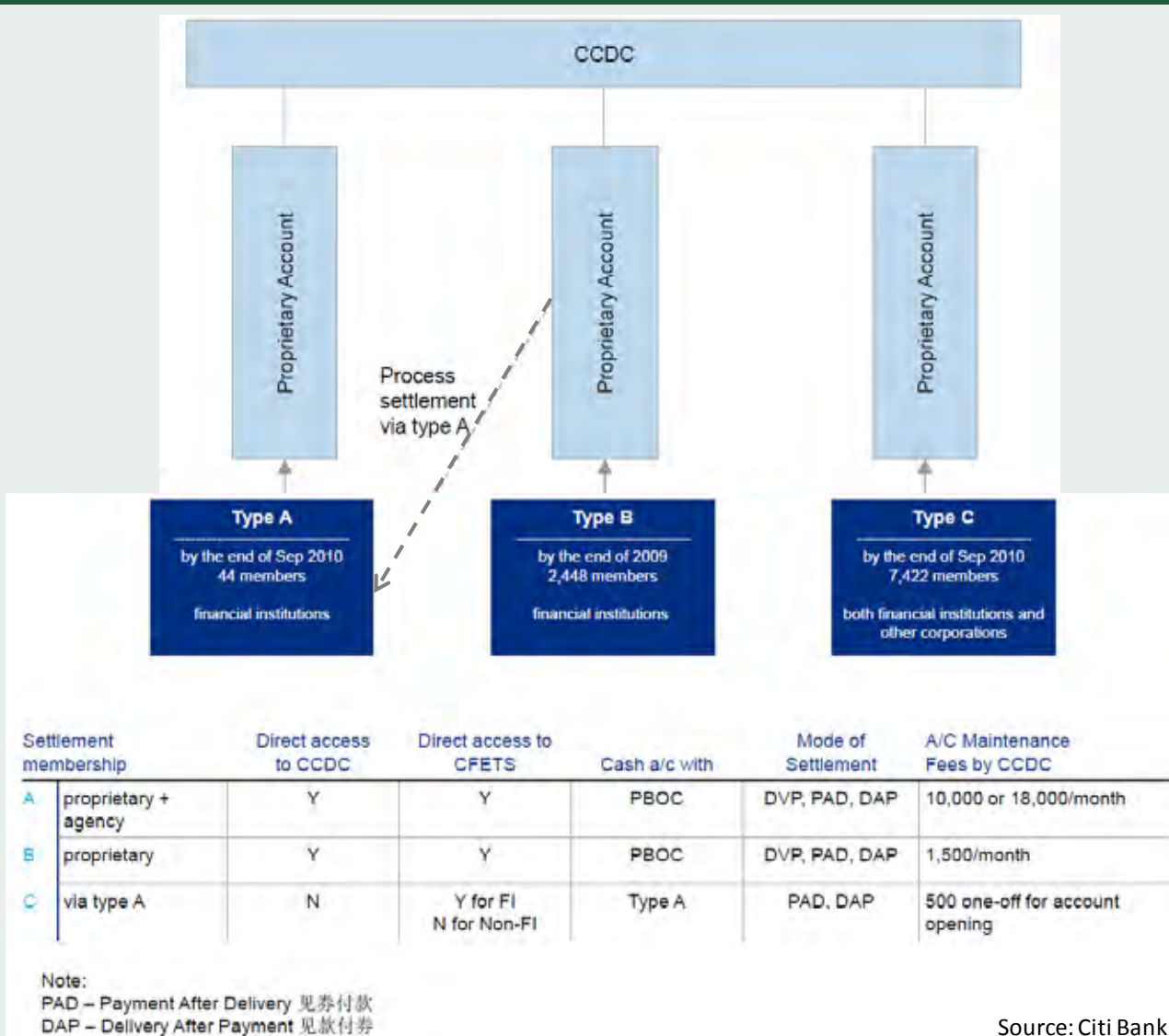
### Shenzhen Stock Exchange (SZSE)

SZSE, established on 1 December 1990, is a self-regulated legal entity under the supervision of CSRC. Its main functions include providing venues and facilities for securities trading, formulating operational rules, arranging securities listing, organizing and supervising securities trading, offering membership supervision and oversight of listed companies, managing and publicizing market information, and other capacities permitted by CSRC.

### China Central Depository and Clearing Company, Limited (CCDC)

CCDC, also known as ChinaBond, is a central securities depository (CSD) and a state-owned financial institution operating the ChinaBond Integrated Business System. CCDC mainly serves the interbank bond market and also acts as general custodian for cross-market eligible issues. CCDC-eligible securities are dematerialized, including treasury bonds, local government bonds, policy bank bonds, agency bonds, commercial bonds, commercial bank

<sup>2</sup> LCY bonds outstanding for China include amounts of LCY bonds issued by non-residents.

**Figure CN01: Settlement Membership in People's Republic of China**

bonds, other financial bonds, enterprise bonds, commercial paper, MTNs, MBS and ABS, foreign bonds, and domestic dollar bonds, among others. There are over 10,000 system members, including almost all financial institutions and various non-financial entities, as well as institutional investors. CCDC also provides nearly 9 million retail bond investors in the OTC market with inquiry services. CCDC's business line covers issuance, registration, custody, settlement, principal and interest payment, and collateral management, as well as services on information, research, consultancy, training, and magazine

production. CCDC operates a proprietary network based on multi-telecommunications operator lines, with an integrated services digital network (ISDN) and dial-up combined. CCDC has several links with CSDs and international CSDs, including the link with CSDCC, outbound links with Hong Kong Monetary Authority's (HKMA) Central Money Market Unit (CMU), and Clearstream (**Figure CN01**).

#### **China Securities Depository and Clearing Corporation (CSDCC)**

CSDCC is owned by SSE and SZSE, and operates



a CSDCC system for the exchange market. CSDCC-eligible securities are dematerialized and include stocks, bonds, warrants, exchange trade funds, ABS, and repos. The CSDCC business line covers central registry and depository, wherein securities companies and custodian banks act as sub-custodians. CSDCC is also known as Chinaclear.

### **Shanghai Clearing House (SHCH)**

SHCH was authorized by the PBOC and MOF, and incorporated by CFETS, CCDC, China Banknote Printing and Minting Company Limited, and China Gold Coin Corporation. SHCH provides a CCP function to mitigate counterparty and settlement risks, following the Group of Twenty (G-20) recommendation. Also, SHCH provides CSD services for the interbank bond market and both the spot and derivatives FX markets. SHCH currently provides CSD services for innovative instruments and money market tools of the interbank bond market covering SCP, CP, credit risk mitigation (CRM) instruments, and PPN. SHCH has established its proprietary business network through the Synchronous Digital Hierarchy.

The regulatory framework for the PRC's financial markets is presented in **Figure CN02**.

## Overview of Government Bond Market

### **Trading**

#### **OTC Trading**

Bonds are traded through CFETS/NIFC and brokers and/or dealers. The Automated Interbank Trading System (AITS) of CFETS has a trade-matching function. AITS is linked with the centralized bond book-entry system of CCDC and the clearing business integrated processing system of SHCH to support straight-through-processing (STP) of the trading and settlement layers of the interbank bond market.

#### **Exchange Trading**

Institutional market participants recognized by SSE may provide daily bilateral quotations for bonds traded on SSE's block trading system, with the specific bonds and the spreads to be determined at their discretion to the extent permitted by SSE rules. Bonds listed on SZSE are traded on an SZSE integrated negotiated trading platform. To support STP, the exchanges are linked with CSDCC. The market is regulated by the CSRC. Although the exchange market provides platforms for bond transactions, institutional investors prefer to transact bonds in the interbank bond market.

### **CCP**

#### **CCP for the OTC Market**

There is no CCP for government bonds traded on the OTC market.

#### **CCP for the Exchange Market**

CSDCC provides the CCP function for the exchange market.

For more details, please refer to **Appendix 1—Clearing, CCP, DVP, and Pre-Matching Procedures by CSDCC**.

### **Bond Settlement**

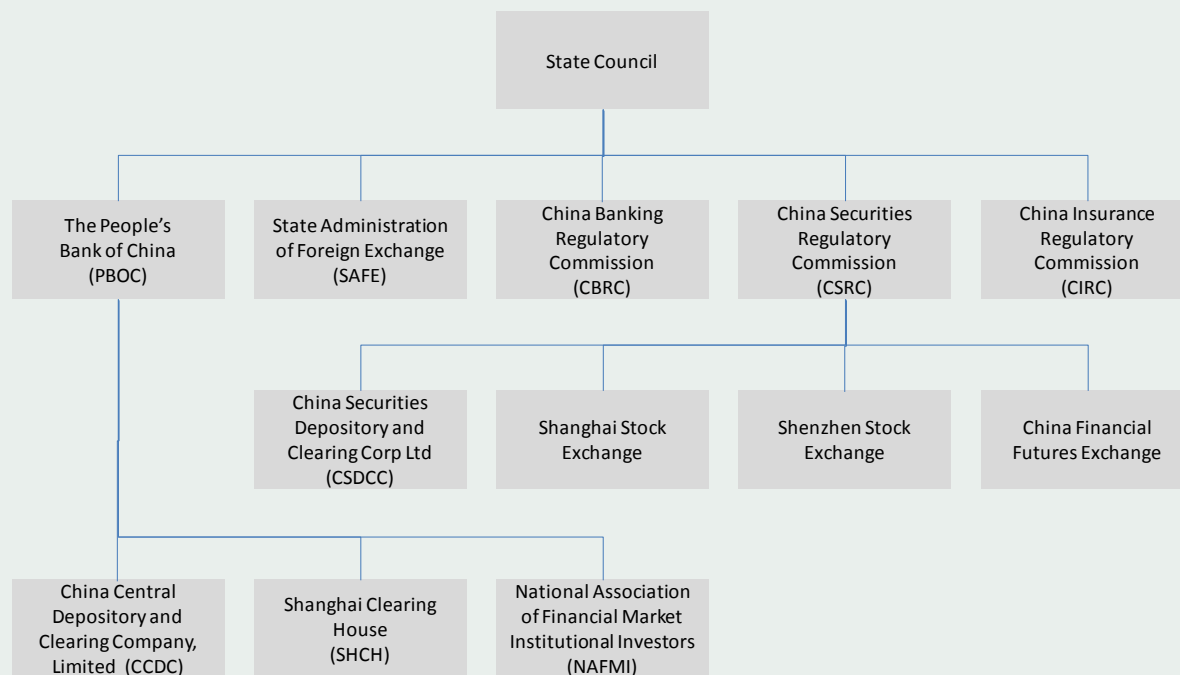
#### **Bond Settlement in the OTC Market**

Government bonds traded in the OTC market are settled by CCDC (**Figure CN03**). Bond transactions are matched by the Central Bond Generalized System (CBGS) and settled through safekeeping account in the CBGS.

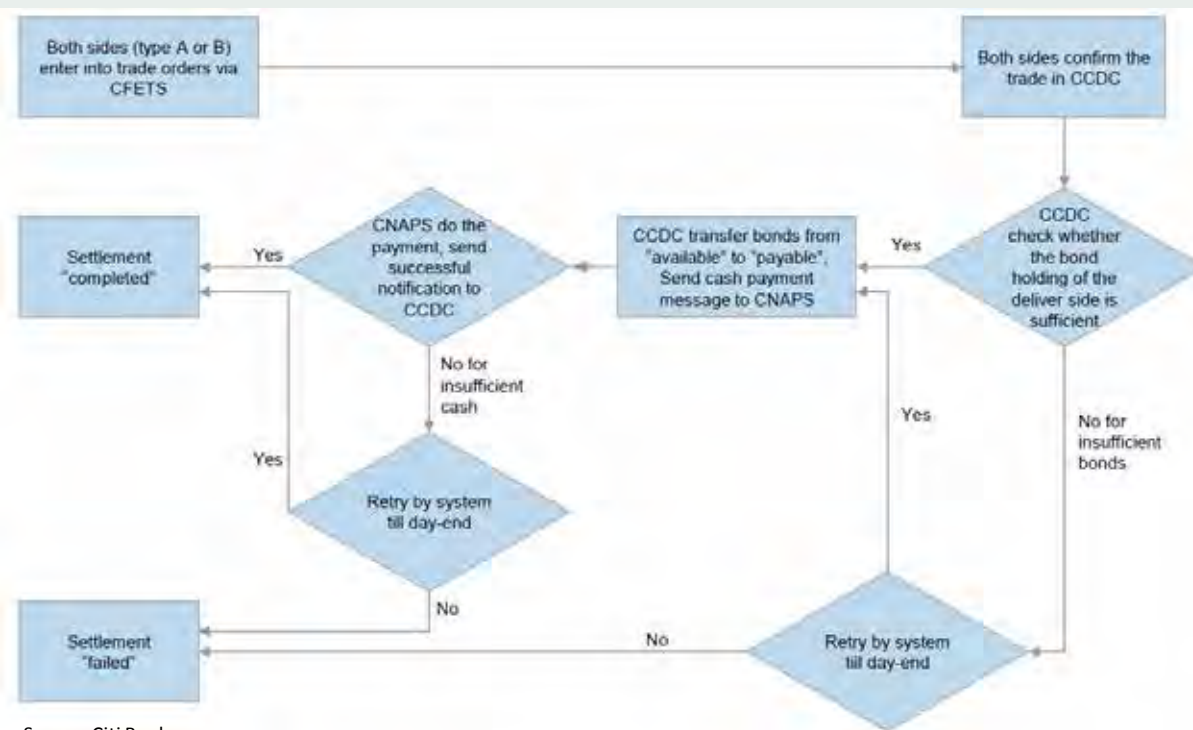
CBGS is linked with AITS of CFETS to support STP of the trading and settlement layers of the interbank bond market. If two members negotiate a transaction through the trading system of CFETS, trade data are sent in real time from the trading system to CBGS. Upon receiving the trade data, CBGS checks its validity and sends settlement instructions to both parties for confirmation. The transaction can be settled only after confirmation.

CCDC adopts delivery-versus-payment (DVP) Model 1 of the Bank for International Settlements' (BIS) definition.



**Figure CN02: Regulatory Framework for Chinese Financial Market**

Source: Created by ADB based on information from HSBC China.

**Figure CN03: DVP Workflow (CCDC)**

Source: Citi Bank

**Bond Settlement in the Exchange Market**

Government bonds traded in the exchange market are settled at CSDCC after netted. CSDCC adopts DVP Model 2 of the BIS definition.

**Cash Settlement****Cash Settlement in the OTC Market**

Bond settlement of government bond transactions at CCDC is simultaneously processed with cash settlement through the current accounts of HVPS of CNAPS. In 2004, CCDC system linked to the HVPS, which achieved DVP for interbank bond trades.

**Cash Settlement in the Exchange Market**

Cash settlement is handled by commercial banks, while CSDCC uses a Participant Remote Operating Platform for SSE market's business and an Integrated Settlement Terminal for SZSE market's business.

## Overview of Corporate Bond Market

**Trading****OTC Trading**

Business procedures and system infrastructure for corporate bonds are the same as those for government bonds.

**Exchange Trading**

The exchange trades of corporate bonds take place in SSE and SZSE. The trading process is the same as that for government bonds.

**CCP****CCP in the OTC Market**

SHCH is the designated CCP for the OTC market. SHCH provides CCP services for bond transactions in the interbank bond market. Currently, it is used for bonds deposited by SHCH.

The clearing system receives trading data on a real-time basis, and clears the data confirmed by participants. After clearing, the clearing system generates funds and securities settlement instructions. Then the securities settlement instructions are sent to the SHCH registration and settlement system. Funds settlement instructions are handled by HVPS or the designated settlement banks.

**CCP in the Exchange Market**

CSDCC serves as CCP to provide multilateral netting of transactions in bonds traded on the exchange market. CSDCC directly receives transaction information from the trading systems, and achieves STP from trading to clearing by connecting its registration, clearing, and settlement systems with the trading systems of the SZSE and SSE.

**Bond Settlement****Bond Settlement in the OTC Market**

There are two CSDs for the OTC corporate bond market. One is CCDC and the other is SHCH. CCDC provides CSD services for corporate bonds such as commercial bank bonds, other financial bonds, enterprise bonds, commercial paper, MTNs, MBS and ABS, foreign bonds, and domestic dollar bonds, among others. SHCH provides CSD services for innovative instruments and money market tools of the interbank bond market, covering short-term commercial paper, commercial paper, CRM instruments, and private placement notes. For bonds deposited by SHCH, trades are matched by the Clearing Business Integrated Processing System and settled by the Securities Settlement System of SHCH after receiving transactions from CFETS. Both CCDC and SHCH adopt DVP Model 1 of the BIS definition.

**Bond Settlement in the Exchange Market**

Bond settlement of corporate bond transactions in the exchange market is the same as that of government bonds.

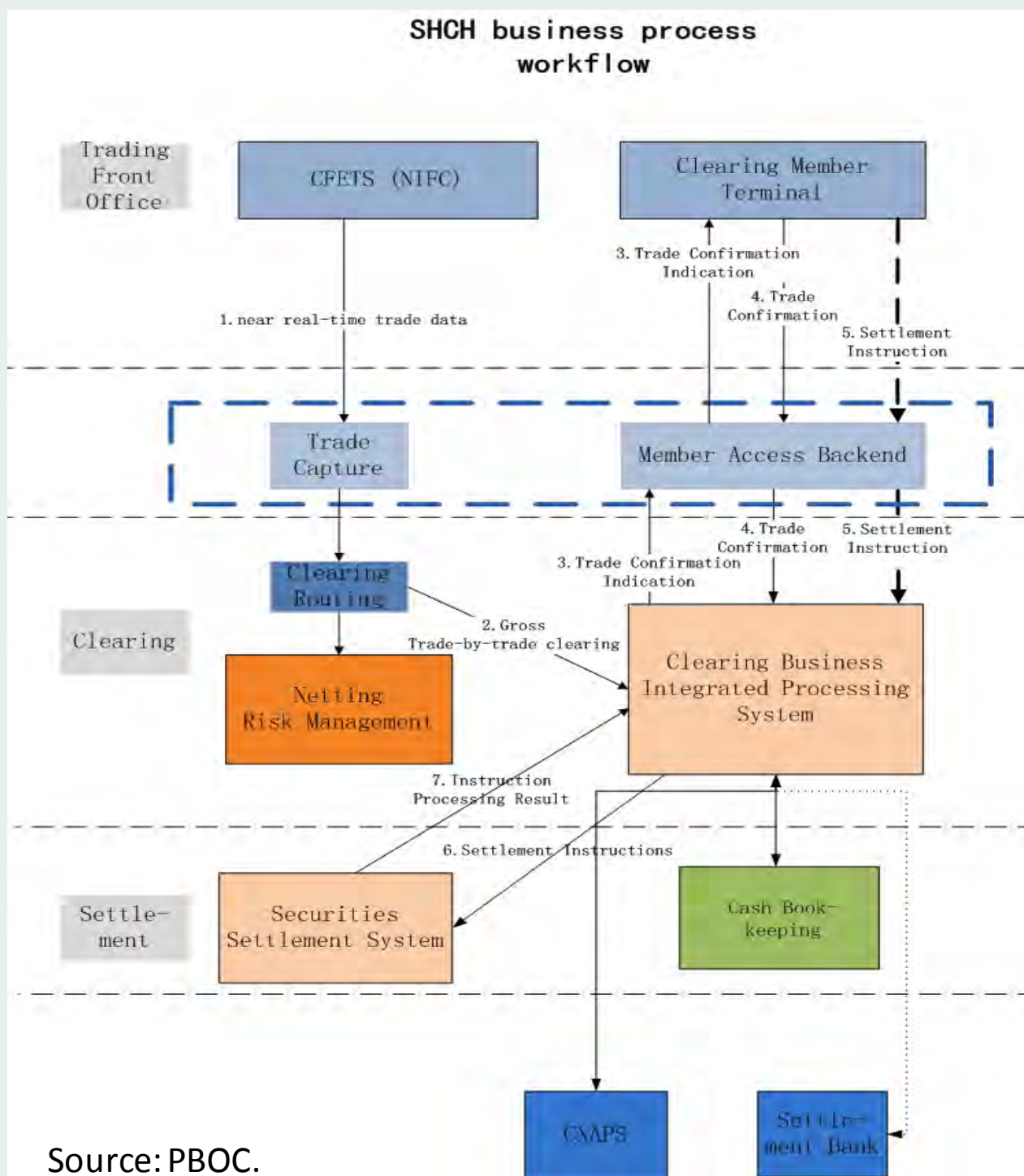
**Cash Settlement**

Cash settlement of corporate bonds is almost same as that of government bonds. In addition, for bond transactions settled at SHCH using DVP, cash settlement can be processed in one of

three ways. Institutions that have accounts in HVPS can achieve DVP directly through HVPS. Institutions that do not have accounts in HVPS can achieve DVP either through commercial bank

agents or through their cash settlement accounts at SHCH (Figure CN04).

Figure CN04: SHCH Business Process Workflow



Source: PBOC.

The intraday liquidity facility includes intraday overdraft. Collateralized lending is also available and can be used prior to intraday overdraft. Overnight overdraft is not allowed.

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

In the case of fixed-income instruments, the interest payment and redemption date are normally predetermined.

Investors who hold the bonds on the record date for the interest and redemption payment are entitled to receive the payments. For treasury bonds, the interest is normally paid 1 working day after the record date.

Interest and redemption on debt instruments are paid on an actual receipt basis as contractual income cannot be offered to QFIIs since custodian banks are not allowed to provide credit facilities to QFIIs.

### Interest Payment and Redemption of Corporate Bonds

The situation for corporate bonds is almost the same as that for government bonds. For convertible bonds, the interest is normally paid 2 working days after the record date.

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

#### DVP Flow of Government Bonds in the OTC Market

Business flows in the PRC's OTC government bond market is analyzed by means of comparison with typical DVP flow. Key findings of the analysis are described below.

##### (i) Pre-Settlement Matching

There is no automated pre-settlement matching system in the OTC government bond market. The sell side and buy side send settlement instruction to the designated CSD (CCDC), which matches instructions within the system on S-1.

##### (ii) Bond Settlement

Government bonds traded in the OTC market are settled via a book entry system called CBGS that is operated by CCDC. CCDC receives trade data from CFETS after the trade matching. Then, CCDC forwards the trade data to both the sell side and buy side. If the data are correct, both sides send the data back to CCDC. CCDC sends a cash settlement request to the PBOC. CCDC adopts DVP Model 1.

##### (iii) Cash Settlement

After the receipt of the cash settlement request from CCDC, the PBOC transfers cash from the buy side's account to sell side's account. Then, the PBOC sends fund a transfer notice to the both sides of the trade.

For further details, please refer to **Part 3 CN03 (Government Bond Transaction Flow for Domestic Trades (OTC))**.

#### DVP Flow of Government Bonds in the Exchange Market

Business flow in the PRC's exchange government bond market is analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are described below.

**(i) Pre-Settlement Matching**

In the exchange market, CSDCC sends a notice of trade to be settled to both the sell and buy sides.

**(ii) Bond Settlement**

After the sell side and buy sides receive the notice of the trade from CSDCC, they affirm the settlement notice to CSDCC. Then, CSDCC executes the bond settlement and sends settlement data to the payment bank. CSDCC adopts DVP Model 2.

**(iii) Cash Settlement**

After the receipt of the cash settlement request from CSDCC, the payment bank transfers cash from the buy side's account to the sell side's account. Then, it sends a cash settlement report to both the sell and buy sides.

For further details, please refer to **Part 3 CN04 (Government Bond Transaction Flow for Domestic Trades (Exchange))**.

## DVP Flow of Corporate Bonds for Domestic Trades

### DVP Flow of Corporate Bonds in the OTC Market

Business flows in the PRC's OTC corporate bond market are analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are almost the same as that for government bonds.

For further details, please refer to **Part 3 CN05 and CN06 (Corporate Bond Transaction Flow for Domestic Trades (OTC))**.

### DVP Flow of Corporate Bonds in the Exchange Market

The business flow in the PRC corporate bond exchange market is analyzed by means of comparison with a typical DVP flow. The key findings of the analysis are almost the same as those for government bonds.

For further details, please refer to **Part 3 CN07 (Corporate Bond Transaction Flow for Domestic Trades (Exchange))**.

### DVP Flow of Cross-Border Bond Transactions

Funds maintained in QFII foreign currency accounts and special renminbi accounts cannot be used for any purposes other than onshore securities investment; pre-funding for securities settlement is required either.

Offshore foreign exchanges are not permitted. Overdrafts are not permitted.

Although there is no explicit regulation prohibiting third-party foreign exchanges from obtaining renminbi, CSRC regulations require a sub-custodian to execute foreign exchanges on behalf of QFIIs. Therefore, it is effectively impossible to execute third-party foreign exchanges to obtain renminbi.

Regarding foreign exchange (FX) reporting, upon approval of an investment license and quota, QFIIs must remit the investment fund within 6 months and no overdue remittance shall be made without approval. Total inbound remittances should not exceed the approved investment amount. If the principal is not fully remitted, but it is more than the equivalent of US\$20 million within the prescribed deadline, the investment quota is reduced to the actual remitted-in amount.

For defined open-ended funds, after-tax profits and principal can be repatriated once per month after a 3-month lock-up period (from the initial US\$20 million of remittances). Repatriation above US\$50 million requires prior approval from the PRC's State Administration of Foreign Exchange (SAFE). For other investor types, SAFE approval is always required to repatriate after-tax profits or any part of the principal after the 1-year lock-up period (starts from the full amount remitted). After-tax profits can be repatriated once each fiscal year (on 31 December), while the principal can be repatriated with SAFE pre-approvals. Repatriation of principal reduces the quota correspondingly.



For further details, please refer to **Part 3 CN08 (Bond Transaction Flow for Foreign Investors OTC Market / RMB Banks)** and **Part 3 CN09 (Bond Transaction Flow for Foreign Investors Exchange Market / QFII)**.

## Interest Payment and Redemption of Government Bonds

### (i) PA

Designated CSDs, CCDC and CSDCC, are appointed as PAs. CCDC and CSDCC send payment request to MOF, make a bond-holder list and calculate the amount of interest. MOF, as issuer of government bonds, instructs the PBOC to pay interest and principal.

### (ii) CSD

CDCC and CSDCC are appointed as CSDs for government bonds. They have cash accounts in the PBOC for the sake of interest payments because they do not have banking licenses and payment infrastructures.

### (iii) Payment Flow

The central bank is used in the case of interest payment and redemption as cash settlement infrastructure. In the exchange market, interest and redemption payments are conducted through commercial banks.

### (iv) Tax

No tax is imposed on either residents or non-residents.

### (v) Other Issues

The PA does not notify custodians of an interest payment in advance. CSDs segregate account structures and act as a sort of custodian. Both CSD as the custodian and the settlement bank of the bond holder send payment confirmation to the bond holder. In the exchange market, the PA instructs commercial banks to pay interest to bond holders.

For further details, please refer to below **Part 3 CN10 (Interest Payment Flow of Government Bond OTC Market)**, **Part 3 CN11 (Interest Payment Flow of Government Bond Exchange Market)**, **Part 3 CN12 (Redemption Flow of Government Bond OTC Market)** and **Part 3**

## CN13 (Redemption Flow of Government Bond Exchange Market).

## Interest Payment and Redemption of Corporate Bonds

### (i) PA

The designated CSDs—CCDC, SHCH, and CSDSS—are appointed as PAs. CCDC, SHCM and CSDCC send a payment request to the bond issuer, make a bond-holder list, and calculate the amount of interest. The bond issuer instructs the designated bank to pay interest and principal.

### (ii) CSD

CCDC, SHCH, and CSDCC are appointed as the CSD for government bonds. They have cash accounts in the PBOC for the sake of interest payments because they do not have banking licenses and payment infrastructures.

### (iii) Payment Flow

The central bank is used in the case of interest payment and redemption in the OTC market as cash settlement infrastructure. In the exchange market, interest and redemption payments are conducted through commercial banks.

### (iv) Tax

In the OTC market, bond holders pay tax to a tax office. In the exchange market, CSDCC withholds tax.

### (v) Other Issues

The PA does not notify custodians of interest payment in advance. CSDs have a segregated account structure and act as a sort of custodian. Both the CSD as custodian and the settlement bank of the bond holder send payment confirmation to the bond holder. In the exchange market, the PA instructs commercial banks to pay interest to bond holders.

For further details about interest payment, please refer to below **Part 3 CN14 (Interest Payment Flow of Corporate Bond OTC Market)** and **Part 3 CN15 (Interest Payment Flow of Corporate Bond Exchange Market)**.

For further details about redemption, please refer to **Part 3 CN16 (Redemption Flow of Corporate Bond OTC Market)** and **Part 3 CN17 (Redemption Flow of Corporate Bond Exchange Market)**.

## Message Standard

### Message Format

CCDC and CSDCC adopt proprietary formats. CCDC developed the Chinabond settlement messaging format in accordance with ISO20022 and plans to present them to ISO20022 SEG through the Financial Standardization Technical Committee (CFSTC). SHCH adopts IMIX as its external communication messaging format, which is based on the FIX protocol, one of the participants of ISO20022.

### Message Items

Regarding the 10 common elements defined by the Securities Market Practice Group (SMPG), CSDCC has all 10 as mandatory elements in its proprietary format for settlement instruction and settlement confirmation.

## Market Practice

### Operating Hours

The interbank bond market (CCDC and SHCH) opens at 9:00 and closes at 17:00. CSDCC opens at 8:00 and closes at 16:00.

### Settlement Cycle

Government bonds and corporate bonds are settled on a T+0 or T+1 cycle.

### Fails

Failed trades are not allowed. In case of wrong execution or settlement, the QFII and broker must

resolve it mutually and then rectify the error trade on an ex post facto basis. There are no buy-in or sell-out rules for the QFII market. However, in the event that a custodian runs into an overdraft at its clearing reserve account with CSDCC on T+1, CSDCC imposes an overdraft interest equivalent to the interbank deposit rate, as well as penalty interest (0.1% per day) based on the amount of overdraft. Additionally, CSDCC provisionally retains the securities held by the custodian, equal to 120% of the amount of the overdraft. If the custodian repays the overdraft and interest within 2 days, CSDCC returns the provisionally retained securities. Otherwise, CSDCC disposes of the retained securities to cover the overdraft. If the proceeds from the disposal are not sufficient to cover the principal of the overdraft and the penalizing interest, the difference is claimed from the custodian.

## Numbering and Coding

### Numbering and Coding in the OTC and Exchange Markets

#### Securities Numbering

All securities registered on the interbank bond market for CCDC are given an International Securities Identification Number (ISIN). The ISIN is not used for bond trades or settlement, but rather proprietary securities numbering is used. CCDC is planning to create a conversion table within the system to make possible the conversion of proprietary numbering to ISIN. CSDCC adopts the local code instead of the ISIN. It is possible to convert local numbering to ISIN using a conversion rule.

#### Financial Institution Identification

A proprietary participant code is used for financial institution identification in CCDC. By creating the conversion table in the system, the conversion of proprietary code into a business identifier code (e.g., BIC, ISO9362) is possible. A software program is used in converting BIC and local codes.

#### Securities Account

The PRC adopts segregated and single-layer accounts. CSDs manage bonds separately from

their own bonds and customer's bonds in their book-entry systems. For securities accounts, the proprietary account code is used.

### **Cash Account**

The proprietary account code is also used for cash accounts.

### **Character Code and Language**

Unicode (UTF 8) is used for character codes by CCDC. Chinese authority regards that it is not desirable to use English as a common language for the payment and settlement system, thus, the need to make a standard conversion rule. On the other hand, CSDCC does not use Unicode (UTF) as the character set.

## Medium- to Long-Term Strategies

The PRC authorities, in particular the PBOC, are trying to gradually open the interbank bond market to non-residents.

As the main trading platform and the price-setting center of renminbi products, CFETS will continue to strengthen the construction of infrastructure by promoting innovation in debt financing instruments to comply with market demand, optimizing the market transaction mechanism and services mode, and expanding the number market participants (e.g., foreign institutional investors).

CCDC has three major targets to achieve by 2014. First, it is to ensure that its core business, management, and systems meet international standards and are fully prepared for the opening up of the PRC's bond market to the world, as well as supporting the renminbi bond market's move to become the region's core market. Second, it is to diversify on the basis of professionalization by establishing its strengths while developing its core competencies and new business, and protecting against risk and increasing its overall operating capacity. Third, it is to improve its internal management in line with modern financial corporate standards in order to reap

both economic and social rewards. CCDC is trying to enhance its comprehensive issuance services, expanding the coverage and depth of registration and depository services, improving its customer service system, improving IT system construction standards, and promoting strategic research and cooperative exchanges.

Cross-border bond-related business will be promoted based on the agreements and Memorandum of Understanding (MOU) with ICSDs and other CSDs. CCDC shall participate in the International Standardization Organization (ISO) and shall participate in making the standards rules and promoting related business. Also, CCDC shall consider the situation of each country and each region, and shall support local businesses as much as possible.

Continuous improvement of the various aspects of registration, custody, clearing and settlement services, and enhancement of STP processing capabilities form the core of the Mid- to Long-Term Strategy and Technical System Construction Plan of SHCH. As a clearing institution and CSD, the business area of SHCH includes registration, depository, clearing, settlement, and other relevant services of renminbi and foreign exchange cash and derivatives.

In terms of registration and depository service, SHCH will improve the efficiency of registration and depository services, as well as reduce the operational risk to meet regulatory requirements. In the aspects of registration, custody, settlement, interest payment, information disclosure, evaluation, collateral management, and other information services for innovative, fixed-income, and money market instruments, SHCH will enhance the quality of services through automated and standardized procedures in line with relevant international standards. In terms of market services, when broadening the business scope of the CCP clearing and enriching the level and range of clearing members, SHCH will implement the recommended standardized approach of BIS and other international standardized institutions. First, it will support and coordinate market regulatory requirements, reform OTC market transactions and settlement agents to improve efficiency and enhance incentive mechanisms by providing relatively automated services. Second, it will support multi-



product and multi-market solutions to meet the centralized clearing and settlement requirements of the OTC market, broaden the services network of clearing members, enhance data downloading and uploading services via member terminals, and improve the quality of multi-product cross-market clearing and settlement services in order to prevent systemic risk.

Future plans include a medium- to long-term strategy for bond market infrastructures and standardization. With the listed commercial banks to participate in the exchange bond market, CSDCC is ready to introduce RTGS for a robust clearing and settlement system. CSDCC shall promote registration and confirmation of bond transitions for a block negotiating system and bid-ask trades in the Integrated Electronic Platform of Shanghai Stock Exchange for Fixed-Income Securities (IEPFS). CSDCC also shall promote greater efficiency and effectiveness in cross-market registration, and a corporate bond classified management system will help make risk management more robust.

## Appendix 1

### Clearing, CCP, DVP, and Pre-Matching Procedures by CSDCC

The securities company shall apply to CSDCC for admission as a CSDCC clearing participant in the central securities clearing and settlement system. A clearing participant shall act as the clearing and settlement agency on behalf of a securities company that is not a clearing participant. CSDCC shall designate a qualified commercial bank for settlement of monetary obligations with respect to the securities clearing and settlement services. The eligibility criteria and conditions applicable to the designated clearing bank shall be set out by CSDCC.

#### 1. Stratified Clearing System

The central securities clearing and settlement system is structured as a stratified system wherein CSDCC acts as the central counterparty to each clearing participant who in turn acts as the counterpart to each of its clients. CSDCC shall set up a Central

Stock Clearing Account and Central Cash Clearing Account for settlement of delivery or payment obligations due to or from the clearing participants on each settlement day. Each clearing participant shall have a Stock Clearing Account and a Cash Clearing Account in CSDCC for settlement of delivery or payment obligations in line with the provisions set out by CSDCC. In relation to a clearing participant involved in proprietary trading, brokerage, and asset management activities simultaneously, a Brokerage Stock Clearing Account and a Brokerage Cash Clearing Account for settlement of brokerage trading shall also be established separate from the Proprietary Stock Clearing Account and the Proprietary Cash Clearing Account, which are used for settlement of proprietary trading.

Prior to the central settlement of transactions in CSDCC, the clearing participant shall ensure that there are sufficient securities in its Stock Clearing Account as well as sufficient funds in its Cash Clearing Account to effect the settlement by collecting the securities and funds due from clients. So with regard to a clearing participant involved in proprietary trading, brokerage, and asset management activities simultaneously, CSDCC may select to apply the funds in its Proprietary Cash Clearing Account to meet the liabilities owed by its client, provided that the funds in the Brokerage Cash Clearing Account are insufficient to meet the liabilities.

When the central settlement closes, the clearing participant shall settle the payment or transfer of securities due to the clients. The transfer of securities ownership between the clearing participant and its client shall be executed by CSDCC.

#### 2. Multilateral Net Settlement System—CCP and DVP

CSDCC may adopt a Multilateral Net Settlement System (MNS System), wherein CSDCC is substituted as the common settlement counterparty to each clearing participant and settlement will be effected between each clearing participant and CSDCC on a DVP basis. The clearing participant who fails to make full payment of any sum payable or fails to deliver the securities due on a timely

basis may not receive the money or securities due from its counterparty.

- (i) The payment or delivery obligations between the participants under a particular transaction will be transferred to CSDCC, which becomes substituted as the sole settlement counterparty for the buyer and seller.
- (ii) Upon effective transfer of entitlements or obligations under a particular transaction, CSDCC shall be obligated to satisfy the settlement obligations while also being subject to receive any benefit entitlement under that transaction.
- (iii) Under the MNS System, the obligation to deliver securities or the amounts to be paid between CSDCC and each clearing participant with respect to the same issue of securities and having the same settlement date shall be set-off against each other to arrive at a net money position or net obligation of securities to be delivered. The clearing participants will be kept informed of its net money or securities position as calculated in the netting process.

CSDCC will settle the net outstanding money and stock position at the stated settlement period by taking the money or securities due from the clearing participant, whilst making the payment or delivery of securities it owes to the clearing participant on an irrevocable basis.

## References

ADB. *ASEAN+3 Bond Market Guide*.

Executives' Meeting of East Asia Pacific Central Banks *Payment, Clearing, and Settlement Systems in China*.

Shanghai Stock Exchange. *Fact Book 2013*.  
Shenzhen Stock Exchange. <http://www.szse.cn/main/en/>

Note: Some parts of this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

# Hong Kong, China (HK)

## Bond Market Infrastructure

### Overview of Bond Market

The Hong Kong, China bond market comprises mainly over-the-counter (OTC) markets, while a relatively small portion of bonds are listed and traded on the Hong Kong Stock Exchange. The Central Moneymarkets Unit (CMU) serves as the central securities depository (CSD) for debt securities involving Exchange Fund Bills and Notes (EFBNs), government bonds, and debt securities issued by both public and private entities. CMU is owned and operated by Hong Kong Monetary Authority (HKMA), and provides trade matching and bond settlement services for market participants. It also conducts end-of-day batch settlement on net basis, but does not act as a central counterparty (CCP).

Cash settlement for both government and corporate bonds is performed on the Clearing House Automated Transfer System (CHATS), a computer-based system for electronic processing and settlement of interbank fund transfers. CHATS operates in a Real-Time Gross Settlement (RTGS) mode between banks in Hong Kong,

China, and is designed for high-value interbank payments.

According to the Asian Development Bank's (ADB) *AsianBondsOnline* website, the absolute amount of local currency (LCY) government bonds outstanding in Hong Kong, China in 1Q13 was US\$100.36 billion, while LCY corporate bonds totaled US\$83.27 billion.<sup>1</sup>

Please refer to **Part 3 HK01 (Government Bond Market Infrastructure Diagram)** and **Part 3 HK02 (Corporate Bond Market Infrastructure Diagram)**.

### Description of Related Organizations

#### Hong Kong Monetary Authority (HKMA)

HKMA was established on 1 April 1993 after the Legislative Council passed amendments to the Exchange Fund Ordinance in 1992 empowering the Financial Secretary to appoint a monetary authority. The powers, functions, and responsibilities of HKMA are set out in the Exchange Fund Ordinance, the Banking Ordinance, the Deposit Protection Scheme

---

<sup>1</sup> LCY bonds outstanding for Hong Kong, China includes LCY bonds issued by nonresidents.

Ordinance<sup>2</sup>, the Clearing and Settlement Systems Ordinance, and other relevant ordinances. The division of functions and responsibilities in monetary and financial affairs between the Financial Secretary and HKMA is set out in an Exchange of Letters between them dated 25 June 2003. This Exchange of Letters also discloses the delegations made by the Financial Secretary to the HKMA under the ordinances, which are:

- (i) to maintain currency stability within the framework of the Linked Exchange Rate system;
- (ii) to promote the stability and integrity of the financial system, including the banking system;
- (iii) to help maintain Hong Kong, China's status as an international financial center, including the maintenance and development of Hong Kong, China's financial infrastructure; and
- (iv) to manage the exchange fund.

HKMA is an integral part of the government of the Special Administrative Region of Hong Kong, China. In its day-to-day work, HKMA operates with a high degree of autonomy within the relevant statutory powers either conferred upon or delegated to it.

#### **Central Moneymarkets Unit (CMU)**

CMU is the debt securities clearing and settlement unit in Hong Kong, China operated by HKMA. Established in 1990, CMU provides an efficient clearing, settlement, and custodian service for debt securities denominated in Hong Kong dollars and other major currencies. It also provides an electronic book-entry system, which eliminates the physical delivery of debt securities between CMU members. These debt securities include Exchange Fund papers, government

bonds, and debt securities issued by both public and private sector entities.

In December 1996, a seamless interface between CMU and CHATS for Hong Kong dollars was established. Such a linkage provides real-time and end-of-day delivery versus payment (DVP) services to CMU members. CMU was further linked to CHATS—for US dollars, euros, and renminbi in December 2000, April 2003, and March 2006, respectively—to provide real-time DVP capability for debt securities denominated in these currencies, as well as intraday and overnight repo facilities for their respective payment systems in Hong Kong, China.

#### **Hong Kong Stock Exchanges and Clearing (HKEx)**

HKEx is a recognized exchange controller under the Securities and Futures Ordinance (SFO). It owns and operates the only stock exchange and futures exchange in Hong Kong, China and their related clearing houses: the Hong Kong Securities Clearing Company (HKSCC), HKFE Clearing Corporation (HKCC), and SEHK Options Clearing House (SECH).

#### **The Stock Exchange of Hong Kong (SEHK)**

SEHK, a wholly-owned subsidiary of HKEx, is a recognized exchange company under the SFO. It operates and maintains a stock market in Hong Kong, China and is the frontline regulator of stock exchange participants with respect to trading matters, and of companies listed on the Main Board and the Growth Enterprise Market of SEHK.

#### **Hong Kong Interbank Clearing Limited (HKICL)**

HKICL is a private company jointly owned by HKMA and the Hong Kong Association of Banks (HKAB). HKICL was established in May 1995 to implement a phased takeover of the clearing functions provided by the former management bank of the Clearing House, the Hong Kong and Shanghai Banking Corporation Limited (HSBC). The process was completed in April 1997. HKICL provides interbank clearing and settlement services to all banks in Hong Kong, China and operates a central clearing and settlement system including CMY and CHATS for public and private debt securities on behalf of HKMA.

<sup>2</sup> Clearing and Settlement Systems Ordinance (CSSO), which came into force in November 2004, establishes a statutory regime for the Monetary Authority to designate and oversee clearing and settlement systems that are material to the monetary or financial stability of Hong Kong, China, or to the functioning of Hong Kong, China as an international financial center. HKMA is empowered to designate clearing and settlement systems and to oversee these systems on an ongoing basis to ensure their compliance with the CSSO. CSSO also provides statutory backing for the finality of settlement for transactions made through systems designated under the ordinance by protecting the finality of settlement from insolvency laws or other legislation.

### Securities and Futures Commission (SFC)

The principal regulator of Hong Kong, China's securities and futures market is the SFC, which is an independent statutory body established in 1989 by the Securities and Futures Commission Ordinance (SFCO). SFCO and nine other securities and futures-related ordinances were consolidated into SFO, which came into effect on 1 April 2003. SFC is responsible for administering the laws governing the securities and futures market in Hong Kong, China. In addition to regulating HKEx, listed companies, and share registrars, SFC oversees licensed corporations and individuals carrying out regulated activities.

## Overview of Government Bond Market

### Trading

#### OTC Market

Government bonds in Hong Kong, China are primarily unlisted and traded through the over-the-counter market by negotiation between the sell side and buy side.

#### Exchange Trading

Government bond trading takes place mostly through the OTC markets. There are few types of debt securities listed on HKEx.

#### CCP

There is no CCP for the government bond market in Hong Kong, China.

#### Bond Settlement

In Hong Kong, China, the majority of bond transactions are conducted through the OTC market, and cleared and settled through CMU. The settlement of bond transactions through CMU is final and irrevocable. This finality is protected from insolvency laws and other laws CSSO in particular.

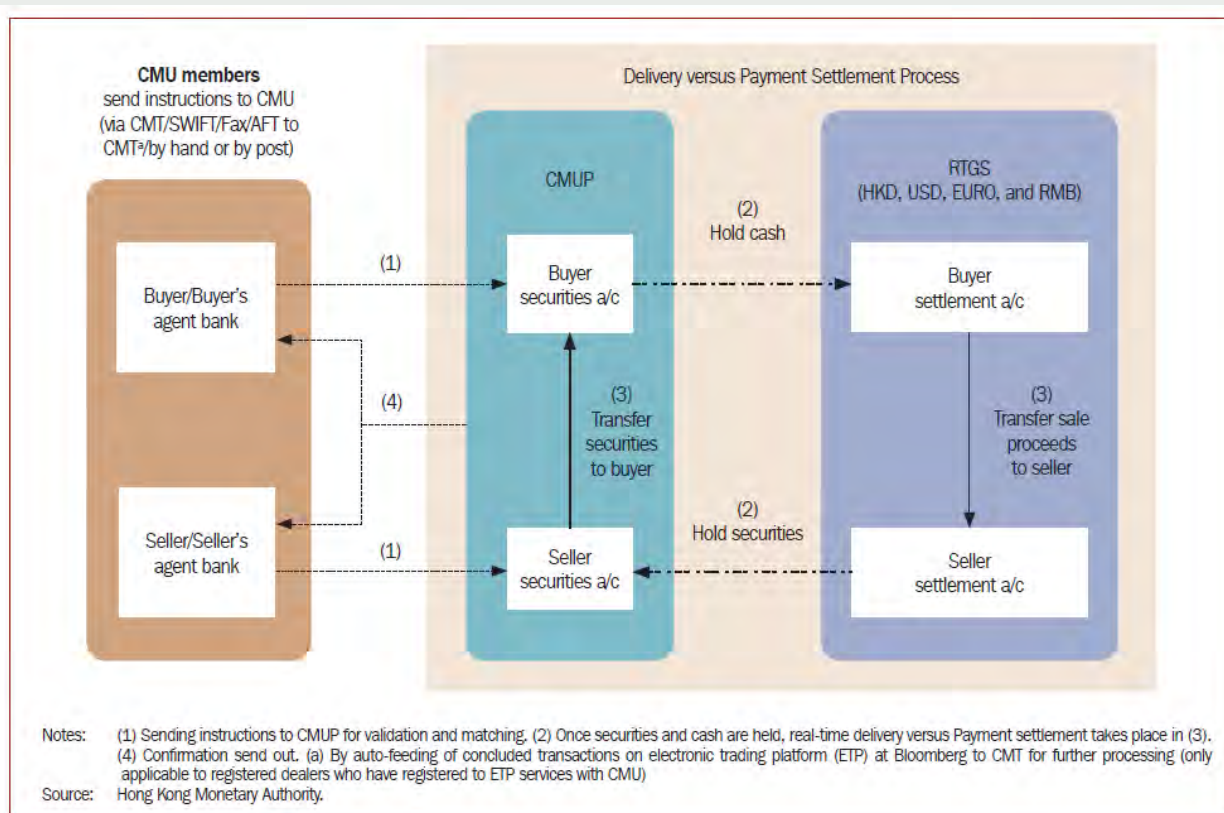
Through the seamless interface between CMU and CHATS, securities transactions can be settled on a real-time or end-of-day DVP basis in CMU. For real-time DVP, both the sell side and buy side input instructions through their CMU terminal

or SWIFT. Once the instruction is matched, the matched transaction is stored in the system. The system then locks for the specific securities in the sell side's account and puts the securities on hold, after which an interbank payment message is generated. After the payment initiated by the buy side is settled across the books of HKMA or a settlement institution, a confirmed message is returned to CMU and the securities held are released to the buy side. If the sell side does not have sufficient securities, the system retries at 15-minute intervals until cut-off time, by which time all unsettled transactions are converted to end-of-day transactions and settled during the end-of-day settlement run. Likewise, if the buy side does not have sufficient funds in its cash accounts, the transactions are pending for settlement until sufficient funds are available in the buy side's accounts. If transactions cannot be settled before the cut-off time, the transactions are converted to end-of-day transactions and settled during the end-of-day settlement run.

For end-of-day transactions, securities and cash are settled on a multilateral netting basis. At the time of the end-of-day settlement run, the system calculates the net settlement amount of both securities and cash for each member. The system then checks whether sufficient funds and securities are available for each member. If so, final transfers of both securities and cash for all members are executed simultaneously. Otherwise, all or part of the transfer instructions of the members who do not have sufficient funds or securities are cancelled before the final end-of-day settlement takes place.

The settlement of government bonds is performed via CMU's book-entry system. CMU supports both RTGS, which is DVP Model 1 of the Bank for International Settlements (BIS) definition, and end-of-day net settlement, which is DVP Model 3 of the BIS definition. Presently, over 90% of trades are settled on a DVP basis. In terms of settlement arrangements, if the debt securities are settled using real-time DVP mode, both the cash and securities legs are settled on gross basis. If the debt securities are settled using end-of-day DVP mode, then both cash and securities are settled on a net basis. If the securities are settled using free-of-payment (FOP) mode, settlement is done on a gross basis for real-time FOP and net basis for end-of-day FOP. The settlement process for



**Figure HK01: Settlement Process for Government Bond Trades**

government bond trades (DVP) is shown in **Figure HK01**.

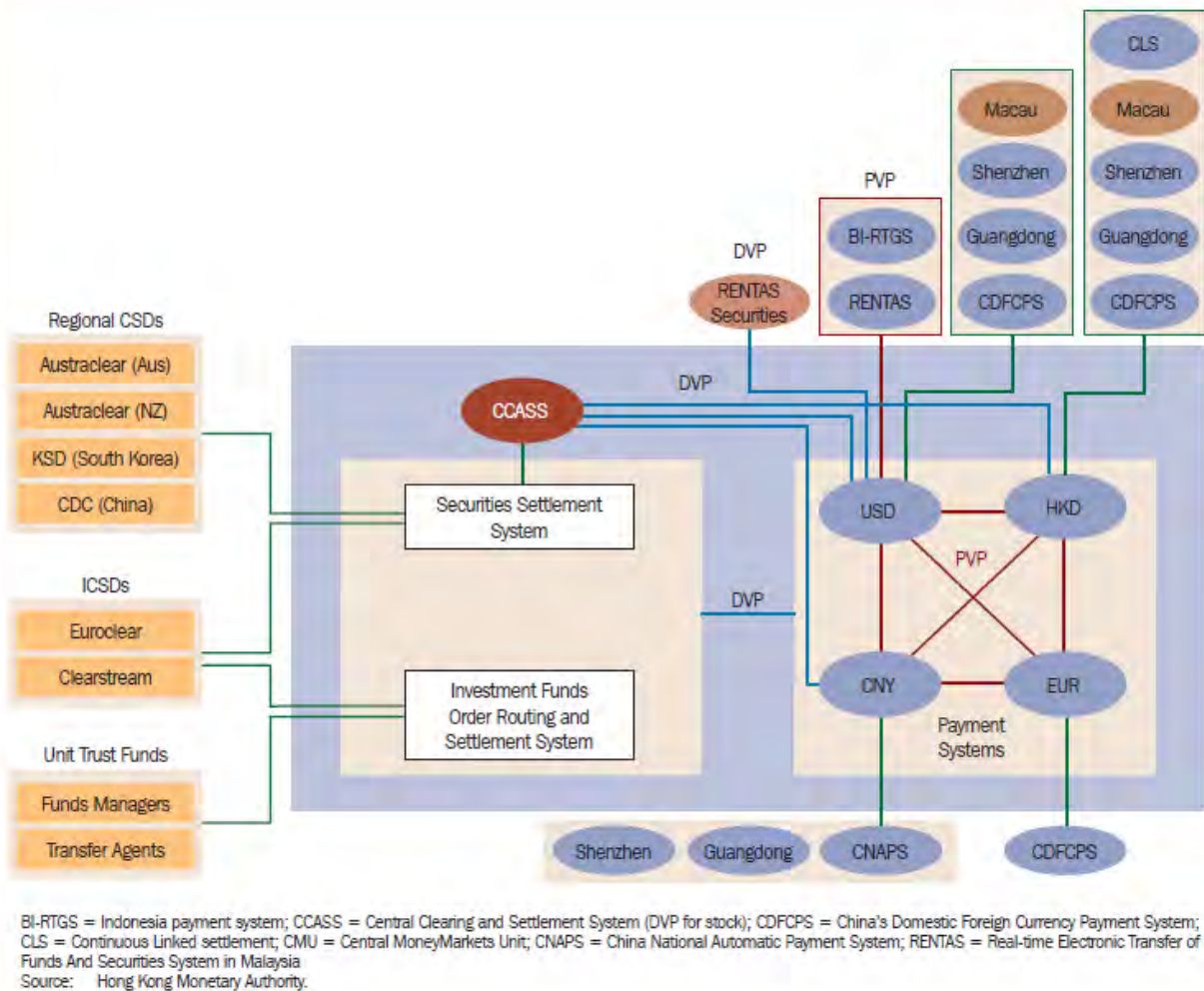
CMU uses SWIFTNet as its network with participants. The types of lines are leased line and the internet protocol is TCP/IP. The interfaces are SWIFTNet InterAct and InterBrowse. The message format is ISO15022.

Over the years, CMU has developed external links with regional CSDs and international CSDs. One-way inbound links from Euroclear and Clearstream, the two largest international CSDs in the world, to CMU were set up in 1994 to allow international investors to hold and settle Hong Kong dollar debt securities through these international networks. The linkages were further extended to two-way (bilateral) links in November 2002 (Euroclear) and January 2003 (Clearstream) to enable investors in Hong Kong, China and other parts of Asia to hold and settle Euroclear and Clearstream debt securities

directly in a secure DVP environment via their CMU members.

Hong Kong, China's multi-currency payment and securities settlement infrastructure is shown in **Figure HK02**.

CMU also established links with CSDs in Australia in December 1997, New Zealand in April 1998, and the Republic of Korea in September 1999. Apart from facilitating cross-border holding and settlement of debt securities in Hong Kong, China and overseas, they also enlarged the investor base, broadened domestic debt markets, and reduced settlement risk by facilitating DVP settlement for cross-border securities transactions. HKMA and the China Central Depository and Clearing Co., Ltd. (CCDC) signed an agreement in April 2004 to establish a link between CMU and the Government Securities Book-Entry System (GSBS) operated by the CCDC. This link enables authorized investors in the People's Republic of

**Figure HK02: Hong Kong Multi-Currency Payment and Securities Settlement Infrastructure**

China (PRC) to hold and settle Hong Kong, China and foreign debt securities lodged in CMU. These links for Euroclear, Clearstream, New Zealand, and the Republic of Korea are bilateral. Those for the PRC and Australia are unilateral. CMU has an account at Austraclear in Australia, and CCDC has an account at CMU.

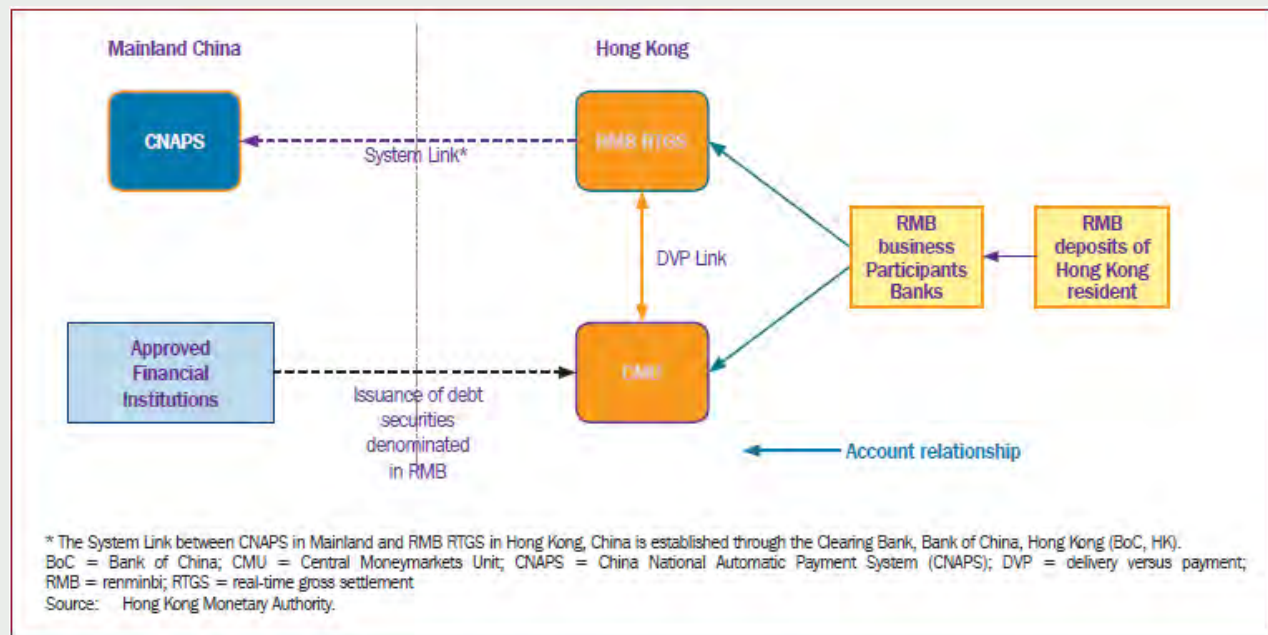
The cross-border and cross currency trade is processed as illustrated in **Figure HK03**.

The cross-border, cross-currency DVP Model (denominated in US dollars) is illustrated in **Figure HK04**.

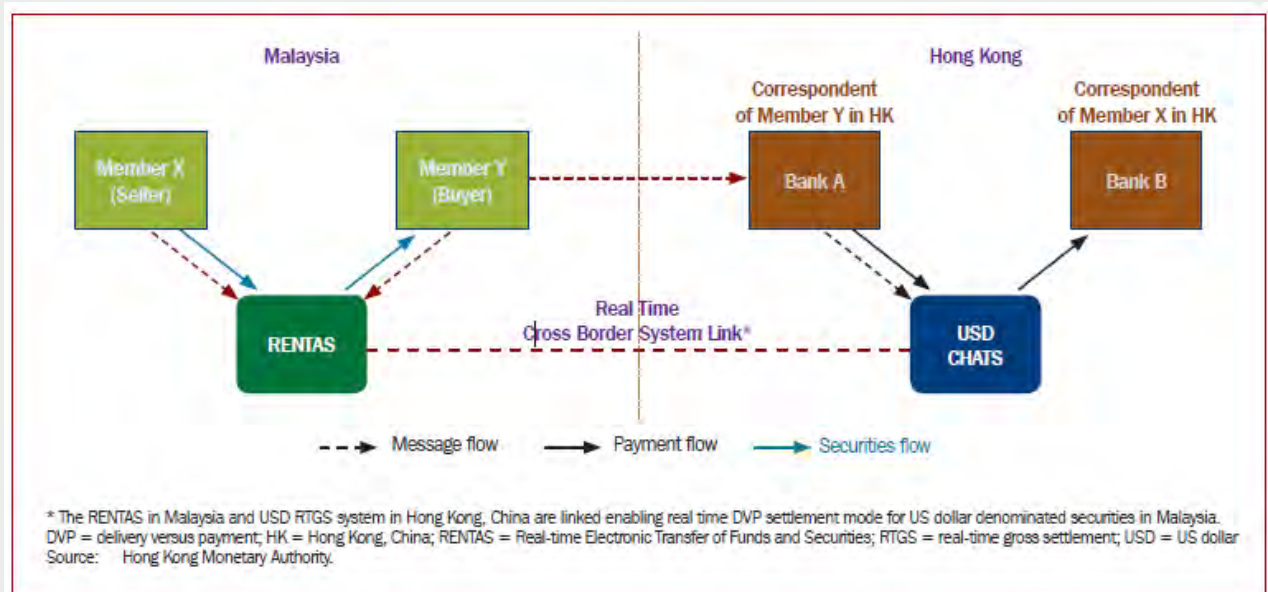
## Cash Settlement

Cash settlement of bond transactions is carried out in CHATS. CHATS is a computer-based system established in Hong Kong, China for the electronic processing and settlement of interbank fund transfers. CHATS operates in a RTGS mode between banks in Hong Kong, China and is designed for large-value interbank payments. Banks using CHATS are connected to the clearing house computer operated by HKICL. As mentioned in the discussion on bond settlement above, for real-time DVP transactions, after CMU puts the required securities involved in a bond transaction in the sell side's account on hold, an interbank payment message is generated in CHATS. When the payment initiated by the buy

**Figure HK03: Cross-Border Delivery-versus-Payment Model for Renminbi-Denominated Debt Securities issued in Hong Kong, China**



**Figure HK04: Cross-Border Delivery-versus-Payment Model**





side is settled across the books of HKMA (or the relevant settlement institutions in cases other than Hong Kong dollars), a confirmed message is returned to CMU and the held securities is released to the buy side. If the buy side does not have sufficient funds in its cash accounts, the transaction is pending for settlement until sufficient funds are available. In the event that the transaction cannot be settled before the cut-off time, the transaction is converted to an end-of-day transaction and settled during the end-of-day settlement run.

At the time of the end-of-day settlement run, the system calculates the net settlement amount of both securities and cash for each member. If sufficient funds and securities are available for each member, the final transfers of cash within CHATS and for the securities are executed simultaneously. Otherwise, all or part of the transfer instructions of members who do not have sufficient funds or securities are cancelled before final end-of-day settlement takes place.

To allow better liquidity management for banks via collateral management services, intraday repos and overnight repos are available for CHATS while intraday overdraft is available for US dollar and euro RTGS systems.<sup>3</sup>

## Overview of Corporate Bond Market

### Trading

#### OTC Trading

Corporate bond trading takes place mostly through OTC markets.

#### Exchange Trading

There are few listed corporate bonds in the Hong Kong, China bond market.

### CCP

There is no CCP for the bond market in Hong Kong, China.

### Bond Settlement

Most corporate bonds are eligible for clearing at CMU and maintained in book-entry form. In cases of corporate bond transactions, payment initiated by the buy side is settled across the books of settlement institutions.

The methods used are similar to those used for government bonds.

### Cash Settlement

CHATS performs cash settlement of corporate bonds in the same manner as with government bonds.

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

Each issue of bonds bears a fixed rate of interest that is announced in advance of each tender. Interest rounded to the nearest cent and calculated on the actual number of days in an interest period (being a period from, and including, an interest payment date to, but excluding, the next interest payment date) and on the basis of a 365-day year, is paid semi-annually.

HKMA as the paying agent (PA), pays interest proceeds to account management institutions (CMU members) via CHATS.

### Interest Payment and Redemption of Corporate Bonds

The issuing corporation promises to return the principal on a specified maturity date to

<sup>3</sup> Intraday and overnight repos for a renminbi RTGS system were introduced on 21 February 2011.

the bondholders. Until that time, the issuing corporate pays the bondholders a stated rate of interest periodically. Interest payments are usually distributed quarterly or semi-annually. PAs credit interest payments directly to members' bank accounts via CHATS on pay date. For HKD-denominated instruments, interest is calculated on the basis of 365 days.

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trade

#### (i) Pre-Settlement Matching

There is no automated pre-settlement matching system in the Hong Kong, China OTC market.

#### (ii) Bond Settlement

There is no system interface in order to receive settlement instruction from another system. Therefore, settlement instruction data are not transferred from other systems, such as a trading system, with respect to straight-through-processing (STP).

Both the sell side and buy side send instructions to CMU via eCMT, SWIFT, Fax, AFT, or by hand for matching. Participants need to send the message instructions before the cut-off time on settlement day. After CMU performs validation and matching, CMU sends matching result to the both sides, and holds the bond. CMU adopts a central matching system.

#### (iii) Cash Settlement

CMU sends settlement data to CHATS, which executes cash settlement by auto-debit from the buy side's RTGS account and sends a cash settlement report to CMU for bond settlement execution. Then, CHATS sends a cash settlement report to the buy side and sell side, while CMU sends securities settlement confirmation to both sides.

For further details, please refer to **Part 3 HK03 (Government Bond Transaction Flow for Domestic Trades)**.

### DVP Flow of Corporate Bonds for Domestic Trades

The corporate bond transaction flow is similar to the government bond transaction flow in Hong Kong, China.

For further details, please refer to **Part 3 HK04 (Corporate Bond Transaction Flow for Domestic Trades)**.

### DVP Flow of Cross-Border Bond Transactions

Although there are some barriers to cross-border bond transactions in ASEAN+3 economies, especially with respect to foreign exchange (FX) and cash controls, cross-border DVP settlement is effected via regional and international CSDs, and few barriers exist in Hong Kong, China. Hong Kong dollars are freely convertible. Foreign investors are not subject to (i) any restrictions on FX trades with an underlying investment, (ii) pre-funding, or (iii) FX reporting. Offshore FX Trading, third-party FX trading, and repatriation are permitted for foreign investors in Hong Kong, China.

For further details, please refer to **Part 3 HK05 (Bond Transaction Flow for Foreign Investors in the OTC Market—DVP)**.

### Interest Payment and Redemption of Government Bonds

The business flow of interest payments and redemption of government bonds in Hong Kong, China is analyzed using a typical flow. Key findings of the analysis are given below.

#### (i) PA

HKMA, as a PA, has a responsibility for interest payment and redemption on behalf of the issuer. HKMA sends interest payment and redemption notification to the Treasury Department 3 days before the payment date. HKMA transfers cash for the payment from

the Treasury Department's account to its own account after receiving payment instruction from the Treasury Department, and pays the interest and principal proceeds to account management institutions (CMU members) via CHATS on the interest payment and redemption date.

(ii) **CSD**

HKMA, the central bank of Hong Kong, China, also has a CSD function with its system called CMU. CMU, as a CSD, has an own cash account in CHATS for the purpose of interest payment and redemption. In Hong Kong, China, there is no withholding tax for government bonds and the CSD does not need to arrange a tax holder list.

CMU sends notification of interest payment and redemption details to account management institutions (CMU members) 1 day before the redemption payment date. Upon completion of payment, CMU sends settlement reports to account management institutions (CMU members). HKMA, as a CSD, conducts bond redemption.

(iii) **Payment Flow**

A central bank cash settlement system is used in for interest payment and redemption of government bonds.

(iv) **Tax**

There is no withholding tax for government bonds in Hong Kong, China.

For further details, please refer to **Part 3 HK06 (Interest Payment Flow of Government Bond OTC Market)** and **Part 3 HK07 (Redemption Payment Flow of Government Bond OTC Market)**.

## Interest Payment and Redemption of Corporate Bonds

The business flow of interest payment and redemption of corporate bonds is analyzed using typical flow. Key findings of the analysis are shown below.

(i) **PA**

A commercial bank is appointed as a PA by an issuer. The PA notifies the bond issuer

of interest payment and redemption. The PA transfers cash from an issuer account to its own account and pays the interest and principal to the account management institutions (CMU members) via CHATS on the interest payment and redemption date after receiving it from the bond issuer.

(ii) **CSD**

HKMA as CSD sends an account positions report to the PA and notification of interest and principal payment details to the account management institutions (CMU members) 1 day before the interest payment date. Though HKMA has an own cash account in the RTGS system, the PA does not use it for interest payment and redemption. HKMA as CSD carries out redemption. In Hong Kong, China, there is no withholding tax for corporate bonds and the CSD does not need to arrange a tax holder list.

(iii) **Payment Flow**

Central bank cash settlement system is used for interest payment and redemption of corporate bonds.

(iv) **Tax**

There is no withholding tax for corporate bonds in Hong Kong, China.

For further details, please refer to **Part 3 HK08 (Interest Payment Flow of Corporate Bond)** and **Part 3 HK09 (Redemption Payment Flow of Corporate Bond)**.

## Message Standard

### Message Format

CMU adopts ISO15022 for its book-entry system and its network with participants.

### Message Items

Typical message items are settlement instruction and settlement confirmation. Securities Market Practice Group (SMPG) defined 10 common elements of these two message types. Typical

message items are compared with those of ISO20022, (sese.023, and sese.025).

In both government and corporate bond settlement systems, 10 common elements of CMU are almost all the same as ISO20022.

## Market Practices

### Operating Hours

The CSD in Hong Kong, China, CMU, opens at 8:30 and the cut-off time is 16:00. The closing time of CMU for Hong Kong dollars, US dollars, and euros, is 18:30. The cut-off time for renminbi was extended from 18:30 to 23:30 effective 25 June 2012.

### Settlement Cycle

CMU performs clearing and settlement for a variety of debt securities. The settlement cycle of each type of debt security generally follows the standard cycle practice of that specific type of security, and differs among different types of debt securities. For example, the settlement cycles for exchange fund paper traded before and after 11:00 in Hong Kong, China are T+0 and T+1, respectively. The settlement cycle for Hong Kong, China government bonds is usually T+1 or T+2, while for corporate bonds and renminbi bonds it is typically T+2.

### Fails

A fail settlement means a situation whereby a transaction cannot be settled on the agreed settlement date. There are no standardized rules to resolve failed trades. The common practice is to settle failed trades on the next business day with the parties involved discussing and agreeing on the interest compensation. The cost of fails is subject to the agreement between the parties involved.

### Bilateral Netting

There is no bilateral netting scheme in Hong Kong, China. There is no CCP for the OTC bond market. In this context, clearing effectively refers to a netting service for participants. For end-of-day transactions, securities and cash are settled on a multilateral netting basis provided by CMU. Matching in this business process is limited to settlement matching since trading is not facilitated by CMU itself. Trade matching continues to be conducted between trading counterparties on a bilateral basis.

### Taxation

Residents and non-residents investing in the Hong Kong, China market are not charged a withholding tax on fixed income. Interest income derived from bond holding is not taxable.

## Numbering and Coding

### Numbering and Coding for OTC and Exchange Markets

#### Securities Numbering

The International Securities Identification Number (ISIN) is used for all securities numbering of bond transactions. CMU system also supports CMU Issue Number (local code) and common code.

#### Financial Institution Identification

A CMU Member Account Number is assigned by a CMU internal coding scheme. There is no need to convert between ISO9362 (BIC) and local codes because the system database can include both BIC and local codes.

#### Securities Account

The account type is an omnibus and multi-layer structure. CSD participants manage bonds separately from their own bonds and customers' bond separately. ISO20022 is not used for securities accounts. It is identified by a proprietary coding scheme.

### Cash Account

The International Bank Account Number (IBAN) code is not used for cash accounts. It is identified by CMU member code (proprietary).

### Character Code and Language

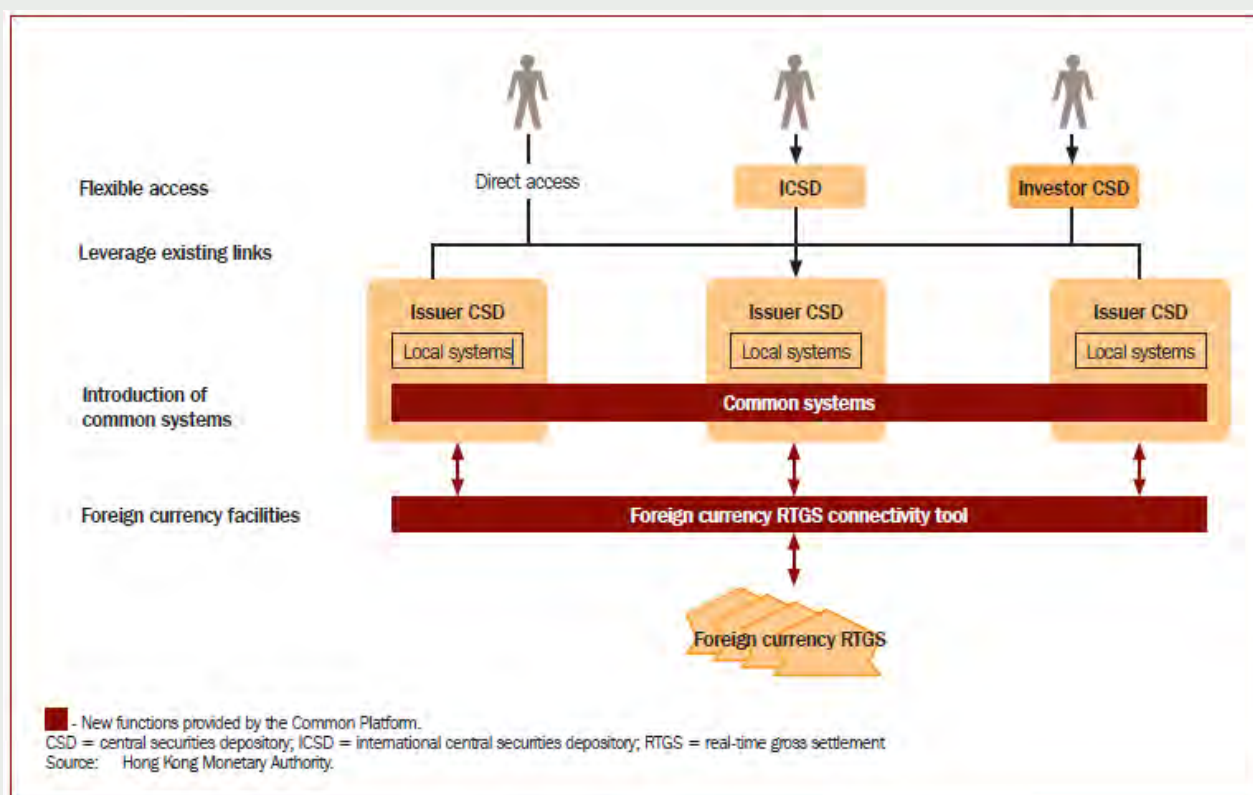
A character set supported by SWIFT is used for coding and language.

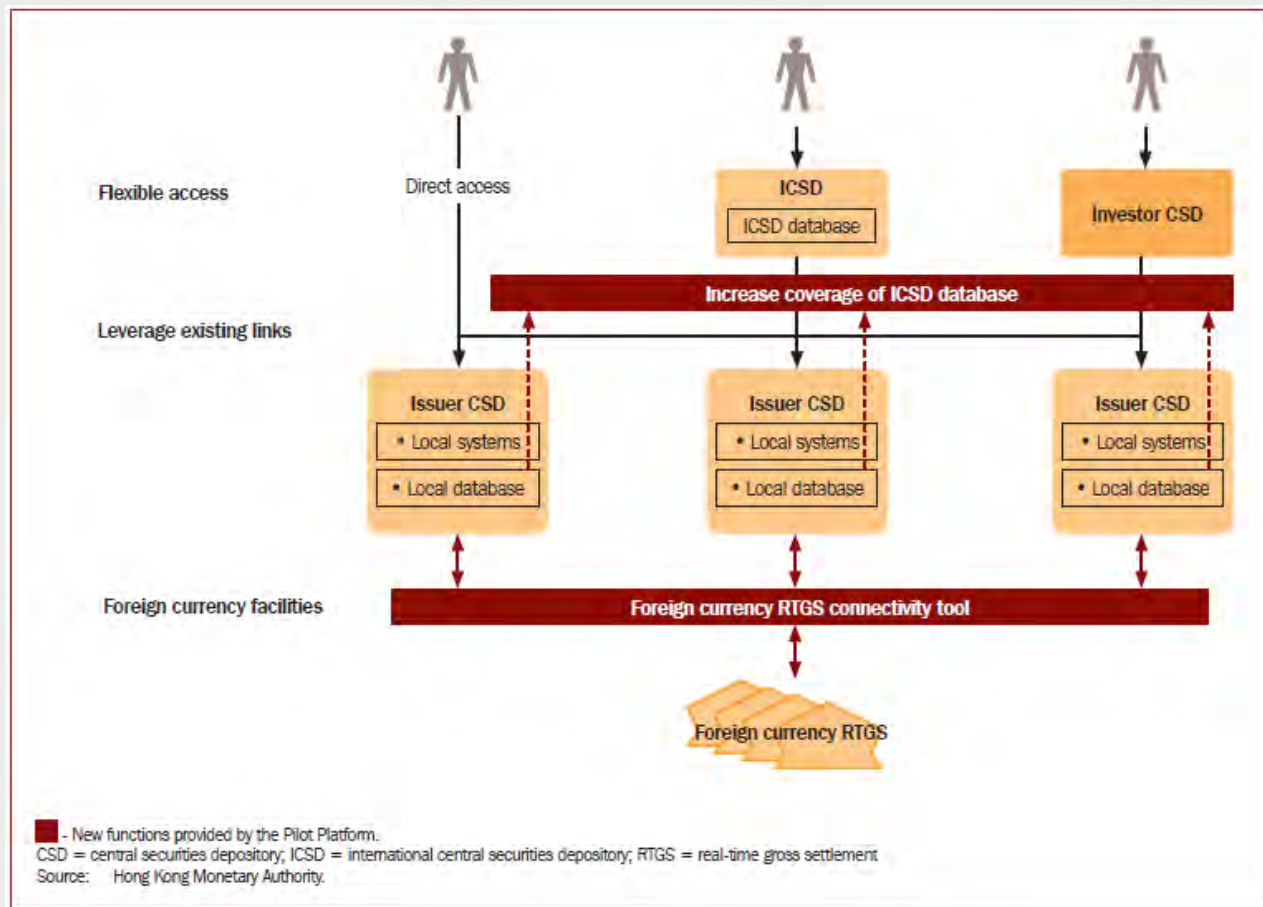
## Medium- to Long-Term Strategies

The conceptual framework of the Common Platform Model is presented in **Figure HK05**.

The concept of the pilot platform is illustrated in **Figures HK06, HK07**.

**Figure HK05: Conceptual Framework of Common Platform Model**



**Figure HK06: Conceptual Framework of Pilot Platform**

## References

ADB. *ASEAN+3 Bond Market Guide*.

ADB. *AsianBondsOnline*.  
<http://asianbondsonline.adb.org/index.php>

BIS. *Payment, Clearing, and Settlement Systems in Hong Kong SAR*.

Government Bond Programme.  
<http://www.hkgb.gov.hk/en/index.html>

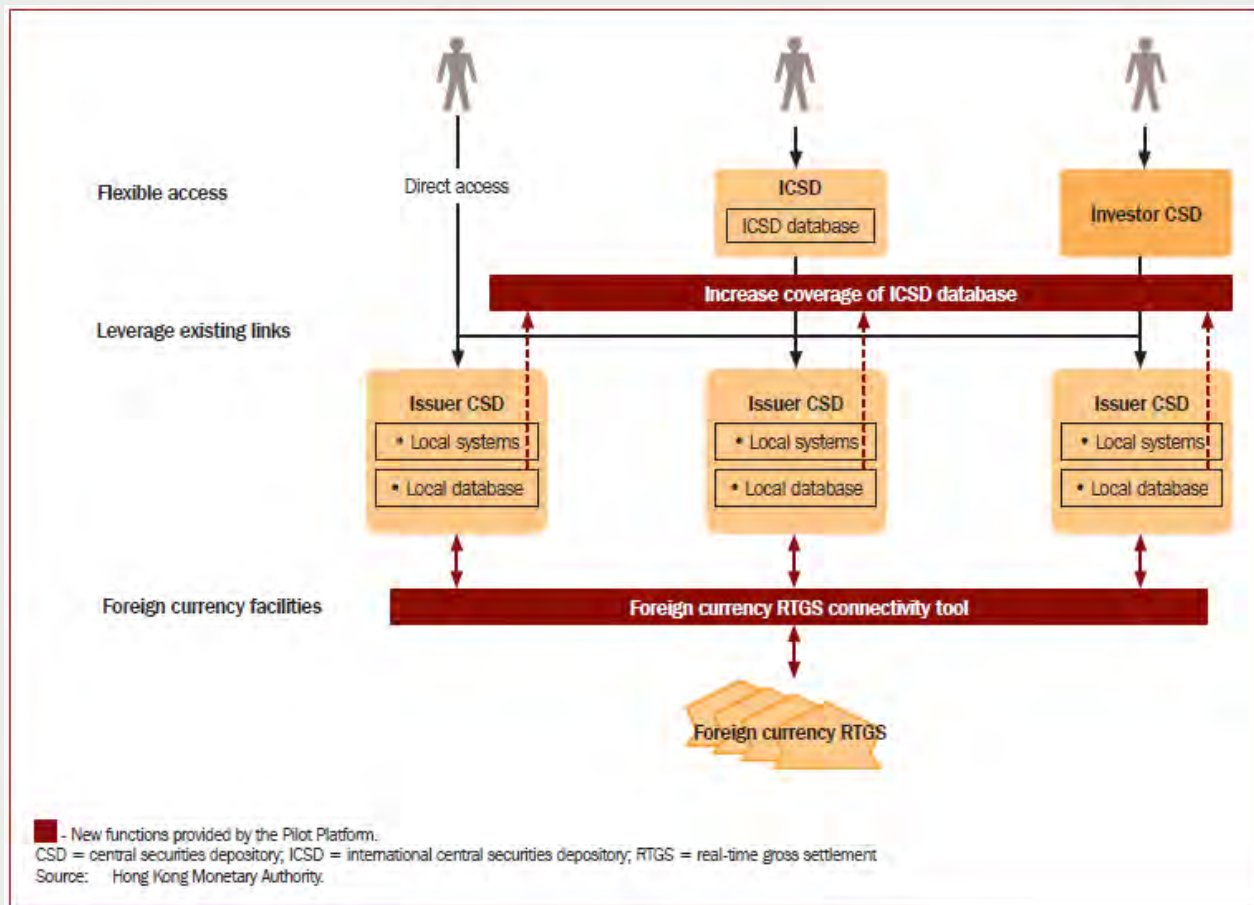
Hong Kong Monetary Authority Pan-Asian CSD Alliance. *Common Platform Model for Asian Post-Trade Processing Infrastructure White Paper*.

Clearstream. *Clearstream Banking Market Profile*.

Note: Some parts of this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.



**Figure HK07: Evolution of Pilot Platform - Corporate Action Platform**



# Indonesia (ID)

## Bond Market Infrastructure

### Overview of Bond Market

The Indonesian bond market comprises the over-the-counter (OTC) and exchange markets. Government bonds and corporate bonds are all listed on the exchange but traded mainly in the OTC market. A few bonds are traded on the exchange and they must be reported to the exchange through the Centralized Trading Platform (CTP) within 30 minutes after a trade is executed.

According to the Asian Development Bank's (ADB) *AsianBondsOnline* website, the amount of local currency (LCY) government bonds outstanding in Indonesia at the end of 1Q13 was US\$98.45 billion, while LCY corporate bonds totaled US\$20.18 billion.

There are two central depositories: Bank Indonesia (BI) handles government bonds and the Indonesian Central Securities Depository (KSEI) handles corporate bonds. KSEI also provides depository and transaction settlement services for government bonds as a sub-registry for BI. Settlement of the government bonds is performed on Bank Indonesia-Scripless Securities Settlement System (BI-SSSS). Cash settlement of government bonds is conducted on Bank

Indonesia Real-Time Gross Settlement (BI-RTGS). BI-SSSS and BI-RTGS are electronically linked. All corporate bonds and some government bonds are settled by KSEI (especially those traded by securities companies) using the Central Depository and Book Entry Settlement (C-BEST) system, with cash settlement conducted via the five appointed payment banks.

Please refer to **Part 3 ID01 (Government Bond Market Infrastructure Diagram)** and **Part 3 ID02 (Corporate Bond Market Infrastructure Diagram)**.

### Description of Related Organizations

#### Ministry of Finance (MOF)

The Government of Indonesia's MOF is the apex body responsible for the administration of central government finances and all economic and financial matters affecting the country. MOF has authorization to issue government bonds. MOF also formulates and implements policies and technical standardization in the field of debt management.

#### Otoritas Jasa Keuangan (OJK)

OJK is an independent institution with authority to regulate, supervise, examine, and investigate the financial services sector in Indonesia. OJK is an autonomous agency designed to be free from



interference. Its functions, duties, and powers include regulations, supervision, inspections, and investigations. The agency was established in 2012, fully replacing the roles of the Capital Market and Financial Institution Supervisory Agency, also known as Badan Pengawas Pasar Modal dan Lembaga Keuangan (Bapepam-LK), and partially replacing the role of BI in banking supervision.

### **Bank Indonesia (BI)**

BI is the central bank of the Republic of Indonesia. BI acts as the central depository for the settlement and safekeeping of government bonds. Its role as the central registry of government bonds includes that of a registrar, settlement agent, and paying agent (PA) for interests and principal.

### **Indonesia Stock Exchange (IDX)**

IDX is the only stock exchange in Indonesia. IDX is a privately owned, limited company whose shareholders are local broking firms. It came into existence through BAPEPAM-LK's Capital Market Master Plan 2005–09, which stipulated the merger of the Jakarta Stock Exchange (JSX) and Surabaya Stock Exchange (SSX). All government bonds and corporate bonds are automatically listed on IDX.

### **PT Kustodian Sentral Efek Indonesia (KSEI)**

KSEI was granted a permanent operational license as a depository and settlement institution by the BAPEPAM-LK on 11 November 1998. KSEI's shareholders consist of IDX, KPEI, custodian banks, securities companies, and registrars. KSEI started the settlement operations in scripless form beginning July 2000. Participants in KSEI are custodian banks, securities companies, and other parties approved by Bapepam-LK. KSEI is a central depository for corporate bonds and sub-registry of BI for government bonds in BI-SSSS.

### **The Indonesian Clearing and Guarantee Corporation (KPEI)**

KPEI, Indonesia's central counterparty (CCP), was established in 1996 as a limited company to provide clearing and settlement, guarantee services for stock exchange transactions (equity, bonds and derivatives), and provide securities lending and borrowing.

### **Indonesia Bond Price Agency (IBPA)**

IBPA conducts valuation and determines fair market prices of bonds. *Sukuk* and types debt

securities, as well as provides debt market information

## Overview of Government Bond

### **Trading**

#### **OTC Trading**

There is no formal OTC market in the Indonesian bond market; however, all government bonds can be traded off-exchange directly between counterparties. Although all government bonds and corporate bonds are automatically listed on IDX, most trading is done OTC. These trades must be reported to the exchange through CTP within 30 minutes after a trade is executed. Price discoveries are made through theoretical prices by IBPA, bond price quotation by primary dealers, and active money brokers. The OTC market occupies a dominant position (100%) in bond trading). CTP is an electronic system established to facilitate the reporting of bond transactions. This system was introduced in September 2006 following the appointment of SSX as the Bond Transaction Reporting Center. Users of CTP are securities companies and banks, which are obliged to report all corporate and government bond transactions, as well as the transactions of their clients. Further development of CTP was conducted by IDX after the merger.

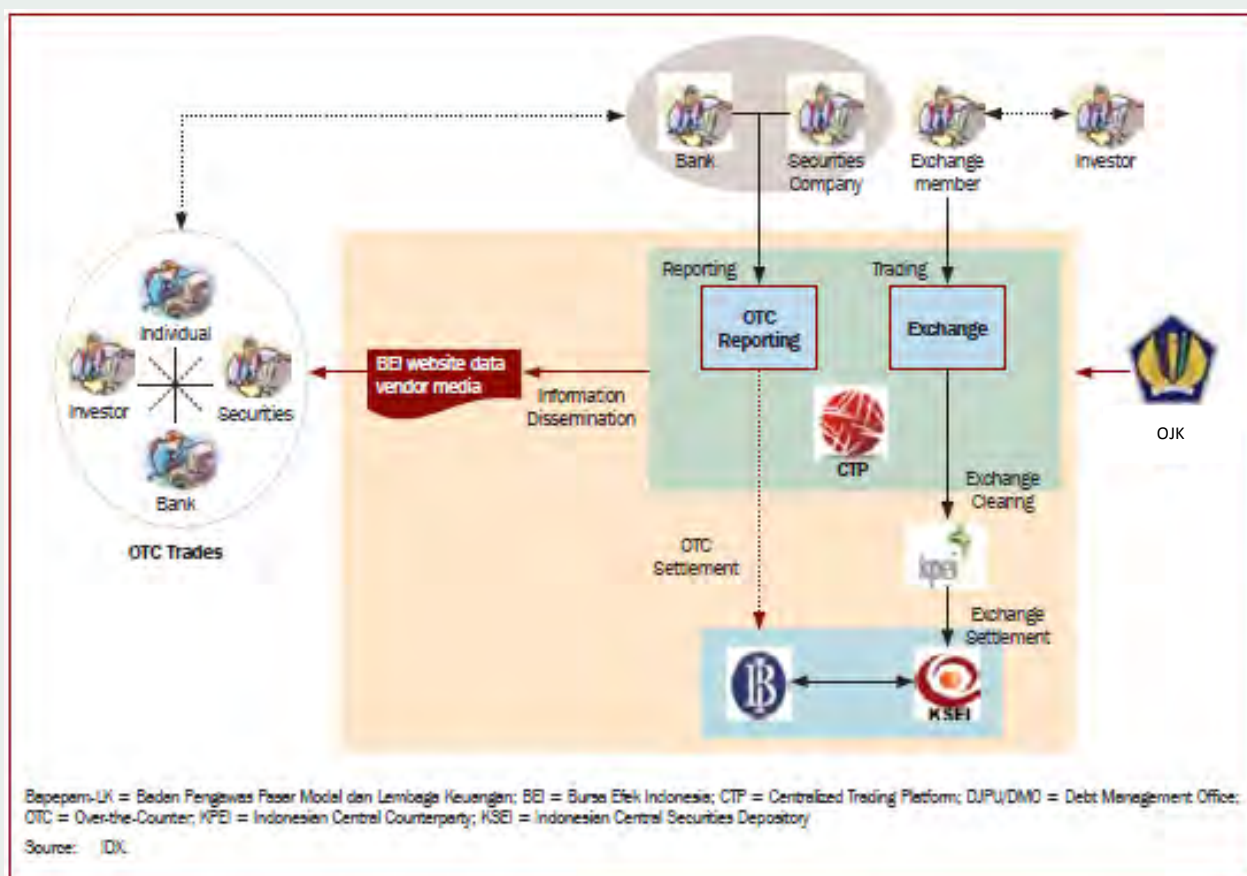
#### **Exchange Trading**

In June 2005, IDX introduced the Fixed Income Trading System (FITS) to facilitate the trading of bonds in the exchange. The clearing of bond trades in the exchange are handled through the Electronic Bond Clearing System (e-BOCS), including allocations.

IDX provides exchange trade and OTC reporting as illustrated in **Figure ID01** and described in detail below.

- (i) **Bonds Exchange Trading System.** Investor can order and trade bonds in this system via exchange member (currently only securities companies), though there was no

Figure ID01: Secondary Market Flow



transactions in the Bonds Exchange Trading System in 2011.

- (ii) **Bonds Transaction Reporting System.** IDX was appointed in 2006 by Bapepam-LK (currently OJK) and Indonesia SEC, as the bonds transaction reporting beneficiary. Market participants report their OTC transactions to this system via banks and securities companies. They have an obligation to report these transactions to OJK through the Bonds Transaction Reporting System within 30 minutes. Both systems can be used for both government and corporate bonds.

## CCP

### CCP for the OTC Market

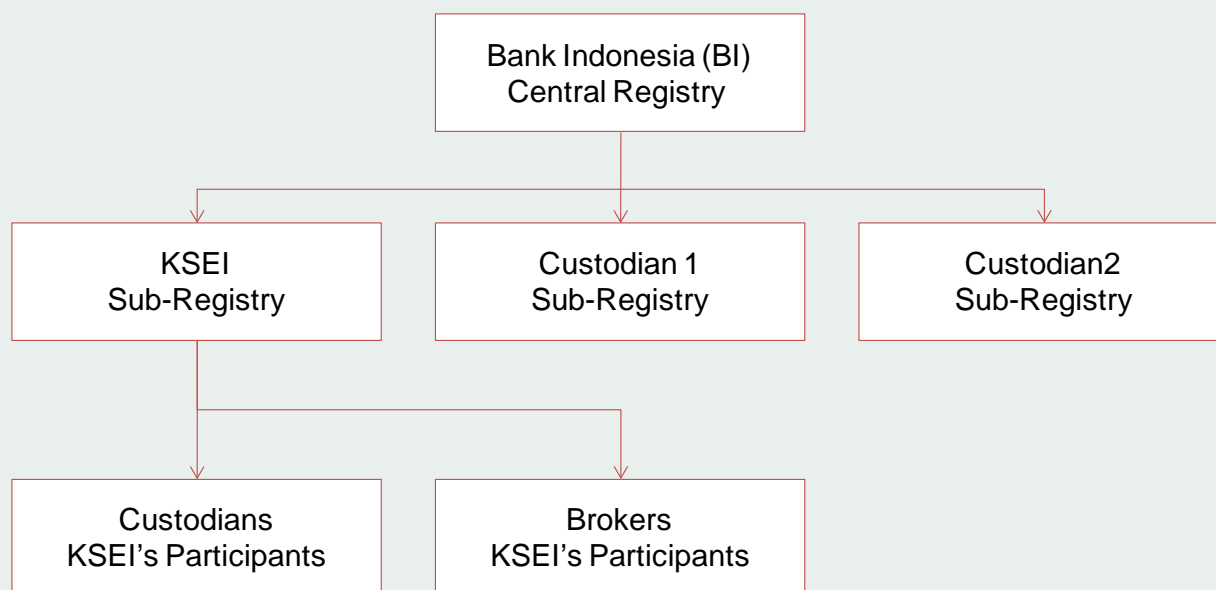
There is no clearing function in the OTC market.

### CCP for the Exchange Market

KPEI acts as central counterparty for the exchange market. KPEI has operated e-BOCS since 2006, which is the system used to settle all bond transactions executed on IDX. This clearing mechanism shortens the settlement of bonds obligations and also increases the efficiency of settlement.

### Bond Settlement

BI functions by law as the central registry to handle government bonds, while KSEI and other custodians are sub-registries under BI. Currently, BI maintains only one omnibus account for each sub-registry. Brokers and some custodians, which are not sub-registries of BI, settle and deposit their government bonds to KSEI as the central depository. The registry system of the Indonesian government bonds is presented in **Figure ID02**.

**Figure ID02: Registry System of Indonesian government Bond**

Source: PT Kustodian Sentral Efek Indonesia.

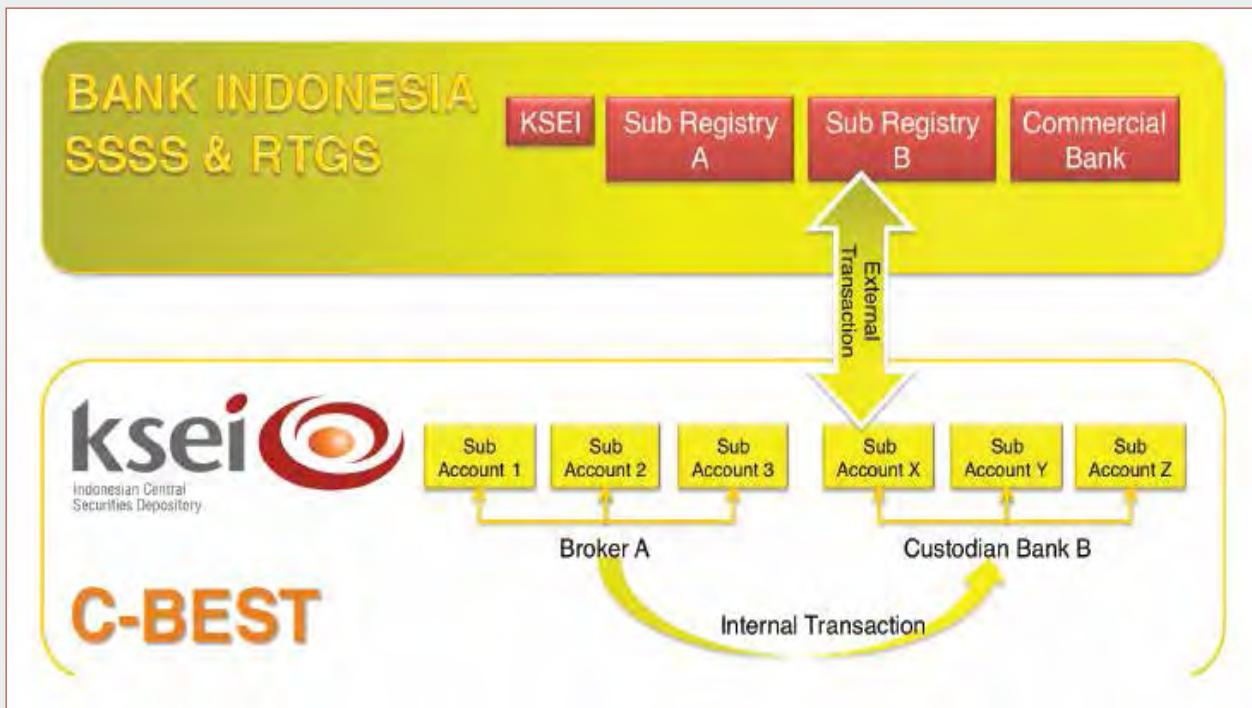
Settlement of government bonds is done through BI-SSSS, which was first implemented in February 2004. Under BI-SSSS, settlement of government bonds can only be performed on a delivery-versus-payment (DVP) basis. This means that government bonds are not allowed to be settled on a free-of-payment (FOP) basis, unless it involves a transfer for the same beneficial owner, a grant, a settlement of court, or lending and borrowing. BI-SSSS adopts DVP Model 1 of the Bank for International Settlements (BIS) definition. BI-SSSS's network is a proprietary network. The types of lines are leased line and dial-up. Its protocol is Systems Network Architecture (SNA), while its interfaces are proprietary (file transfer protocol [FTP]) and socket. The message format is proprietary.

C-BEST enables the settlement of government bonds for all market players who have a security account with KSEI but are not sub-registries of BI-SSSS. There is no difference in the procedure for trading government bonds whether on the exchange market or the OTC market. KSEI participants have access only to C-BEST, but C-BEST is directly connected to BI-SSSS and automatically delivers or receives messages and instructions concerning settlement processes

in BI-SSSS automatically delivers or receives messages concerning settlement processes in BI-SSSS; therefore, participants of KSEI can monitor transaction status, balance position, and obtain reports with C-BEST. Transaction status in C-BEST is available for viewing and may be downloaded every 15 minutes. C-BEST adopts DVP Model 2 of the BIS definition. Government bonds settlement between BI-SSSS and C-BEST is illustrated in **Figure ID03**.

### Cash Settlement

Participants in BI-SSSS utilize central bank money for bond settlement. BI-SSSS and BI-RTGS owned by BI are directly connected to execute DVP settlement. Overdraft is not permitted for foreigners.

**Figure ID03: Government Bond Settlement between BI-SSSS and C-BEST**

Source: PT Kustodian Sentral Efek Indonesia.

## Overview of Corporate Bond

### Trading

#### OTC Trading

Corporate bonds are mostly traded in the OTC market.

#### Exchange Trading

The exchange market for corporate bonds is also a component of IDX as is the case with government bonds. After trade matching, corporate bonds listed on IDX are cleared by KPEI using e-BOCS.

### CCP

#### CCP for the OTC Market

There is no clearing function in the OTC market.

#### CCP for the Exchange Market

KPEI is the CCP for all bonds traded on the exchange market, including corporate bonds.

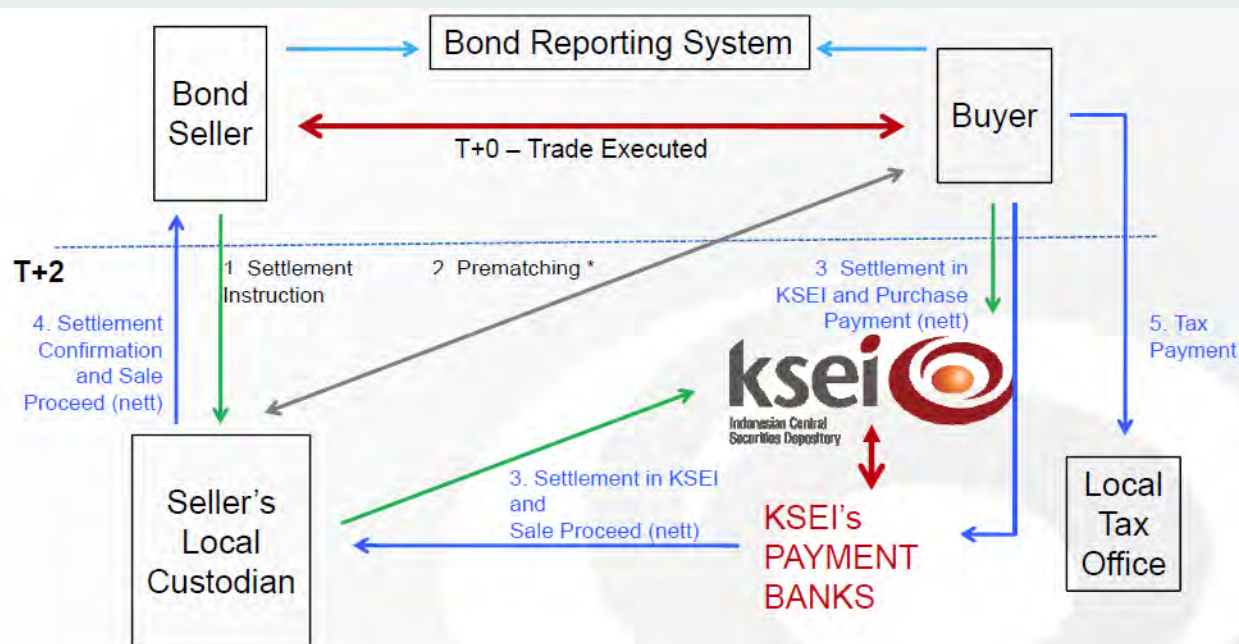
### Bond Settlement

The settlement of corporate bonds is performed on KSEI's C-BEST. C-BEST is conducted in real time throughout the specified operation time, provided that the instructions are matched with the counterparty, and both parties have sufficient securities and cash to settle the trades. At present, C-BEST does not have the capability to link trades, which has an impact on turnaround transactions. Nevertheless, the settlement of linked trades is still possible on a manual basis (**Figure ID04**).

### Cash Settlement

Participants in KSEI, on the other hand, utilize commercial bank money. KSEI has appointed five cash settlement banks: PT Bank Mandiri Tbk (BMRI), PT Bank CIMB Niaga Tbk. (BNGA), PT Bank Central Asia Tbk. (BBCA), PT Bank Permata Tbk. (PRMT), and PT Bank Negara Indonesia (BNI). Overdraft is not permitted for foreigners,



**Figure ID04: DVP Bond Settlement**

\* Prematching – Buyer and Seller calculate the nett proceed of the Seller after deducting the withholding tax of the Accrued Interest during the holding period and Capital Gain (if any). Seller Custodian needs to provide the info on the Purchase Price and the tax rate (tax documents to be provided if treaty rate to be applied)

Source: PT Kustodian Sentral Efek Indonesia.

but an intraday facility is allowed provided the intraday is supported with proof of incoming funds or delivery settlement instruction. Custodians provide an intraday facility to their selected clients for settlement purposes.

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

For fixed income instruments, the interest payment and redemption dates are normally predetermined as there are fixed cycles (monthly, quarterly, and bi-annually).

For interest entitlements on bonds, the registered holder at record date is entitled to the coupon interest. Interest payments on government bonds are distributed by the government to sub-registries via the central bank on gross basis. Sub-registries credit client cash accounts on a net basis after deducting the respective withholding tax on the coupon interest.

Redemption is automatic and mandatory. Custodians do not require the client's instructions in order to execute bond redemptions.

Custodians advise clients of upcoming interest and redemption payments. Interest payments are made to beneficial owners once the funds are received in the custodians' own accounts, which is usually on the pay date. There is no difference between the pay date and the coupon date except when the coupon date falls over the weekend or on a holiday, and then the pay date is the next business day.

Payments occur online and so payments can be made on the due date at any time between 7:30 and 17:00. Once funds are credited to the client's cash account, a message is sent confirming the credit of interest and redemption proceeds.

## Interest Payment and Redemption of Corporate Bonds

Interest payments on corporate bonds are received by the custodians on a net basis, while government bonds are on gross basis.

KSEI acts as paying agent for corporate bonds distributing interest and redemption payments to bondholders through C-BEST.

KSEI receives interest or redemption payments from an issuer on a gross amount basis. KSEI withholds the tax and credits the interest or redemption amount on a net amount basis. KSEI pays the tax to the tax office on behalf of the issuer.

KSEI changed the recording date schedule for corporate bond interest payments from the current practice of 7 exchange days to 4 exchange days prior to the payment date, effective 1 April 2009. This change of the recording date schedule is applicable only for corporate-bond-related interest payments (**Figures ID05, ID06**).

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

The business flow of government bond transactions in Indonesia resembles a typical one. The distinctive feature is the mandatory process of trade reporting. After the trade and pre-settlement matching, both sides of the trade must input trade data into IDX to get the reference code within 30 minutes from the time of trading.

#### (i) Pre-Settlement Matching

Instructions must be pre-matched prior to settlement in the market. KSEI provides auto pre-matching functionality. However, its use

is not enforced in the market. The auto pre-matching function can only be used if the counterparty also uses the same function. Otherwise, the pre-matching is done by phone. Since the pre-matching is only about instruction details, it does not guarantee the settlement.

#### (ii) Bond Settlement

Government bonds are settled in BI's book-entry system called BI-SSSS. Both sides of the trade enter settlement instructions into BI-SSSS. BI matches both instructions and returns the matching result to both sides, while earmarking bonds. Then, BI-SSSS sends the payment message to BI-RTGS internally.

#### (iii) Cash Settlement

After the receipt of payment message from BI-SSSS, BI-RTGS transfers cash from the buy side's account to the sell side's account.

For further details, please refer to **Part 3 ID03 (Government Bond Transaction Flow for Domestic Trades)**.

### DVP Flow of Corporate Bonds in the OTC Market

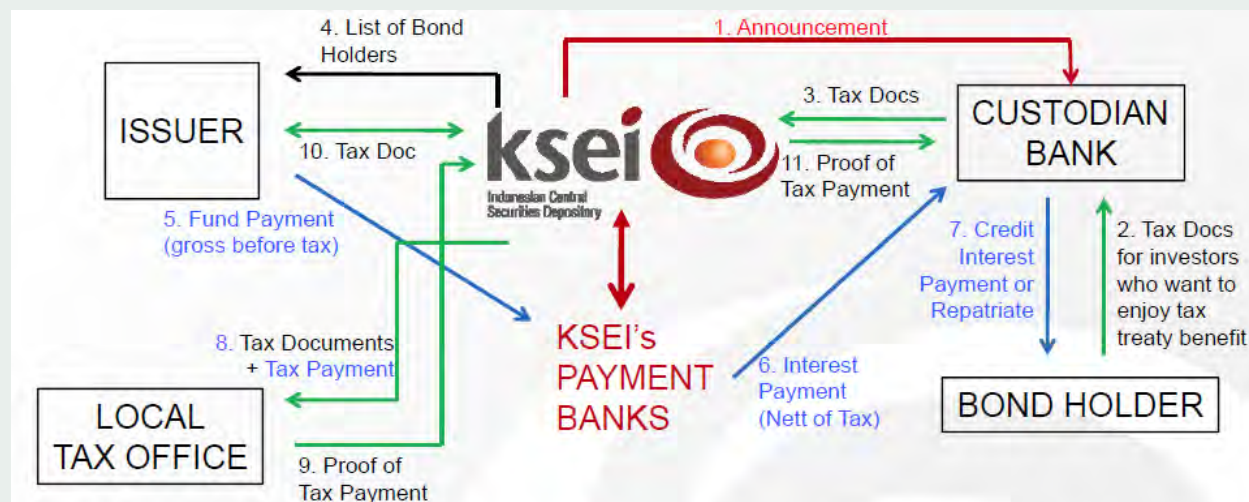
The business flow of corporate bond transactions in Indonesia is different from a typical one in terms of cash settlement.

#### (i) Pre-Settlement Matching

Pre-settlement matching in the corporate bond market is almost the same as in the government bond market.

#### (ii) Bond Settlement

Corporate bonds are settled in KSEI's book-entry system called C-BEST. Both sides of the trade enter settlement instructions into C-BEST. KSEI matches both instructions and returns the matching result to both sides. KSEI checks the balance of the buy side account. When KSEI confirms that the buy side has enough money for the transaction, KSEI performs bond settlement and sends settlement statements to both the sell side and buy side.

**Figure ID05: Corporate Bond - Interest Payment**

- KSEI calculates the interest amount due to each bond holder, including the tax obligation
- All payments executed by the payment banks are based on KSEI's instructions
- Foreign Investors who are not domiciled or who do not wish to enjoy treaty benefits, are not required to submit any tax document

Source: PT Kustodian Sentral Efek Indonesia.

### (iii) Cash Settlement

The cash settlement of corporate bond transactions has two-phase process.

**Step1:** KSEI performs virtual cash settlement with the positions recorded at KSEI.

**Step2:** In order to complete cash settlement, the sell side sends the cash transfer instruction to the payment bank via KSEI. Then, the payment bank carries out real cash settlement.

For the sake of this settlement process, KSEI's participants must open an account at the designated payment banks, and KSEI communicates with its payment banks to keep the real cash positions at payment banks and the positions recorded at KSEI in sync.

For further details, please refer to **Part 3 ID04 (Corporate Bond Transaction Flow for Domestic OTC Trades)**.

### DVP Flow of Cross-Border Bond Transactions

Foreign investors require no local regulatory approval to invest in the Indonesian debt market, and there are currently no limitations on foreign ownership.

All foreign exchange (FX) forward value transactions must match with the underlying securities transactions. Cash accounts of foreign investors are not allowed to be overdrawn and Indonesian rupiah cannot be repatriated offshore. Regarding pre-funding and third-party FX, foreign investors are not subject to any restrictions.

Regulations require documentation of an underlying transaction to support the credit of Indonesian rupiah into investor accounts. Documentation can be in the form of buy/RVP settlement instructions through SWIFT, tested telex, tested fax, or Reuters Monitor



**Figure ID06: Corporate Bond - Redemption Payment**

- KSEI calculates the interest and redemption amount due to each bond holder, including the tax obligation
- All payments executed by the payment banks are based on KSEI's instructions
- Foreign Investors who are not domiciled or who do not wish to enjoy treaty benefits, are not required to submit any tax document

Source: PT Kustodian Sentral Efek Indonesia.

Dealing System (RMDS). The purchase of foreign currency against Indonesian rupiah of more than US\$100,000 (or the equivalent) per month and per legal entity, across all banks in Indonesia, must be supported by underlying documents and a yearly statement confirming the non-speculative nature of the transactions.

For further details, please refer to **Part 3 ID05 (Bond Transaction DVP Flow for Foreign Investors in the OTC Market)**.

### Interest Payment and Redemption of Government Bonds

The interest payment and redemption flow of government bonds in Indonesia is similar to the typical one.

#### (i) PA

BI is appointed as the PA for government bonds. BI sends payment information to the issuer, MOF. BI also receives the payment

instruction from MOF, calculates the amount of interest, and pays interests and principal on behalf of MOF.

#### (ii) CSD

BI also functions as the CSD for government bonds with its system called BI-SSSS. BI as CSD and PA, as well as being the central bank of Indonesia, has its own cash account in its RTGS.

#### (iii) Payment Flow

Interest and principal are transferred from MOF's account into a BI participant's account via BI-RTGS. Then, a participant credits them to a bond holder's account.

#### (iv) Tax

Indonesia imposes capital gains tax and income tax. The tax on interest is deducted at the source by the withholding agent. Regarding government bonds, the buying broker or custodian is the tax withholding agent. For all foreign investors who are



domiciled in countries that have tax treaty agreements with Indonesia, the tax treaty rate is applied subject to the client's eligibility and the completion of Director General of Taxation forms (DGT-1 or DGT-2).

(v) **Other Issues**

BI as a PA does not notify CSD participants of an interest payment in advance. For interest payment and redemption of government bonds, the sub-registry submits the tax documents to the tax office to seek approval.

For further details, please refer to **Part 3 ID06 (Interest Payment Flow of the Government Bond OTC Market)** and **Part 3 ID07 (Redemption Payment Flow of the Government Bond OTC Market)**.

## Interest Payment and Redemption of Corporate Bonds

(i) **PA**

There is no PA appointed by the issuer. KSEI plays the role of PA while bond issuers cover some parts of PA functions themselves.

(ii) **CSD**

KSEI is entitled as a CSD for corporate bonds. KSEI has no banking license and does not use BI for its cash settlement infrastructure. KSEI's participants manage securities separately from their own and their customers' in CSD.

(iii) **Payment Flow**

Interest and principal is transferred from an issuer's account to KSEI's account in KSEI's payment banks. On the payment date, KSEI will distribute interest to participant accounts having entitlement. Then, participants can withdraw cash from KSEI to credit interest and principal to a bond holder's account.

(iv) **Tax**

Indonesia imposes capital gains tax and income tax. The tax on interest is deducted at source by the withholding agent. In the case of corporate bonds, the CSD (KSEI) is the withholding agent. The condition of foreign investors is that same as that for government bonds.

(v) **Other Issues**

For interest payment and redemption of corporate bonds, issuers submit the tax documents to tax office to seek approval.

For further details, please refer to **Part 3 ID08 (Interest Payment Flow of Corporate Bonds)** and **Part 3 ID09 (Redemption Payment Flow of the Corporate Bond OTC Market)**.

## Message Standard

### Message Format

Currently, BI-SSSS adopts a proprietary format and BI is developing a second generation format that will be ISO15022 compliant, and possibly ISO20022 compliant.

KSEI adopts a proprietary format for domestic transactions and ISO15022 for cross-border transactions.

### Message Items

Regarding the 10 common elements of settlement instruction and confirmation messages defined by the Securities Market Practice Group (SMPG), BI currently has 10 common items in its proprietary format in these two messages. KSEI does not have "place of settlement" and "client of receiving/delivering agent" in the messages.

## Market Practice

### Operating Hours

For government bond settlement, BI opens at 6:30 and closes at 19:00. The cut-off time is 16:00.

For corporate bond settlement, KSEI opens at 4:00 and closes at 17:10. The cut-off time for cash settlement instruction of corporate bonds is 15:10.

## Settlement Cycle

There is no fixed settlement period for bonds in the OTC market. The settlement date is usually negotiated and agreed at the time of the deal by the trading counterparties and is generally T+2. Market participants may discuss the shortening of the settlement cycle.

## Fails

KPEI guarantees trade settlement executed on IDX as the clearing and guarantee corporation in the market. KPEI takes over counterparty risk and performs a set of fail management activities to ensure the settlement of each transaction takes place. Its last resort involves the provision of penalties, known as Final Settlement Value (FSV), which roughly amounts to 2.5% of the transaction value. Under FSV, instead of securities, the buying broker receives cash or a combination of cash and securities. Fail trades can be waived as long as the trades are not yet settled. Once the trades are settled, then the trades cannot be cancelled. KPEI does not guarantee the settlement of trades made outside the exchange, thus counterparty risk is borne by end-customers in the OTC market. Since most trades are executed in a scripless environment, 99.9% are settled on the settlement date.

Fail trades for government securities only remain in BI-SSSS for 4 hours before automatically being rejected.

## Buy-in

Buy-in is not necessary as KPEI guarantees all on-exchange transactions. Brokers may pass any penalties resulting from fails to the investor if the fail is caused by the investor.

## Numbering and Coding

In the Indonesian bond market, there are two CSDs: BI for government bonds and KSEI for corporate bonds.

### Numbering and Coding for OTC and Exchange Markets

#### Securities Numbering

Local code is commonly used in the local market rather than the International Securities Identification Number (ISIN) code. Indonesian ISIN codes are issued by KSEI. The full list of ISIN codes is available at KSEI's web site.

#### Financial Institution Identification

A local code, the Single Investor Identification (SID), is used for all investors including foreign institutions.

#### Securities Account

BI adopts multi-layer and omnibus account structures in BI-SSSS. BI's participants manage securities separately from their own and their customers' in CSD. Local securities account numbering is used.

#### Cash Account

Local cash account numbering is used.

#### Character Code and Language

UTF-8 is used for BI-SSSS, C-BEST, and BI-RTGS.

## Medium- to Long-Term Strategies

BI as the central registry for government bonds maintains an electronic registration. Therefore, the settlement processes of government bonds are STP. One of the current challenges in the Indonesian bond market is how to encourage market participants to use a centralized platform for bond trading.

Regarding new initiatives, BI plans to implement a second-generation system that will replace the existing model comprising BI-SSSS and BI-RTGS.

It will consist of two systems: the trading system and the settlement system. **Figure ID07** presents a comparison between the existing system and the proposed second-generation system. **Figure ID08** presents a roadmap for the latter.

Enhancing interoperability between BI-SSSS and C-BEST is another initiative being undertaken by BI. Emphasis is being placed on interface, standardization (e.g., ISIN), a tier system, single investor identity, and synchronization.

## References

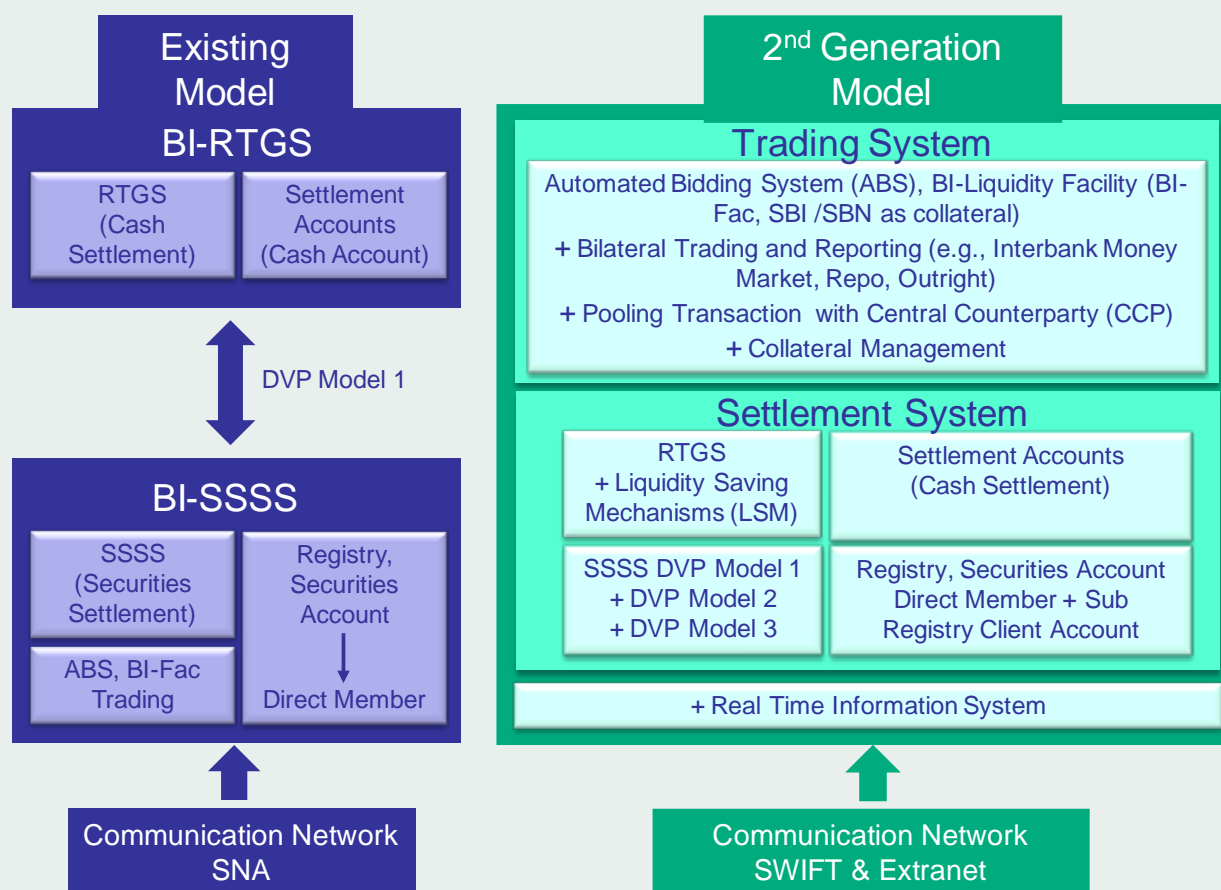
Indonesian Central Securities Depository. *DVP Settlement and Interest and Redemption Payment Indonesia, 7th ABMF Meeting*.

Bank Indonesia. *The Road Map of Money Market Development to a Liquid, Resilient, and Efficient Money Market*.

Indonesian Central Securities Depository. *Fokuss*. 4th edition, year 2012.

Note: Some parts of this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

**Figure ID07 Existing System VS 2nd Generation**

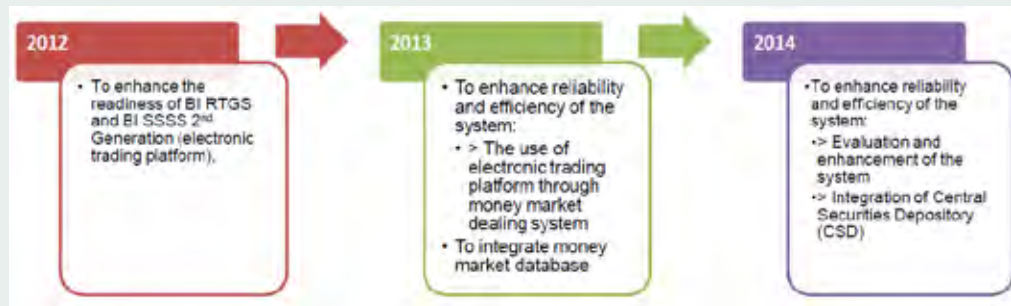


Source: Bank Indonesia.

**Figure ID08: Roadmap of 2nd Generation Model System**

Year	Activities
2008	<ul style="list-style-type: none"> <li>▪ Grand Design</li> <li>▪ Business Requirements</li> <li>▪ Market Liquidity and Financial Market Deepening</li> </ul>
2009	<ul style="list-style-type: none"> <li>▪ Request for Proposal (RFP)</li> <li>▪ Product Evaluation</li> <li>▪ Procurement Process</li> </ul>
2010	<ul style="list-style-type: none"> <li>▪ Procurement Process</li> <li>▪ Dissemination to Participants and other Stakeholders</li> <li>▪ Formulation of Regulation</li> </ul>
2011	<ul style="list-style-type: none"> <li>▪ Formulation of Functional Specifications and Design Specifications</li> <li>▪ Development (Product Customization)</li> <li>▪ Dissemination to Participants and other Stakeholders</li> <li>▪ Formulation of Regulations (BI Regulation and Circular Letter)</li> </ul>
2012	<ul style="list-style-type: none"> <li>▪ Testing (Unit Test, SIT, UAT, UIT, Simulation-Industrial Test)</li> <li>▪ Dissemination to Participants and other Stakeholders</li> <li>▪ Formulation of Regulations (BI Regulation, Circular Letter, SOP, guidance) and By-Laws</li> <li>▪ Training for Participants</li> <li>▪ Preparation for Implementation</li> <li>▪ Implementation</li> </ul>

Source: Bank Indonesia.

**Figure ID09: Timeframe for Developing System Infrastructures**

Source: Bank Indonesia.

# Japan (JP)

## Bond Market Infrastructure

### Overview of Bond Markets

The secondary market for bonds in Japan can be divided into the exchange market and the over-the-counter (OTC) market. Most bond transactions take place in the OTC market.

According to the Asian Development Bank's (ADB) *AsianBondsOnline* website, the amount of local currency (LCY) government bonds outstanding in Japan at the end of 1Q13 was US\$9,933.99 billion, while LCY corporate bonds totaled US\$97.95 billion.

The scale of the OTC market is massive, reaching JPY7,723 trillion in 2010 and accounting for almost 100% of total bond trade value.<sup>1</sup> On the other hand, bond purchasing and selling in the exchange market was valued at only JPY1 trillion in 2010. By bond type, the value of government bond purchasing and selling was JPY7,620 trillion in 2010, or 98.7% of total trade value, while the value of corporate bond purchasing and selling amounted to JPY35 trillion, or 0.5% of the total.<sup>2</sup>

<sup>1</sup> The bond purchasing and selling volume of exchanges = (trading volume on the exchanges) \* (2).

<sup>2</sup> These figures include the purchase and sale values of repurchase agreements.

In the OTC market, a Pre-Settlement Matching System (PSMS) is provided by the Japan Securities Depository Center, Incorporated (JASDEC) for all types of debt securities. However, it does not mean all transactions data are inputted into the system, and some transactions go directly to the central securities depositories (CSDs). Regarding clearing systems, the Japan Securities Clearing Corporation (JSCC)<sup>3</sup> is the central counterparty (CCP) for Japanese Government Bonds (JGBs) and other types of debt traded in the exchange market. There are two CSDs in Japanese bond markets: (i) the Bank of Japan (BOJ), which operates the Financial Network System (BOJ-NET) and is the CSD of JGBs, and (ii) JASDEC, which is the CSD for all other securities in Japan. All securities can be settled with central bank money using delivery versus payment (DVP).

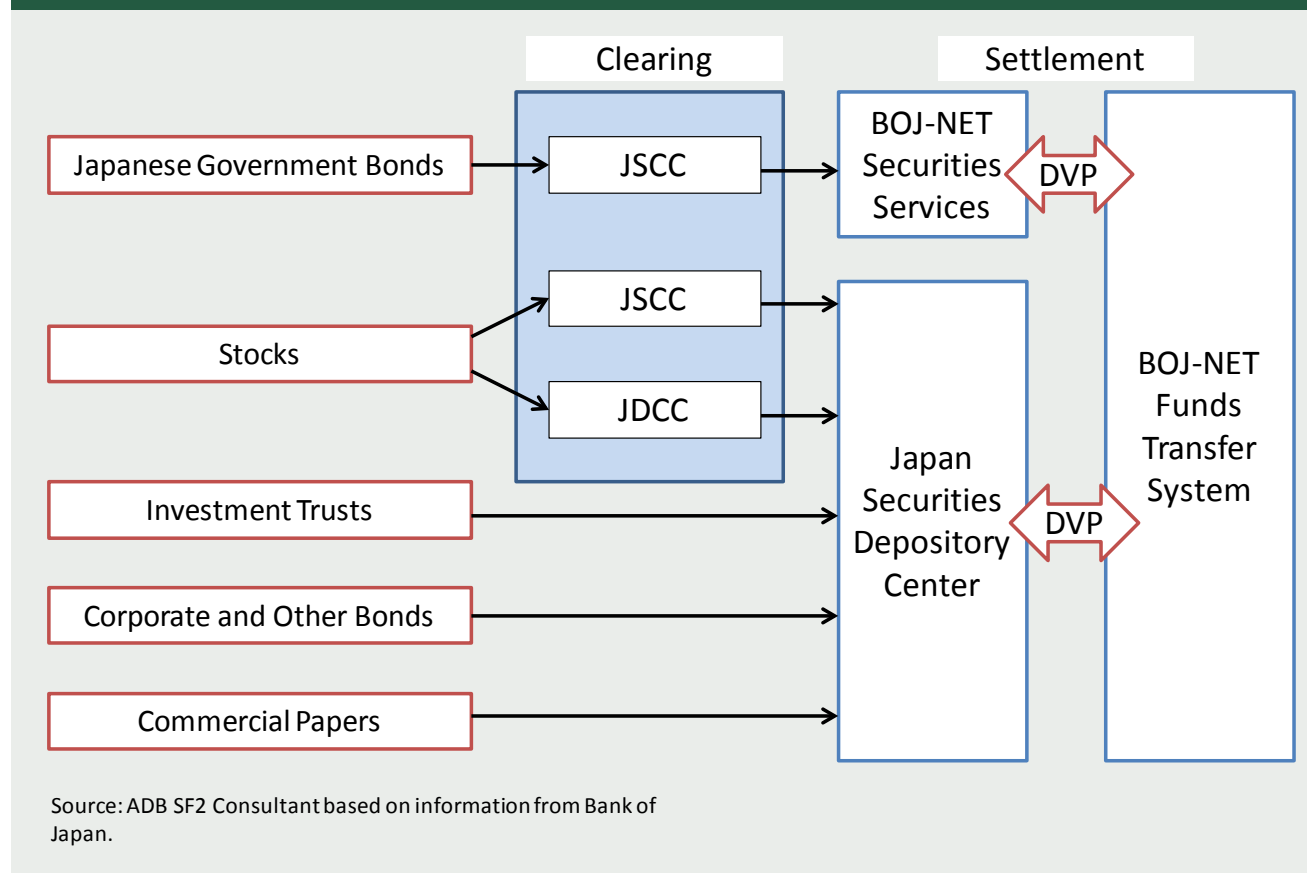
Please refer to **Part 3 JP01 (Government Bond Market Infrastructure Diagram)** and **Part 3 JP02 (Corporate Bond Market Infrastructure Diagram)**.

### Description of Related Organizations

#### Ministry of Finance (MOF)

MOF is responsible for the management of fiscal and economic policies in Japan. MOF issues JGBs

<sup>3</sup> Formerly, the Japanese Government Bond Clearing Center (JGBCC).

**Figure JP01: Overview of Securities Settlement Systems in Japan**

and makes interest payments and redemption. Moreover, MOF tries to achieve stable and smooth financing for national accounts and to minimize medium-to-long term financing costs. It formulates an annual JGB Issuance Plan in close consultation with market participants. Also, it conducts cost-at-risk (CAR) analysis and promotes diversification of the investor base.

#### **Financial Services Agency (FSA)**

FSA inspects and supervises banks and insurance and securities companies; establishes policies for the financial system; and monitors adherence to the relevant securities laws, including the Financial Instruments and Exchange Law, Banking Law, and Deposit Insurance Law. The Financial Instruments and Exchange Law governs trading practices in the Japanese securities market.

#### **Bank of Japan (BOJ)**

BOJ is the central bank of Japan. BOJ deals with the entire business of JGBs, including issuance, securities and cash settlement, and interest

payment and redemption. BOJ is also the central depository of JGBs. The settlement of funds and Japanese government securities is facilitated by BOJ-NET. BOJ operates the BOJ-NET Funds Transfer System (BOJ-NET FTS) and BOJ-NET JGB Services. BOJ also oversees all systemically important payment systems (SIPS).

#### **Tokyo Stock Exchange, Inc. (TSE)**

TSE is a stock corporation that provides an exchange securities market under the authorization of the Prime Minister. TSE is a central institution in the secondary market and its major functions include providing a market place, monitoring trading, listing securities, monitoring listed securities, and supervising trading participants.

#### **Japan Securities Depository Center, Inc. (JASDEC)**

JASDEC was founded on 6 December 1984 as a non-profit foundation and began operations on 9 October 1991. It was later incorporated

on 4 January 2002 and began operations as a stock company, JASDEC Inc., on 17 June 2002. The stock company is owned by its depository participants, which include securities companies, banks, insurance companies, securities finance companies, and stock exchanges.

#### **Japan Securities Clearing Corporation (JSCC)**

JSCC was established in 2002 as the first cross-market clearing organization in the Japanese securities market by the stock exchanges and the Japan Securities Dealers Association (JSDA). In January 2003, JSCC was licensed as the first clearing organization in Japan to conduct securities obligation assumption business (now called financial instruments obligation assumption business) under the Securities and Exchange Law (now called the Financial Instruments and Exchange Law). JSCC merged with the Japan Government Bond Clearing Corporation (JGBCC) in October 2013. JGBCC was founded in October 2003 and began offering JGB settlement and clearing services in May 2005 after being granted authorization to assume obligations arising from the transaction of financial instruments under the Financial Instruments and Exchange Act. As a result of the merger, JSCC took over the role of JGB clearing services.

#### **Japan Securities Dealers Association (JSDA)**

JSDA is an association functioning as a self-regulatory organization (SRO) and as an interlocutor for the securities industry. JSDA's membership comprises more than 500 securities firms and other financial institutions operating securities businesses in Japan. As a fully empowered SRO, JSDA extensively regulates market intermediaries. Its self-regulatory functions encompass rule-making, enforcement, inspection, disciplinary actions, accreditation of sales representatives, and dispute mediation. JSDA also provides vehicles for policy dialogue between the industry, the government, and other related parties; conducts and promotes investor education; and implements studies for further developing the market.

## Overview of Government Bond Market

### **Trading**

#### **OTC Market**

Over 99% of JGB trades take place in the OTC market. The sell side and buy side trade through telephone, fax, the Private Trading System (PTS), and systems operated by information vendors. JASDEC provides trade matching functions with the Pre-Settlement Matching System (PSMS) for all types of debt securities, although some transactions go directly to the CSDs. JASDEC also serves a pre-settlement matching function for clearing and DVP settlement.

#### **Exchange Trading**

TSE operates the exchange market for JGBs. However, TSE currently deals with only JGB futures in a trading system called Tdex+. JGB spot transactions are conducted outside the trading system.

### **CCP**

#### **CCP for the OTC Market**

Approximately 40% of JGB domestic transactions are cleared by JSCC, which is the CCP for JGB.<sup>4</sup> JSCC replaces a contract between the two parties with two new contracts: one between JSCC and the buy side, and the other between JSCC and the sell side. Cash and securities positions between JSCC and participants are netted and settled on a DVP basis using BOJ-NET. Netting reduces the value of JGB transfers to roughly one-quarter of the value of the original transactions. JSCC conducts novation for OTC market transactions.

#### **CCP for the Exchange Market**

There is no CCP for the exchange market.

### **Bond Settlement**

As mentioned above, BOJ is the CSD for JGBs. It operates BOJ-NET, an online network system

<sup>4</sup> Cross-border transactions are processed directly by CSD (BOJ-NET) without using CCP (JSCC).



linking BOJ and other financial institutions. BOJ-NET is used for funds transfer services, as well as JGB-related services including settlement, auction, and initial payments for the issuance of JGBs. The business application of BOJ-NET for JGB-related services is called BOJ-NET JGB Services, which started operations in 1990 to enable online processing of services. BOJ-NET's network is also called BOJ-NET. The type of line used is VPN. The protocol used is TCP/IP.

## Cash Settlement

Cash settlement of JGB transactions uses central bank money. For cash settlement obligations for domestic bond transactions, JSCC has an account with the BOJ. Intraday overdraft is allowed if there is collateral to secure debt incurred as a result of the use of the intraday overdraft facility. The liquidity-saving feature of the BOJ-NET Real-Time Gross Settlement (RTGS) system enables the smooth settlement of bond transactions.

# Overview of Corporate Bond Market

## Trading

### OTC Trading

Corporate bonds are mostly dealt in the OTC market. It is not necessary for the sell side and the buy side to input the OTC dealings into trading systems, but both the sell side and buy side send a trade report to JASDEC for matching.

### Exchange Trading

There are less corporate bond transactions in exchange markets than the OTC market, although TSE and the Nagoya Stock Exchange have bond trading facilities.

## CCP

### CCP for the OTC Market

There is no CCP for the corporate bond OTC market.

### CCP for the Exchange Market

There is no CCP for the corporate bond exchange market.

## Bond Settlement

JASDEC is the central depository for all types of bonds except JGBs. Under the dematerialized system, it is compulsory for all listed securities to be transferred to JASDEC's Book-Entry Transfer System (BETS). Transaction settlements include securities alone, with cash settlement handled separately through BOJ. The types of lines are Integrated Services Digital Network (ISDN) and the protocol is TCP/IP. Message formats are ISO15022 and comma-separated values (CSV).

## Cash Settlement

Cash settlement of corporate bond transactions is conducted in BOJ-NET as is the case in government bond.

# Interest Payment and Redemption

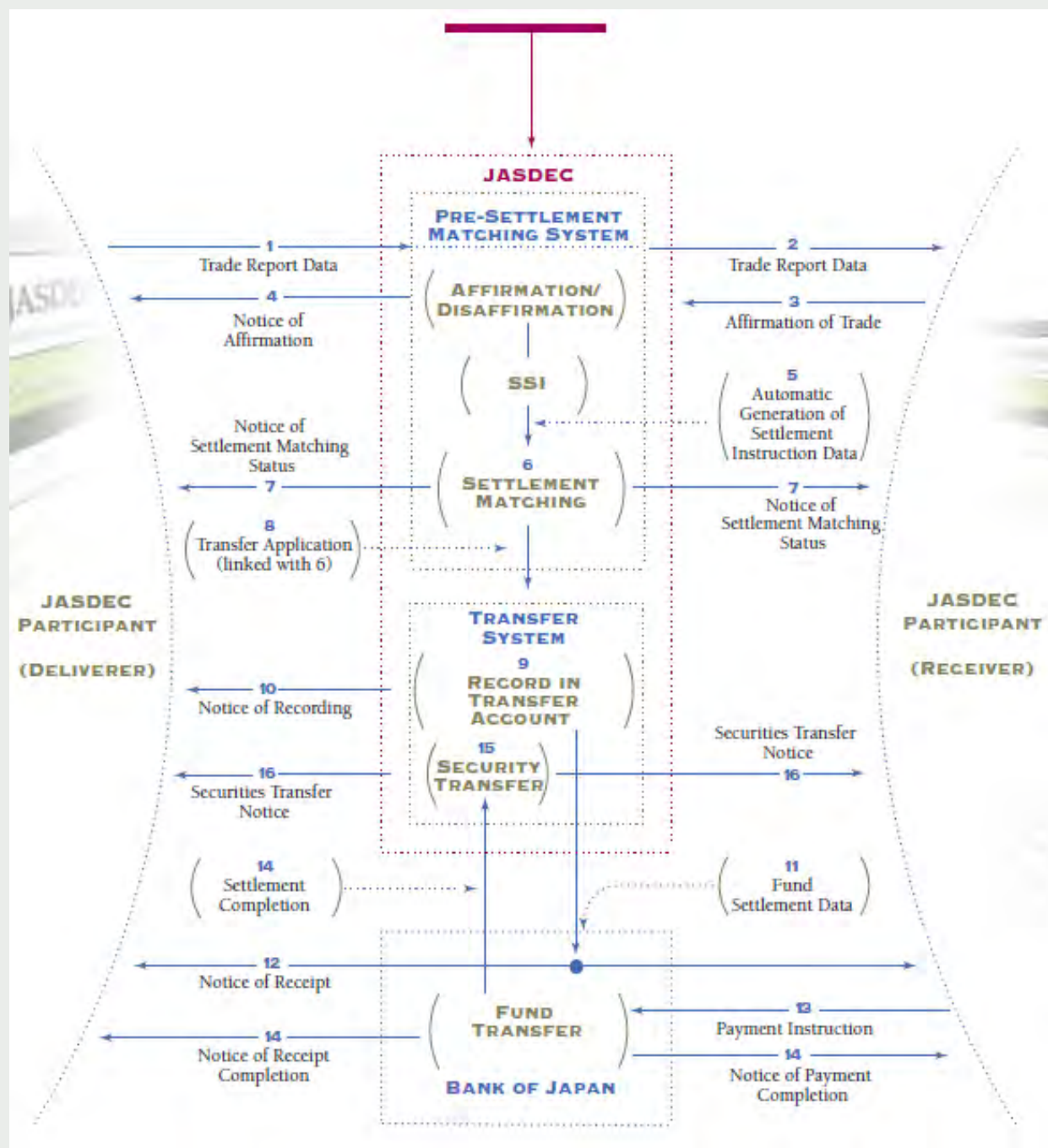
## Interest Payment and Redemption of Government Bonds

Most bonds pay interest on a semi-annual basis depending on the conditions for the interest. Interest is calculated on a 365-day basis (366 days in a leap year). BOJ notifies CSD participants of interest payments twice in advance. Regarding redemption, BOJ sends notification of payment detail to CSD participants twice in advance as well.

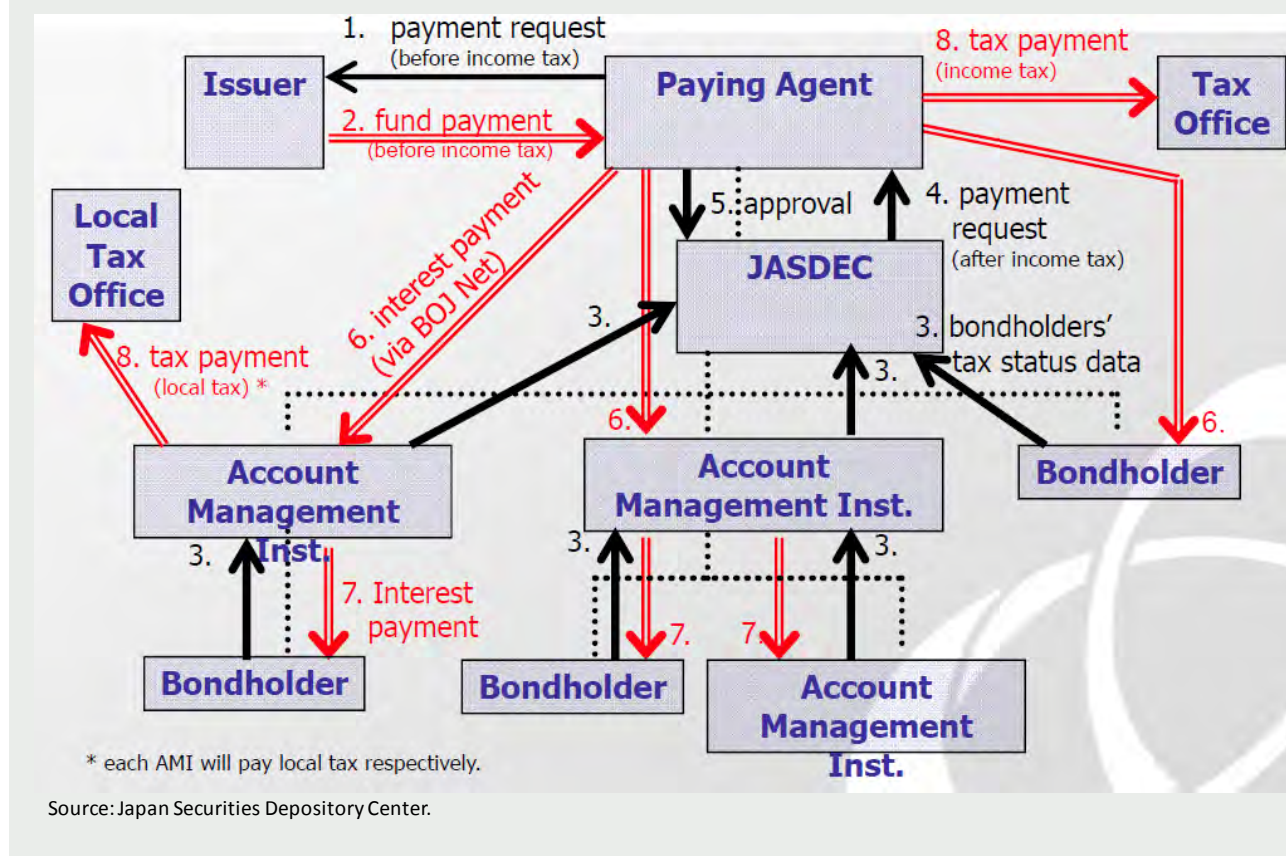
## Interest Payment and Redemption of Corporate Bonds

Most bonds pay interest on a semi-annual basis. Interest payment is performed on condition of a cycle-interest setup at the time of issue. Interest is calculated on a 365-day basis (366 days in a leap year). Unlike the case of government bonds,

Figure JP02: Book-Entry Transfer System (BETS) for straight bond by JASDEC



Source: JASDEC.

**Figure JP03: Interest Payment Flow of Corporate Bond**

the Paying Agent (PA) does not notify CSD participants of an interest payment in advance (**Figures JP03, JP04**).

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

The business flow of the JGB OTC market is analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are described below.

#### (i) Pre-Settlement Matching

JASDEC owns and operates PSMS for the pre-settlement of JGBs. PSMS provides a framework for electronic matching for institutional investor transactions between investment management companies,

securities companies, trust banks, custodian banks, and life and non-life insurance companies to achieve the seamless, automated processing of all operations from post-trade through settlement.

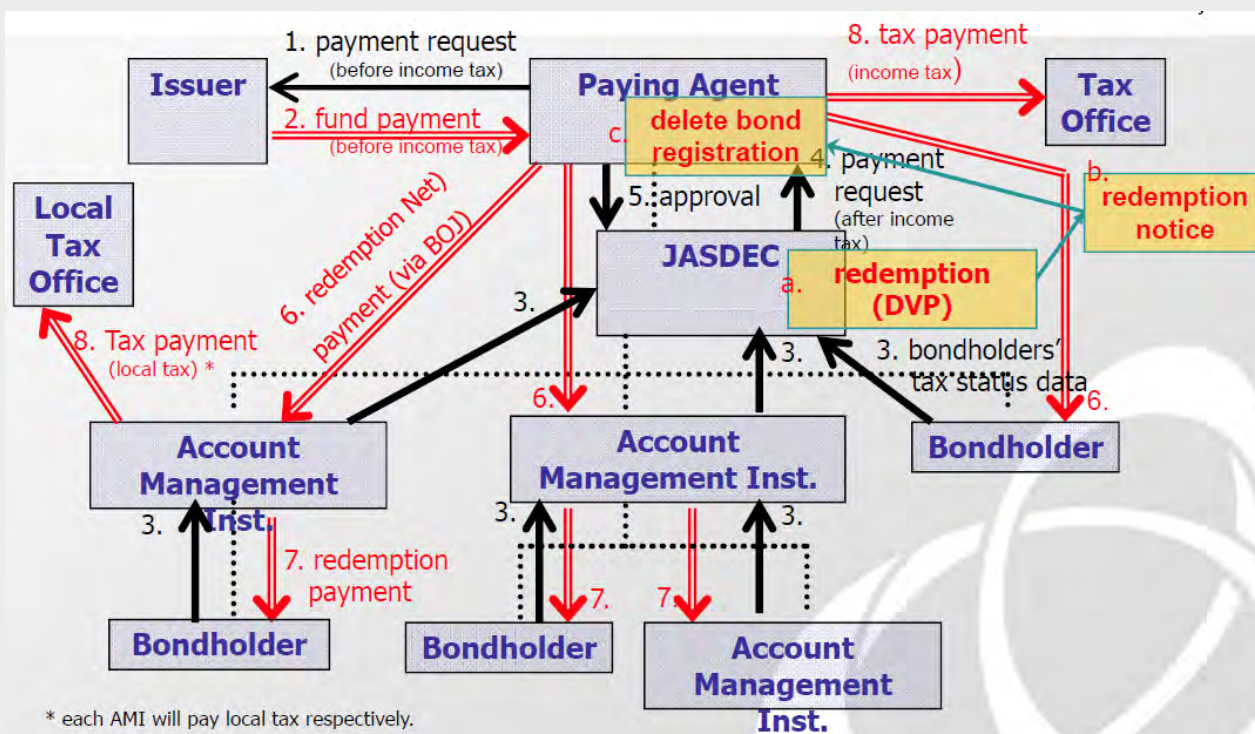
#### (ii) Bond Settlement

Currently, there is no connection between PSMS and BOJ-NET. Therefore, online transfers from PSMS to BOJ-NET have not yet been realized. Settlement instructions are entered from the sell side or buy side. Then, BOJ-NET forwards the instruction to the other side for affirmation. The other side sends back affirmation after checking the instruction and confirming its accuracy.

Regarding settlement matching, BOJ adopts local matching. First, the sell side sends a DVP request to BOJ-NET.<sup>5</sup> BOJ-NET sends notice of the DVP request from the sell side to the buy side. After receiving the notice,

<sup>5</sup> The buy side also can send (initiate) the DVP request.



**Figure JP04: Redemption Payment (with final interest payment) Flow of Corporate Bond**

Source: Japan Securities Depository Center.

the buy side matches the notice and sends the DVP request back to BOJ-NET. BOJ does not send matching confirmation to either side at the time of settlement matching. BOJ performs DVP settlement on a real-time basis. BOJ adopts DVP Model 1 of the Bank for International Settlements (BIS) definition. DVP settlement is effected by locking all related accounts and releasing them simultaneously.

With the launch of a new BOJ-NET in either 2015 or 2016, the system will be able to connect with PSMS to receive settlement instruction data. After receiving the data, the new BOJ-NET will send a notice of acceptance of JGB transfer instruction for DVP to both of the sell side and the buy side. After receiving a notice of acceptance of JGB transfer instruction for DVP, the sell side will send a DVP request to the new BOJ-NET. In the case of JSCC, the sell side or buy side will send settlement instruction to BOJ via PSMS when connected.

### (iii) Cash Settlement

Cash settlement is conducted by BOJ using central bank money. The buy side enters a DVP request into BOJ-NET, and then BOJ-NET notifies the buy side of acceptance of the instruction. BOJ performs bond and cash settlement simultaneously. When the settlement is completed, BOJ-NET sends settlement confirmation to both the sell side and the buy side.

For further details, please refer to **Part 3 JP03 (Government Bond Transaction Flow for Domestic Trades OTC Market (JGB) / DVP through Trade Matching (PSMS))**, **Part 3 JP04 (Government Bond Transaction Flow for Domestic Trades OTC Market (JGB) / DVP (New BOJ-NET) through Trade Matching (PSMS) and JSCC)**, and **Part 3 JP05 (Government Bond)**.

## DVP Flow of Corporate Bonds for Domestic Trades

The business flow in the Japanese corporate bond OTC market is analyzed using a typical DVP flow. Key findings of the analysis are described below.

### (i) Pre-Settlement Matching

PSMS is operated by JASDEC and the scheme of electronic matching on trades and settlements for institutional investor transactions in PSMS is similar to the case of government bonds. JASDEC receives a trade report from both sides, performs post-trade matching, and creates the Standing Settlement Instruction (SSI).

### (ii) Bond Settlement

PSMS and BETS are directly connected with each other. PSMS transfers settlement instruction to BETS. Before sending, PSMS generates settlement instruction within the system and sends a notice of matching status to both the sell side and buy side. Hence, BETS does not send any instruction to either the sell side or buy side before bond settlement.

JASDEC performs settlement matching via a central matching method within its system. JASDEC holds bonds with BETS and sends funds settlement data for DVP to BOJ-NET. JASDEC executes bond settlement following cash receipt completion from BOJ. JASDEC sends settlement confirmation to the sell side and buy side. JASDEC and BOJ are connected online and they perform DVP settlement on a real-time basis. JASDEC adopts DVP Model 1 of the BIS definition.

### (iii) Cash Settlement

BOJ conducts cash settlement of corporate bonds using its BOJ-NET FTS. JASDEC sends a DVP request (cash) to BOJ-NET and BOJ-NET sends a payment request to the buy side only. The buy side receives a payment request from BOJ-NET and affirms and returns the instruction. BOJ-NET sends a cash settlement report to the sell side and the buy side, and notifies JASDEC of cash receipt completion for bond settlement.

For further details, please refer to **Part 3 JP05 (Corporate Bond Transaction Flow for Domestic Trades)**.

## DVP Flow of Cross-Border Bond Transactions

Foreign investors are not subject to any restrictions on foreign exchange (FX) or cash management. Trade orders are placed from a foreign institutional investor (FII) to a global broker, and then to a domestic broker. The trade flow is a typical one. Japan is an open market in which FX with underlying investment, third-party FX, offshore FX trading, FX prefunding, FX reporting, and overdraft for foreign investors are all permitted. The Japanese yen is available in international financial markets. Also, a global custodian, or even large FIIs or their investment managers, may have their own treasury function based in Tokyo. Hence, trades are funded through a domestic custodian account in Japanese yen on settlement day.

For further details, please refer to **Part 3 JP06 (Bond Transaction Flow for Foreign Investors OTC Market (JGB) / DVP)**.

## Interest Payment and Redemption of Government Bonds

The business flow of interest payment and redemption of JGBs is analyzed using a typical flow. Key findings of the analysis are given below.

### (i) PA

For JGBs, BOJ is appointed as the PA, requesting interest payment instruction from an issuer and paying interest and principle to custodians on behalf of the issuer.

### (ii) CSD

BOJ also has a CSD function with the system called BOJ-NET. BOJ as the CSD, PA, and central bank in Japan has a cash account in its RTGS system.

### (iii) Payment Flow

BOJ plays a role in payment flow as a PA. BOJ makes redemption and interest payment to an account management institution (AMI)

via BOJ-NET for credit to bondholder's account.<sup>6</sup> BOJ-NET is used as a cash settlement system for interest payment and redemption. Central bank money is usually more secure than commercial bank money.

(iv) **Tax**

Withholding taxes are imposed on interest for residents only, and not for non-residents in Japan. PA withholds income taxes while AMI withholds local tax.

For further details, please refer to **Part 3 JP07 (Interest Payment Flow of Government Bond)** and **Part 3 JP08 (Redemption Payment Flow of Government Bond)**.

## Interest Payment and Redemption of Corporate Bonds

The business flow of interest payment and redemption of corporate bonds is analyzed using a typical flow. Key findings of the analysis are given below.

(i) **PA**

Issuers appoint commercial banks as a PA. The PA requests interest payment instruction of issuers and pays interest and principal to AMI on behalf of issuers. Also, the PA confirms the bond-holder list and calculates interest.

(ii) **CSD**

JASDEC is charged with CSD functions for corporate bonds in Japan. It does not have a banking license and does not have an account in the RTGS system. JASDEC receives a bondholder list with tax data from the participants (generally, custodians).

(iii) **Payment Flow**

Both the PA and AMI have an account within BOJ-NET. First, the PA transfers cash for redemption and interest payment from an issuer's account to its own account. Then, the PA instructs BOJ to transfer cash to AMI's account to credit the bondholder's account via BOJ-NET.

(iv) **Tax**

Withholding taxes are imposed on interest for residents only. The PA withholds income tax while AMI withholds local tax.

For further details, please refer to **Part 3 JP09 (Interest Payment Flow of Corporate Bond)** and **Part 3 JP10 (Redemption Payment Flow of Corporate Bond)**.

## Message Standard

### Message Format

BOJ uses its proprietary format and has plans to adopt ISO20022 in FY2015. JASDEC uses ISO15022 and will adopt ISO20022 in January 2014.

### Message Items

BOJ-NET does not comply with international standard format, instead using its own format. Regarding the 10 common elements of settlement instruction and confirmation defined by Securities Market Practice Group (SMPG), BOJ has the same message items as ISO20022 except with respect to Trade Data, Place of Settlement, and Client of the Receiving or Delivering Agent.

## Market Practice

### Operating Hours

BOJ-NET for JGBs operates from 9:00 to 16:30. The cut-off time is 14:00.<sup>7</sup>

<sup>6</sup> AMI has the same meaning as Account Management Agent (AMA), and it plays a similar role as custodian.

<sup>7</sup> The cut-off time is the deadline for bond settlement prior to the closing time for the book-entry system as decided by market participants for the purpose of recognizing fails and completing all settlements each day.

JASDEC operates from 9:00 to 17:00. The cut-off time is 15:00.

## Settlement Cycle

The standard settlement cycle for domestic JGB transactions is T+2. For domestic corporate bond transactions, it is T+3. The settlement cycle of cross-border transactions is between T+2 and T+4. One reason for the differences is that business processes vary between domestic and cross-border transactions. Cross-border transactions may require additional operations by global and local custodians. The other reason is the time differences between North America, Europe, and Japan.

## Fails

### OTC Market DVP Transactions for Government Bonds

JSDA sets out the guidelines concerning fails for government bonds. Please refer to Appendix 2 for Japanese Government Securities Guidelines for RTGS published by JSDA.

### Exchange Market DVP Transactions for Government Bonds

Settlements of JGBs that are not delivered by 13:30 on settlement date are postponed to a later date, but must be settled no later than settlement date +4. The delivering participant must notify JSCC beforehand of the date on which the settlement will take place for the failed transaction.

### Exchange Market DVP Transactions for Corporate Bonds

Delivering participants are allowed to settle corporate bonds with the consent of the receiving participant by issuing the due bill in lieu of actual securities delivery. The delivering participant must deliver the security within 5 business days after the original settlement date.

## Bilateral Netting

JSCC act as CCP and guarantees the performance of payment and securities delivery of any trading transaction for government bonds. This reduces the risks stemming from clearing members who fail to meet their contractual obligations. In addition,

since the legal basis of multilateral netting is not clear in Japan, after a clearing organization takes over debt from all the participants as a CCP and becomes a party concerned with all the dealings, it performs bilateral netting to acquire the same effect with multilateral netting.

## Taxation

PAs withhold 15% in income taxes and AMI withholds 5% in local taxes from individual investors (residents). Non-residents can become tax-exempt by following the necessary procedures.

## Numbering and Coding

### Numbering and Coding for OTC and Exchange Markets

#### Securities Numbering

BOJ-NET uses proprietary code and the new BOJ-NET will adopt International Securities Identification Number (ISIN) as a securities identification number. JASDEC has already adopted ISIN for bonds. ISIN will be the standard for securities identification in Japan. The relationship between ISIN and local numbering is shown in **Figure JP05**.

#### Financial Institution Identification

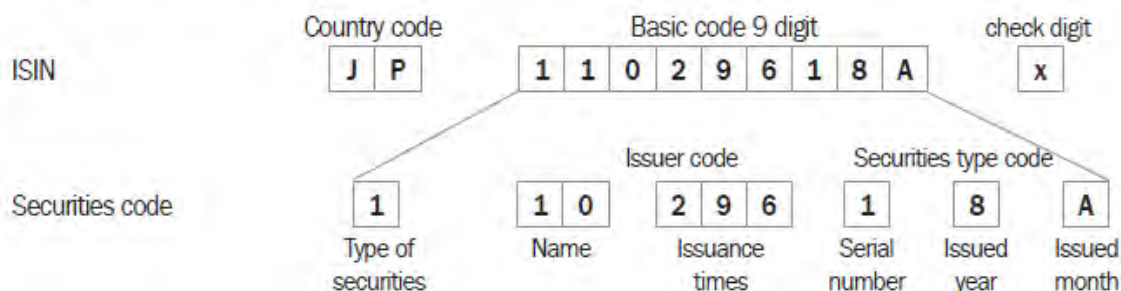
Currently, only proprietary financial institution identification codes are used by CSDs for JGBs. The new BOJ-NET will adopt the Business Identifier Code (BIC) in addition to the current proprietary codes. JASDEC has already adopted BIC (**Figure JP06**).

#### Securities Account

BOJ adopts an omnibus account structure in its book entry, and also has a multi-layer account structure for participants. JASDEC also adopts an omnibus account structure in its BETS, and has a multi-layer of account structure for CSD participants.

Securities accounts use proprietary numbering. The current proprietary account structure will be used for the new BOJ-NET. **Figure JP07** provides a brief description of the account structure based



**Figure JP05: Local Numbering Scheme and Codes for International Securities Identification Number****Example: 296th 10-year bonds**

ISIN = International Securities Identification Number

Source: NTT DATA Corporation.

**Figure JP06: Financial Institution Identification**

BIC address = ISO 9362

- ✓ 8 digits code shows financial institution (last 3 digits are option for branch code)
- ✓ Any local identification code used in market practice, should be translated into BIC.

Example:

B O J P

4 characters for  
financial institution

J P

2 characters  
ISO country short name  
ISO 3166-1 alpha 2

J T

2 characters  
location code

X X X

3 characters  
branch code, option  
(‘XXX’ means head office)

BOJP = Bank of Japan; JP = Japan; JT = Tokyo

Source: NTT DATA Corporation.

on BOJ regulations of the JGB book-entry system.

The securities account structure is illustrated in **Figure JP08**.

JASDEC has also adopted a proprietary securities account structure.

### Cash Account

Cash accounts use proprietary numbering.

### Character Code and Language

The current BOJ-NET adopts Japanese Industrial Standards (JIS). New BOJ-NET will adopt Unicode, using UTF-8 as the encoding scheme.

The language for New BOJ-NET will be Japanese. PSMS and BETS of JASDEC also adopt UTF-8.

Character code sets and language are illustrated in **Figure JP09**.

Figure JP07: Securities Account

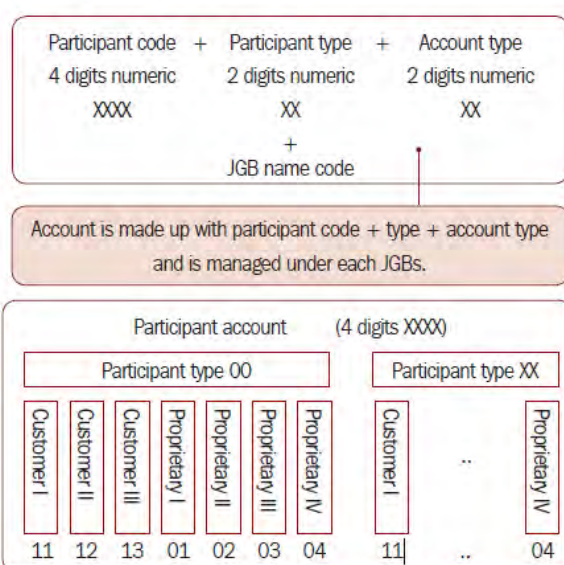
Divisions of Direct Participant's Account<sup>1</sup>

1. The Direct Participant's Account shall be divided into the following:
  - a. The account into which the description or record of the book-entry JGBs to which the relevant Direct Participant holds the rights shall be made (hereinafter referred to as the "Direct Participant's Account [Proprietary ledger]"); and
  - b. The account into which the description or record of the book-entry JGBs to which Customers of the relevant Direct Participant, or its Lower-Positioned Institutions, hold the rights shall be made (hereinafter referred to as the "Direct Participant's Account [Customer ledger]").
2. The Direct Participant's Account (Proprietary ledger) and the Direct Participant's Account (Customer ledger) shall have subdivisions for each Classification as separately provided by the BOJ. In such case, the Direct Participant's Account (Proprietary ledger) shall have a subdivision into which the book-entry JGBs, which are subject to a pledge, are described or recorded, and the other subdivision into which other book-entry JGBs are described or recorded.

<sup>1</sup> Bank of Japan. 2009. Regulations concerning the Japanese Government Bonds Book-Entry System. [http://www.boj.or.jp/erv/paym/jgb\\_bes/data/fyoryo01.pdf](http://www.boj.or.jp/erv/paym/jgb_bes/data/fyoryo01.pdf)

## JP08: Securities Account Structure

## Account system of JCB book entry



Source: ABMF SF2.

## Securities account under MT message

A. General information
B. Trade details
C. Financial instrument/account
95a ACOW account owner
97a 41c Safekeeping account
E. Settlement details

Example:

95a:ACOW//BOTKJPJT

95a:SAFE/xyz123

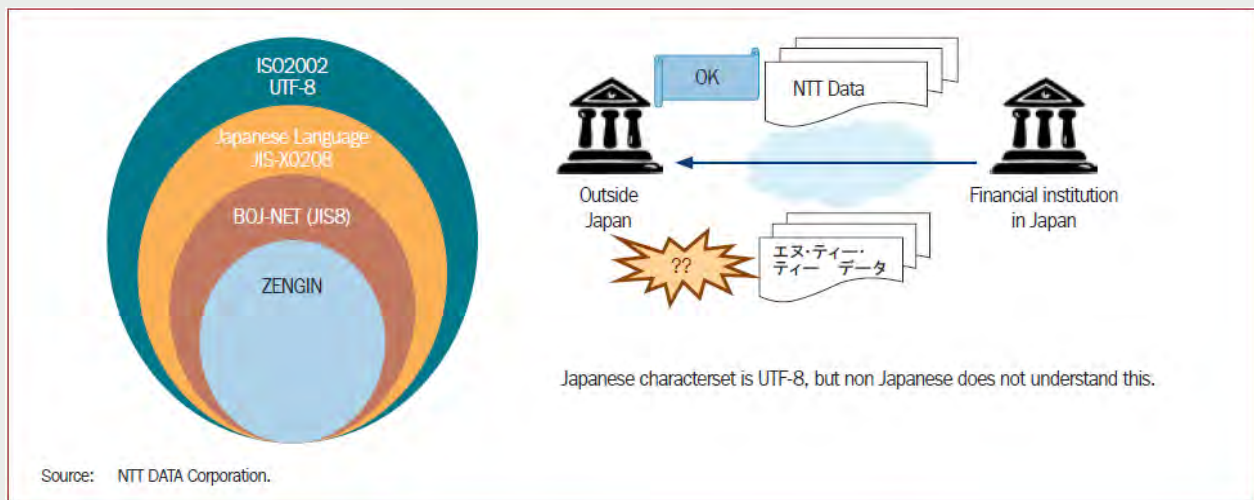
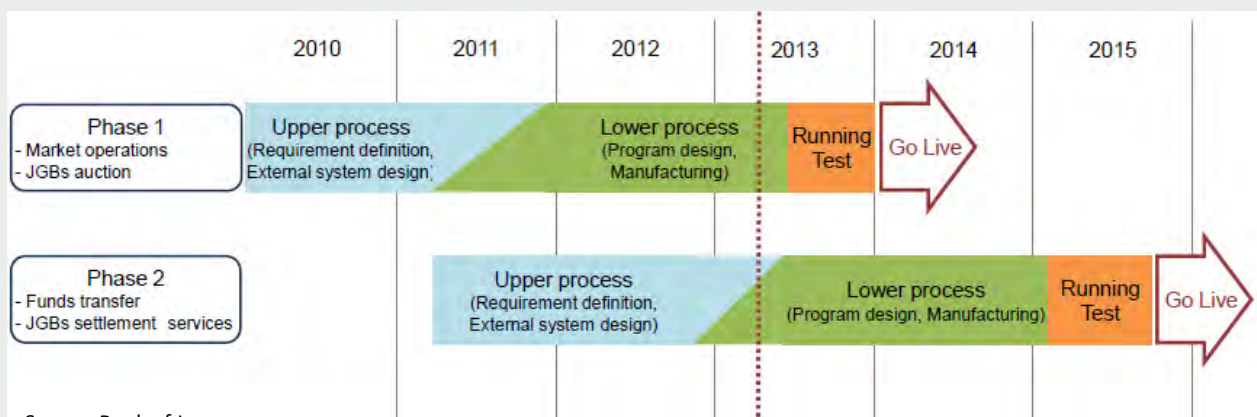
Indicated only as account

## Securities account under ISO message

index	Message item	
8.0	Quantity and account details	M
8.1	Settlement quantity	M
8.2	Quantity	M
8.3	Original and current face	M
8.4	Denomination choice	O
8.5	Account owner	O
8.6	Safekeeping account	M
8.7	Cash account	O
8.8	Safekeeping place	O
8.9	Quantity breakdown	O

ISO example:

```
<QtyAndAcctDtls>
<SfkpgAcct>
  <Id>xyz123</Id>
</SfkpgAcct>
</QtyAndAcctDtls>
```

**Figure JP09: Character Code Sets and Language in the Japanese Settlement System****Figure JP10: New BOJ-NET Implementation Timeline**

## Medium- to Long-Term Strategies

Regarding message standards, JASDEC will introduce ISO20022 in 2014 for PSMS and BETS. JASDEC will also introduce SWIFTNet by 2014 and will terminate use of ISO15022 by the end of 2019.

BOJ will adopt ISO20022 for some transactions related to cross-border businesses under the new BOJ-NET between the end of 2015 and early 2016 (**Figure JP10**). On the matter of the settlement cycle, a working group tasked to shorten the settlement cycle for JGBs was established in September 2009 under the Reform Promotion Center for Securities Clearing and Settlement System, with JSDA serving as the secretariat of the working group.



## References

ADB. *ASEAN+3 Bond Market Guide*

Financial Bureau, Ministry of Finance, Japan.  
*Debt Management Report: The Government  
Debt Management and the State of Public  
Debt.*

BOJ. [www.boj.or.jp/en/](http://www.boj.or.jp/en/)

Japan Securities Research Institute. *Securities  
Market in Japan 2012.*

JSDA. *The Japanese Government Securities  
Guidelines for Real-Time Gross Settlement.*

JSDA. *Practical Guidelines for the Handling of  
Fails Charges.*

JSDA. [www.jsda.or.jp/html/en/index.html](http://www.jsda.or.jp/html/en/index.html)

JASDEC. *The Japanese Government Securities  
Guidelines for Real-Time Gross Settlement.*

JASDEC. *Book-Entry Transfer Guidelines for  
Corporate Bonds.*

JSDC. [www.jasdec.com/en/](http://www.jasdec.com/en/)

National Tax Agency. [http://www.nta.go.jp/  
index.htm](http://www.nta.go.jp/index.htm)

TSE. <http://www.tse.or.jp/>

Note: Some parts of this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

transactions between investment management companies, securities companies, trust banks, custodian banks, life and non-life insurance companies, and other actors in the bond market to achieve a seamless, automated processing of all operations from order to settlement. Moreover, PSMS provides an advance matching function for delivery-versus-payment (DVP) book-entry transfer settlements conducted by the Japan Securities Depository Center Inc. (JASDEC) and for clearing conducted by the Japan Securities Clearing Corporation (JSCC).

### A. Straight through Processing for Securities Settlement in Japan

As far as institutional transactions are concerned, it is quite common that institutions that perform investments and those that perform settlement are different entities not only in Japan but also in other countries. In Japan, however, it is typical for trust banks to retain the rights and obligations. For this reason, PSMS was developed to realize the straight through processing (STP) suitable to the specifics of the securities settlement environment in Japan.

### B. Establishment and Application of Japanese Standards in Conformity with Global Standards

Securities markets have been rapidly globalized. Until recently, securities settlement systems used to be constructed on the vernacular architecture of data syntax and codes, which can be only used in the domestic market; connectivity with overseas counterparts must be incorporated in future settlements system. To achieve this, PSMS was developed based on the following standard data syntax and codes:

- (i) **Data Syntax: ISO15022 (and ISO 20022).** ISO15022 is the data syntax originally developed for the Society for Worldwide Interbank Financial Telecommunications (SWIFT) network for securities and cash settlement data, and then was registered with the International Organization for Standardization (ISO) in the autumn of 2002. Added to this, ISO20022 was issued in 2004 as a new international standard with regard to the registration procedure of data syntax used in financial industry. As a successor of ISO15022,

## Appendixes

### Appendix 1: Pre-Settlement Matching System

#### I. Introduction

The Pre-Settlement Matching System (PSMS) provides a framework for electronic matching on trades and settlements for institutional investor

it has become a global trend to adopt the next-generation data syntax which conforms to ISO20022.

PSMS, from its very beginning, has adopted data syntax which is based on ISO15022. Effective from January 2014 on, PSMS will also support new syntax in principle, which is in full conformity with ISO20022. The use of these data syntax will allow, for example, Japanese sub-custodians to easily transmit settlement instructions to PSMS, which are sent from global custodians.

Because of the scalable architecture, notably ISO20022, it is also expected to assure the scalability of PSMS to meet future increases in the scope of securities to be handled and the diversification of types of trades.

Added to the adoption of ISO20022 in January 2014, users will be able to connect to PSMS via SWIFTNet, which is widely used among overseas financial institutions as a network to electronically transmit and receive ISO20022 messages.

- (ii) **International Securities Identification Number.** The International Securities Identification Number (ISIN) is the standard code allocated by the Securities Identification Code Committee in conformity with the International Securities Identification Code Standard (ISO6166). All Japanese domestic stocks, as well as all bonds issued by public offering in Japan, are allocated with the ISIN“JP+ basic code+ check digit”. ISIN is the only global common code, since it is allocated by the securities identification code organization of each country in accordance with the International Identification Code Standard. The adoption of ISIN will have the same effects as the adoption of ISO15022 mentioned above.
- (iii) **Business Identifier Code.** It is necessary to identify various participating parties, such as counterparties of trading and of settlement, in PSMS by code numbers.

The Business Identifier Code (BIC) is being used in the SWIFT network as the standard bank identifier code, such as ISO15022, and is registered with ISO as ISO9362. To utilize PSMS, it is necessary for all users—such as banks, securities companies, investment trust companies, and investment advisory companies—to obtain a BIC. In cases where it is not possible to obtain a BIC, other identifiers, such as the Uniform Bank Code or the Standard Code for Securities Company, will be used as a supplementary identification in PSMS.

#### C. Matching on Trade Date (T+0 Matching)

While PSMS was implemented under a T+3 environment, the objective is to complete the matching of trades on the trade date, T+0, to keep pace with the movement of the securities industry to a shorter settlement cycle, T+1. It is believed that completion of trade matching on T+0 will help increase convenience for investment trust management services. To be precise, open-ended investment trust is required to calculate and announce the net asset value (NAV) every day, which should be done accurately and promptly. PSMS provides facilities to match the investment instruction data sent by investment trust companies and trade report data sent by securities companies on a real-time basis, and then sends the matched data to trust banks. This enables trust banks to smoothly and accurately calculate the NAV and match it with the NAV calculated by investment trust companies more quickly and accurately.

#### D. Connecting to the Delivery-versus-Payment System

On 17 May 2004, with the implementation of the delivery-versus-payment (DVP) system for trades other than stock exchange transactions, PSMS linked to the Book-Entry Transfer System. The matched settlement instruction data linked to the Book-Entry Transfer System set in PSMS is automatically transmitted to the Book-Entry Transfer System, thereby completing the settlement process without any manual interventions. The participation of PSMS is a requisite for putting DVP settlement into practice.

**E. Digitization and Dematerialization**

Digitization of trade data and dematerialization or immobilization of securities is a prerequisite for bringing STP into operation. As a practical step, an amendment to the Ordinance of the Cabinet Office was issued on 1 October 2001, which allows securities companies to send trade reports to their customers in electronic or magnetic form through PSMS, upon the agreement of customers.

**F. The Average Price: The New Pricing Framework in Japan**

On 7 July 2003, an amendment to the Ordinance of the Cabinet Office on securities companies and the members' notification of the Japan Securities Dealers Association (JSDA No. 15–33) relating to the average price were issued. This allowed securities companies not to send to their customers trade confirmations regulated by the Securities and Exchange Law under Article 41. It also allowed sending trade reports, using an average price with the conditions such as agreement of customers, under the Ordinance of the Cabinet Office on securities companies. This amendment made it possible for securities companies to send trade reports using average price to their customers in the electronic or magnetic form through PSMS.

**G. Connecting to Japan Government Bond Clearing Corporation**

Since May 2005, the Japan Government Bond Clearing Corporation (JGBCC, currently known as JSCC) started the clearing business for Japanese Government Bonds (JGBs). At the same time, PSMS linked data to the JGBCC system. The matched trade report data in JGBs linked to JGBCC set in PSMS is automatically transmitted to JGBCC system; PSMS receives data generated by the system such as credit approval status, netting result, among others, and sends these data to the participants.

**II. Domestic Transactions****A. Scope of Services**

PSMS was developed to perform the post-trade procedure, mainly for institutional investors; thus, it covers both transaction

types on the buy-side, consisting of investment managers (investment trust management companies and/or investment advisory companies) and trust banks, which perform matching for specified money trust transactions, and another buy-side consisting of institutional investors, such as life or non-life insurance companies and trust banks, which perform matching for their own transactions, known as the Proper Type. Further, the former buy side type can be categorized into three sub-types based on the difference of data-transmission method between the investment managers and the trust banks: (i) Three-Party Center Matching Type (without using Investment Instruction Distribution Service), (ii) Three-Party Center Matching Type (using Investment Instruction Distribution Service), and (iii) Investment Instruction Support Unsubscribed. As far as bonds are concerned, PSMS provides two more transaction types: Through Type and Two-Party Center Matching. Under the Through Type, PSMS is not used for matching investment instruction data and trade report data while the Two-Party Center Matching involves two parties confirming the result of a bilateral trade.

(i) **Three-Party Center Matching Type (using Investment Instruction Distribution Service).** This type does not receive Investment Instruction Data from investment managers, but PSMS, on their behalf, generates Investment Instruction Data based on Trade Report Data sent from the securities companies and transmits the data to the investment managers. After checking the contents of the data, investment managers send it back to PSMS as Investment Instruction Data. Investment managers are able to replace the Notice of Execution by fax from securities companies by electronic data transmission.

(ii) **Investment Instruction Support Unsubscribed Type.** This type is used when investment managers do not participate in PSMS and send Investment Instruction Data (or Investment Instruction Statement) to trust banks by some other means. In this case, trust banks receive only Trade Report Data sent by securities companies via PSMS, match Trade Report Data internally

with Investment Instruction Data (or Investment Instruction Statement) received by some other systems or methods, and send the Trade Report Affirmation Data to PSMS.

- (iii) **Through Type.** This type is used when PSMS is not used for matching investment instruction data and trade report data. Investment instruction data from investment managers and trade report data from brokers or dealers are transmitted to trust banks, respectively. In this case, the trust banks match these two data internally and send the Trade Report Affirmation Data to PSMS.
- (iv) **Proper Type.** This type is used by the buy-side consisting of institutional investors, such as life or non-life insurance companies or trust banks who perform investments and settlement for their own transactions. As the party in the transaction in this case is only one, the matching process becomes simpler than specified money trust transactions, eliminating the transmission or receipt of Investment Instruction Data.
- (v) **Two-Party Center Matching Type.** This type is used when two parties confirm the result of a bilateral trade, and both the sell side and buy side send the trade report data to PSMS. PSMS executes the matching of trade report data from the sell side and the buy side and immediately transmits the Notice Data of Trade Matching Status.

## B. Outline of Matching Process

The matching process for the Three-Party Center Matching Type (without using Investment Instruction Distribution Service) is described below.

- (i) **Transmission of Trade Report Data and Investment Instruction Data.** As stated above, the Order from investment managers to securities companies, the Notice of Execution from securities companies to investment managers, and the allocation between investment managers and securities companies are beyond the scope of services. Service starts from the transmission of Trade Report Data from securities companies and Investment Instruction Data from

investment managers. The data syntax used for Trade Report Data is MT515 of ISO15022 and that for Investment Instruction Data is MT541/543 (Buy/Sell) (**Figure JP11 ① and ②**).

- (ii) **Matching of Trade Report Data and Investment Instruction Data (Trade Matching) (Figure JP11 ③).** When the Trade Report Data and Investment Instruction Data are received, PSMS searches for the data to be matched in accordance with the matching logic. When the data to be matched are specified, the matching procedure takes place and the Notice Data of Trade Matching Status (MT509) are transmitted to the investment manager and the securities company (originators of matching data) in real-time, together with the status information of Matched or Unmatched (**Figure JP11 ④**). In case the status information is Unmatched, the reason for discrepancy and details of counterpart for unmatched item will be transmitted.
- (iii) **Transmission of Trade Report Data and Investment Instruction Data to Trust Banks and Trade Report Affirmation or Disaffirmation Data (Figure JP11 ⑤, ⑥, ⑦, and ⑧).** When the data is matched, the Trade Report Data and Investment Instruction Data are immediately transmitted to the trust banks (**Figure JP11 ⑤ and ⑥**). The trust banks then confirm the details of data and send out the Trade Report Affirmation or Disaffirmation Data (Affirmed or Disaffirmed, MT517 (**Figure JP11 ⑦**)). Upon receipt of such data, PSMS transmits the Notice Data of Trade Report Affirming Status to the securities companies (MT509) (**Figure JP11 ⑧**). In case the status indicates Disaffirmed by the trust banks, securities companies (and/or investment managers) cancel the previously sent Trade Report Data (and/or Investment Instruction Data) and resend the corrected Trade Report Data (and/or Investment Instruction Data).<sup>8</sup>

<sup>8</sup> As ISO15022 does not have the function to correct data elements, or the re-submission of corrected specific element is not available, the cancellation of all elements of previously sent data and re-entry of the corrected data have to be transmitted.





**(iv) Generation of Settlement Instruction Data (Figure JP11 ⑨ and ⑩).**

When a Trade Report Affirmation or Disaffirmation Data sent by trust banks carries the Affirmed flag, the process moves to the generation of settlement instruction data. To realize the straight-through nature of the process, PSMS provides the Standing Settlement Instruction (SSI) database to register settlement conditions such as key account information for all trading parties. By using this database, PSMS automatically generates and transmits Settlement Instruction Data to the settlement matching unit, and eliminates manual efforts of creation and transmission of the settlement instruction data by trust banks and securities companies (Figure JP11 ⑨). Then, the Notice of Settlement Matching Status Data (MT548) with Matched status will be sent to both parties (Figure JP11 ⑩).

**(v) Generation of Delivery-versus-Payment Order.** When Settlement Instruction Data carrying a LINK/DVP is matching, PSMS immediately prepares a Delivery-versus-Payment (DVP) Order from the matched settlement instruction data of both deliverer and receiver and transmits the order to the Book-Entry Transfer System (Figure JP11).

### III. Non-Residents Transactions

#### A. Scope of Services

In case of non-resident transactions, trade matching is not performed, but matching of Settlement Instruction Data sent from settlement agents such as banks and securities companies who perform custody operations for Japanese securities traded by non-residents, is utilized (Figure JP12).

#### B. Outline of the Matching Process

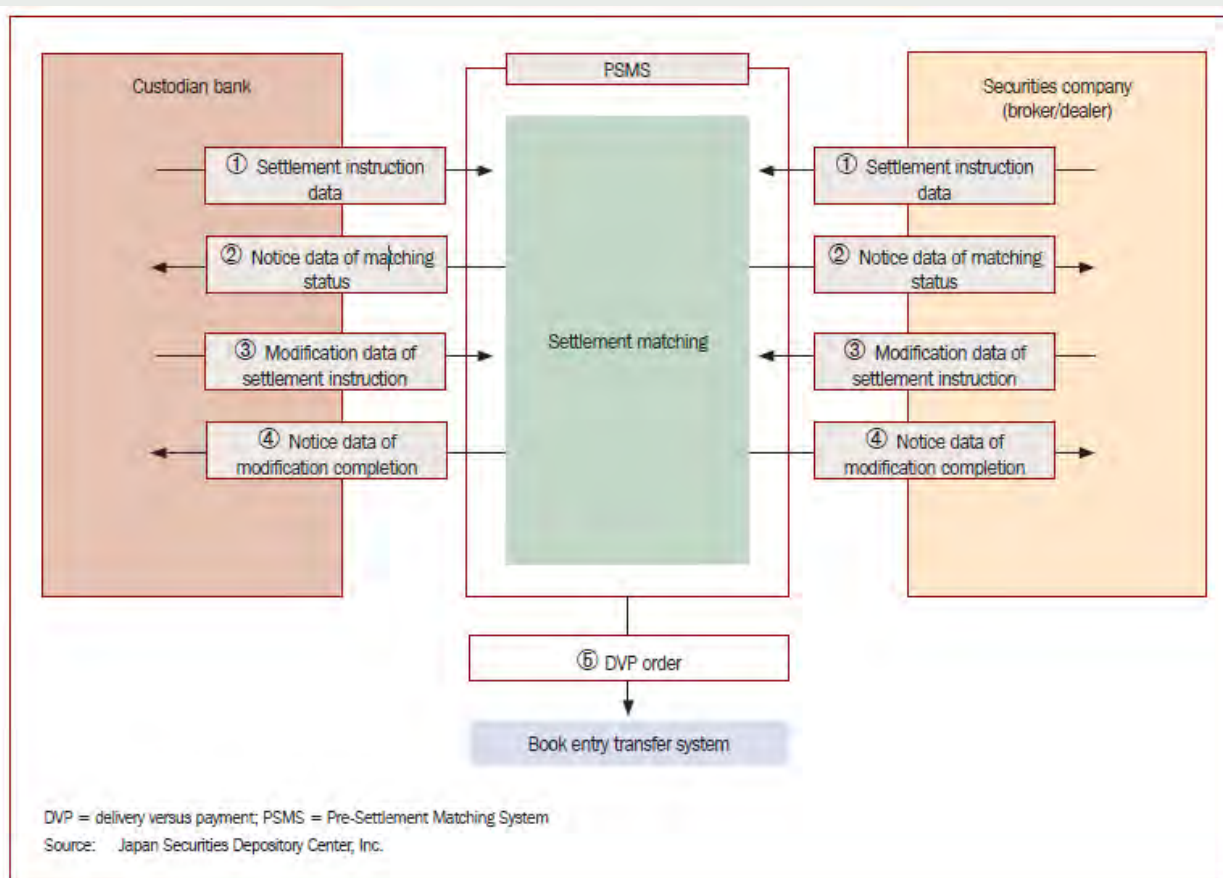
**(i) Transmission of Settlement Instruction Data or Notice Data of Settlement Matching Status (Figure JP12 ① and ②).** When Settlement Instruction Data (MT540 to 543) are received from settlement agents, such as banks and securities companies who perform custody operations (Figure JP12 ①),

PSMS searches for the data to be matched in accordance with the matching logic. When the data to be matched are specified, the matching procedure takes place and Notice Data of Settlement Matching Status (MT548) are transmitted to both the deliverer and receiver in real-time with the following corresponding status: Unmatched when there is one or more unmatched items; Matched (settlement not executable) when all items are matched but with Release Flag, which carries the information whether the settlement is executable or not, on either deliverer or receiver side stays Release Not Executable; or Matched (settlement executable on settlement date) when all items are matched and Release Flags on both sides stay Release Executable (Figure JP12 ②).

**(ii) Transmission of Settlement Instruction Modification Data or Notice Data of Settlement Instruction Modification Completion Data (Figure JP12 ③ and ④).**

When the Release Flag in the Settlement Instruction Data states Release Not Executable, settlement agents resend the correction data (MT599) to change the Release Flag to Release Executable after checking the balance of securities or funds, which caused the delivery to be suspended, and making the delivery to be executable (Figure JP12 ③). When the modified data are received, PSMS rewrites the Release Flag of Settlement Instruction Data already recorded, and transmits the modification completion data (MT548 or 578) with the corrected status to both deliverer and receiver (Figure JP12 ④). It should be noted that the modification data could be issued not only to change the Release Flag but to correct the settlement amount.

**(iii) Generation of DVP Order (Figure JP12 ⑤).** When the Settlement Instruction Data carrying LINK/DVP is matching, PSMS immediately generates a DVP Order from the matched settlement instruction data of both deliverer and receiver and transmits the order to the Book-Entry Transfer System (Figure JP12 ⑤).

**Figure JP12: Non-Residents' Transactions**

#### IV. Network and Connection with Users

##### A. User Connection Format

The formats of connection to PSMS by users can be in one of two ways. The first is to connect the user's own system directly (Central Processing Unit Direct Connection) to PSMS and the other is to use a personal computer with a web browser as a terminal of PSMS (Terminal Connection). The former can utilize either of two types of processing: online real-time processing or batch processing by file transfer. For online real-time processing and batch processing by file transfer, users can choose either connect their own systems to PSMS, or have the systems of their computer service subcontractors connected to PSMS. In the case of online real-time processing, dedicated lines are commonly used; for file transfer and terminal connection, Integrated Services Digital Network lines are used.

##### B. Terminal Functions

For users who have large volume of trades, direct online real-time connection of their systems to PSMS is efficient in view of the possibility to further shorten the settlement cycle in the future. However, for users who do not have large volume of trades and wish to curtail the initial investment for system development, Terminal Connection to PSMS is convenient. To utilize the services provided, users only need to prepare a PC with certain specifications and a web browser, and log on to the web server of PSMS. The transmission or receipt of data explained above is possible by means of this terminal function. For data transmission, users may choose either key-input through the form on-browser or comma separated value file transfer.

## Appendix 2: OTC Market DVP Transactions of Government Bonds

JSDA sets out the guideline concerning fails for government bonds. Portions of this Appendix were taken from the Japanese Government Securities Guidelines for Real-Time Gross Settlement published by JSDA.

### 1. Definition of a Fail

A Fail means a situation whereby a party receiving government securities has not received delivery of the relevant securities from the delivering party after the end of the scheduled settlement date.

### 2. Good-Faith Efforts to Resolve Fails

Fails are not recommendable situations and the frequent occurrence thereof may hinder the primary objective of facilitating smooth transactions and securing market liquidity. Market participants therefore should avoid fails as much as possible. Upon the unavoidable occurrence of fails, parties to the relevant transaction will be required to deal with such situations in good faith to resolve the fail as soon as possible. In addition, upon the occurrence of a fail, the delivering party who caused the fail shall endeavor to give the receiving party who suffered from the fail an explanation about the situation leading to the fail, if so requested by the receiving party.

### 3. Conditions to Guidelines Concerning Fails

- (i) Market participants should note that in view of the policy regarding costs incurred under fails as described below, they can treat situations as Fails only with respect to the DVP transactions (including the settlements of government securities against the payments of funds on the same date, in the cases where an agreement to that effect has been made between the parties to the transaction while their mutual claims and debts being preserved explicitly). DVP transactions include overseas DVP settlements, such as those settled in Euroclear or Clearstream.
- (ii) Transactions subject to the guidelines concerning fails are purchase and sale

transactions, and repo transactions; that is, the starting legs of transactions and the closing legs of transactions in conditional purchase and sale transactions, and the lending and returning in lending transactions, which are hereafter referred to as being the same.

- (iii) Delivery in the purchase and sale transactions and the repo transactions shall be conducted according to the manner stipulated in Article 4 of the Regulations Concerning Handling of Short Sale and Lending Transaction of Bonds in the case of short sale in the purchase and sale transactions, and according to the manner stipulated in Article 11 of the Regulations Concerning Handling of Short Sale and Lending Transaction of Bonds or Article 13 of the Regulations Concerning Handling of Conditional Sale and Purchase of Bonds, etc. in the case of repo transactions.
  - (iv) Market participants shall not exercise the right of cancellation on the grounds of the occurrence of fails.
  - (v) It is not acceptable that parties receiving government securities leave settlements incomplete as a result of a shortage of funds.
  - (vi) Market participants should mutually deal on their own with all settlements remaining incomplete other than the fails prescribed in these guidelines.
- ### 4. Policy Regarding Costs Incurred under Fails
- (i) A party causing a fail will, since it is unable to receive funds payable by the party receiving government securities, have to incur some funding costs for holding the government securities and will further have to give up profit that could be earned by investing such funds. Moreover, accrued interest to be received by such failing party will only be for the period up to the scheduled settlement date.



- (ii) A party suffering from a fail will, contrary to the above, be able to receive interest accrued from the scheduled settlement date to the date of actual receipt of the government securities and will further also be entitled to invest funds in hand retained due to the uncompleted settlement.
- (iii) Under the circumstances of a low interest rate, the economic rationality stated in (i) and (ii) may not work effectively, and there may be a concern about frequent occurrence of fails. Therefore, the receiving party suffering from a fail will be entitled to claim a fails charge (a certain monetary burden imposed on the delivering party causing a fail, hereinafter meaning the same) against the delivering party causing the fail.
- (iv) Therefore, no specific penal provisions have been established for fails, and no payments of default interest will be required.

## 5. Handling of Fails Charges

- (i) Preparations before the introduction of fails charges, and the practice concerning calculation and claim, payment and receipt, and other operations of fails charges shall be conducted according to the Practical Guidelines for Handling of Fails Charges (hereinafter referred to as Guidelines for Fails Charges), which is established separately.
- (ii) Market participants can claim fails charges in connection with all transactions on a DVP basis.
- (iii) In introducing fails charges, market participants shall note that a prior agreement shall be made between the parties to the transaction by giving a prior notice to their counterparties as prescribed in the Guidelines for Fails Charges or by any other means.
- (iv) Fails charges shall be calculated according to the following formula (See the Guidelines for Fails Charges for the definitions of terms and other

explanations used in the calculation formula):

$$\sum 1/365 \times \max(3\% - \text{Reference rate}, 0) \times \text{Amount of funds delivered Fail period}$$

## 6. Applications to Fails Based on Cut-off time

- (i) Any transactions that have not been completed with regard to transmissions of securities transfer messages at the point of cut-off time shall be defined as fails unless it is agreed in advance to extend the delivery deadline by the parties involved. In case a prior agreement has been made between the parties, market participants can treat any transaction as being in a settlement fail even before the cut-off time if the transaction has not been completed with regard to transmissions of securities transfer message. In addition, even in the case of making prior agreements for extended delivery, market participants should note that they have to treat transactions remaining unsettled by the closing time of the BOJ-NET JGB Services as fails.
- (ii) Market participants to whom the provision of (i) applies should deal with such situations in good faith to avoid the frequent occurrence of fails.

## 7. Guidelines for Payments and Receipts in where Coupon Payment and/or Redemption Occur Prior to Resolution of Fails

- (i) In the case where a coupon has been paid prior to resolution of a fail, the receiving party shall claim against the delivering party for an amount equivalent to the coupon payment receivable by the receiving party. And the delivering party shall pay the amount to the receiving party.
- (ii) Where the securities are redeemed prior to resolution of a fail, the receiving party shall claim against the delivering party for an amount equivalent to the coupon payment and redemption amount receivable by the receiving party. And the delivering party should then pay

such amount to the receiving party on behalf of receipt of the original contract amount for the relevant securities. In the case where the securities are redeemed prior to resolution of fails, market participants should note that the contract between the parties is regarded as completed by this payment.



# Cambodia

## (KH)

### Bond Market Infrastructure

#### Overview of Bond Market

The Government of Cambodia has undertaken comprehensive economic and structural reforms, beginning in 2001 when it adopted a Financial Sector Blueprint for 2001–10. The strategy outlines a sequence of policy reforms, including plans for the establishment of a securities exchange in 2007, and the legal and regulatory framework needed for market infrastructure. It also outlines the development of money market instruments, treasury bills, and the need to establish a bond market. Currently, Cambodia is in the second phase of implementation of the Financial Sector Blueprint.

The Ministry of Economy and Finance (MEF), through the National Bank of Cambodia (NBC), has issued treasury bills, recapitalization bonds, and certificates of deposit. No negotiable instruments has been issued yet. The Law on Government Securities and Law on Issuance and Trading of Non-Government Securities were adopted in 2007, and have both been enforced.

Regarding possible future market infrastructure, please refer to **Part 3 KH01 (Government Bond Market Infrastructure Diagram)** and **Part 3**

**KH02 (Corporate Bond Market Infrastructure Diagram).**

#### Description of Related Organizations

##### **Ministry of Economy and Finance (MEF)**

MEF is delegated by the government to perform the mission of guidance and administration of the economic and financial policies of Cambodia, including

- (i) participate in the organization, implementation, and monitoring of the performance of economic and financial policies of the Royal Government;
- (ii) administer and coordinate the structural reform of the economic and financial institutions;
- (iii) promote good governance as to the administrative aspect of economy and public finance;
- (iv) allocate and re-allocate national revenues through the collection of income and programming and budgeting of public expenses;
- (v) establish a financial system;
- (vi) establish a national, uniform financial system and ensure a proper application of the law on the financial system and finance law, as well as other relevant laws and regulations;

- (vii) prepare draft laws and regulations, either of annual or permanent nature, for macroeconomic and financial management;
- (viii) prepare and administer the national budget;
- (ix) prepare and implement the policy of the national revenue budget;
- (x) collect tax revenues and non-tax revenues, and deposit them in the public accounts; prepare balance sheets and statements of accounts for state financial operations;
- (xi) control and endorse the expenses made by the ministry and other public institutions;
- (xii) administer public properties;
- (xiii) analyze, monitor, and predict economic situations in the short-, medium- and long-term, and formulate measures for regulating and improving economic administration;
- (xiv) participate in developing, administering, and controlling industrial and financial activities, including insurance, market, bonds, lotto games, lotteries, casinos, retirement funds, and other financial reserves;
- (xv) cooperate with other relevant ministries and institutions for management purposes and participate in the organization and implementation of the Royal Government's strategic policy in terms of international economic and financial cooperation, and the integration of the Cambodia economy into the world economy, in particular economic integration with the Association of Southeast Asian Nations (ASEAN);
- (xvi) participate in lobbying for aid and the preparation of plans for borrowing and payment of foreign loans, and follow-up and monitor the performance of such plans;
- (xvii) manage and control public procurement transactions of ministries and institutions, provinces and municipalities, and state-managed and autonomous institutions;
- (xviii) participate in the formulation of policy and management of investments;
- (xix) undertake inspection tasks on public finance; and
- (xx) conduct regular training for improvement of economic and financial skills and management of public property for ministerial officials and relevant institutions.

### **Securities and Exchange Commission of Cambodia (SECC)**

SECC is established under the Law on The Issuance and Trading of Non-Government Securities (Securities Law). SECC regulates the securities industry in Cambodia to contribute to socio-economic development through capital mobilization from securities investors to meet the demand for financing.

The mission of SECC includes

- (i) develop and maintain the confidence of public investors in Cambodia by protecting their lawful rights and ensuring that the offer, issue, purchase, and sale of securities is carried out in a fair and orderly manner;
- (ii) promote the effective regulation, efficiency, and orderly development of the securities markets;
- (iii) encourage a variety of saving tools through the buying of securities and other financial instruments;
- (iv) encourage foreign investment and participation in the securities markets in Cambodia; and
- (vi) assist in facilitating the privatization of state-owned enterprises in Cambodia.

### **National Bank of Cambodia (NBC)**

NBC is the central bank of Cambodia. The bank was established in 1954. NBC is referred to as the Government Securities Management Agency, whose authority is delegated by MEF, and it deals with operational matters related to government securities.

### **Cambodia Securities Exchange (CSX)**

In March 2009, the government, represented by MEF and Korea Exchange (KRX), signed a joint-venture agreement to establish CSX as a public enterprise in accordance with the Law on the General Statutes of Public Enterprises. Cambodia Securities Exchange was then incorporated on 23 February 2010. In accordance with the agreement, CSX was capitalized by both parties, with MEF owning 55% of the registered capital and KRX the remaining 45%. In accordance with the Securities Law, CSX had been granted approval to function as market operator, clearing and settlement facility operator, and depository operator. CSX's primary mandate is to establish and operate a securities market, a clearing and settlement facility, and a depository, in accordance with the

Law on Issuance and Trading of Non-Government Securities and its subsequent regulations. For information about securities exchange, please refer to **Appendix 1**.

## Overview of Government Bonds

### Trading

#### Over-the-Counter Trading

There is no government bond market in Cambodia.

#### Exchange Trading

There is no government bond market in Cambodia. However, government securities trading in the secondary market will be under the regulation and supervision of SECC.

### Clearing and Central Counterparty

There is no clearing and central counterparty for government bonds in Cambodia.

### Bond Settlement

The Government of Cambodia has issued government bonds before when it implemented a book-entry system, though the system does not operate now. Regarding the book-entry system, please refer to **Appendix 2**.

### Cash Settlement

Government bonds were previously settled through the account in NBC, although there are currently no transactions.

## Overview of Corporate Bonds

There is no corporate bond market in Cambodia. Though corporate bonds are not yet either issued or traded, Cambodia already has laws and regulations to guide and develop the bond

market, and the issuance and trading of debt securities will be under the regulation and supervision of SECC.

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

There is no government bond market in Cambodia.

### Interest Payment and Redemption of Corporate Bonds

There is no corporate bond market in Cambodia.

## Typical Business Flows

Cambodia does not have a bond market.

### DVP Flow of Government Bonds for Domestic Trade

There is no government bond market in Cambodia.

For information about flows within the book-entry system, please refer to **Part 3 KH03 (Government Bond Transaction Flow for Domestic Flow)**.

### DVP Flow of Corporate Bonds for Domestic Trades

There is no corporate bond market in Cambodia.

For reference, please refer to **Part 3 KH04 (Corporate Bond Transaction Flow for Domestic Flow)**.

## DVP Flow of Cross-Border Bond Transactions

There are no cross-border bond transactions in Cambodia.

## Interest Payment and Redemption of Government Bonds

There is no government bond market in Cambodia.

For information about interest payment and redemption with BES, please refer to **Part 3 KH05 (Interest Payment Flow of Government Bond)** and **Part 3 KH06 (Redemption Flow of Government Bond)**.

## Interest Payment and Redemption of Corporate Bonds

There is no corporate bond market in Cambodia.

## Message Standard

There is no rule about message standards. Message standards may also accommodate the standards for ASEAN Trading Linkages.

## Market Practices

### Settlement Cycle

As the bond market does not yet exist in Cambodia, there is no settlement cycle.

### Other Market Practices

Market practices such as operating hours (opening time, cut-off time, and closing time) and fail rules are to be discussed.

## Numbering and Coding

### Numbering and Coding for the OTC Market

#### Securities Numbering

Current securities numbering and use of International Securities Identification Number (ISIN) are to be discussed. A National Numbering Agency (NNA) is also to be identified.

#### Financial Institution Identification

Current financial institution identification and use of the international Business Identifier Code (BIC) is to be discussed.

#### Securities Account

Current securities account structure is to be discussed.

#### Cash Account

Current cash account structure is to be discussed.

#### Character Code and Language

Current character code set and language for payment system are to be discussed.

## Medium- to Long-Term Strategies

The Government of Cambodia has been making efforts to develop financial sector infrastructures, including bond markets. Current infrastructures may be utilized where possible. Also, possible future best practices that are applicable in Cambodia may be included as much as possible since bond markets and their infrastructures are not fully developed in Cambodia yet.

Medium- to long-term strategies are based on the Financial Sector Development Strategy 2011–20.

## Development of the Government Bond Market and Operation of a Government Securities Market

- (i) **Short-Term (2011–14):** Develop the government securities market.
  - Develop the legal and regulatory framework to support the issuance and trading of government securities.
  - Consider issuing short-term treasury bills denominated in riel based on a pre-determined borrowing program with NBC to determine the timing of market distribution for investment and reserve purposes.
  - Develop bidding procedures and an auction system for issuance of government securities.
  - Establish a system for accreditation of primary market dealers in government securities.
- (ii) **Medium-Term (2014–17):** Monitor and strengthen the government securities market's performance.
  - Review performance of primary market dealers and develop performance-based accreditation procedures on the basis of incentives and penalties.
  - Consider issuing treasury securities with maturities of more than 1 year.
- (iii) **Long-Term (2017–20):** Deepen the development of the government securities market.
  - Consider issuing government bonds.

## Support for infrastructure

- (i) **Short Term (2011–14)**
  - SECC is the lead agency in the establishment of support infrastructure for securities market depositories and securities clearing and settlement facilities, and payment system linkups with national payment systems, with the participation of the Ministry of Economy and Finance and the National Bank of Cambodia.

- (ii) **Medium Term (2014–17)**
  - Conduct due diligence on operating systems to ensure they are operating smoothly and safely.
- (iii) **Long Term (2017–20)**
  - Review and upgrade as needed depending upon market developments.

## Compliance with Principles for Financial Market Infrastructures (PFMI)

- (i) **Short-Term (2011–14)**
  - Conduct a self-assessment.
- (ii) **Medium-Term (2014–17)**
  - Include review system in the next Financial Sector Assessment Program (FSAP).
- (ii) **Long-Term (2017–20)**
  - Review regulatory framework and SECC structure to ensure they remain relevant to market conditions.

## Secondary Market Regulation

- (i) **Short-Term (2011–14)**
  - The Securities Market Rule, Securities Clearing and Settlement Rule, Securities Depository Rule, Listing Rule, and Membership Rule of the Cambodia Securities Exchange (CSX) were approved by the SECC in 2011.
  - Introduce rules used for licensing/authorizing/accrediting examinations for all securities market participants including fit and proper testing.
- (ii) **Medium-Term (2014–17)**
  - Oversee renewal of licenses to all securities market participants

## Market Mechanism and Instruments

- (i) **Short-Term (2011–14)**
  - Consider the procedures to allow securities borrowing and lending.
  - Conduct feasibility study for setting up a securities financing mechanism.

- Conduct feasibility study for setting up a sovereign wealth fund.

(ii) **Medium-Term (2014–17)**

- If feasible, develop securities borrowing and lending mechanism.
- If feasible, set up a securities finance corporation.
- If feasible, set up a sovereign wealth fund.

(iii) **Long-Term (2017–20)**

- Implement securities borrowing and lending mechanism.

## Information Technology

(i) **Short-Term (2011–14)**

- Consider IT systems for information disclosure.

(ii) **Medium-Term (2014–17)**

- Consider IT systems for surveillance of securities market operations.

(iii) **Long-Term (2017–20)**

- Develop IT systems for information disclosure and surveillance of securities market operations.

## Corporate Bond Market Development

(i) **Short-Term (2011–14)**

- Establish legal and regulatory framework for the development of a corporate bond market.

(ii) **Medium-Term (2014–17)**

- Implement regulations for the development of a corporate bond market.

(iii) **Long-Term (2017–20)**

- Review the impact of the regulations on market development and develop a broad corporate bond market.

## Payment System

(i) **Short-Term (2011–14)**

- Commission “full solution” phase of the national payment system, including electronic transfers to effect DVP, ACH implementation, centralized settlement, defining settlement cash, introduction of direct credit operation, development of money market operations for US dollar–riel traders cash settlement, shared switch implementation, intraday settlement, and introduction of direct debit operation.
- Enact the law on the national payment system.
- Harmonize payment system arrangements with the SECC and sign the MOU.

(ii) **Medium-Term (2014–17)**

- Consider the establishment of a Real-Time Gross Settlement (RTGS) system depending on market developments.
- Adopt the sub-decree and accompanying regulations for implementing the law on the national payment system.
- Prepare the oversight principles, policies, and guidelines based on the BIS Core Principles for Systemically Important Payment Systems (SIPS).
- Conduct self-assessment against BIS Core Principles of SIPS.
- Consider SWIFT connectivity for high value transactions.

(iii) **Long-Term (2017–20)**

- Establish RTGS if the market demands.
- Extend payment services to all parts of the country and encourage greater use of electronic payments to replace cash, including the use of a network of third-party service providers, mobile phone banking services, prepaid cards, and SMS billing arrangements.
- Arrange to join the ASEAN Payment System Network.



## Appendix 1 Cambodia Securities Exchange

Cambodia launched its stock exchange in 2011. The Cambodia Securities Exchange (CSX) was established as a joint venture between the Cambodian Ministry of Economy and Finance and Korea Exchange.

### Overview of Securities Trade and Settlement

A secondary market has not fully developed yet. The mechanism for clearing and settlement from trade to settlement is shown in Figure KH01.

#### 1.1 Trading

Over-the-Counter Market

There is no over-the-counter (OTC) trading.

#### Exchange Market

Currently, there is only one company listed on CSX: Phnom Penh Water Supply Authority. Its shares are traded in the secondary market.

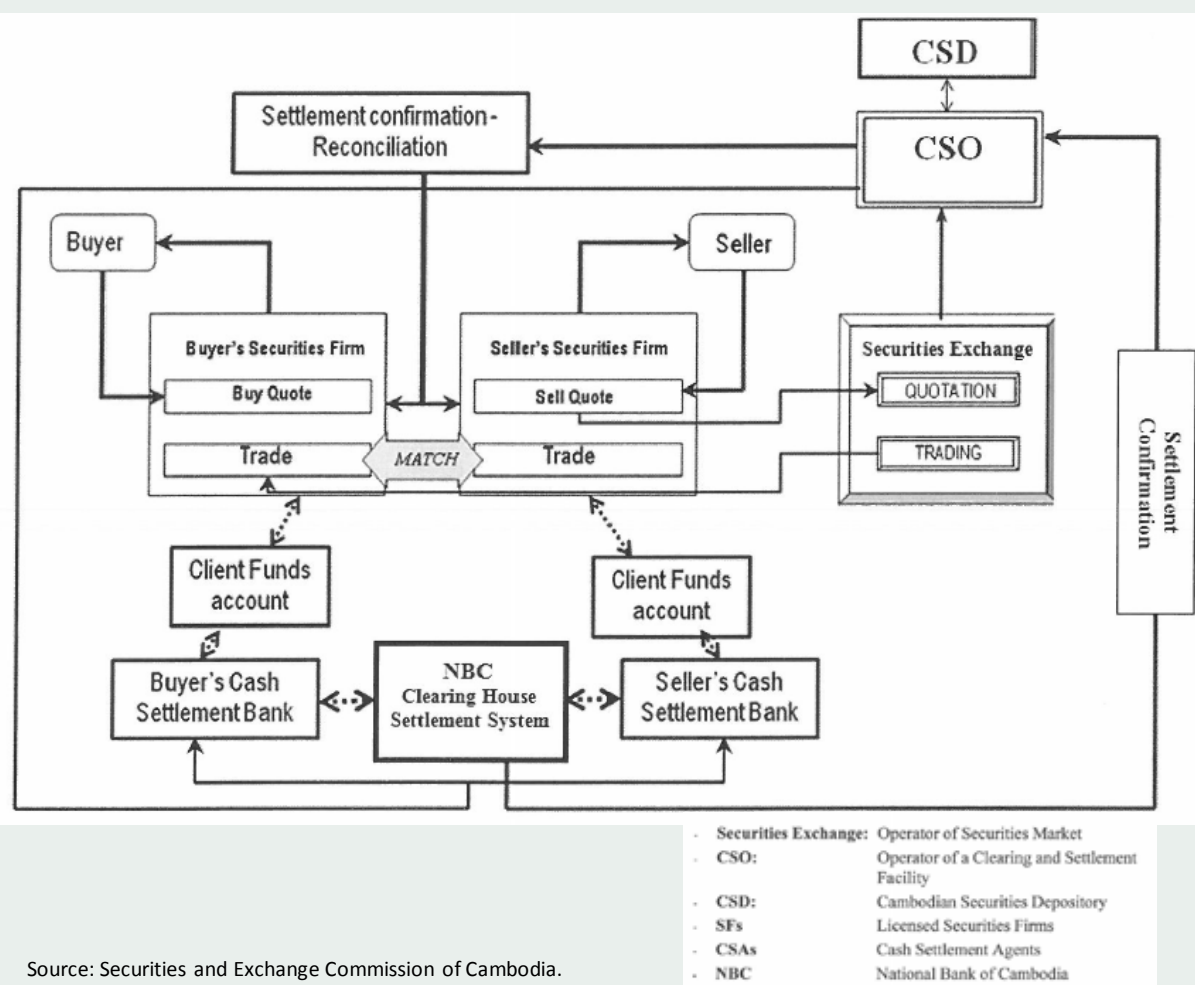
#### 1.2 Clearing and Central Counterparty

CSX performs as the clearing and central counterparty (CCP) in the Cambodia Securities Market.

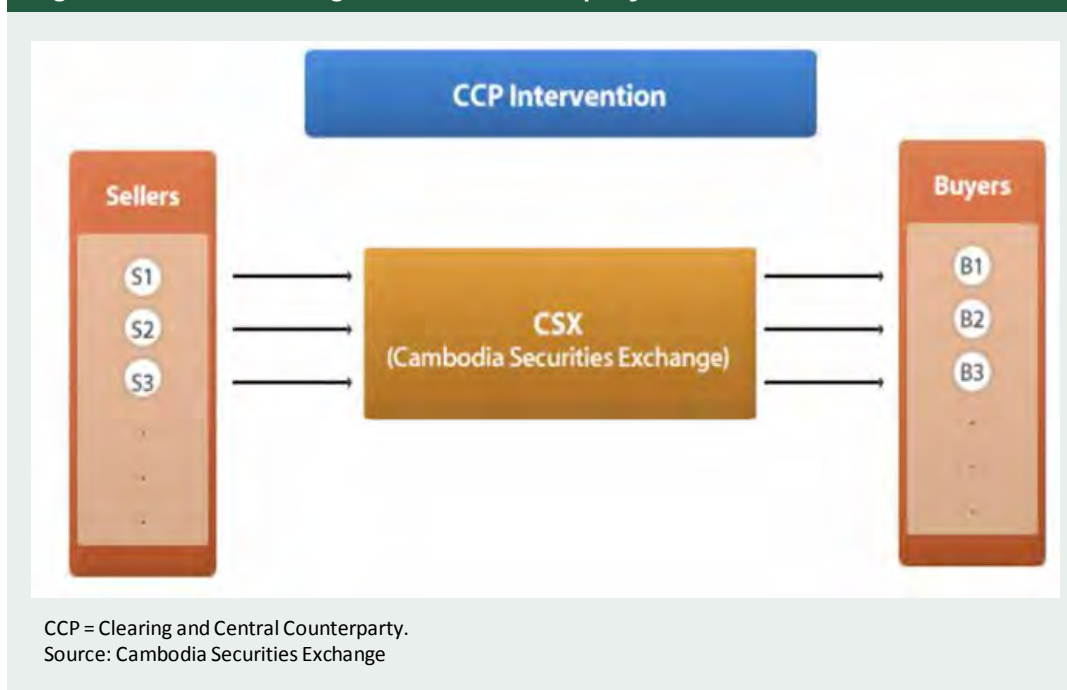
#### Securities Settlement

CSX performs as the central securities depository (CSD). The settlement method of CSX is the Bank for International Settlements (BIS) Delivery-versus-Payment (DVP) Model 3, which is the process of delivery of securities simultaneously with payment on a net basis (net stock, net payment). It occurs at the end of the processing cycle. Settlement time is 8:30 on T+2.

Figure KH01: Mechanism of Clearing and Settlement



Source: Securities and Exchange Commission of Cambodia.

**Figure KH02: CSX Clearing and Central Counterparty**

The member shall transfer the securities and cash to be settled to the accounts of CSX before 8:30 on T+2, and CSX shall settle those securities and cash to the counterpart members after 8:30 on the same settlement date.

### Cash Settlement

ACLEDA Bank Plc., Canadia Bank Plc., and the Bank for Investment and Development of Cambodia have been accredited as cash settlement agents by the Securities and Exchange Commission of Cambodia (SECC). Settlements between members and CSX are carried out through the three participating banks.

### Market Practices

#### Settlement Cycle

Settlement shall be conducted 2 trading days after the securities-traded day (T+2). The closing day(s) will not be included in the trading days.

#### Operating hours

The operating hours of CSX are from 8:00 to 11:30, with trades executed six times a day: 9:00, 9:30, 10:00, 10:30, 11:00, and 11:30.

## Appendix 2 Government Bond Procedure in Cambodia with Book-Entry System

There is currently no government bond market in Cambodia. The Government of Cambodia previously issued government bonds with maturities longer than 10 years, and it implemented a book-entry system, though the system no longer operates. A summary description of the former book-entry system is given below.

### Book-Entry System

#### Overview of Book-Entry System

The Book-Entry System (BES) is a computerized registry for government bonds developed by the International Monetary Fund (IMF). It can process participant's details, auction outcomes, and secondary market transactions. BES also handles information on interest and redemption.

#### Registration of Participant with BES

Each commercial bank needs to create three accounts: securities account, customer account (one account for all customers of each bank that are trading on behalf of customers), and collateral account.

For a large non-bank corporation that intends to participate in bond auctions on a regular basis, a security account can be created, and a collateral account is also created when required.

### Overview of Procedure

#### *Auction (Bids)*

All submissions for bond auctions must be made on a standard physical form issued by the National Bank of Cambodia (NBC). After all bid forms are validated, NBC enters all bid submissions in BES one time. Then, accepted bids are picked. The settlement date is 3 days (72 hours) after auction.

#### *Sales and Transfers*

In its roles as agent of the treasury, NBC provides a registry service to existing holders of government securities. The service includes the maintenance and update of ownership records.

The transfer forms for government securities must be completed and signed by both the sell side and buys side as the source for the data entry into BES. This form also allows the NBC to debit the buy side's clearing account and credit the sell side's clearing account by the agreed value of the transaction. NBC must check that the transfer form for government securities is correctly filled in.

There are three patterns mainly of sales and purchases in Cambodia: (i) between a bank and its customers, (ii) between two banks, and (iii) repo and reverse repo.

For sales and purchases between a bank and its customers, the bank's securities account and bank's customer account are involved. The bank's customer account is one separate account whose current balance can be monitored by NBC. From time to time, NBC requires a complete disclosure of a customer's particulars and the amount of securities held, the total of which must reconcile with the BES book-entry account held at NBC.

#### *Interest Payment*

All interest payments on bonds issued at face value with an annual rate of interest and a fixed maturity date are shown in BES. Interest can be paid to bond holders either once or twice per year depending on the terms of issuance.

On the due date, NBC processes a fund transfer arising from interest payment by debiting a

treasury account. NBC types and sends a letter to subscribers and also sends copies of an interest payment due report for to NBC's Internal Audit Department.

#### *Redemption*

At maturity, securities are repaid (bought back by the treasury) by debiting treasury accounts held at NBC in favor of the bond holder.

NBC processes funds transfer following a list of all current holders displayed in the system. Then, it sends copies of redemption to NBC's Internal Audit Department. Next, all records of redeemed securities are cleared out. Securities that have been redeemed should be kept in BES for at least 3 months before they are purged from the system.

## References

Asian Development Bank (ADB). *AsianBondsOnline*. <http://asianbondsonline.adb.org/cambodia/structure/overview.php>

Ministry of Economy and Finance. <http://www.mef.gov.kh/about-ministry.html>

The Securities and Exchange Commission of Cambodia. <http://secc.gov.kh/english/m11.php?pn=1>

National Bank of Cambodia. [http://www.nbc.org.kh/english/about\\_the\\_bank/overview\\_of\\_functions\\_and\\_opertation.php](http://www.nbc.org.kh/english/about_the_bank/overview_of_functions_and_opertation.php)

Cambodia Securities Exchange. <http://www.csx.com.kh/en/about/chairman.jsp?MNCD=1000>

KPMG. *KPMG Investing in Cambodia*. [https://www.kpmg.com/KH/en/IssuesAndInsights/ArticlesPublications/Documents/Investing%20in%20Cambodia\\_16%20Jul\\_s.pdf](https://www.kpmg.com/KH/en/IssuesAndInsights/ArticlesPublications/Documents/Investing%20in%20Cambodia_16%20Jul_s.pdf)

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

# Republic of Korea

## (KR)

### Bond Market Infrastructure

#### Overview of Bond Market

The Korean bond market is comprised of the over-the-counter (OTC) market and the exchange market operated by Korea Exchange (KRX).

According to Asian Development Bank's (ADB) *AsianBondsOnline* website, the amount of local currency (LCY) government bonds outstanding in the Republic of Korea at the end of 1Q13 reached USD560.27 billion, while LCY corporate bonds totaled USD892.58 billion.

In the Republic of Korea, four types of bonds are traded: (i) Korea Treasury Bonds (KTBs), (ii) corporate bonds, (iii) commercial paper, and (iv) certificates of deposit (CDs). About 80% of bond trades are performed on the OTC market, whereas other bonds are traded on the exchange market. For trade matching, KRX executes matching in the exchange market and the Korean Securities Depository (KSD) executes it for trades in the OTC market. KRX is also designated to provide clearing services in the exchange market. For settlement, KSD is in charge of securities settlement for all kinds of bonds, while The Bank of Korea (BOK), as the central bank, is in charge of cash settlement.

Please refer to **Part 3 Figure KR01 (Government Bond Market Infrastructure Diagram)** and **Part 3 Figure KR02 (Corporate Bond Market Infrastructure Diagram)**.

#### Description of Related Organizations

##### Ministry of Strategy and Finance (MOSF)

MOSF controls and directs the Korean financial industry through overall policy formation and implementation. It is primarily responsible for the establishment of economic and financial development policies.

##### Financial Supervisory Service (FSS)

FSS acts as the Financial Services Commission's (FSC) executive arm. The main objective of the FSS is to provide supervision and conduct examination and investigation of financial institutions to ensure sound and fair trading practices in the financial markets for the protection of investors.

##### The Bank of Korea (BOK)

BOK was created on 12 June 1950 under The Bank of Korea Act. BOK conducts the typical functions of a central bank.

##### Korea Exchange (KRX)

Three former exchanges in the Republic of Korea—Korea Stock Exchange (KSE), Korea Futures Exchange (KOFEX), and Korean Securities Dealers Automated Quotations (KOSDAQ) Market—were

merged into KRX effective 27 January 2005. KRX maintains a fair and orderly market for trading securities; it also regulates and supervises its member firms through the establishment of market operations rules.

#### Korea Securities Depository (KSD)

KSD was established in 1974 to act as the central depository of the Korean market. KSD is the single central securities depository (CSD) in the Republic of Korea. In 1994, KSD became a nonprofit organization and increased its base of shareholders. The shareholders of KSD are various market participants, KRX, banks, and other banking corporations.

#### Korea Financial Investment Association (KOFIA)

KOFIA was launched on 4 February 2009 through the merger of three associations representing the securities, asset management, and futures industries, as set forth by the Financial Investment Services and Capital Markets Act (FISCMA), which took effect the same day. To provide transparent and accurate information to participants, KOFIA established FreeBond and manages the OTC market.

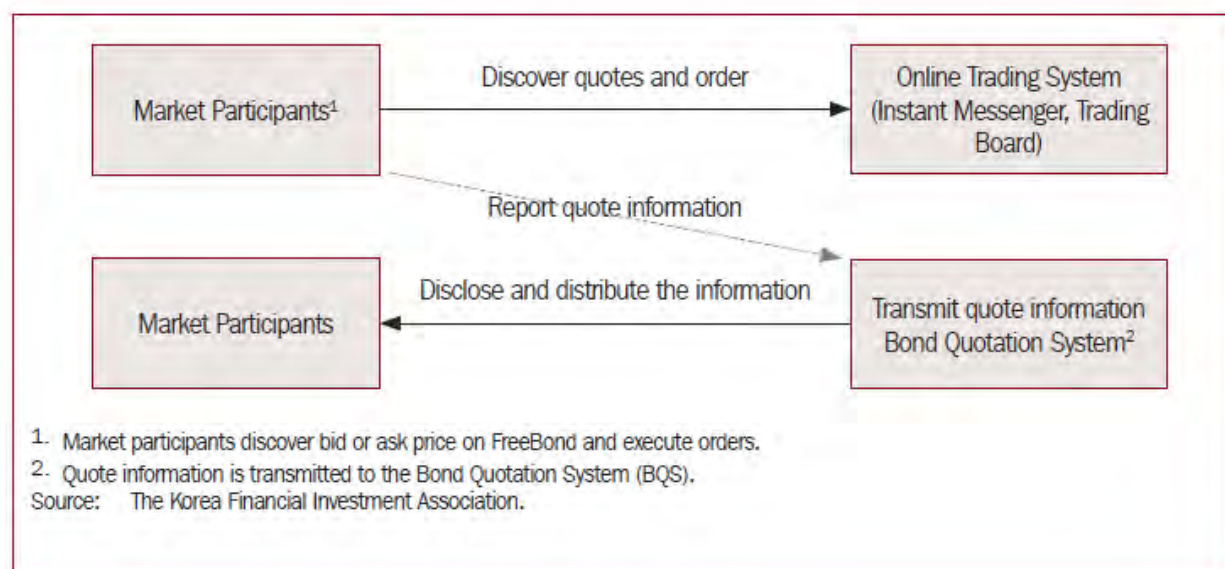
## Overview of Government Bonds

### Trading

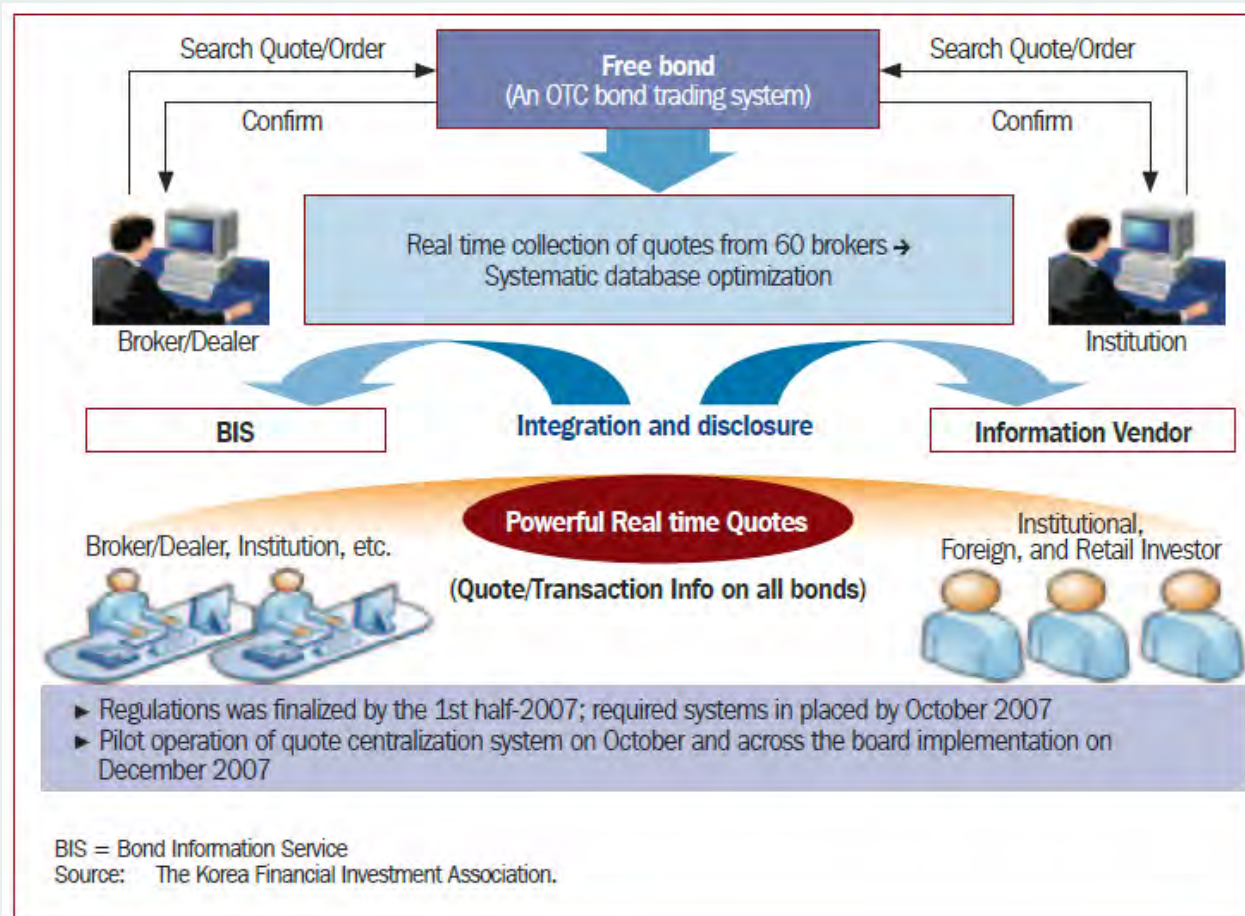
#### OTC Trading

In the Korean OTC market, the sell side and buy side trade bonds mostly via a private messenger and partly through FreeBond, which is run by KOFIA and enables financial investment firms and major market practitioners to search bid or ask prices for trading and intermediation in the OTC bond market. FreeBond also supports negotiations among trading counterparties. It consists of two components: Trading-Board (T-Board) and messenger. T-Board has many functions, such as searching bid prices, ordering, negotiating, confirming trades, providing real-time information on bid prices, and conducting analysis. Messenger actualizes one versus N-chatting, storing and using chatting frame layout, and chatting room services. The operations of FreeBond are illustrated in **Figure KR01**.

**Figure KR01: Operation of FreeBond**





**Figure KR02: Centralization and Disclosure of Over-the-Counter Quotations**

KOFIA is planning and working on adding matching services and linking FreeBond to the settlement system when related laws and regulations in the country change. The centralization and disclosure of OTC quotations is illustrated in **Figure KR02**.

If the client is a foreign investor, the sell side and/or the buy side of securities companies transfer order information to the FSS via the Foreign Investment Management System (FIMS). After receiving order information, FSS determines whether to accept or reject the order. If holding is enough, the FSS transfers order information to the sell side and/or the buy side of securities companies and KRX.

A screen image of the Bond-Trade Report and Information Service (B-TRiS) is shown in **Figure KR03**.

A financial investment company engaging in bond trading shall report to KOFIA the details related to such trading within 15 minutes from the execution of the sales agreement, using B-TRiS to enhance transparency when trading or brokering bonds with investors in the OTC market. After reporting, KOFIA discloses this information on its website.

Trade matching for OTC bond transactions can be done through KSD's Bond Institutional Settlement System (**Figure KR04**). However, the Bond Institutional Settlement System performs matching in the course of processing a series of bond settlement operations consisting of entering trade data, trade matching, generating settlement data, and delivery-versus-payment (DVP) settlement (delivery of securities and cash). It means the system is not exclusively for trade matching. In addition, matching is



Figure KR03: Screen Image of the Bond-Trade Report and Information Service

The screenshot displays the 'Real-time Trading Summary' page of the Bond-Trade Report and Information Service. The interface includes a search bar at the top with filters for Credit Rating (All), Interest (OTC), and Trading (All). Below the search bar, there are tabs for Comprehensive, Government, Municipal, Special, MSB, Bank, Other Financial, Corporate, and ABS. The main table lists bond trading data with columns for Time, Instrument, Time to Maturity, Credit Rating, Yield, Unit Price (offer), Change, 2 Agency Avg, and Volume. The table contains 18 rows of data, including various government and corporate bonds.

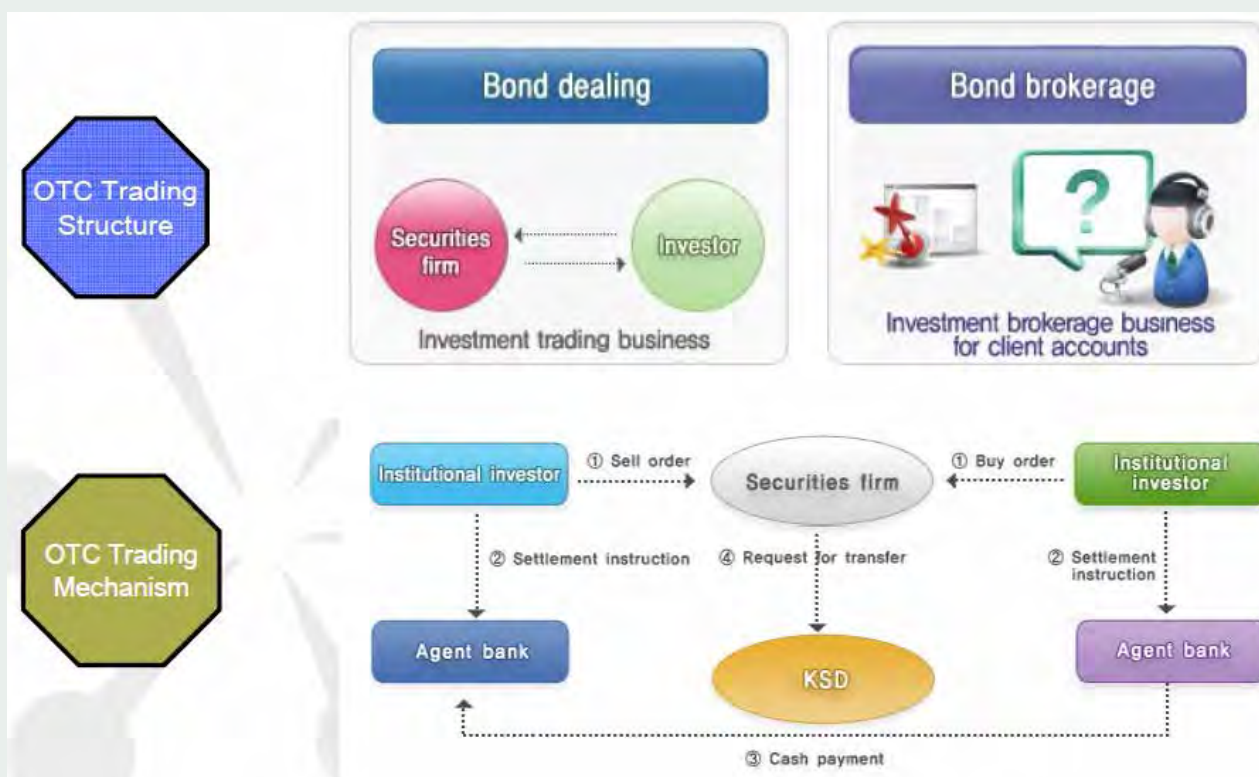
Time	Instrument	Time to Maturity	Credit Rating	Yield	Unit Price (offer)	Change	2 Agency Avg	Volume
16:18:40	MONETARY STABILIZATION BOND45-729-3-26	01y10m04d		3.960	9,947	0.010	3.97	1,000,000
16:18:21	HANJIN HEAVY INDUSTRIAL121	02y10m26d	AA	6.500	9,899	0.240	6.26	232,848
16:15:28	KOREA TREASURY BOND0475-1403	04y08m08d		4.590	10,213	0.030	4.56	1,000,000
16:15:24	KOREA TREASURY BOND0475-1403	04y08m08d		4.590	10,213	0.030	4.56	1,000,000
16:14:58	INDUSTRIAL BANK OF KOREA(TS0901DE185A-30)	00y01m01d	AAA	2.170	9,981	-	2.17	1,000,000
16:14:40	TREASURY BOND0500-1809	07y02m08d		4.980	10,179	-0.030	4.99	100,000
16:14:36	INDUSTRIAL BANK OF KOREA(TS0901DE185A-30)	00y01m01d	AAA	2.170	9,981	-	2.17	1,000,000
16:14:07	MONETARY STABILIZATION BOND0609-0713-0280	00y00m11d		1.910	9,994	-	1.91	1,010,000
16:13:51	MONETARY STABILIZATION BOND0609-0713-0280	00y00m11d		1.910	9,994	-	1.91	1,010,000
16:13:36	KOREA TREASURY BOND0575-1808	08y02m08d		5.040	10,895	-0.040	5.06	1,000,000
16:13:18	MONETARY STABILIZATION BOND45-729-2-25	00y00m23d		1.920	10,124	-	1.92	1,000,000
16:13:02	MONETARY STABILIZATION BOND45-729-2-25	00y00m23d		1.920	10,124	-	1.92	1,000,000
16:12:59	TREASURY BOND0550-1709	05y02m08d		5.060	10,461	-0.030	5.09	1,000,000
16:12:59	TREASURY BOND0550-1709	05y02m08d		5.060	10,461	-0.030	5.09	1,000,000
16:12:50	KOREA TREASURY BOND0575-1808	08y02m08d		5.040	10,895	-0.040	5.06	1,000,000
16:12:15	HACF-18 ABS SPECIALTY1-3	01y06m05d	AAA	5.050	10,025	0.080	0.00	200,000
16:11:22	WOO BANK1.0400030233	00y09m21d	AA+	3.080	10,271	-0.020	3.10	1,000,000
16:10:02	KOREA TREASURY BOND0475-1403	04y08m08d		4.540	10,204	-0.020	4.56	1,000,000
16:08:17	TREASURY BOND0475-1309	04y02m15d		4.390	10,289	-0.290	4.64	100,000

Source: The Korea Financial Investment Association

done in a conventional and standard method, without especially distinctive features. KSD's Bond Institutional Settlement System begins processing trade matching immediately after the participant submits their trade data. In a T+1 settlement cycle, the matching is completed by 20:00 on the trade date (T). In instances of foreign investors' holdings with custodian banks, it is completed by 14:00 on the settlement day (T+1).

### Exchange Trading

KRX provides the Electronic Trading System for Government Bonds (KTS) browser to market participants. Participants are directly connected with KTS using the browser without any additional cost, provided that Internet access is available. There are currently 67 market participants, of which 40 are regular members and 27 are bond

**Figure KR04: OTC Market Overview**

Source: Korea Securities Depository.

members. By function, the number of primary dealers are 21, and the number of secondary dealers are 46.

Securities such as KTBs, Monetary Stabilization Bonds (MSBs) issued by BOK, and Deposit Insurance Fund Bonds (DIFBs) issued by the Korea Deposit Insurance Corporation are traded on KTS (**Figure KR05**). Trading hours are from 9:00 to 15:00 and the trading lot is KRW1 billion.

Since KRX is an order-driven market, bonds are traded through a competitive bidding system. The bid–ask orders placed by eligible participants are automatically executed by a centrally matching system. If the client is a foreign investor, the sell side and/or the buy side of securities companies transfer the order information to FSS.

The KTS market structure is illustrated in **Figures KR06, KR07**.

## Clearing and Central Counterparty

### Clearing and Central Counterparty for the OTC Market

There is no clearing and central counterparty (CCP) function for the OTC bond market.

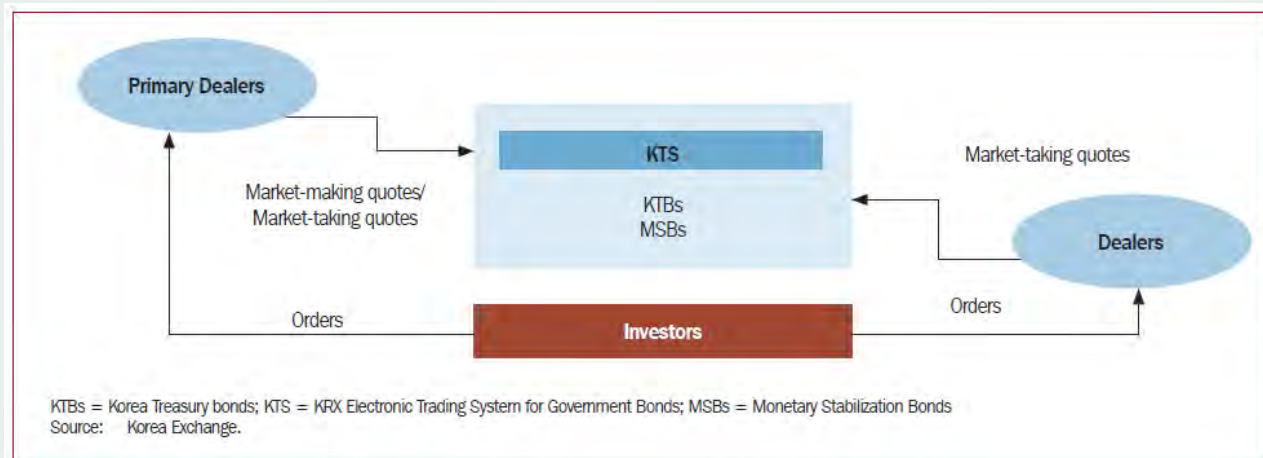
### CCP for the Exchange Market

Acting as a CCP, KRX owns and operates the netting system for the trades in the exchange market. Through KRX debt assumption without responsibilities, multilateral trading in the Republic of Korea's market has shifted to a bilateral trading relationship between KRX and its members. This guarantees the legal validity of multilateral netting. Netting is a process that confirms the securities and charges to be delivered by members to KRX on the settlement date. The quantity of securities to be delivered is calculated from the balance (net) between the selling and buying quantities per issue and members. For charges, the net single position is calculated by finding the net between buying

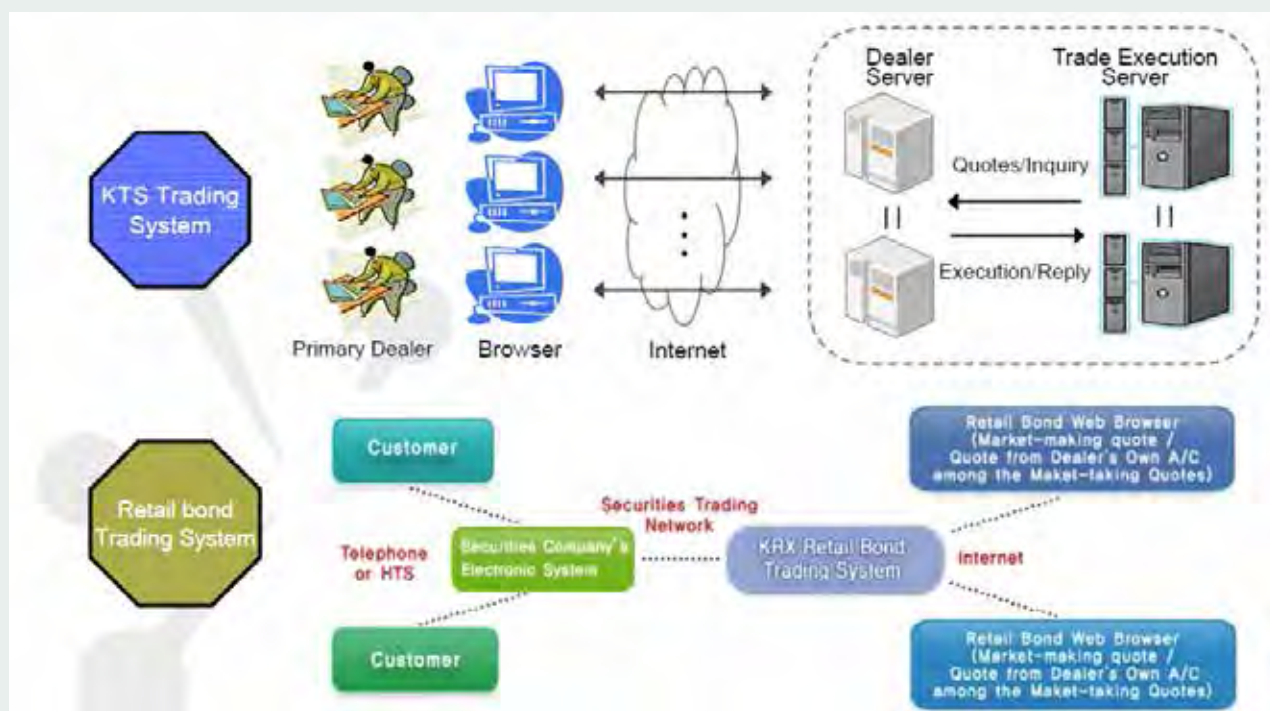
**Figure KR05: Korea Exchange Bond Market (Overview)**

Market Division		Purpose	Eligible Bonds	Participants
Institutional Investors Market	KTS	<ul style="list-style-type: none"> <li>❖ Stimulation of GB Issuance &amp; Trading</li> <li>❖ Establishing fair price by constructing benchmark yields</li> </ul>	<ul style="list-style-type: none"> <li>❖ KTBs</li> <li>❖ MSBs</li> <li>❖ KDIC bonds</li> </ul>	<ul style="list-style-type: none"> <li>❖ Securities companies</li> <li>❖ Banks</li> <li>❖ Institutional investors(pension, insurance companies)</li> </ul>
	Repo Market	<ul style="list-style-type: none"> <li>❖ Funding through collateral bonds</li> <li>❖ Facilitating bond lending &amp; borrowing</li> </ul>	<ul style="list-style-type: none"> <li>❖ KTBs, MSBs, KIBs &amp; corporate bonds(AA or higher)</li> </ul>	
Ordinary Bond Market	Retail Bond Market	<ul style="list-style-type: none"> <li>❖ Stimulating individual investors' bond investment</li> </ul>	<ul style="list-style-type: none"> <li>❖ Bonds whose quotation amount is less than KRW 5 bn.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Retail Primary Dealers</li> <li>❖ Ordinary investors</li> </ul>
	Small-lot Public Bond Market	<ul style="list-style-type: none"> <li>❖ Providing liquidity to the non-voluntarily holding bonds</li> </ul>	<ul style="list-style-type: none"> <li>❖ National Housing Bonds</li> <li>❖ Seoul Subway Bonds</li> <li>❖ Regional Development Bonds</li> </ul>	<ul style="list-style-type: none"> <li>❖ Exclusive members for buying small-lot bonds</li> <li>❖ The general public</li> </ul>
	Others	<ul style="list-style-type: none"> <li>❖ Trading equity-linked bonds etc.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Equity-linked bonds</li> <li>❖ Other corporate bonds</li> </ul>	<ul style="list-style-type: none"> <li>❖ Securities companies</li> <li>❖ Ordinary investors</li> </ul>

Source: Korea Securities Depository.

**Figure KR06: Market Structure of KRX Electronic Trading System for Government Bonds)**



**Figure KR07: KRX Market System**

Source: Korea Securities Depository.

and selling charges per member. In order for settlements to be accomplished according to the calculated settlement positions, KRX gives settlement orders to member firms and KSD. Bond trades in the exchange market are cleared by KRX on a multilateral netting basis. In this process, KRX acts as the CCP.

## Bond Settlement

### Bond Settlement in the OTC Market

All bonds, including Korean government bonds, are deposited in registered form in KSD. At the end of 2013, KSD participants included 298 institutions: 61 brokers-dealers, 51 banks, 143 asset management companies, 21 insurance companies, 5 pension funds, and 17 institutions classified as others. KSD conducts simultaneous security and cash settlement on a trade-by-trade basis, or DVP Model 1 of the Bank for International Settlements (BIS) definition.

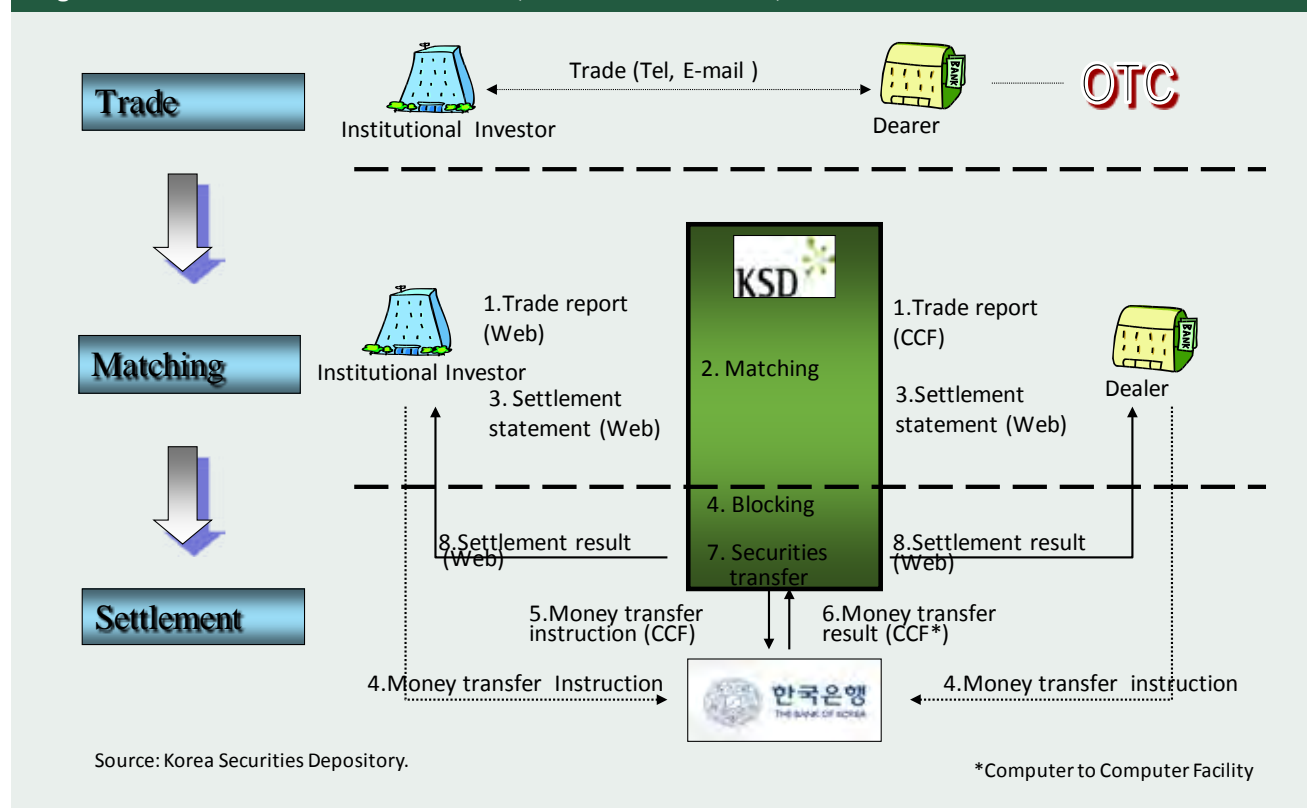
The trading parties must deliver the securities or make payments to KSD settlement accounts

during BOK-Wire+ business hours on the settlement date, and in accordance with the notified details. Settlement occurs between T+1 and T+30 for bonds and on T for CDs and commercial paper. As soon as the trading parties have delivered their securities and funds to their securities accounts with KSD and KSD's account with BOK, KSD simultaneously settles the securities and funds through the parties' securities accounts at KSD and funds accounts held with BOK (**Figures KR08, KR09**).

### Bond Settlement in the Exchange Market

KSD also provides DVP settlement for bonds traded on KRX. KSD launched a new bond settlement system in February 2012. The new system introduces DVP Model 1 of the BIS definition after netting, while the previous system adopted DVP Model 3 of the BIS definition. The new system connects KTS and the New Bank of Korea Financial Wire Network System (BOK-Wire+).

In cases of exchange transactions, there is no limit on the transaction value, but there is

**Figure KR08: Bond Trade and Settlement (Institutional Investors)**

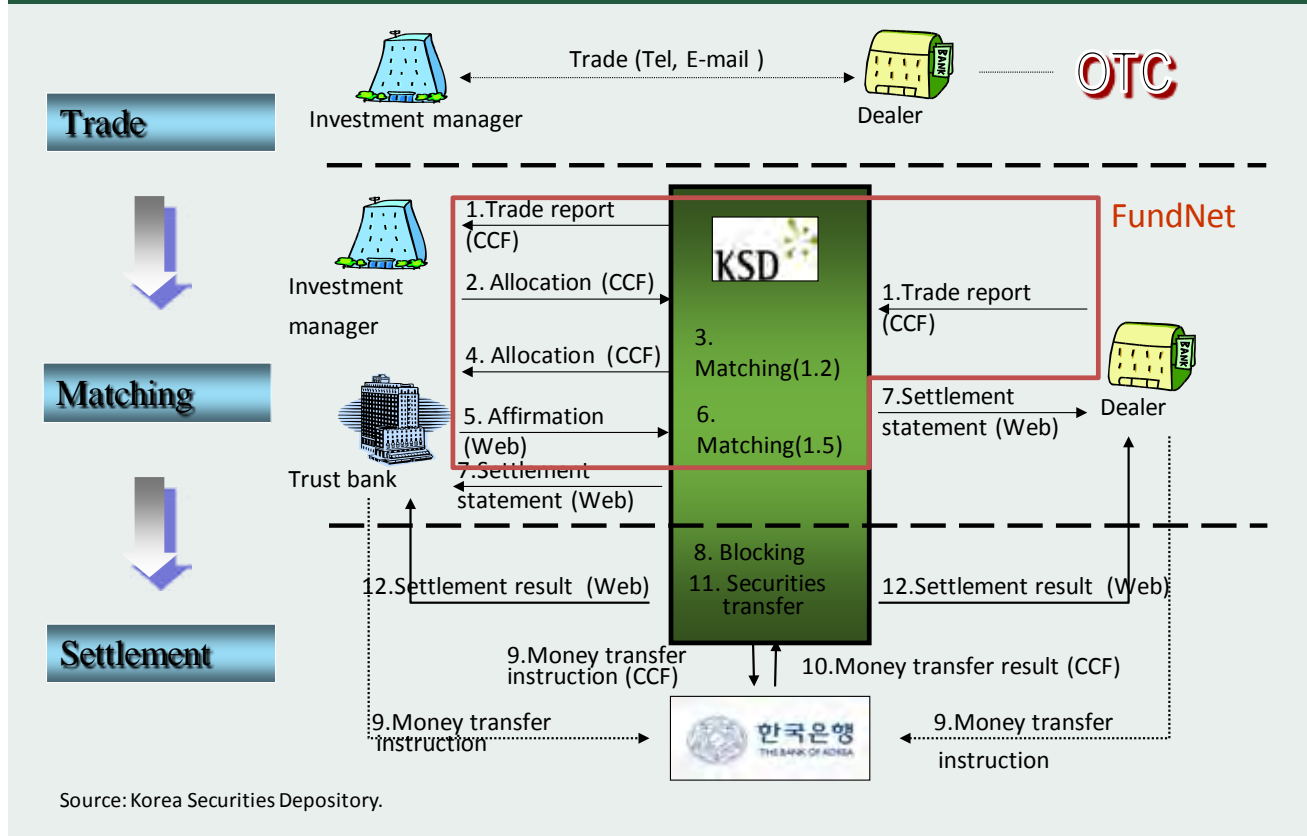
a ceiling of KRW10 billion for settlement. For example, a single trade of KRW25 billion worth of government bonds would be settled in three tranches: KRW10 billion, KRW10 billion, and KRW 5 billion. On the other hand, there is no limit to trading and settlement values in the OTC market.

## Cash Settlement

BOK owns and operates BOK-Wire+ for cash settlement. The previous BOK-Wire, introduced in December 1994, was a large-value payment system. Through this system, BOK provided funds-transfer services via participants' current accounts with BOK. In November 1999, BOK also began providing DVP service, and in December 2004 it connected with the Continuous Linked Settlement (CLS) system to enable payment-versus-payment (PVP) service for foreign exchange settlement involving Korean won. In its early days, BOK-Wire processed fund transfers based solely on its Real-Time Gross Settlement (RTGS) mechanism. As BOK-Wire

settlement volumes surged, however, liquidity burdens on participants increased. In May 2005, BOK launched a 4-year project to develop a new system (BOK-Wire+) that would use not only the pre-existing RTGS mechanism, but a hybrid settlement mechanism as well. BOK-Wire+ has operated stably since its launch in April 2009. The BOK-Wire+ hybrid system provides bilateral and multilateral offsetting settlements for liquidity savings. BOK also provides intraday overdraft with KRX for settlement of government bond transactions.

BOK-Wire+ settlement procedures are sub-classified into those using the RTGS system and those using the hybrid system with its bilateral and multilateral offsetting features added to the RTGS system. Participants hold two types of accounts with BOK: current accounts and deposit accounts for settlement. The former are used for transactions carried out through the RTGS system and the latter for those through the hybrid system.

**Figure KR09: Bond Trade and Settlement (Fund)**

Funds transfers involving BOK loans, government and public bond transactions, CLS, and Retail Payment System (RPS) net settlement are handled through the RTGS system, while those related to general funds transfers, call transaction settlements, and DVP settlements are processed through the hybrid system.

The online operating hours of BOK-Wire+ are 9:00 to 17:30 from Monday to Friday. But market participants can use the commercial banking system for money transfers after BOK-Wire+ closes. BOK may extend its operating hours temporarily if it deems it necessary due to an error in the BOK-Wire+ system, delays or concentrations of funds settlement, or any other unavoidable reasons.

## Overview of Corporate Bonds

### Trading

#### OTC Trading

In the Republic of Korea, there are two major corporate bond markets. Most corporate bonds are traded in the OTC market.

#### Exchange Trading

The exchange market is operated by KRX. Equity-linked corporate bonds are traded in the exchange market.

### CCP

#### CCP for the OTC Market

Corporate bonds traded in the OTC market are settled through KSD's settlement system (KSD SAFE+) without netting.



### CCP for the Exchange Market

Exchange trading of corporate bonds is settled through clearing in KRX. That means the settlement detail volume after netting is smaller than the trade volume. In this process, KRX is acting as CCP.

### Bond Settlement

#### Bond Settlement in the OTC Market

Most corporate bonds are traded in the OTC market. The processes for corporate bond trades are similar to those of government bonds (**Figure KR10**).

#### Bond Settlement in the Exchange Market

KSD plays the same role with respect to exchange-traded bond settlement as it does in the OTC market.

### Cash Settlement

For cash settlement in OTC market trading, BOK acts as the cash settlement bank. For cash settlement in exchange trading, participants can use one of two commercial banks (Shinhan or Woori).

## Interest Payment and Redemption

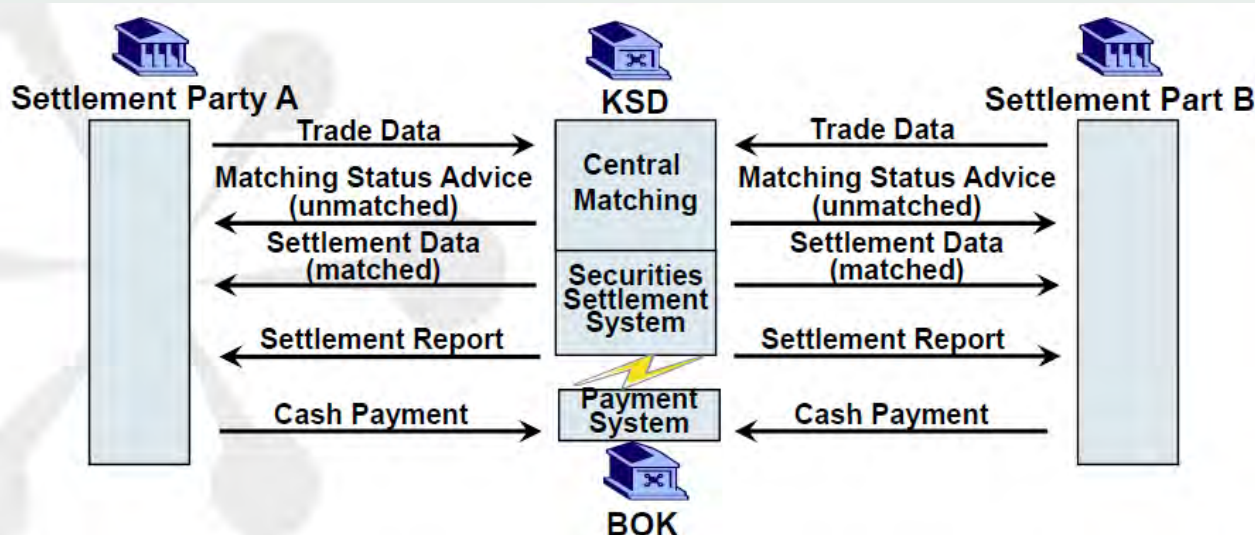
### Interest Payment and Redemption of Government Bonds

BOK, as the registrar of government bonds, pays interests and redemption to KSD on behalf of an issuer. Interest on all government bonds is paid by KSD directly into the respective custodian's cash account with BOK. Upon receipt of interest payment from KSD, the custodian credits the interest amount to a client's cash accounts after deduction of the relevant taxes (**Figures KR11, KR12**).

In cases of investment by a non-resident (vs. a resident), there are three different procedures to be followed:

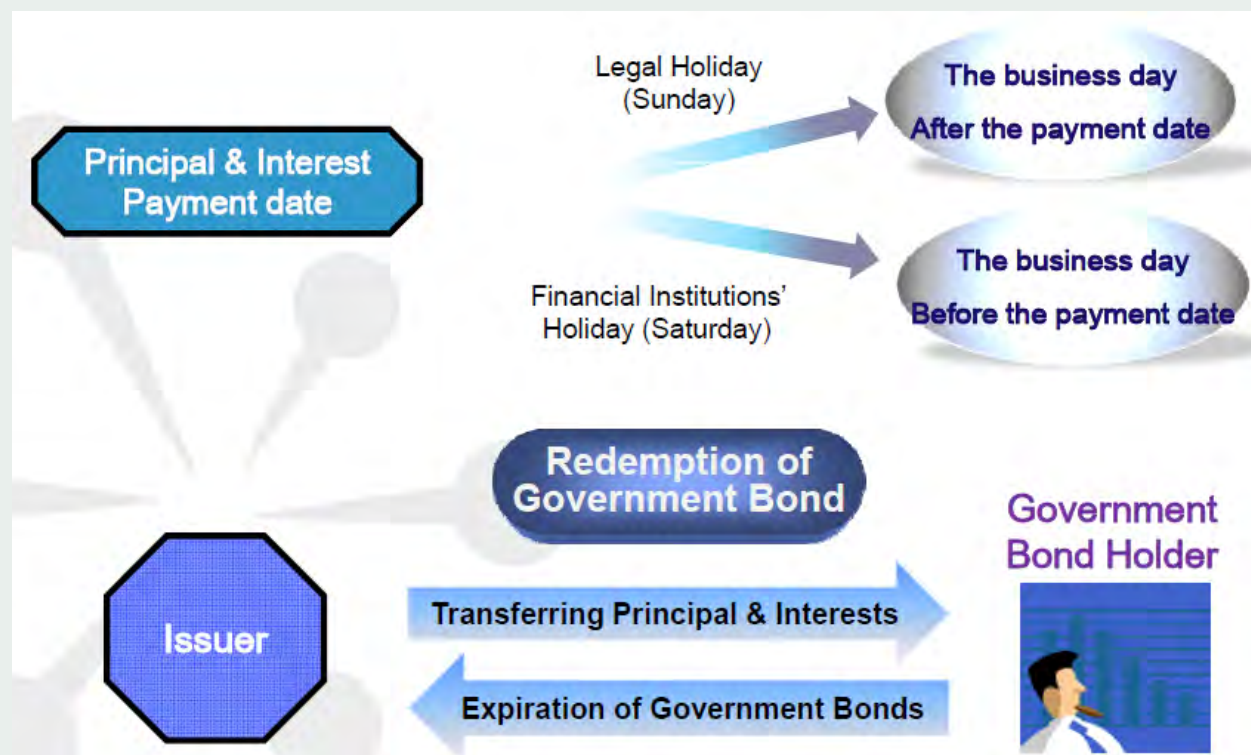
- (i) IRC (investor's registration with FSS),
- (ii) appointment of a custodian for mandatory deposit of bond, and
- (iii) maintenance of exclusive investment LCY and foreign exchange (FX) accounts through which cash transfers should be made.

Figure KR10: Corporate Bond Trade & Settlement in OTC Market



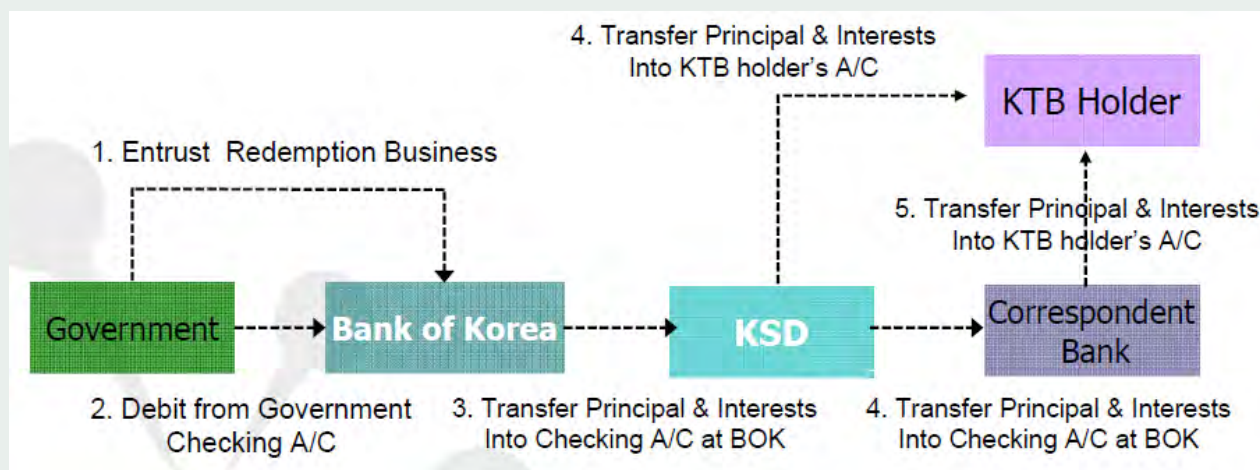
Source: Korea Securities Depository.

**Figure KR11: Overview of KTB Redemption**

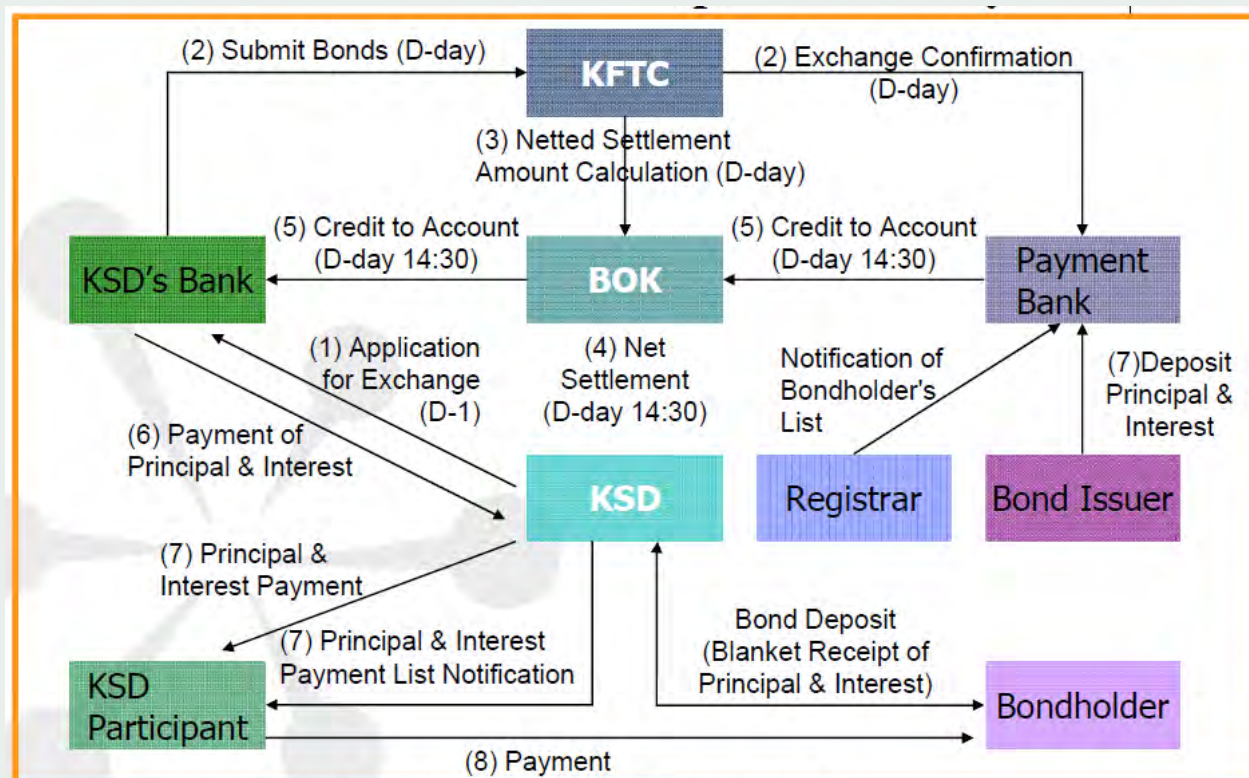


Source: Korea Securities Depository.

**Figure KR12: KTB Redemption Procedures**



Source: Korea Securities Depository.

**Figure KR13: Flow Chart of Corporate Bond Redemption and Payment**

\* KFTC: Korea Financial Telecommunications & Clearing Institute

Source: Korea Securities Depository.

Interest accrues on an actual (365-day) basis. The redemption amount of a government bond is fully paid back on the maturity date and interest is paid every 6 months until maturity.

### Interest Payment and Redemption of Corporate Bonds

Commercial banks play a role as payment bank on behalf of issuers. Interest and redemption are remitted from an issuer's account to a bond holder's account through a payment bank's account, KSD's account, and a custodian's account (**Figure KR13**).

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

Business flows in the Korean government bond OTC and exchange markets are analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are given below.

#### (i) Pre-settlement Matching

There is no automated pre-settlement matching system (PSMS) in the Korean bond market, but both the sell side and buy side send settlement instruction to KSD's book-entry system on S-1 day, and the system matches settlement instruction. On the other hand, settlement instruction is cleared and thus there is no need to perform



pre-settlement matching in the exchange market.

(ii) **Bond Settlement**

The book-entry system requires settlement instruction. There are two ways to obtain instruction data: manual input and data interface.

In the OTC market, there is no system interface between the trading platform and the book-entry system, SAFE+, thus market participants input settlement instruction into SAFE+. On the other hand, Exture, which is the Korean trading and clearing system, sends settlement instruction data to SAFE+. In the exchange market, SAFE+ does not require any confirmation from the sell side or buy side because settlement instruction has been netted.

SAFE+ adopts central matching and sends matching confirmation to both the sell side and buy side. SAFE+ performs DVP settlement on a real-time basis (DVP Model 1 of the BIS definition) if instruction derives from an OTC trade. However, when a transaction derives from the exchange market, SAFE+ adopts DVP Model 3 of the BIS definition (Net-Net).

(iii) **Cash Settlement**

BOK, as the central bank in the Republic of Korea, plays a role as a cash settlement bank. SAFE+ sends cash settlement instruction to BOK-Wire, the cash settlement system owned and operated by BOK. If the transaction derives from OTC trading, BOK-Wire sends a payment request to the buy side, and the buy side affirms it and sends back cash settlement instruction to BOK-Wire.

After DVP settlement, BOK-Wire sends cash settlement instruction to both the sell side and buy side.

For further details, please refer to **Part 3 KR03 (Government Bond Transaction Flow for Domestic Trades (OTC))** and **Part 3 KR04 (Government Bond Transaction Flow for Domestic Trades (Exchange))**.

## **DVP Flow of Corporate Bonds for Domestic Trades**

Business flows in the Korean corporate bond OTC market are analyzed using a typical DVP flow. Key findings of the analysis are given below.

(i) **Pre-Settlement Matching**

PSMS for corporate bonds is similar to that of government bonds in the Republic of Korea.

(ii) **Bond Settlement**

Bond settlement for corporate bonds is similar to that of government bonds in the Republic of Korea.

(iii) **Cash Settlement**

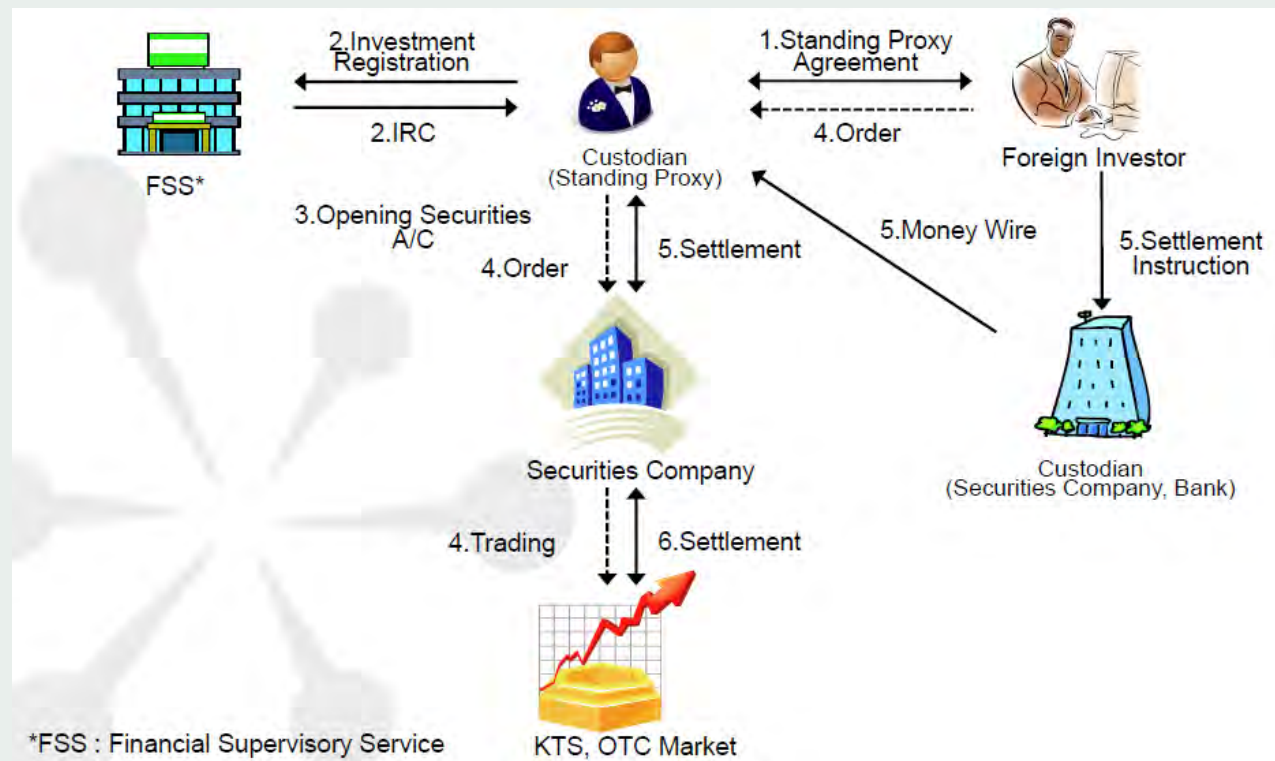
There are two types of cash settlement in the Republic of Korea. BOK plays a role as a cash settlement bank if cash settlement instruction derives from the OTC market. On the other hand, commercial banks play a role as cash settlement banks if instruction derives from the exchange market. For instruction from the OTC market, SAFE+ and BOK-Wire+ performs DVP settlement on a real-time basis. In this case, BOK-Wire+ receives settlement instruction from SAFE+ and performs cash settlement. After settlement, BOK-Wire+ sends confirmation back to SAFE+ and also sends a settlement report (cash) to both the sell side and buy side.

For instruction from the exchange market, SAFE+ and commercial banks performs DVP settlement. SAFE+ sends cash settlement instruction to commercial banks and commercial banks send it back to SAFE+.

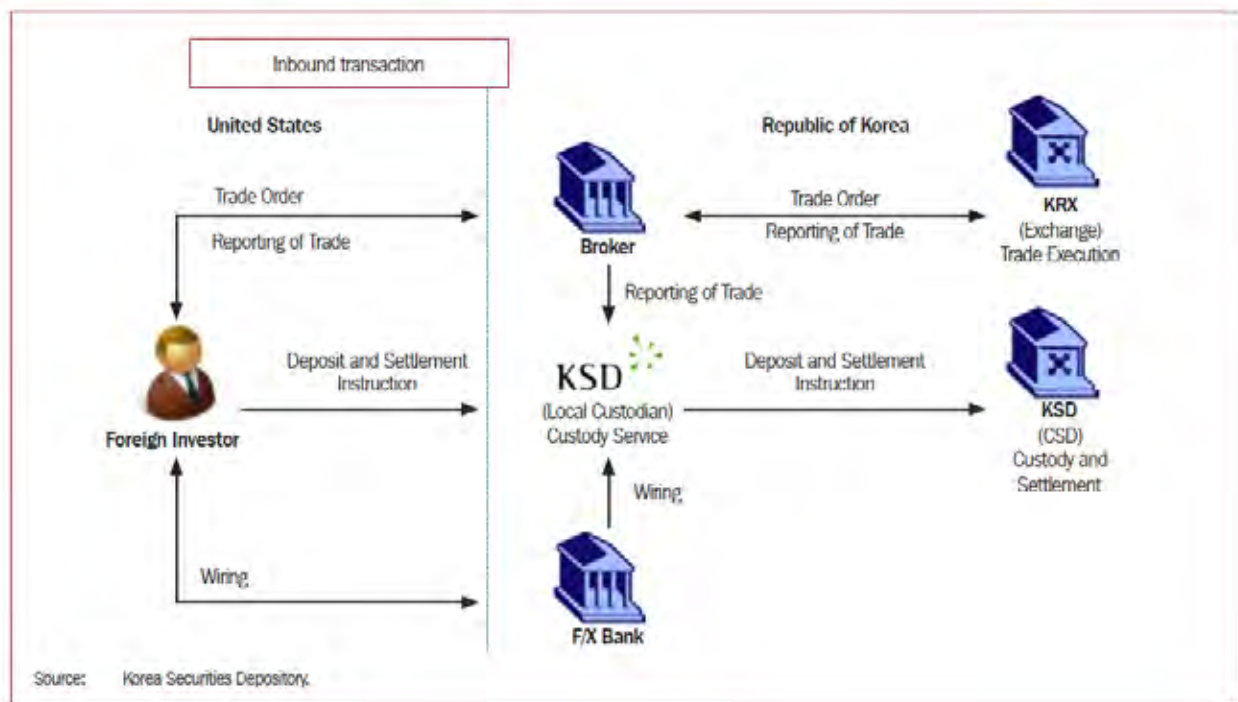
For further details, please refer to **Part 3 KR05 (Corporate Bond Transaction Flow for Domestic Trades (OTC))** and **Part 3 KR06 (Corporate Bond Transaction Flow for Domestic Trades (Exchange))**.

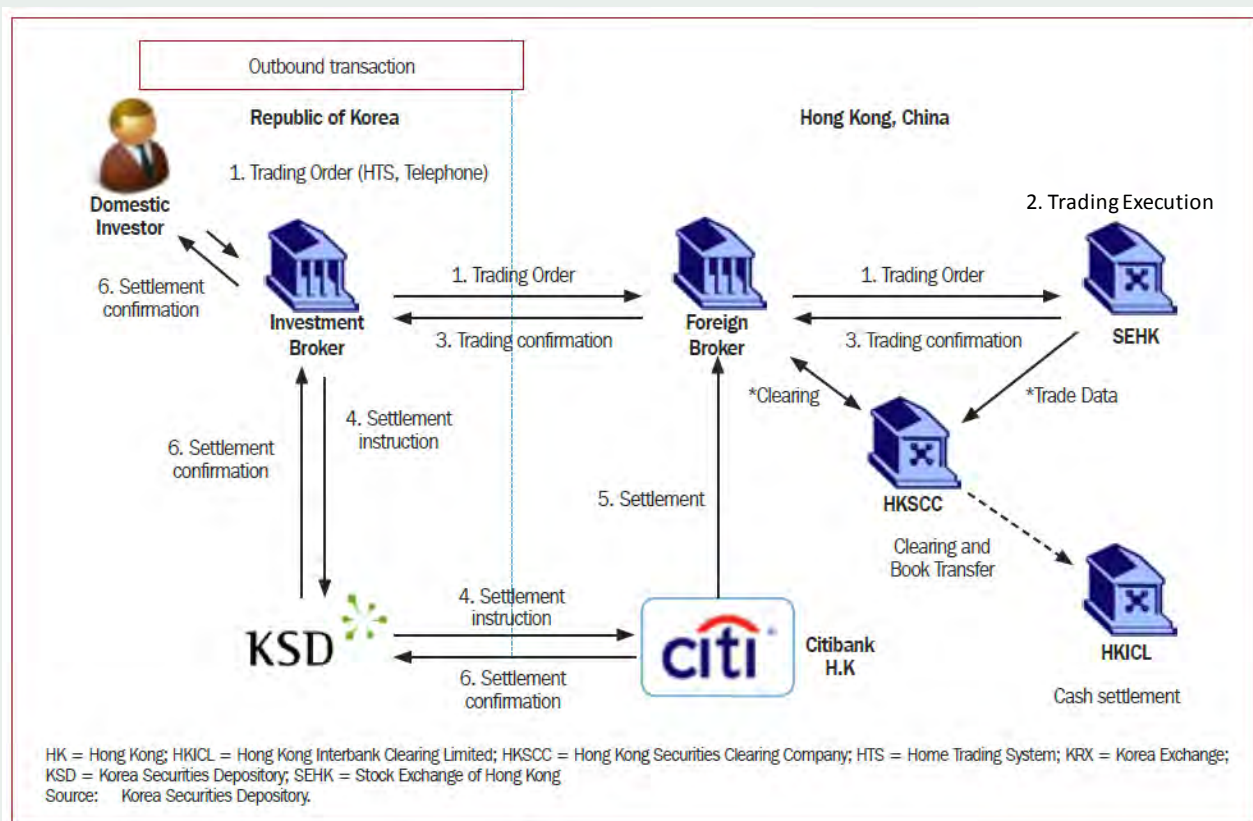
## **DVP Flow of Cross-Border Bond Transactions**

Although there are some barriers to cross-border bond transactions in ASEAN+3 economies, especially with regard to FX and cash controls, few barriers exist in the Korean money market.

**Figure KR14: Foreign Investment Procedures on Secondary Market**

Source: Korea Securities Depository.

**Figure KR15: Sample of Inbound Transactions in the Korea Bond Market**

**Figure KR16: Sample of Outbound Transactions in the Korea Bond Market**

Some examples of cross-border transactions are shown in **Figures KR14, KR15, KR16**. Foreign investors are not subject to any restrictions on FX trades with underlying investment or pre-funding, or FX reporting. Offshore FX trading and repatriation is permitted for foreign investors. Third-party FX trading is legally permissible, but not used in practice.

For further details, please refer to **Part 3 KR07 (Bond Transaction Flow for Foreign Investors OTC Market / DVP)**.

### Interest Payment and Redemption of Government Bonds

The business flow of interest payment and redemption of government bond is analyzed using a typical flow. Key findings of the analysis are given below.

#### (i) **Paying Agent (PA)**

Generally, a PA has four functions:

- payment request for issuer,
- interest and redemption payment on behalf of issuer,
- receiving bond-holder list from central securities depository (CSD), and
- interest calculation.

In the Korean government bond market, BOK and KSD share a role as PAs because the Korean MOF entrusts interest payments to BOK.

KSD, as the government bond market CSD in the Republic of Korea, sends a payment request to BOK, which calculates interest payment and pays interest and redemption to a custodian.



(ii) **CSD**

Within ASEAN+3, many central banks are charged as the CSD in the government bond market. Nevertheless, KSD, an exchange-related entity, is the CSD in the Korean government bond market. Although KSD does not have a banking license, it has cash accounts with BOK-Wire+ for interest and redemption payment.

KSD receives a bond-holder list from CSD participants in order to calculate withholding tax. CSD participants manage their own bonds and customers' bonds separately.

(iii) **Payment Flow**

A central bank cash settlement system is used in the case of interest and redemption payment.

(iv) **Tax**

In the Republic of Korea, residents and non-residents must pay income tax. As the CSD, KSD withholds tax for residents, while custodians withhold tax for non-residents.

For further details, please refer to **Part 3 KR08 (Interest Payment Flow of Government Bond)** and **Part 3 KR09 (Redemption Flow of Government Bond)**.

## Interest Payment and Redemption of Corporate Bonds

Business flows for interest payment and redemption of corporate bond are analyzed using a typical flow. Key findings of the analysis are given below.

(i) **PA**

The functions of a PA for corporate bonds are the same as those for government bonds.

In the Korean corporate bond market, commercial banks play a role as PAs, paying interest and principal to custodians on the issuer's behalf. Issuers instruct PAs to pay them based on an issuer's initiative and without a payment request from the PA. PAs also confirm bond-holder lists and calculate interest.

(ii) **CSD**

KSD is charged as the CSD in the Korean bond market. Although KSD does not have a banking license, it has cash accounts in BOK-Wire+, which is BOK's RTGS system, and uses them for payment. CSD receives the bond-holder list and tax data from CSD participants.

(iii) **Payment Flow**

BOK-Wire+, as the central bank cash settlement system in the Republic of Korea, is used in the case of interest payment and redemption.

(iv) **Tax**

Both residents and non-residents must pay tax on interest payments (**Figure KR17**). For residents, KSD's bank withholds the tax. Custodians withhold tax for non-residents.

For further details, please refer to **Part 3 KR10 (Interest Payment Flow of Corporate Bond)** and **Part 3 KR11 (Redemption Flow of Corporate Bond)**.

## Message Standards

### Message Format

KSD adopts proprietary message format for bond settlement; it does not adopt the ISO standard.

### Message Items

Typical message types of bond settlement are settlement instruction and settlement confirmation. Securities Market Practice Group (SMPG) has defined 10 common elements of these two message types. These typical message items are compared with that of ISO20022, (sese.023, and sese.025).

**Figure KR17: Taxation on Individual and Corporation**

	Individual Investor	Institutional Investor
Applicable Act	Income Tax Act	Corporate Tax Acts
Taxable Income	Coupon payments	Coupon payments + Capital gains
Withholding Tax	Coupon payments are subject to withholding tax. (The tax amount is calculated by length of holding period.)	
Withholding Tax Rate	14% (The inhabitant tax equivalent to 10% of the income tax will be levied.)	
Collection of Withholding Tax	When the coupon is paid or when the bonds are sold, the withholding tax on the coupon will be withheld according to the length of the holding period.	
Withholding Agent	<ul style="list-style-type: none"> <li>•When the bonds are sold, in principal, the seller collects the tax. If the seller is an individual, the buyer (corporate) instead withholds it.</li> <li>•When the coupon is paid, the bond coupon payer collects tax.</li> </ul>	

Source: Korea Securities Depository.

Message items of settlement instruction and confirmation adopted by KSD do not include Place of Settlement and Client of Receiving or Delivering Agent.

## Market Practices

### Operating Hours

For on-exchange transactions, the settlement cut-off time is 16:00. Trades taking place after this time are not immediately processed as fails, and settlement continues to be processed. After the cut-off time, the deadline for securities delivery is 19:00 and for cash it is 17:00. In cases of OTC transactions, the cut-off time has two stages. The initial deadline is 17:30, the closing time for BOK-Wire+. (This is referred to as closing DVP settlement and switching over to free-of-payment [FOP].) KSD's Bond Institutional Settlement system closes at 18:30. (This is referred to as the closing of Bond Institutional Settlement.) Thus, the reversal time is between 17:30 and 18:30, and BOK-Wire+ cannot be used.

### Settlement Cycle

In the Republic of Korea, the settlement cycle for OTC bond transactions is from T+1 to T+30, as decided by agreement between the seller and buyer. However, repurchase agreements, retail bond transactions, and bond transactions by collective investment vehicles can be settled on the trade date, T, per the Regulation on Financial Investment Business. The settlement cycle for OTC bond transactions are decided without relevance to nationality of participants or type of bond (government or corporate), and is usually T+1.

On the other hand, the settlement cycles for on-exchange bond transactions are as follows. The settlement cycle for the Inter-Dealer Market for KTBs, MSBs, and Deposit Insurance Fund Bonds is T+1, and that of the general bond market for small-lot transactions of government bonds and retail bond transactions (e.g., convertible bonds, corporate bonds) is T.

## Fails

The approach to fails differs between the exchange and OTC markets. Generally, fails mean that the selling member has been unable to deliver the securities by the designated deadline on the settlement day, resulting in the non-receipt of securities on the part of the buyer.

In case of on-exchange bond settlement, KRX regulations provide the guidelines for resolving fails. The first method is to use a Securities Delivery Bill. With the consent of the receiving member, the seller can issue a Securities Delivery Bill to be delivered in lieu of the securities. In this case, the member must post cash amounting to 130% of the securities' value (closing price on the day before issuance of the bill), and also pay compensation for the delay.

In case of Bond Institutional Settlement, there are no set guidelines, and fails are processed according to an agreement between the trading parties.

## Bilateral Netting

On-exchange transactions are netted multilaterally and bilateral netting is not applicable. Therefore, only OTC bond transactions that are settled as gross transactions are applicable.

Basically, the settlement of OTC bond transactions is DVP Model 1 of the BIS definition (gross securities and cash), which is RTGS, and bilateral netting is seemingly not applicable. However, the function provided by the institutional settlement system for bonds is technically similar to bilateral netting. This is referred to as consecutive settlement (or technical netting).

For example, in the first transaction, securities company A sells KRW 10.0 billion (face value) of 3-year benchmark KTBs at KRW10.1 billion, which are bought by securities company B. In a second transaction, B sells A the same issue securities with face value of KRW10.0 billion for KRW10.1 billion. In this case, when the securities companies submit the trade data for both transactions into the Bond Institutional Settlement system, after trade matching and settlement data creation, these transactions are

processed as cross-trades. That is, (Transaction 1) A→B, (Transaction 2) B→A ⇒ Settlement data A→B. Therefore, these trades are processed without delivery of securities or cash.

A more complicated example is if securities company A sells 3-year benchmark KTBs with a face value of KRW10.0 billion to B at the price of KRW10.1 billion, and B sells the same issue securities of the same face value to securities company C for KRW10.2 billion. In this case, B, in the middle of the transaction chain, can process these trades with consecutive settlement; that is, A→B, B→C is merged into A→B→C. There is no need for B to deliver cash or securities. A delivers the securities and C delivers KRW10.1 billion and KRW100 million to A and B, respectively. Hence, the netting conducted by the Bond Institutional Settlement system (netting through consecutive settlement or technical netting) is somewhat different to bilateral netting.

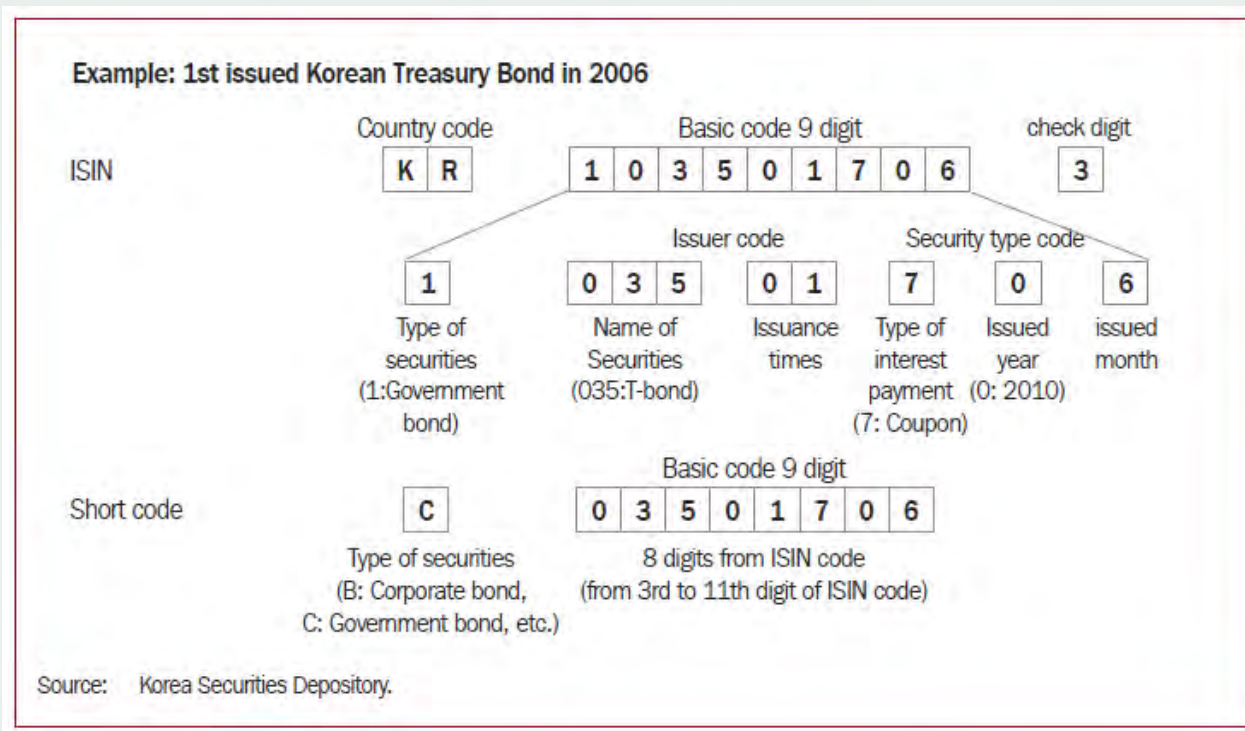
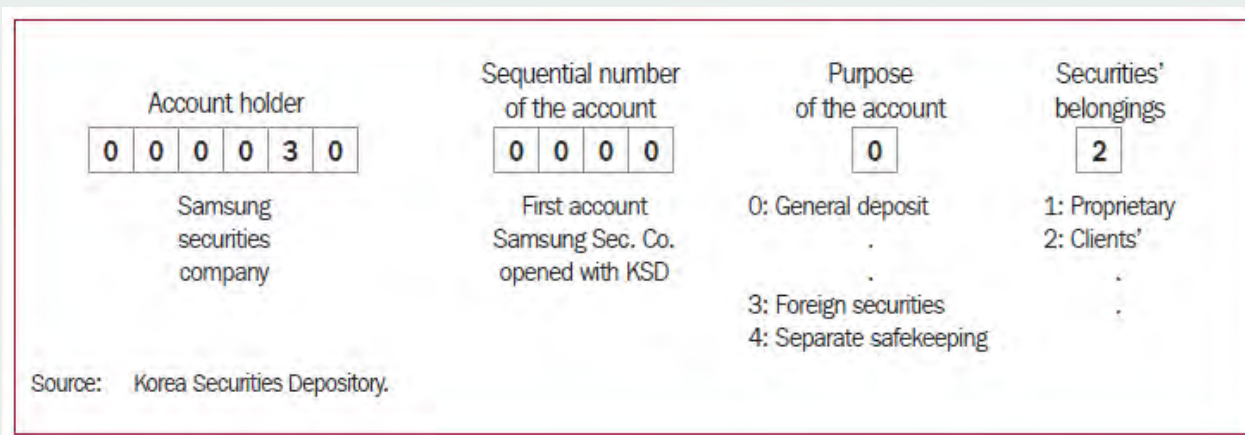
Since the Bond Institutional Settlement system handles OTC bond trading, these examples do not apply to settlement of securities lending or repo transactions. Also, it only applies to transactions with the same settlement date (same execution period), and when the settlement method is DVP. Merging multiple transactions for settlement is possible when submitting the trade data, and also after settlement data has been created.

## Numbering and Coding

### Numbering and Coding for the OTC and Exchange Markets

#### Securities Numbering

KRX is responsible for issuing International Securities Identification Number (ISIN) in the Republic of Korea. As the national numbering agency, KRX is authorized by ISO for securities numbering. ISIN is adopted as the numbering standard by KRX. In the domestic market, short-code is also used to identify bond name, which is composed of nine digits. The first digit is an alphabetical code, which denotes type of security. An example of the first issued KTB is shown in **Figure KR18**.

**Figure KR18: Sample of First Issued Korean Treasury Bond in 2006****Figure KR19: Korea Securities Depository Code Structure****Financial Institution Identification**

Each institution such as KSD, KRX, and BOK has a proprietary code for each financial entity. KSD uses an account number as an identification number. All of KSD's participants have one or more account number. The account number has 12 digits. The first six digits signify the account

holder, the next four digits in the middle signify the purpose of the account, and last digit reflects whether the securities are proprietary or a client's. KSD's code structure is presented in **Figure KR19**.

In case of conversion between the Business Identifier Code (BIC) and the local code, the BIC is mapped into the local code and vice versa.

### **Securities Accounts**

KSD has adopted a segregated and single-layer account structure. CSD participants manage their own bonds and customer's bonds separately in the SAFE+ book-entry system operated by KSD. A securities account number is used as a financial institution identification code in KSD.

### **Cash Account**

Proprietary account numbers from BOK and commercial banks are used for cash accounts. If necessary, the International Bank Account Number (IBAN) is mapped into the proprietary code and vice versa.

### **Character Code and Language**

Unicode and UTF-8 are used for the character code while the Korean language is used for bond settlement Infrastructure.

## Medium- to Long-Term Strategies

In the future, a complete bond Alternative Trading System (ATS) will be introduced, equipped with a settlement function for the OTC market. The introduction of a bond ATS will bring innovations to the secondary bond market, thereby reducing trading costs, enhancing the price discovery function of the bond market, and improving market efficiency.

## References

ADB. *ASEAN+3 Bond Market Guide*.

ADB. *AsianBondsOnline*. <http://asianbondsonline.adb.org/index.php>

Korea Financial Investment Association. *Capital Market in Korea 2012*.

Korea Securities Depository. <http://www.ksd.or.kr/eng/main.home>

Executives' Meeting of East Asia Pacific Central Banks. *Payment, Clearing, and Settlement Systems in Korea*.

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

# Lao PDR (LA)

## Bond Market Infrastructure

### Overview of Bond Market

The Lao People's Democratic Republic (Lao PDR) is in the process of developing a bond market. The domestic bond market is still in the preliminary stages, with only government bonds being issued.

Since the 1990s, there have been two types of bonds issued by the government: Treasury Bills and Arrears Clearance Bills. Treasury bills are issued on a regular basis for financing the budget deficit. The amount of each issue is limited to LAK50–LAK60 billion, which is equivalent to USD5–USD6 million, with maturities ranging from 3 months to 1 year and an average coupon rate of 15%. The Ministry of Finance (MOF) started issuing Treasury bills as a means to meet Lao PDR's fiscal deficits.

Arrears Clearance Bills are issued on a non-regular basis for clearing government debt accumulated by state-owned enterprises (SOEs). The amount of each issue is limited to LAK25 billion, with an annual interest rate of 16% and a maturity of up to 3 years.

Since a majority of Treasury bills are sold to commercial banks, these banks also work

as agents in the sale or transfer of Treasury bills, although there is no law supporting such functions. Treasury bills are allocated among commercial banks in accordance with their capacity. Such capacity is based on their network, such as the number of branches, and willingness and ability to advance coupon payments on behalf of the government. Most Treasury bills are allocated for distribution or sales to the following banks: Banque Pour Le Commerce Exterieur Lao (BCEL), Lao Development Bank (LDB), and Agriculture Promotion Bank (APB).

No business firm, such as a public limited company, besides a bank has thus far issued and sold corporate bonds through public offering. The Business Law broadly stipulates that only a business firm (public limited company) is entitled to issue and sell corporate securities such as shares and bonds to the public.

Please refer to **Part 3 LA01 (Government Bond Market Infrastructure Diagram)** and **LA02 (Corporate Bond Market Infrastructure Diagram)**.

### Description of Related Organizations

#### Ministry of Finance (MOF)

MOF is the authority responsible for any matter relating to the financial sector. MOF participates



in research to resolve banking problems related to public finance, currencies, credit, and stocks market in order to fulfill its financial management functions with regard to banking and monetary credit. Also, MOF oversees state banks, commercial banks, insurance, lotteries, accounting, auditing, and other financial services, as well as co-manages the sale of Treasury bills and bonds, and various types of social insurance.

### **Department of Domestic and Foreign Investment (DDFI)**

Operating under the Prime Minister's office, DDFI administers the foreign investment system and reviews investment applications. Its primary functions include promoting Lao PDR as an investment destination, screening investment proposals, offering investment incentives, and facilitating foreign investment. To support and encourage investment, the government offers incentives to investors in various forms, including reduced corporate profit taxes, reduced duties and turnover taxes on imported capital equipment and inputs to production, and investment permission and guarantees.

### **Bank of the Lao PDR (BOL)**

BOL, as the central bank, has regulatory authority to control the commercial banks, banking system, money supply, and foreign currency exchanges. BOL is responsible for issuing licenses to establish banks and other financial institutions. BOL is given the duties and authority to establish and improve the state and commercial banking systems for sustainable growth, and to manage and inspect the activities of all banks and financial institutions under its authority to ensure the stability and expansion of the banking system and financial institutions. BOL has the following rights and duties:

- (i) issuing notes and coins with the approval of the Government of Lao PDR, and managing the domestic circulation of the currency;
- (ii) administering monetary policy, supervising commercial banks and financial institutions, and serving as the final lender to such commercial banks and financial institutions with the objective of implementing monetary policy;
- (iii) implementing foreign currency control and exchange rate policies;

- (iv) issuing its own bonds to carry out monetary policy, buying and selling bonds directly with other commercial banks and financial institutions; and
- (v) authorizing the establishment of local commercial banks, foreign commercial banks, and financial institutions under its supervision based on the approval of the government.

MOF and BOL have cooperated with each other when necessary. As an example, BOL monitors economic and monetary conditions, and advises MOF on the ceiling rate for Treasury bill auctions.

### **Lao Securities Exchange (LSX)**

LSX is the primary stock exchange in Lao PDR. Its mission is to provide up-to-date and modern services characterized by transparent practices. Opening LSX was done to propel economic development and offer new opportunities to individual, institutional, and foreign investors.

## Overview of Government Bond

### **Trading**

#### **Over-the-Counter Market Trading**

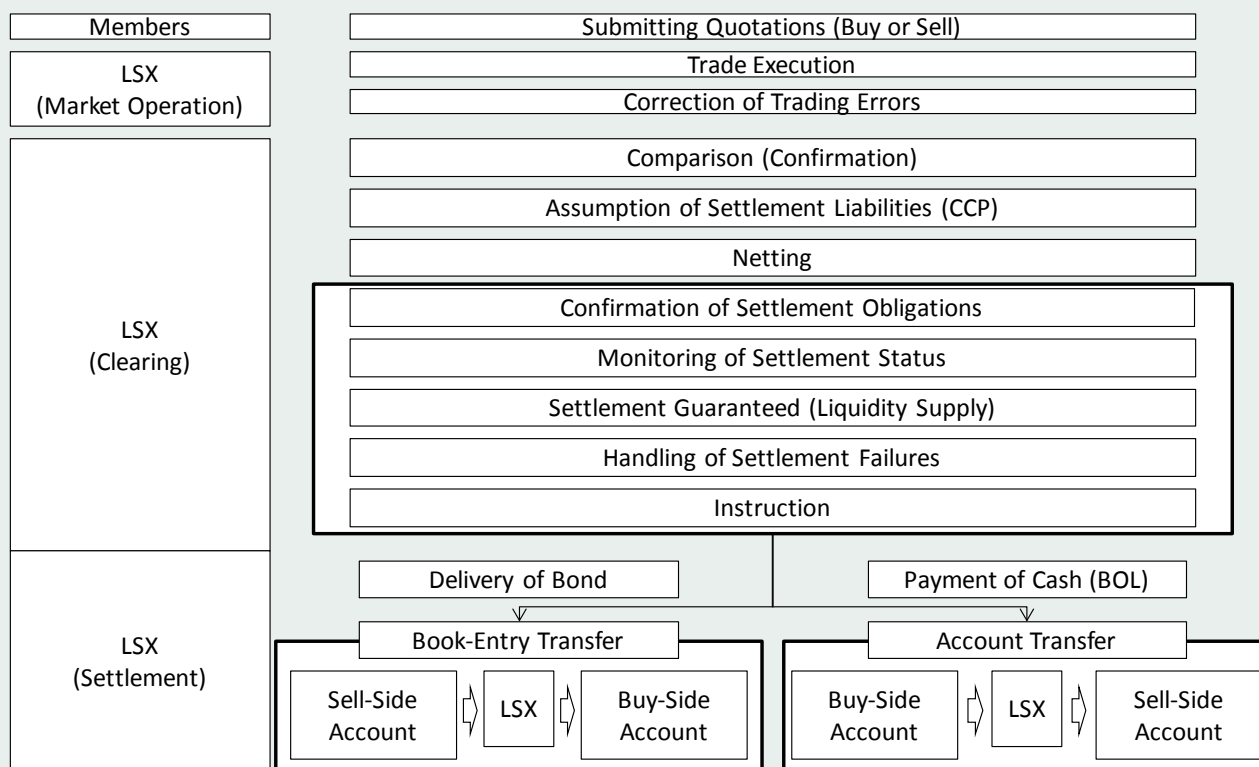
The over-the-counter (OTC) market in Lao PDR is in the early stage of development. The sell side and buy side trade via OTC market by telephone or FAX.

#### **Exchange Trading**

There is no exchange trade for government bond in Lao PDR secondary market although Lao PDR formally established its stock exchange in January 2011.

### **Clearing and Central Counterparty**

There is no clearing and central counterparty (CCP) for the government bond market in Lao PDR.

**Figure LA01: Trading Life Cycle in LSX**

Source: LAO Securities Exchange (LSX).

## Bond Settlement

Lao PDR does not adopt DVP settlement for government bonds. The settlement of bonds is done within 2 business days (T+2). The sell side delivers a physical certificate as evidence of trade to BOL. At the same time as registration of the trade, BOL completes cash settlement with the participant's accounts held at BOL. Then, the buy side receives the physical certificate from BOL.

## Cash Settlement

BOL makes cash settlement with the participant's accounts held at BOL.

## Overview of Corporate Bonds

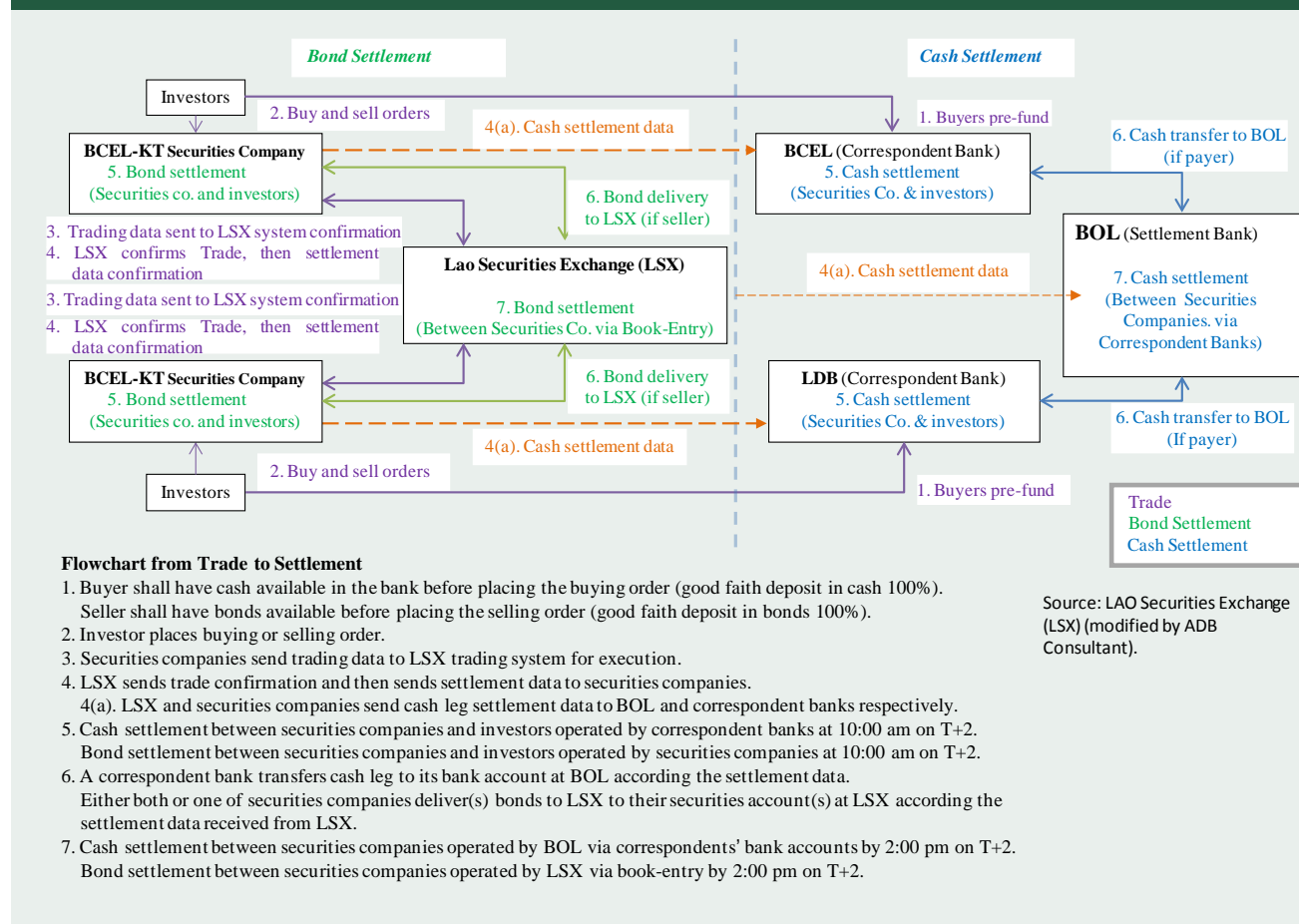
As described above, the Business Law permits public limited companies to issue and to sell corporate securities, but there are no corporate bonds issued in Lao PDR. In the event of corporate bond issuance, it would be handled with the same flow as stocks.

## Trading

There are no corporate bonds issued in Lao PDR.

## CCP

There are no corporate bonds issued in Lao PDR.

**Figure LA02: Flowchart of Listed Corporate Bond Settlement**

## Bond Settlement

There are no corporate bonds issued in Lao PDR.

## Cash Settlement

There are no corporate bonds issued in Lao PDR.

## Interest Payment and Redemption

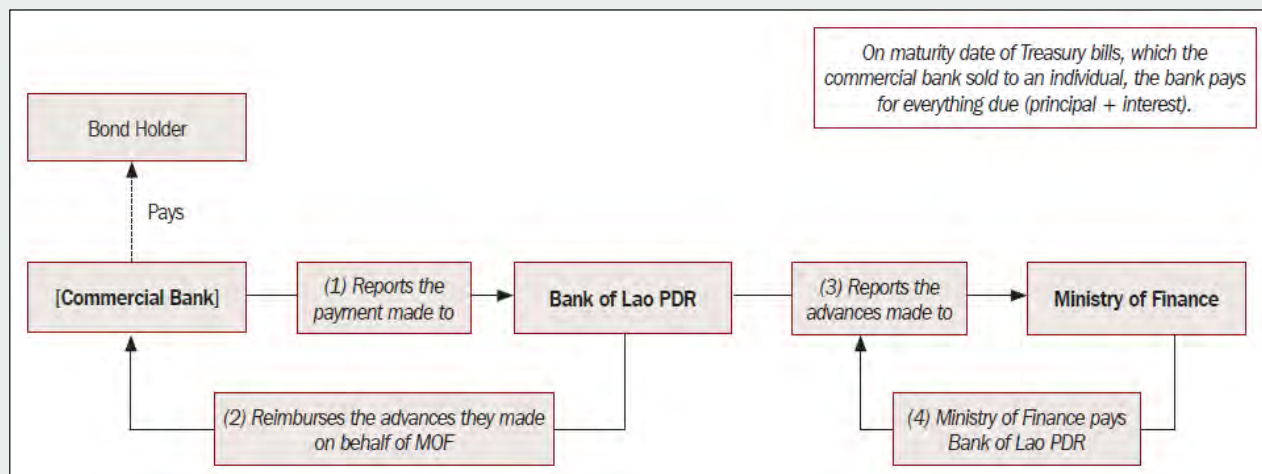
### Interest Payment and Redemption of Government Bonds

For interest payments where Treasury bills have been sold or transferred by commercial banks to non-banks, the commercial bank advances the

interest to bond holders. After that, commercial banks report to BOL about the advance payment they made on behalf of MOF, and BOL records the advance payment and later on reports to MOF. The report is made on a quarterly basis for the purpose of a reminder.

MOF, before making payments, reconciles the details with BOL, particularly on the amount for payment.

MOF informs BOL of which Treasury bills are subject for redemption. Commercial banks go to BOL seeking Treasury bill redemption. BOL then advances payment to the commercial banks on behalf of MOF. After that, MOF issues a letter similar to a promissory note stating when they can pay for the advances BOL made on their behalf for particular Treasury bills (**Figure LA03**).

**Figure LA03: Process of Redemption of Treasury Bills Issued to Commercial Banks**

Source: ABMF Sub-Forum 1.

## Interest Payment and Redemption of Corporate Bonds

There are no corporate bonds in Lao PDR. However, it is expected that the flow of interest payment and redemption for listed corporate bond would be similar to the flow of listed equities. **Figure LA04** is the expected flowchart of interest payment and redemption of listed corporate bonds.

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

Lao PDR does not adopt DVP settlement for government bonds.

- (i) **Pre-Settlement Matching**  
Lao PDR does not adopt DVP settlement for government bonds.
- (ii) **Bond Settlement**  
Lao PDR does not adopt DVP settlement for government bonds.

### (iii) Cash Settlement

Lao PDR does not adopt DVP settlement for government bonds.

For the flow of government bonds, please refer to **Part 3 LA03 (Government Bond Transaction Flow for Domestic Transfer)**.

### DVP Flow of Corporate Bonds for Domestic Trades

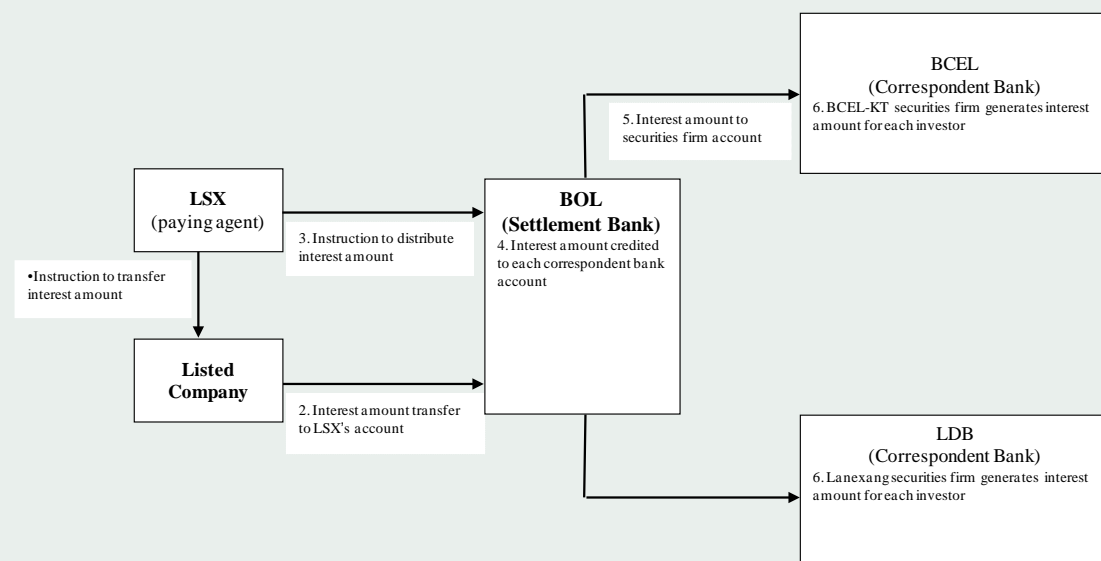
There are no corporate bonds issued in Lao PDR.

For a possible future flow of corporate bonds, please refer to **Part 3 LA04 (Corporate Bond Transaction Flow for Domestic Transfer)**.

### DVP Flow of Cross-Border Bond Transactions

There is no DVP flow of cross-border transactions. BOL regulates cross-border capital and money market transactions. Inward remittances and repatriation of portfolio investments are principally allowed for both residents and non-residents.

For capital inflows, all capital transactions are subject to authorization from BOL. Foreign investors are allowed to repatriate profits, capital gains, and other income upon full payment of

**Figure LA04. Flowchart of Interest Payment for Listed Corporate Bond**

1. LSX calculates and instructs listed company to transfer interest amount to LSX's account at BOL.
2. Listed company transfers interest amount to LSX's account at BOL.
3. LSX instructs BOL to distribute interest amount BCEL and LDB accounts at BOL.
4. BOL debits LSX's account and credits interest amount to each correspondent bank account (BCEL and LDB).
5. BOL transfers interest amount to securities firms' accounts.
6. Securities firms generate interest amount for each investor on the payment day.

Source: LAO Securities Exchange (LSX) (modified by ADB Consultant).

duties, taxes, and other fees. Repatriation of funds can be done through banks in Lao PDR.

### Interest Payment and Redemption of Government Bonds

- (i) **Paying Agent**  
BOL acts as the paying agent (PA).
- (ii) **Central Securities Depository (CSD)**  
There is no central securities depository (CSD) in Lao PDR since MOF issues a physical certificate.
- (iii) **Payment Flow**  
Interest and principal redemptions are transferred from MOF's account to a commercial bank account through BOL's account, and then credited to an investor's account.

#### (iv) **Tax**

According to the Tax Law of 2005, interest from bonds or government debentures, as well as those from deposits, are exempted from income tax.

For more information, please refer to **Part 3 LA05 (Interest Payment Flow of Government Bond)** and **Part 3 LA06 (Redemption Payment Flow of Government Bond)**.

### Interest Payment and Redemption of Corporate Bonds

- (i) **Paying Agent**  
There are no corporate bonds issued in Lao PDR.
- (ii) **Central Securities Depository**  
There are no corporate bonds issued in Lao PDR.

**(iii) Payment Flow**

There are no corporate bonds issued in Lao PDR.

**(iv) Tax**

There are no corporate bonds issued in Lao PDR.

## Message Standard

**Message Format**

There is no settlement system in Lao PDR.

**Message Items**

There is no settlement system in Lao PDR.

## Market Practices

**Operating Hours**

There are no particular operating hours in the Lao PDR bond market.

**Settlement Cycle**

The standard settlement cycle in Lao PDR is T+2.

**Fails**

There is no particular rule related to fails in the Lao PDR bond market.

**Bilateral Netting**

There is no particular rule related to bilateral netting in the Lao PDR bond market.

**Taxation**

Article 30 of the Tax Law states that lending interest and bond and share interest are all included in the list of tax-exempt income. Interest paid is considered an expense that can be deducted from annual taxable profits. Detailed descriptions of Lao PDR's tax system and the special tax regime for foreign investors are accessible through the Department of Domestic and Foreign Investment (DDFI) website.

## Numbering and Coding

**Numbering and Coding for the OTC and Exchange Markets****Securities Numbering**

Not applicable.

**Financial Institution Identification**

Not applicable.

**Securities Account**

Not applicable.

**Cash Account**

Not applicable.

**Character Code and Language**

Not applicable.

## Medium- to Long-Term Strategies

A core goal of Lao PDR's bond market development plans is to establish primary and secondary markets for government securities. Lao PDR is in the process of establishing a regulatory framework and supervisory body. Lao PDR is restructuring its capital market by diversifying access to funding sources. Currently, the banking system remains dominant in Lao PDR's financial system, while other financial markets still have limited impact on the country's economy. The



aims of the Comprehensive Services Strategy 2020 include

- (i) cultivating employees to be moral and to be experts in their technical skills and knowledge to provide appropriate services to investors;
- (ii) raising the knowledge level of investors and potential listing companies seeking raise funds through the stock market, including on-site training and through media campaigns; and
- (iii) testing the information technology system to guarantee its quality to be ready for short- and long-term securities trading services.

Lao PDR intends to list corporate bonds at a later stage.

## References

Asian Development Bank (ADB). *ASEAN+3 Bond Market Guide*.

ADB. *AsianBondsOnline*. <http://asianbondsonline.adb.org/index.php>

Asian Development Bank Institute (ADBI). *ADBI Working Paper Series*. <http://www.adbi.org/files/2013.05.20.wp422.asean.payment.system.policy.regulatory.issues.pdf>

Lao Securities Exchange. <http://www.lsx.com.la/main.do>

Government of Lao PDR. *Self-Assessment Report on Local Bond Market Development in the Lao PDR*.

International Monetary Fund (IMF). *IMF Country Report—Lao People's Democratic Republic*.

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

# Myanmar (MM)

## Bond Market Infrastructure

### Overview of Bond Market

The Government of Myanmar started the process of financial liberalization in the early 1990s by allowing private sector participation in financial activities. In 1996, Myanmar Securities Exchange Center Co., Ltd. (MSEC) was established to help develop an organized capital market in Myanmar. Legal infrastructure is also being improved, including enactment of the Myanmar Companies Act and Myanmar Companies Rules. The Ministry of Finance (MOF) and Attorney General's Office are jointly drafting a Myanmar Securities Exchange Law.

The Central Bank of Myanmar (CBM) has issued 3- and 5-year local currency (LCY) government treasury bonds since 1993 to promote public savings and develop the capital market in Myanmar. In 2010, 2-year LCY government treasury bonds were issued to the public. There is also a 3-month treasury bill in Myanmar. Bonds are registered manually by CBM.

For an overview of recent government bond issuance trends in Myanmar see **Figure MM01**.

In order to develop efficient market infrastructure and a secondary government bond market, Myanmar Economic Bank (MEB) and MSEC were appointed as underwriters for government bonds on 1 January 2010.<sup>1</sup> Banks generally do not sell their government bonds until maturity. Retail investors sometimes sell their government bonds at MSEC or MEB, but trading activities are quite small for now.

The government bond is the only investment vehicle in the Myanmar bond market, as there are no other investment instruments such as corporate bonds. Government bonds can be traded on the stock exchange, but the majority of government bonds are traded in the over-the-counter (OTC) market.

Please refer to Part 3 **MM01 (Government Bond Market Infrastructure Diagram)**.

### Description of Related Organizations

#### Ministry of Finance (MOF)

MOF has played a major role in the development of Myanmar's economy. MOF comprises five functional departments and seven institutions. The departments include the Budget Department,

<sup>1</sup> The underwriter in this instance is the organization that is allowed to sell treasury bonds to retail investors.

**Figure MM01: Trends in Government Bond Issuance**

(Kyat bn)		FY 2007		FY 2008		FY 2009		FY 2010		FY 2011		FY 07-10 CAGR
			% Share		% Share		% Share		% Share		% Share	
Total Government Bond Issuance Outstanding (by Holder Category)		179.8	100.0%	297.4	100.0%	939.2	100.0%	1,272.3	100.0%	1,855.3	100.0%	92.0%
Two-year Bonds	Public sector	-	-	-	-	-	-	1.4	0.1%	51.4	2.8%	-
	Private sector	-	-	-	-	-	-	12.2	1.0%	290.7	15.7%	-
Three-year Bonds	Public sector	0.6	0.3%	0.6	0.2%	0.7	0.1%	0.5	0.0%	2.5	0.1%	-7.2%
	Private sector	121.1	67.3%	196.8	66.2%	755.9	80.5%	767.8	60.3%	746.4	40.2%	85.1%
Five-year Bonds	Public sector	5.3	2.9%	6.9	2.3%	11.8	1.3%	13.2	1.0%	15.1	0.8%	35.6%
	Private sector	52.8	29.4%	93.0	31.3%	170.8	18.2%	477.3	37.5%	749.2	40.4%	108.3%

Source: Myanmar Central Statistical Office

Note: FY2007-2010: April-March, 2011: April-December

Internal Revenue Department, Customs Department, Revenue Appellate Tribunal, and Pension Department.

To achieve the objectives of its political, economic, and social policies, MOF performs the following activities:

- (i) collecting, maintaining, and allocating public finances to increase tax revenue;
- (ii) lowering inflation;
- (iii) stabilizing general prices; and
- (v) mobilizing domestic resources and financing the needs of the private sector.

#### **Central Bank of Myanmar (CBM)**

CBM, under control of MOF, is stipulated as the regulatory body of the banking sector under the CBM Law. CBM is also responsible for supervising non-banks, including the Myanmar Insurance Corporation, Microfinance Supervisory Enterprises, Myanmar Oriental Leasing, and MSEC. The aim of CBM is to preserve the internal and external value of Myanmar's currency, the kyat. In accordance with this aim, CBM also endeavors to attain such objectives as to promote efficient payment mechanisms; facilitate the liquidity, solvency, and proper functioning of a soundly based financial system; and foster monetary, credit, and financial conditions

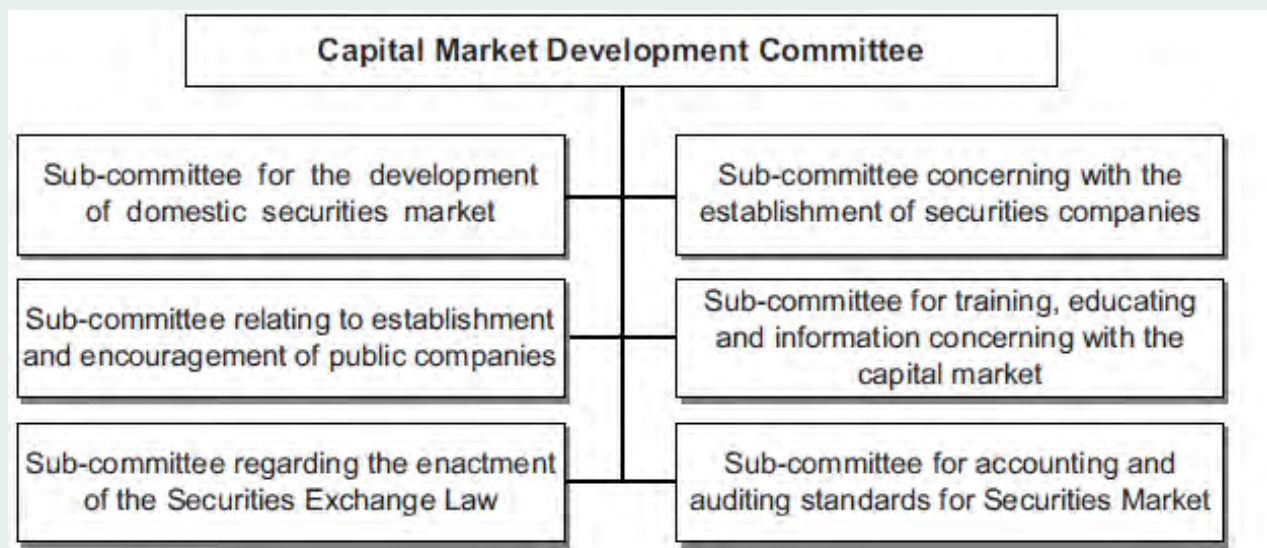
conductive to orderly, balanced, and sustained economic development.

CBM is responsible as the sole institute issuing LCY and serves as the bank of the government by controlling its accounts as well as being the bank of other financial institutions. CBM operates monetary policy to maintain macroeconomic stability, mainly through the setting of interest rates. CBM has the authority to implement necessary legal enforcement and to grant banking licenses. Finally, CBM sells government bonds directly to banks and is responsible for registering and managing them.

#### **Capital Market Development Committee CMDC**

CMDC was formed by MOF with the approval of the Prime Minister's office in 2008. The committee was assigned to prescribe the Securities and Exchange Law and to set up the Securities and Exchange Commission and other infrastructure needed to develop the capital market. To carry out these objectives, the committee is split into six subcommittees (**Figure MM02**).

The committee was assigned responsibility for designing and implementing a capital market development plan in line with the Association of Southeast Asian Nations (ASEAN) Capital Market Vision. CMDC submitted a development roadmap with a precise schedule of itemized tasks and policies to be implemented in three phases in 2008–15. This roadmap covers various policy

**Figure MM02: Capital Market Development Committee**

Source: Central Bank of Myanmar.

items in capital market development, including stipulating the necessary legal framework and establishing regulatory authorities, relevant securities market institutions, and infrastructure (Figure MM03).

#### **Myanmar Securities Exchange Centre Co., Ltd. (MSEC)**

MSEC was launched in April 1996 as a joint venture between MOF and Japan's Daiwa Institute of Research. Generally, MSEC's trading activities are low and investors hold the shares as another savings instrument. The securities sector is still in its early stage. Currently, there are only two companies listed on MSEC.

MSEC provides services related to assisting companies in going public, helping investors in securities investments, acting as an intermediary in securities trading, maintaining a fair and efficient market for shares and bonds, supplying information for investments, and advising foreign funds seeking to invest in Myanmar. Thus, MSEC's activities include brokering, dealing, underwriting and distributing securities; researching the national economy and domestic companies; publishing investment information; providing consultancy services; managing venture capital fund; and acting as an agent for joint ventures. MSEC also sells treasury bonds to

retail investors as an agent for CBM and shares of Myanmar companies as an agent for those companies.

#### **Myanma Economic Bank (MEB)**

MEB is state-owned banking enterprise and provides a full range of traditional banking services, including foreign exchange transactions. MEB is one of four state-owned commercial banks in Myanmar.<sup>2</sup> MEB and MSEC are normally mediated when CBM sells new bonds to the public.

## Overview of Government Bonds

Trading does not take place in a secondary government bond market because banks generally do not sell their government bonds until maturity. Retail investors sometimes sell their government bonds at MSEC or MEB. The

<sup>2</sup> Other state-owned banks include Myanma Foreign Trade Bank, Myanma Investment and Commercial Bank, and Myanma Agricultural Development Bank.



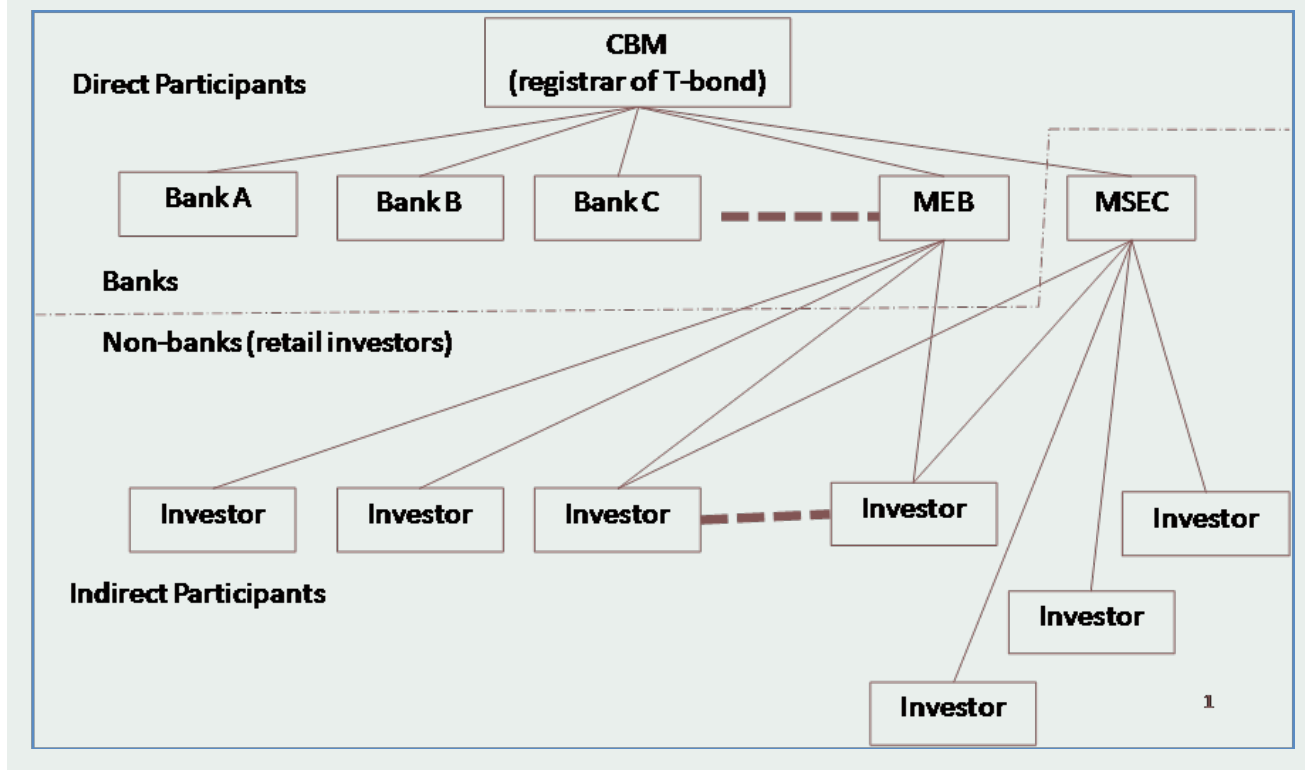
**Figure MM03: Capital Market Development Roadmap**

<b>Phase 1</b> <b>2008-09</b>	Diversify treasury bonds issued by Central Bank of Myanmar
	Increase numbers of public companies and issuance of corporate bonds
	Constitute a committee of development for capital markets
	Promote and disseminate knowledge of securities through workshops, seminars, business talks and media
	Capacity building of local employees in financial sector
	Attend international conferences and seminars in ASEAN and the other countries
<b>Phase 2</b> <b>2010-12</b>	Enforce the Securities and Exchange Law
	Issue municipal bonds
	Convert state-owned companies to a joint-stock corporations
	Educate institutional investors
	Establish an industry association for the securities market
<b>Phase 3</b> <b>2013-15</b>	Establish a stock exchange
	Diversify methods of securities transaction

Source: Capital Market Development Committee

current government bond market structure and its salient features are shown in Figure MM04 and detailed below:

- (i) Issued Treasury bonds are physical certificates registered in CBM. A bank has only own account (registration) in CBM. MEB has both own account and customer account (registration) in CBM. MSEC has only customer account (registration) in CBM.
- (ii) Most Treasury bonds are owned by banks. The outstanding amount of bonds owned by retail investors (non-banks) is less than a few percent of total government bonds outstanding.
- (iii) There are very little transactions in the secondary market, whether between banks or non-banks.
- (iv) Bond settlement between banks is done by updating the record of ownership of the bonds registered in CBM.
- (v) Cash settlement of Treasury bond trades can be done either by transferring money between CBM current accounts or by physically delivering banknotes and/or checks between banks. Cash settlement of Treasury bond trades for retail investors can be done either by using MEB accounts or by physically delivering banknotes and/or checks.
- (vi) MSEC does not have a banking license.

**Figure MM04: Government Bond Market Structure in Myanmar**

- (vii) MSEC acts as an intermediary in the OTC market for banks and securities companies.

## Trading

### OTC Trading

Myanmar's bond market is an OTC market. MSEC maintains a trading market for bonds on the OTC market. Government bonds are traded between banks and retail investors.

### Exchange Trading

There is no exchange trading in Myanmar.

## Clearing and Central Counterparty

Myanmar does not have clearing and central counterparty (CCP).

## Bond Settlement

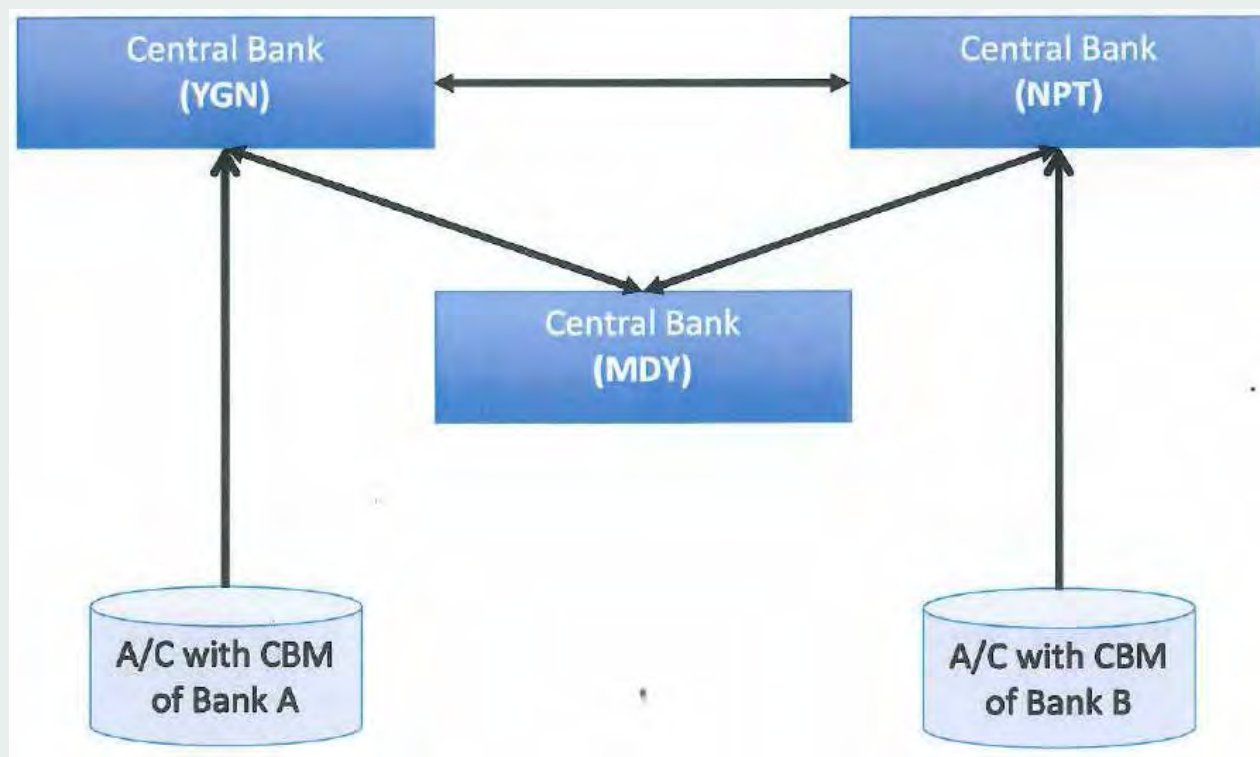
Myanmar does not have a book-entry system for government bonds. CBM registers each security on-book manually. Bond settlement is conducted by transferring the bond physically as well as registering the bond to transfer the ownership. Regarding retail investors, the registration of those bonds sold through MEB (and MSEC) is reported to CBM every week to enable it to keep track of the entire government bond market.<sup>3</sup> Bond settlement is also conducted in the form of a physical certificate.

## Cash Settlement

Cash settlement between banks for bond settlement is conducted by CBM (**Figure MM05**). Although CBM has begun processing electronic data transfer and implemented Banking Network for Electronic Fund Transfer (EFT) in 2011,

<sup>3</sup> MSEC is an indirect participant.



**Figure MM05: Funds Transfer System**

Source: Central Bank of Myanmar.

cash transfer is still conducted manually. Cash settlement between banks can be conducted through CMB's three clearing houses in Naypyidaw, Yangon, and Mandalay. The original application and facsimile also can be used for payment instruction. Myanmar has not adopted Real-Time Gross Settlement (RTGS), though the government is considering implementation of an RTGS system. Regarding cash settlement for retail investors, both the sell side and buy side open a cash account in MEB and conduct cash settlement through these accounts. Bank notes and checks are also used.

## Overview of Corporate Bonds

There are no corporate bonds issued in Myanmar.

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

On 1 April 2006, 3- and 5-year government treasury bonds were first issued bearing interest rates of 10.5% and 11.0%, respectively. Treasury bonds deposited by financial institutions in CBM are treated as a cash balance in calculating the reserve requirement.

Redemption is made on the maturity date along with the remaining interest due. For bonds sold by MEB and MSEC, interest and redemption are paid by the Budget Department through the account of MEB and MSEC on the due dates.

## Interest Payment and Redemption of Corporate Bonds

There are no corporate bonds in Myanmar.

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

Myanmar does not adopt DVP settlement for government bonds.

- (i) **Pre-Settlement Matching**  
Myanmar does not adopt DVP settlement for government bonds.
- (ii) **Bond Settlement**  
Myanmar does not adopt DVP settlement for government bonds.
- (iii) **Cash Settlement**  
Myanmar does not adopt DVP settlement for government bonds.

For more detail, please refer to **Part 3 MM02 (Government Bond Transaction Flow for Domestic Trades)**.

### DVP Flow of Corporate Bond for Domestic Trades

There are no corporate bonds in Myanmar.

### DVP Flow of Cross-Border Bond Transactions

There is no DVP flow of cross-border transactions in Myanmar.

The kyat is non-convertible and non-negotiable outside of Myanmar. The import and export of kyat is prohibited. Non-resident domestic currency accounts are permitted only with CBM authorization. Non-resident foreign currency accounts of international organizations and diplomatic missions may be kept with the

Myanmar Foreign Trade Bank. Prior approval is required for other non-residents.

### Interest Payment and Redemption of Government Bonds

- (i) **Paying Agent (PA)**  
CBM acts as the paying agent (PA) for government bonds.
- (ii) **Central Securities Depository**  
CBM functions as the central securities depository (CSD) for government bond.
- (iii) **Payment Flow**  
Interest and principal redemption is transferred from MOF's Revenue Department Account to MEB and a CSD participant account. Then, they credit the funds to the investor's account.
- (iv) **Tax**  
Withholding tax rates are dependent on the types of payment. Payments on income from interest are subject to the following rates of withholding tax:
  - There is no tax for resident citizens and resident foreigners.
  - There is a 15% withholding tax for non-resident foreigners.

For more details, please refer to **Part 3 MM03 (Interest Payment Flow of Government Bond)** and **Part 3 MM04 (Redemption Payment Flow of Government Bond)**.

### Interest Payment and Redemption of Corporate Bonds

There are no corporate bonds in Myanmar.

## Message Standard

### Message Format

There is no settlement system in Myanmar.

**Message Items**

There is no settlement system in Myanmar.

## Market Practices

**Operating Hours**

There are no particular operating hours in Myanmar.

**Settlement Cycle**

There are no particular settlement cycles in Myanmar.

**Fails**

There are no particular rules related to fails in Myanmar's bond market.

**Bilateral Netting**

There are no particular rules related to bilateral netting in Myanmar bond's market.

**Taxation**

There are 15 types of taxes and duties under four categories: (i) corporate tax, (ii) commercial tax (value-added tax), (iii) withholding tax, and (iv) personal income tax.

## Numbering and Coding

**Numbering and Coding for the OTC and Exchange Markets****Securities Numbering**

There are no codes or numbers government bonds, which are differentiated only by year-to-maturity.

**Financial Institution Identification**

The financial institution's name is signed on the physical certificate.

**Securities Account**

Not applicable.

**Cash Account**

Not applicable.

**Character Code and Language**

UTF-8 and local codes are used.

## Medium- to Long-Term Strategies

The financial system in Myanmar is strongly dominated by banks, while the insurance sector and the securities market are relatively small. Though banks and other parts of the financial sector are heavily regulated, these regulations are highly risk-averse. There is very limited opportunity for market liquidity risk. Most banks in the world have some foreign exchange (FX) risk, which can also trigger a liquidity crunch, but foreign banking is only permitted for state-owned banks in Myanmar.

An electronic trading system is being developed and Myanmar is also considering the introduction of an RTGS system, securities depository system, and electronic clearing house. An upgrading of the accounting system of MOF's Accounts Department will also be considered. The new system will have omnibus account and multi-layer structure, and will adopt ISO20022 as message standard. International Securities Identification Number (ISIN) and Business Identified Code (BIC) will also be implemented in the new system.

## Resources

ADB. *AsianBondsOnline*. <http://asianbondsonline.adb.org/>

Burma Economic Watch. <http://www.ibiblio.org/obl/docs3/BEW-2006-01.pdf>

Central Bank of Myanmar. *Banking & Financial Reforms in Myanmar*.

Central Bank of Myanmar. <http://www.cbm.gov.mm/>

Daiwa Institute of Research Ltd. *Government Bond Market in Myanmar: An Overview*.

Directorate of Investment and Company Administration. <http://www.dica.gov.mm/dica.htm>

Government of Myanmar. *Republic of the Union of Myanmar Data Collection Survey on Modernization of the Financial System—FINAL REPORT*. <http://www.burmalibrary.org/docs14/mya-interim-economy.pdf>

Ministry of Finance. [http://www.myanmar.com/finance/dept\\_cbm.html](http://www.myanmar.com/finance/dept_cbm.html)

The SEACEN Centre [http://www.seacen.org/GUI/pdf/publications/research\\_proj/2010/rp81/li5.pdf](http://www.seacen.org/GUI/pdf/publications/research_proj/2010/rp81/li5.pdf)

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

# Malaysia (MY)

## Bond Market Infrastructure

### Overview of Bond Market

The bond market in Malaysia has developed significantly in recent decades in terms of market size, range of instruments, and efficiency. According to the Asian Development Bank's (ADB) *AsianBondsOnline* website, the amount of local currency (LCY) government bonds outstanding in Malaysia reached USD190.30 billion at the end of 1Q13, while LCY corporate bonds were valued at USD131.64 billion.

Malaysian government securities are marketable debt instruments issued by the Government of Malaysia to raise funds from the domestic capital market to finance public development expenditure and working capital. The central bank, Bank Negara Malaysia (BNM), in its role as banker and adviser to the government, advises on the details of government securities issuance and facilitates such issuance through various market infrastructures that it owns and operates. Government securities in Malaysia include

- (i) Malaysian Government Securities (MGSs) are long-term interest-bearing bonds issued by the Government of Malaysia to raise funds from the domestic capital market for development expenditure.

- (ii) Malaysian Treasury Bills (MTBs) are short-term securities issued by the Government of Malaysia for working capital.

- (iii) Government Investment Issues (GIIs) and Malaysian Islamic Treasury Bills (MITBs) are long-term and short-term, non interest-bearing government securities, which are issued based on Islamic principles by the Government of Malaysia.

The corporate bond market is known by its generic term, the Private Debt Securities (PDS) market. It includes listed and unlisted debenture, conventional bonds, convertible bonds, and Islamic bonds. The sector is further divided into short-term debt, such as commercial paper, and medium- and long-term bonds. Corporations have turned their attention toward the bond market as a viable alternative to bank borrowing and the equity market. Investors are also able to adjust their risk-return profile through the trading of various securities available in the market.

Islamic bonds, which are based on *shari'a* principles, are also available and play a major role in Malaysia's capital market development.

Both government and corporate bond markets are active markets for conventional and Islamic bonds. Domestic and foreign investors can

buy and sell conventional and Islamic debt instruments through the exchange and over-the-counter (OTC) markets.

Unlisted bonds are largely traded in the OTC market, while listed bonds are traded through Bursa Malaysia (exchange market). More than 95% of Malaysian bonds are traded in the OTC market. Trade data are entered into the electronic trading platform (ETP), which was launched by Bursa Malaysia in March 2008.

The Real-Time Electronic Transfer of Funds and Securities (RENTAS) system is the central securities depository (CSD) and Real-Time Gross Settlement (RTGS) system for government bond trades in Malaysia. RENTAS comprises a Scripless Securities Trading System (SSTS), which allows book-entry settlement and recording of holdings of scripless debt securities; and the Interbank Funds Transfer System (IFTS), which deals with large-value fund transfers. It is a delivery-versus-payment (DVP) Model 1 of the Bank for International Settlements (BIS) definition. BNM owns and operates RENTAS.

Please refer to **Part 3 MY01 (Government Bond Market Infrastructure Diagram)** and **Part 3 MY02 (Corporate Bond Market Infrastructure Diagram)**.

## Description of Related Organizations

### Ministry of Finance (MOF)

The Ministry of Finance (MOF), or Treasury Malaysia, looks after the financial and economic affairs of the state of Malaysia. MOF formulates the financial and economic plans that are followed by the Malaysian national government to ensure overall economic improvement.

### Securities Commission (SC)

The Securities Commission (SC) is the central authority responsible for the supervision, regulation, and development of the securities and futures industries in Malaysia. SC was established under the Securities Commission Act of 1993. It is a self-funding statutory institution and reports directly to MOF. It has investigative and enforcement powers.

### Bank Negara Malaysia (BNM)

BNM is the central bank of Malaysia. BNM focuses on the three pillars of central banking: monetary stability, financial stability, and the payment system. In addition, BNM is responsible for the issuance, registration, and settlement and redemption of government bonds through in-house automated trading and settlement systems. BNM introduced a payment and bond settlement system called RENTAS.

### Bursa Malaysia

Bursa Malaysia is an exchange holding company approved under Section 15 of the Capital Markets and Services Act of 2007. It operates a fully integrated exchange, offering a complete range of exchange-related services, including trading, clearing, settlement, and depository services.

### Bursa Malaysia Securities Clearing Sdn. Bhd. (BMSC)

Bursa Malaysia Securities Clearing Sdn. Bhd. (BMSC) is a wholly owned subsidiary of Bursa Malaysia with paid-up capital of MYR300 million. It provides clearing and settlement facilities for contracts between clearing participants. BMSC was incorporated on 12 November 1983 and commenced clearing house operations in March 1984. BMSC is governed by the BMSC Rules, which came into force on 1 January 1997. On 11 November 2002, BMSC completed the acquisition of Bursa Malaysia Derivatives Clearing Bhd., thus making it a wholly owned subsidiary of BMSC.

### MyClear

MyClear is an operator of key market infrastructure for the securities market and provides securities and payment services via RENTAS (CSD and RTGS) and the Fully Automated System for Issuing/Tendering (FAST), the issuing system for unlisted debt securities. MyClear was incorporated in October 2008 and commenced operations on 2 January 2009. It was established as a wholly owned subsidiary of BNM as a separate overseer and operator of the systematically important payment systems (SIPS). Facilitating cross-border securities payments and settlement is also one of the roles of MyClear.

### Bursa Malaysia Depository (BMD)

BMD is a subsidiary of Bursa Malaysia and was established in 1990. It was incorporated under the Companies Act of 1965 and authorized to perform the role of a central depository by the Securities



Industry (Central Depositories) Act of 1991 (SICDA). SICDA provides the legal framework and safeguards for users and participants in the central depository system (CDS).

## Overview of Government Bonds

### Trading

#### OTC Trading

The Malaysian government bond market consists of listed and unlisted bonds. Unlisted bonds are largely traded in the OTC market, where most overall trading takes place in the OTC market. Quotes are typically obtained directly from money brokers and dealers over the phone. Financial institutions either have to be registered or licensed by the SC to trade in bonds for their own or their clients' accounts. An agreement concluded over the telephone is then followed up with a confirmation order in writing. An investor can place an order with a dealer at his desired price and amount. However, a trade is only concluded when the dealer can find a corresponding sell side in the OTC market.

Financial institutions maintaining their own bond inventories usually provide their market bid or offer prices to their clients. In addition, principal dealers are obliged to provide two-way quotes for benchmark government securities. Information on government securities and bond indices are also available on the tickers on Bloomberg and Reuters. All trading in the OTC market is reported on the ETP, where the sell side keys in the deal and the buy side confirms within the stipulated 10 minutes' cut-off time from trade execution. Normal business hours for a securities trade are as per standard settlement or value spot; that is, 2 business days (T+2) from 9:00 to 16:30 from Monday to Friday, excluding holidays. Some custodians prefer T+3.

Bursa Malaysia introduced the ETP on 10 March 2008 for the Malaysian bond market in line with the National Bond Market Committee's mandate to develop a single electronic reporting and trading platform for the domestic bond market.

The ETP is operated by Bursa Malaysia Sdn. Bhd., a wholly owned subsidiary of Bursa Malaysia. ETP was introduced to boost transparency and liquidity, as well as to increase efficiency in bond trading. The launch of the ETP is in line with the ongoing commitment to further improve market accessibility and increases trading efficiencies via infrastructure enhancement initiatives. The decision to develop the ETP was made in February 2004 by the National Bond Market Committee, which includes MOF, SC, and BNM.

The ETP allows dealers to match bids with offers, negotiate deals, and access historical data through a common computerized network. The ETP offers investors real-time price quotation and facilitates the trading and reporting of all secondary market activities. The key business components that contribute to the business of ETP are

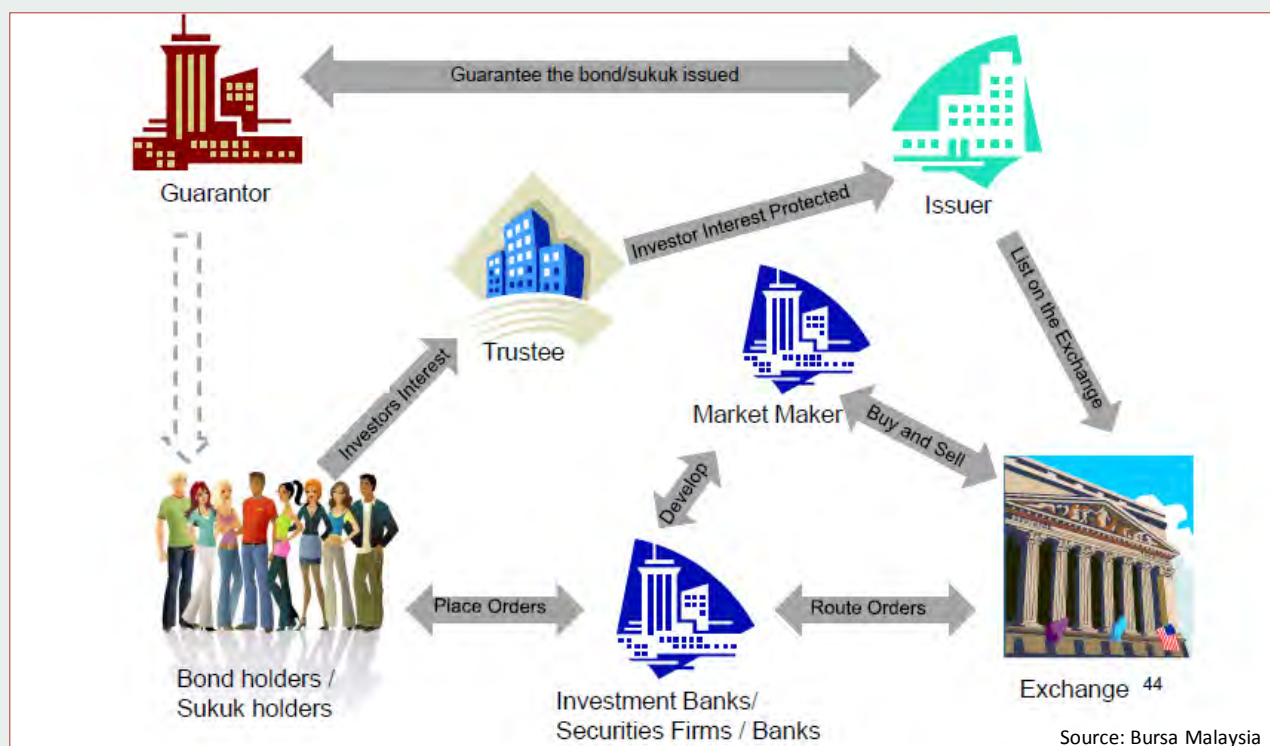
- (i) central order book for matching, trade reporting, and negotiation;
- (ii) a comprehensive dissemination system for price per yield and trade information dissemination;
- (iii) data storage for market history data referential maintenance for exchange administrator; and
- (iv) a real-time market surveillance system.

The ETP interfaces with other systems such as FAST and other information providers (e.g., Bloomberg and Reuters). However, 100% of the volume is conducted OTC via voice brokers and electronic message, and for the time being, there are almost no transactions processed by the ETP.

#### Exchange Trading

Bonds listed on Bursa Malaysia may be purchased through a dealer that is a member of the exchange, such as investment banks, or through *remisiers*. To trade in listed bonds, investors are required to open a depository account operated by BMD. The account is maintained by one of the member banks of the exchange acting as an authorized depository agent. The depository account works on the principle of a book-entry system or electronic clearing and settlement, and represents ownership and movement of the listed bonds. Institutional investors may open a depository

Figure: MY01 ETBS Landscape



account directly with the BMD. Investors need to provide their depository account numbers when buying or selling listed bonds on the exchange. Listed bonds are normally traded in board lots of 1,000 units. Information on prices of listed bonds is readily available on the ETP.

The only bonds traded on the exchange are exchange traded bonds and *sukuk*, launched in early 2013 and specifically targeted to retail investors. At the moment, there is only one bond in this category (**Figure MY01**).

## CCP

### CCP in the OTC Market

There is no CCP in the Malaysian OTC market.

### CCP in the Exchange Market

BMSC is the clearing house for bond securities traded on Bursa Malaysia. BMSC provides the Bursa Clearing and Settlement System for participants on the exchange market, which

electronically connects with the Bursa Trade System and Central Depository System.

## Bond Settlement

### Bond Settlement in the OTC Market

To subscribe or trade in debt securities, an investor must open an account with an authorized depository institution (ADI). ADIs are licensed financial institutions that are members of RENTAS and are allowed by BNM to hold SSTs securities on behalf of customers that are not members of SSTs. For members of SSTs, BNM is the authorized depository, crediting bondholders with scripless bonds for trading and transfers according to the Code of Conduct and Market Practices for Scripless Trading, and recording the holdings and transactions of each SSTs member institution. ADIs offer protection to investors with regard to payment of interest and redemption proceeds. They ensure secrecy of accounts, issue statutory acknowledgement receipts and monthly statements detailing

account holdings and transfers, and carry out the various responsibilities of depository institutions with regard to their customers. Dealers that act as ADIs maintain two accounts with SSTS: one for their own holdings and another for all the securities they hold in custody through which non-SSTS member transactions are cleared and settled. ADIs are required to maintain a separate account for each customer.

All securities trades are generally settled on a delivery-versus-payment (DVP) basis. For all government securities and scripless corporate debt securities, ownership and transfers are reflected as book entries in ADI custody accounts with BNM in RENTAS. For non-RENTAS members, such as institutional investors and other financial institutions, scripless securities can be transacted via their ADIs.

The settlement of primary and secondary market transactions in government securities and unlisted corporate debt securities take place through SSTS, which is part of RENTAS. RENTAS, established by BNM in 1999, comprises IFTS, which deals with large-value fund transfers, and SSTS, which allows the book-entry settlement and recording of holdings of scripless debt securities. A sale or purchase of securities between two parties involves a book-entry and intraday settlement of funds in the cash settlement account maintained with BNM. RENTAS—which has straight-through-processing (STP) capabilities—processes, transfers, and settles interbank funds and scripless transactions simultaneously in real time. It is a DVP Model 1 system based on the BIS definition; that is, securities and funds are settled gross throughout the day.

RENTAS provides local matching. The sell side transmits the unconfirmed sale advice to the buy side via RENTAS. The buyer shall, on receipt of an unconfirmed sale advice from the sell side, check the contents of the advice. If the contents are in order, the buy side shall confirm the deal immediately by transmitting to the sell side a sales confirmation advice, thereby concluding the local matching process. After confirmation, the sell side and buy side can access the confirmation report in RENTAS.

RENTAS contributes to the reduction of settlement risk in scripless securities transactions by providing a mechanism for DVP. This mechanism enables transfer instructions for both scripless securities and funds to be effected on a trade-by-trade basis, with final (unconditional) transfer of the securities from the sell side to buy side (delivery) occurring at the same time as the final transfer of the funds from the buy side to the sell side (payment). RENTAS utilizes the Corporate Information Superhighway (COINS), which is a nationwide, broadband network that supports multiprotocol and multimedia applications provided by Syarikat Telekom Malaysia Bhd., the communications network that links up participating financial institutions.

### **Bond Settlement in the Exchange Market**

BMD operates CDS, which has created a scripless trading platform for trading bonds. CDS facilitates electronic securities transfer and trade settlement, and uses the book-entry form of recording ownership and movement of securities. BMD has been offering omnibus accounts since 2005. In the exchange market, a central matching facility was implemented in 4Q11 to cover only bonds traded on the exchange and settlement at BMD through the Institutional Settlement Service (ISS).<sup>1</sup>

### **Cash Settlement**

The RENTAS IFTS is an RTGS system for the transfer and settlement of high-value, ringgit-denominated interbank funds and scripless securities transactions. RENTAS IFTS enables payment instructions between participants of the system to be processed and settled individually and continuously throughout the working day. All settled transactions are considered as final and irrevocable. Thus, the receiver can use the funds immediately without being exposed to the risk of the funds not being settled. This is in contrast to the former system, Sistem Pemindahan Elektronik Dana dan Sekuriti (SPEEDS), which was a deferred net settlement system, where payments were processed throughout the working day, but actual entries across the books of BNM were only affected at the end of the day. RENTAS IFTS,

<sup>1</sup> ISS is a service compliant with the Bank for International Settlements (BIS) DvP Model 2. BMSC acts as a CCP and guarantees payment and settlement.

being an RTGS system, can substantially reduce or eliminate settlement exposures for participants of the system. Besides reducing the settlement risk for interbank fund transfers, RENTAS IFTS can help reduce the risks in exchange for value settlement systems such as those for securities settlements. The system has the capacity to handle a higher volume of transactions than the former SPEEDS System, and incorporates better security features through the use of smart cards for authentication and transmission. A provision has also been made for international linkages to facilitate real-time DVP and real-time payment versus payment (PVP) should the need to directly connect with other LCY systems arise in the future.

Intraday credit is permitted in the market, and may depend on intermediaries' assessment of client standing. Overdraft is also available for technical reasons, such as time-zone differences, for up to 2 business days, and requires an advised credit line (or prefunding arrangement).

## Overview of Corporate Bonds

### Trading

#### OTC Trading

Corporate bonds are mainly traded OTC in Malaysia. In 1996, a mandatory requirement was imposed by BNM for all new issue of private debt securities to be in scripless form to improve the settlement process, thus there is no need to handle a physical certificate.

#### Exchange Trading

There are few listed corporate bonds in Malaysia.

### CCP

There is no CCP in the OTC corporate bond market.

### Bond Settlement

After trading, bonds are pre-matched by telephone and both sides of the trade must input trade data into the ETP. The sell side inputs settlement instruction into RENTAS-SSTS. RENTAS-SSTS performs settlement of listed and unlisted corporate bonds. Settlement in RENTAS is on a DVP basis. DVP settlement procedures are executed automatically on the value date once the buy side confirms settlement instruction, in the same manner as with government bonds.

### Cash Settlement

RENTAS-IFTs performs cash settlement of corporate bonds in the same manner as with government bonds.

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

Interest income is paid on fixed-income securities, and the terms and conditions are usually advised when the securities are issued. As such, the investor purchasing a security has complete information on the rate of interest and the frequency of payment. Interest payments are usually made annually or semi-annually, and are calculated on the actual number of days per 365-day cycle. For fixed-income securities dematerialized on the RENTAS-SSTS, interest and redemptions are credited directly into the RENTAS-SSTS participants' ADI accounts maintained with BNM on the payment date via RENTAS-IFTs. In turn, clients' accounts are credited with their entitlement on the same day.

### Interest Payment and Redemption of Corporate Bonds

Interest on Malaysian corporate bonds is payable quarterly, semi-annually, or annually, depending on the cash flow of the issuer. Interest payments for corporate bonds are also managed by MyClear,

where interest due is automatically credited to the RENTAS-SSTS participants' ADI account held with BNM via RENTAS-IFTS.

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

The business flow of Malaysian government bonds has some differences with that of a typical DVP flow.

- (i) **Pre-Settlement Matching**  
There is no pre-settlement matching system in the Malaysian bond market.
- (ii) **Bond Settlement**  
Though there is trading report platform, ETP, in the Malaysian bond market, the platform does not send settlement instruction to a book-entry system. Instead of system linkage, the sell side inputs settlement instruction data into RENTAS-SSTS. After input, the buy side checks settlement instruction and sends affirmation back to RENTAS-SSTS if the contents are correct. RENTAS-SSTS adopts local matching and DVP Model 1 of the BIS definition. Since RENTAS consists of a book-entry system, RENTAS-SSTS, and a cash settlement system, RENTAS-IFTS, there is no need to send settlement instruction and confirmation between the book-entry system and RTGS system. In addition, RENTAS performs DVP simultaneously without locking the sell side's bond.
- (iii) **Cash Settlement**  
Therefore, cash settlement is performed within RENTAS, and there is no unique message between cash settlement system and the sell side and buy side. Settlement completion advice, sent from RENTAS to settlement participants, contains both bond and cash confirmation.

For further details, please refer to **Part 3 MY03 (Government Bond Transaction Flow for Domestic Trades (OTC))**.

### DVP Flow of Corporate Bonds for Domestic Trades

The corporate bond transaction flow is similar to the government bond flow in Malaysia.

For further details, please refer to **Part 3 MY04 (Corporate Bond Transaction Flow for Domestic Trades)**.

### DVP Flow of Cross-Border Bond Transactions

Scrippless securities, including Malaysian government securities and selected debt securities, can also be settled internationally via major global custodian banks and international CSDs, such as Euroclear and Clearstream. Both of these international CSDs appoint selected ADIs, which are clearing members of RENTAS, as their clearing agents in Malaysia. Non-residents and offshore investors may also individually appoint ADIs that are RENTAS members as custodians of their investments. Most financial institutions are also members of the Society for Worldwide Interbank Financial Telecommunication (SWIFT), which facilitates the transmission and confirmation of cross-border payment and settlement instructions in foreign currencies.

For foreign investors, there are some restrictions in the Malaysian bond market, especially with regard to foreign exchange (FX) and cash controls. The Malaysian ringgit is a restricted currency and can only be traded onshore. There is no restriction on foreign participation in the FX market. Non-residents intending to purchase or sell ringgit must confirm that it is in relation to an underlying commitment, which may include purchases or sales of Bursa Malaysia securities. There is no restriction on the repatriation from Malaysia of capital, profits, and income earned. External accounts (EAs) are ringgit accounts held by non-residents in Malaysia and can be maintained at either a segregated or omnibus level. A non-resident may open and maintain any number of EAs, and there are no restrictions on the amount of ringgit funds that can be placed in the EAs.

For further details, please refer to **Part 3 MY05 (Bond Transaction Flow for Foreign Investors OTC Market / DVP)**.



## Interest Payment and Redemption of Government Bonds

The business flow of interest payment and redemption of government bonds is analyzed using a typical flow. Key findings of the analysis are given below.

### (i) **Paying Agent (PA)**

There are two types of agents: facility agent (FA) and paying agent (PA). FAs are licensed investment banks, commercial banks, Islamic banks, and other institutions approved by regulatory authorities that coordinate the issuance of debt securities. PAs are responsible for interest and redemption payments on behalf of an issuer. BNM, as the central bank, is appointed as a PA. FAs receive debit notification from RENTAS and payment instruction from issuers. FAs send payment instruction to PAs, which remit interest and redemption payment.

### (ii) **CSD**

BNM has a CSD function and it possesses a book-entry system called RENTAS-SSTS. BNM also has its own account within RENTAS-SSTS for the purpose of interest and redemption payment. In Malaysia, a CSD does not need to arrange a tax holder list because there is no withholding tax for government bonds.

### (iii) **Payment Flow**

RENTAS-IFTS, the central bank cash settlement system, is used for interest payment and redemption.

### (iv) **Tax**

There is no withholding tax in Malaysia. Effective 11 September 2004, all fixed-income instruments (including debentures other than convertible loan stocks) approved by the Securities Commission and ringgit-denominated securities issued by the Government of Malaysia were made exempt from withholding tax for all categories of investors, including non-residents.

For further details, please refer to **Part 3 MY06 (Interest Payment Flow of Government Bond)** and **Part 3 MY07 (Redemption Payment Flow of Government Bond)**.

## Interest Payment and Redemption of Corporate Bonds

The business flow of interest payment and redemption of corporate bonds is analyzed using a typical flow. Key findings of the analysis are given below.

### (i) **PA**

A commercial bank is appointed as a PA. The PA requests interest payment instruction from the issuer and pays interest and principal to custodians on the issuer's behalf.

### (ii) **CSD**

BNM has a CSD function and it possesses a book-entry system called RENTAS-SSTS. In Malaysia, there is no withholding tax for corporate bonds and CSD does not need to arrange a tax holder list.

### (iii) **Payment Flow**

RENTAS-IFTS, the central bank cash settlement system, is used in the case of interest payment and redemption.

### (iv) **Tax**

There is no withholding tax for corporate bonds in Malaysia.

For further details, please refer to **Part 3 MY08 (Interest Payment Flow of Corporate Bond)** and **Part 3 MY09 (Redemption Payment Flow of Corporate Bond)**.

## Message Standard

### Message Format

BNM adopts ISO15022 for its book-entry system.

### Message Items

Typical message types are settlement instruction and settlement confirmation. Securities Market Practice Group (SMPG) defined 10 common elements of these two message types. Typical message items are compared with that of ISO20022 (sese.023 and sese.025).



For government and corporate bond settlement systems, the 10 common elements of RENTAS-SSTS are almost all the same as those of ISO20022.

## Market Practices

### Operating Hours

RENTAS opens at 8:00 and closes at 18:00 for ringgit bond and cash settlement.

### Settlement Cycle

From an infrastructure viewpoint, same-day settlement is available in the Malaysian bond market. The standard settlement cycle is T+1 or T+2 for domestic transactions. For cross-border transactions, the settlement cycle is generally T+2. Nevertheless, some participants adopt T+3.

### Fails

If the buy side has caused the delay or failure in settling the securities transaction, the sell side shall have the right to claim from the buy side the loss of interest on the amount due. On the other hand, if the sell side has caused the delay or failure to settle the securities transaction, the buy side shall have the right to claim from the sell side compensation on the amount due.

### Intraday Liquidity Facility

The ringgit intraday credit facility in RENTAS is a credit line provided by BNM to participants during business hours to ensure that there is sufficient liquidity in RENTAS to effect settlements on a timely basis. BNM determines which participants are eligible for intraday credit. The intraday credit is granted in the form of collateralized borrowing against eligible securities. The eligible participants are provided with a collateral account (K account) to facilitate the earmarking of collateral securities for the intraday credit drawdown. The repayment of the intraday credit facility is automatically done whenever there are sufficient funds in the participant's settlement

account to redeem the earmarked securities in their K account. At the ringgit settlement cut-off time (closing time), MyClear imposes a penalty on participants who fail to redeem their ringgit intraday credit facility.

### Bilateral Netting

There is no bilateral netting scheme in Malaysia.

## Numbering and Coding

### Numbering and Coding for the OTC and Exchange Markets

#### Securities Numbering

International Securities Identification Number (ISIN) is used for securities numbering, but local securities codes prevail.

#### Financial Institution Identification

The Business Identifier Code (BIC) is used as part of a unique identifier code (UIC) for market participants.

#### Securities Account

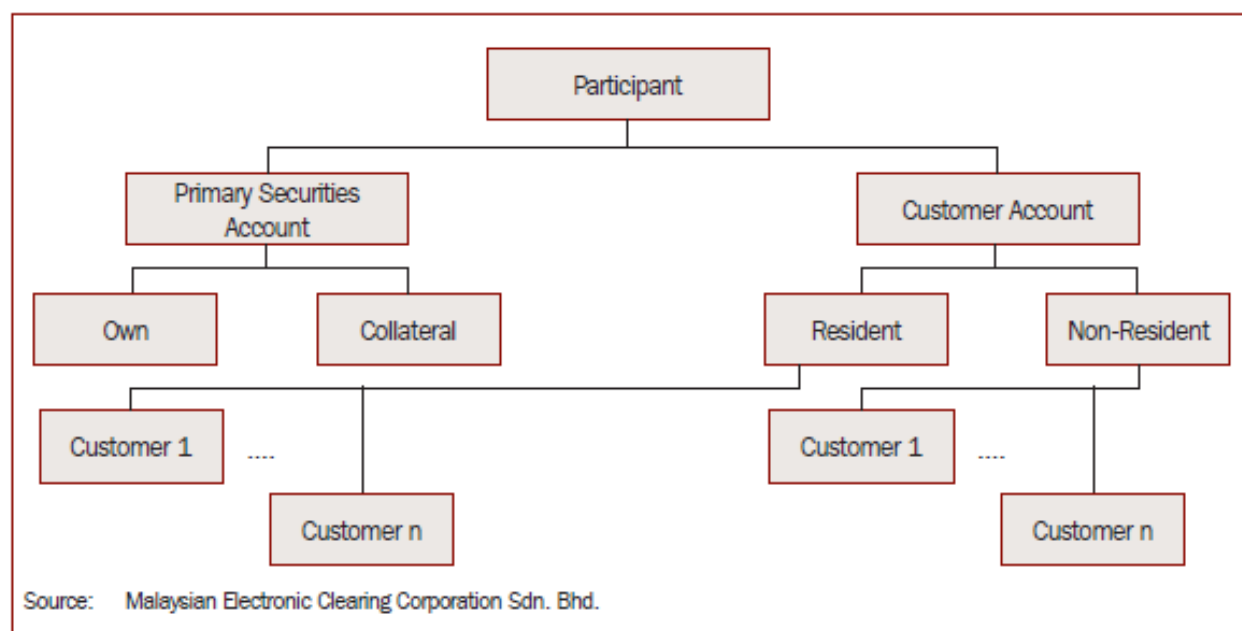
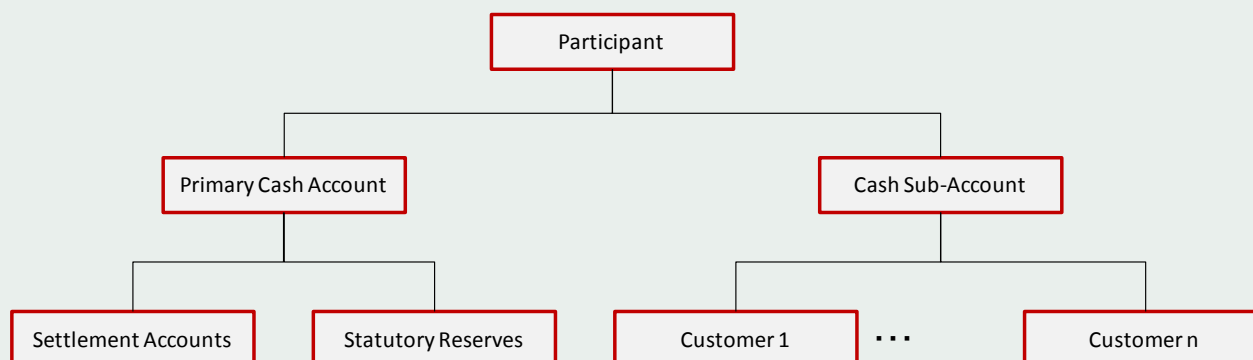
RENTAS-SSTS is an omnibus account with a multi-layer structure. CSD participants manage their own and customer's bonds separately. The securities account structure in RENTAS-SSTS is illustrated in **Figure MY02**. Each participant has a primary securities account, a collateral account, as well as an unlimited number of optional customer sub-accounts. Securities belonging to domestic and foreign investors cannot be co-mingled in a single account.

#### Cash Account

The Cash Account Structure in RENTAS-IFTS is illustrated in **Figure MY03**. Every participant has a primary settlement account, a statutory reserves account, and an unlimited number of optional sub-accounts.

#### Character Code and Language

Unicode UTF-8 is adopted. The language used for payment and settlement systems is English.

**Figure: MY02 Securities Account Structure in RENTAS****Figure: MY03 Cash Account Structure in RENTAS**

## Medium- to Long-Term Strategies

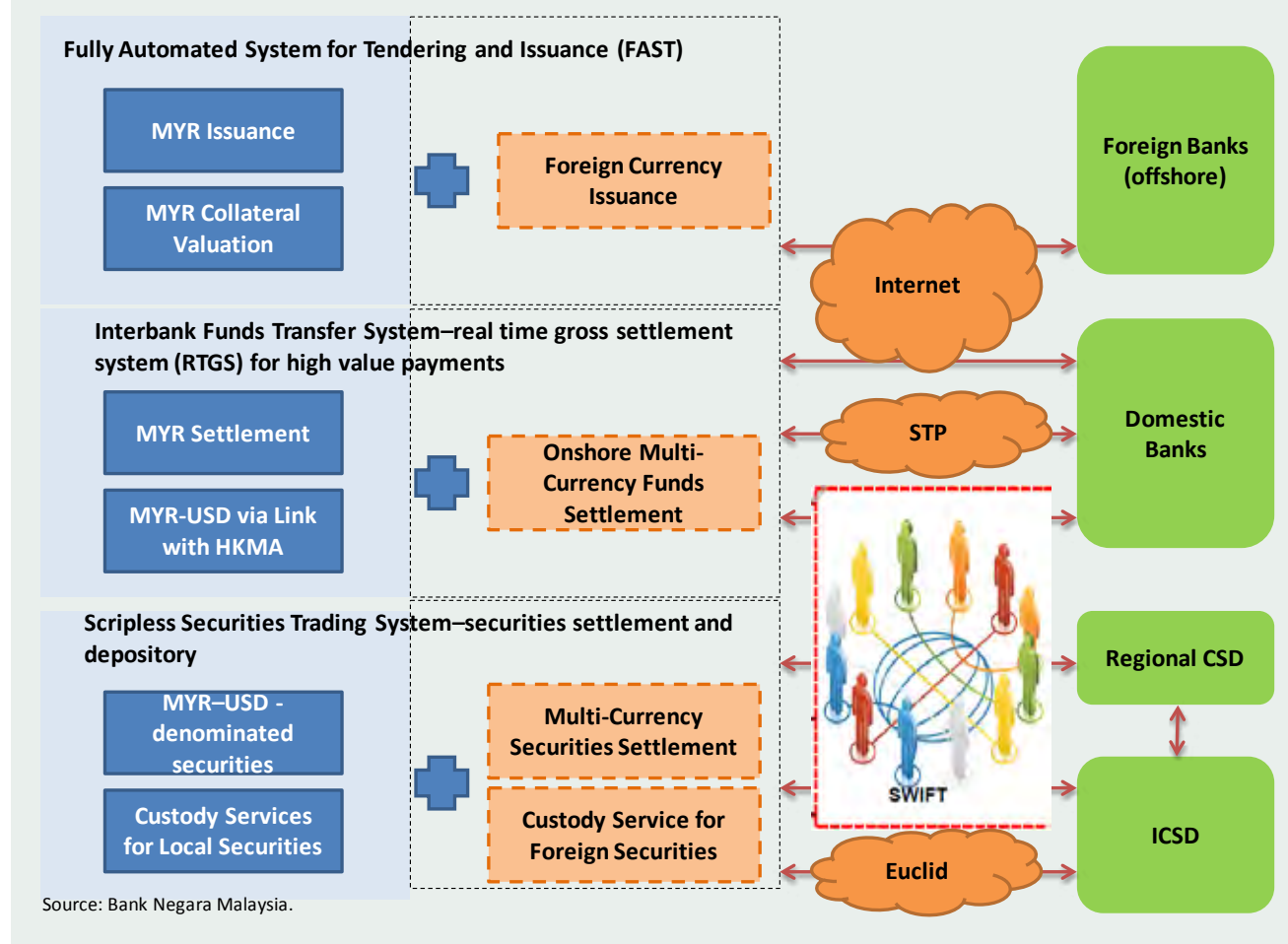
BNM has tried to enhance RENTAS. The present covers ringgit and United States (US) dollar-denominated securities, and provides custody services for local securities. On the other hand, the future RENTAS system will be able to settle multi-currency securities and supply custody service for foreign securities (**Figures MY04, MY05**). Connecting with regional CSDs and international CSDs will make these plans a real possibility.

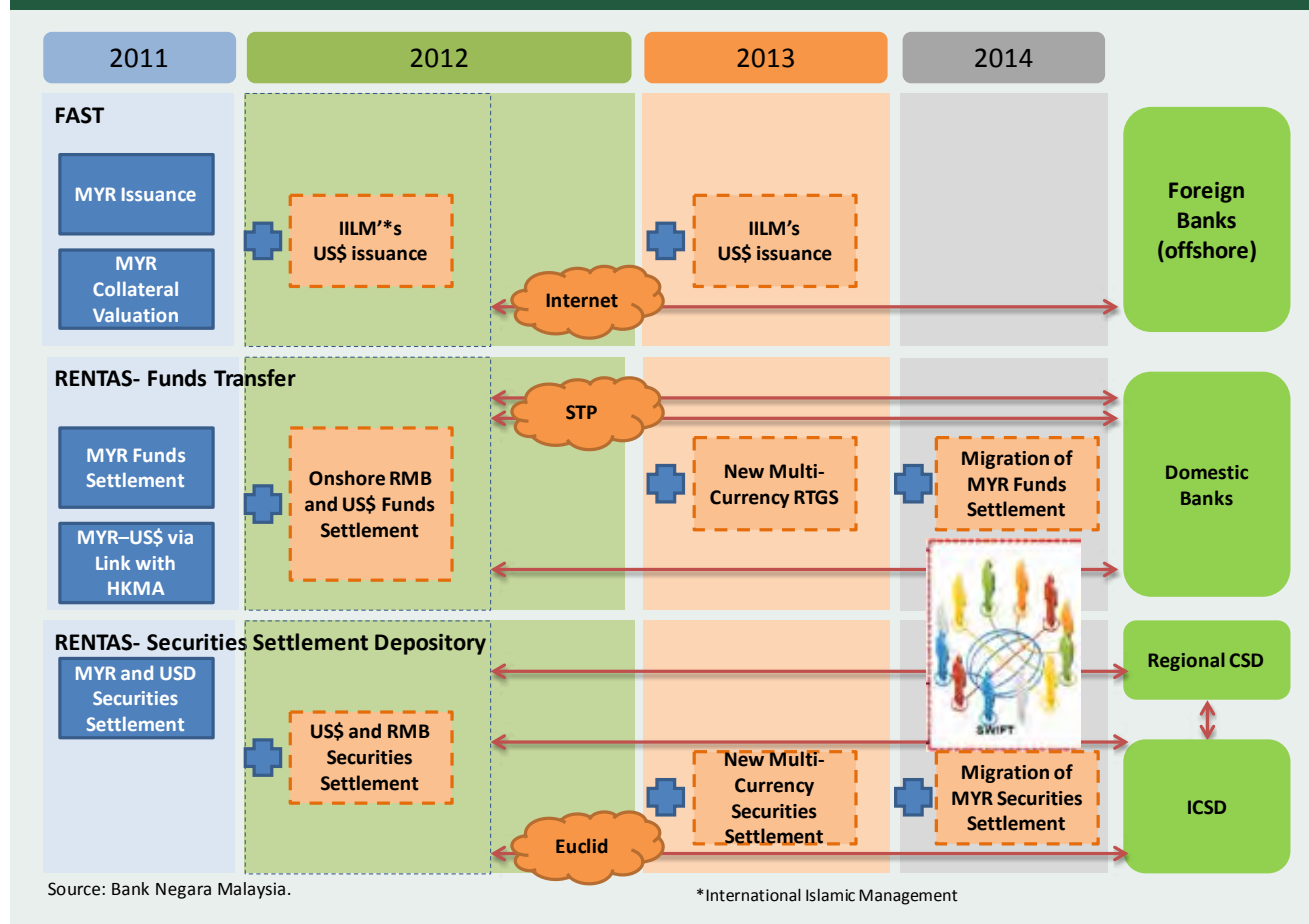
SC Malaysia drew up a Capital Market Masterplan 2 (CMP2) in 2011. CMP2 is a comprehensive plan designed to provide clarity on the strategic direction of the Malaysian capital market for the

next decade. CMP2 advocates the importance of a clear and holistic roadmap for the development of the information technology infrastructure needed to ensure greater synchronization of industry strategies and cost-effective investments in technology. The roadmap will cover

- (i) benchmarking implicit and explicit transactions and post-trade costs to identify areas for improvement,
- (ii) enhancing post-trade settlement efficiencies through the implementation of STP capabilities, including identifying required improvements in clearing and settlement; depository, custody, and collateral management practices; and the requirements to facilitate integration of clearing and settlement with the payments system;

**Figure MY04 Overview of the future RENTAS System**



**Figure MY05 Overview of the future RENTAS System**

- (iii) establishing the technological standards, protocols, and capacity requirements to ensure greater inter-operability across a broad range of systems, data environments, and entities in various market segments;
- (iv) identifying infrastructure improvements to support technology-driven innovation and business strategies to enhance service capabilities, thereby enabling intermediaries and participants to undertake specialized functionalities in trading, products, and services on a cost-effective basis and supporting enhancements in customer interfaces and back-office connectivity;
- (v) addressing information asymmetry challenges through strengthening the infrastructure for cost-effective and efficient data capture, information gathering, analysis, disclosure, and corporate communications; and

- (vi) establishing a data framework for taxonomy with unified naming conventions while also developing data management policies to ensure data consistency and integrity to meet requirements for the aggregation and automation of data flows.

## References

- Asian Development Bank (ADB). *ASEAN+3 Bond Market Guide*.
- ADB. *Asian Bonds Online*. <http://asianbondsonline.adb.org/index.php>
- Bank Negara Malaysia. *Overview of New RENTAS*.
- Bond Info Hub (Bank Negara Malaysia). <http://bondinfo.bnm.gov.my/portal/server.pt>

MyClear. *Operational Procedure for Securities Services.*

MyClear. *Central Securities Depository and Paying Agency Rules.*

MyClear. <http://www.myclear.org.my/references/>

Securities Commission Malaysia. *Capital Market Masterplan 2.*

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

# Philippines (PH)

## Bond Market Infrastructure

### Overview of Bond Market

The Philippine bond market is comprised of the over-the-counter (OTC) market and the exchange market. According to OTC rules in Philippines, secondary trading of government and corporate bonds must be conducted through self-regulatory organizations (SROs). Therefore, trading participants should be members of an SRO. To date, the Philippines Dealing and Exchange Corporation (PDEX) is the only SRO in Philippines and almost all transactions of government and corporate bonds take place in PDEX. It operates the Fixed-Income (FI) Trading System, which includes two types of trading platform for debt securities: the Negotiated Dealing Platform and the Auto Match Platform. The Negotiated Dealing Platform is primarily for professional markets with relatively large trading transactions while the Auto Match Platform caters to the public market (through broker participants) with smaller volumes.

According to the Asian Development Bank's (ADB) *AsianBondsOnline* website, the absolute amount of local currency (LCY) government bonds outstanding in the Philippines at the end of 1Q13 was US\$85.18 billion, while LCY corporate bonds reached US\$13.04 billion.

The Bureau of Treasury (BTr) is the central securities depository (CSD) for government bonds (Treasury bills and Treasury bonds). BTr owns and operates the Registry of Scripless Securities (BTr-RoSS), which is the official registry of absolute ownership, legal or beneficial titles, or interest in government bonds. Hence, all government bond transactions are settled in BTr-RoSS. The Philippines Depository and Trust Corporation (PDTC) is the CSD for corporate bonds. It also acts as a sub-registry for government bonds in some cases.

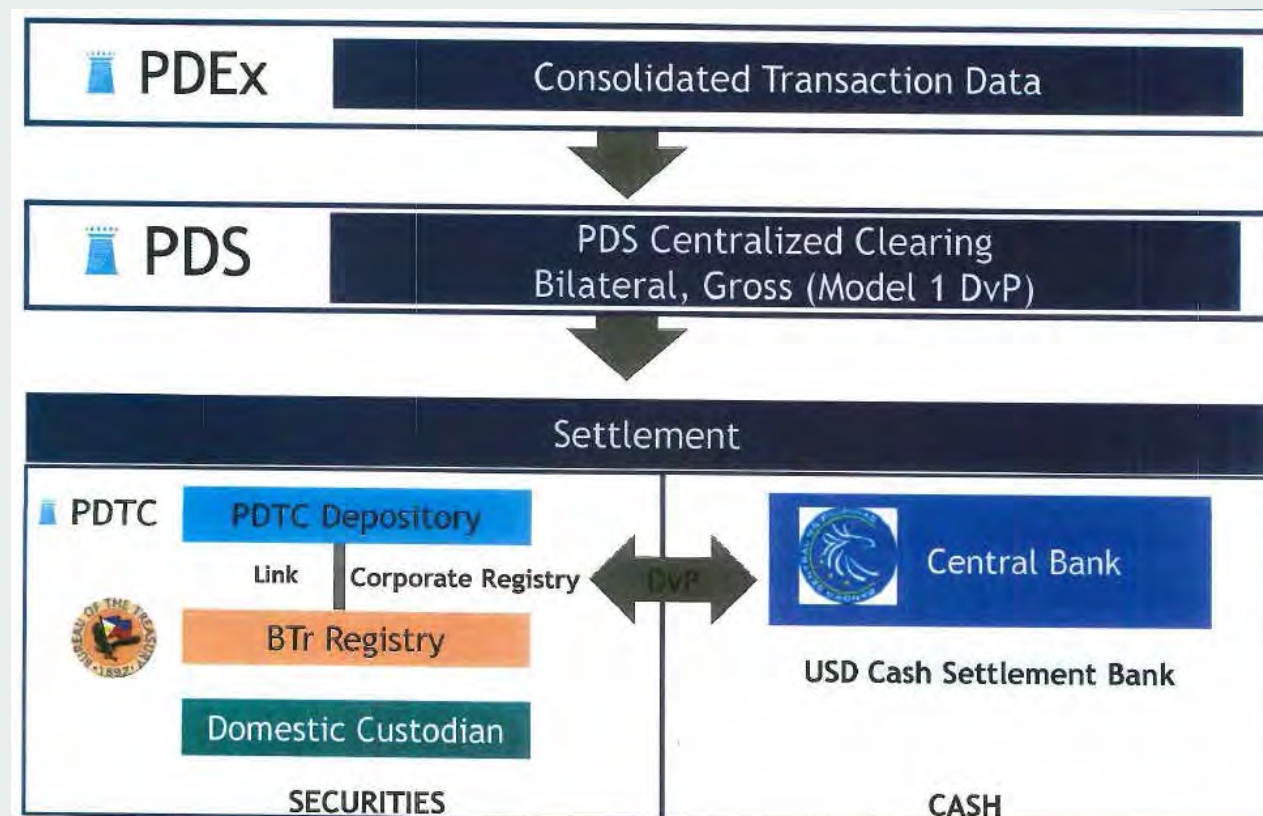
After the trade is executed in the FI Trading System, the trade data are sent to BTr-RoSS via the PDEX-RoSS straight-through-processing (STP) Facility or the electronic delivery-versus-payment (eDvP) System. The FI Trading System automatically chooses the system used for the settlement process—either through PDEX-RoSS or the eDvP System—according to the parties involved in a trade.

The PDEX-RoSS STP Facility is for government securities eligible dealers (GSEDs)<sup>1</sup> and transmits

---

<sup>1</sup> GSEDs are dealers licensed by the Securities and Exchange Commission to engage in both the purchase and sale of government securities. They are acknowledged by the BTr as eligible to participate in the auction upon application and proof of unimpaired capital of at least PHP100 million, compliance with statutory ratios, subscription of an electronic link to BTr's Automated Debt Auction Processing System and BTr-RoSS, and the existence of a demand deposit account with the BSP.



**Figure PH01: Clearing and Settlement Environment of Philippine Bond Market**

Source: Philippine Dealing System Holdings Corp. and subsidiaries.

trade data directly to BTr-RoSS. The eDvP System is for non-GSEDs<sup>2</sup> and transmits trade data to PDTC.

Cash settlement is performed in the Philippine Payment and Settlement System (PhilPaSS), which is owned and operated by the Bangko Sentral ng Pilipinas (BSP).

When trading participants do not have an account with BSP, other settlement banks are involved (Figures PH01, PH02).

Please refer to **Part 3 PH01 (Government Bond Market Infrastructure Diagram)** and **Part 3 PH02 (Corporate Bond Market Infrastructure Diagram)**.

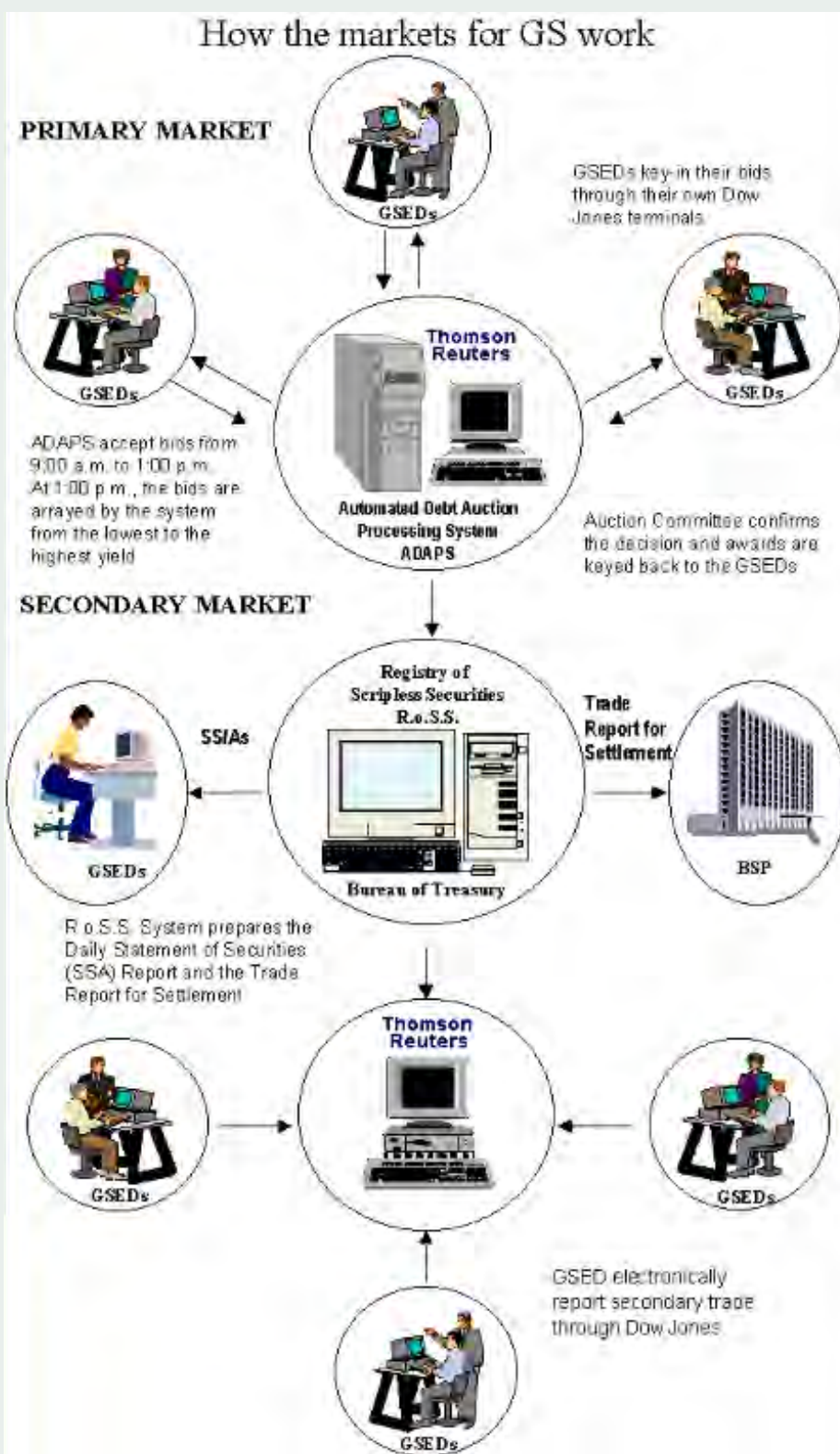
## Description of Related Organizations

### Bureau of Treasury (BTr)

BTr is the CSD for government securities (Treasury bills and government bonds), and BTr assists in the formulation of policies on investment and capital market development. It owns and operates BTr-RoSS, which is the official registry of absolute ownership, legal or beneficial titles, or interest in government bonds. BTr-RoSS monitors and maintains official records of ownership of government securities. In addition, BTr-RoSS monitors and administers government securities coupons and principal payments.

<sup>2</sup> Non-GSEDs are dealers that may also engage in the purchase and sale of government securities but only from and to GSEDs. Any institution may be accepted as a non-GSED after submission of proof that they are capable of buying and selling of securities via an application of membership to BTr-RoSS and accomplishment of an Oath of Undertaking that they will abide by all the rules and provisions governing the system.

Figure PH02: How the Markets for Government Securities Work



Source: Bureau of the Treasury.

**Securities and Exchange Commission (SEC)**

SEC was established on 26 October 1936 by virtue of the Commonwealth Act No. 83, also known as the Securities Act. SEC's establishment was prompted by the need to safeguard public interest in view of the local stock market boom at that time. Operations began on 11 November 1936. Its major functions included registration of securities, analysis of every registered security, evaluation of the financial conditions and operations of applicants for security issue, screening of applications for broker's or dealer's license, and supervision of stock and bond brokers as well as the stock exchanges. On 1 December 2000, SEC was reorganized as mandated by Republic Act 8799, also known as the Securities Regulation Code.

**Bangko Sentral ng Pilipinas (BSP)**

BSP is the central bank of the Republic of the Philippines. It was established on 3 July 1993. It administers PhilPaSS and acts as a cash settlement entity in the bond market.

**Philippine Dealing and Exchange Corporation (PDEX)**

PDEX is licensed by SEC as an exchange under the provisions of Securities Regulation Code. PDEX is an operating subsidiary of the Philippine Dealing System Holdings Corporation (PDS Group).

**Philippine Depository and Trust Corporation (PDTC)**

PDTC was founded as the CSD in the Philippine bond market in 1995. It is owned by the PDS Group. PDTC provides depository and settlement services for private bonds and government securities.

## Overview of Government Bonds

**Trading****OTC Trading**

In March 2005, the Fixed-Income Exchange (FIE) was established in the Philippines. FIE is operated by PDEX, which is tasked to operate and maintain the trading system for fixed-income securities. It

runs the FI Trading System (Negotiated Dealing Platform). Its member brokers and dealers are only allowed to engage in OTC transactions. When the sell side and buy side arrange or negotiate a trade outside the FIE, they have to execute the trade on the FI Trading System within 1 minute from conclusion of negotiation.

Traders can communicate, negotiate, and deal transactions from their respective offices and the system ensures that all information sent to each transacting party is kept confidential and cannot be viewed by the public.

**Exchange Trading**

In February 2008, PDEX launched the Auto Match Dealing Platform where broking participants can post orders received from retail investors. With this platform, retail investors are given equal access to the various fixed-income securities listed on the trading board. The transactions on this platform are captured automatically and broadcast on a real-time basis (**Figures PH03, PH04**).

**Clearing and Central Counterparty**

There is no clearing and central counterparty (CCP) in either the OTC market or the exchange market.

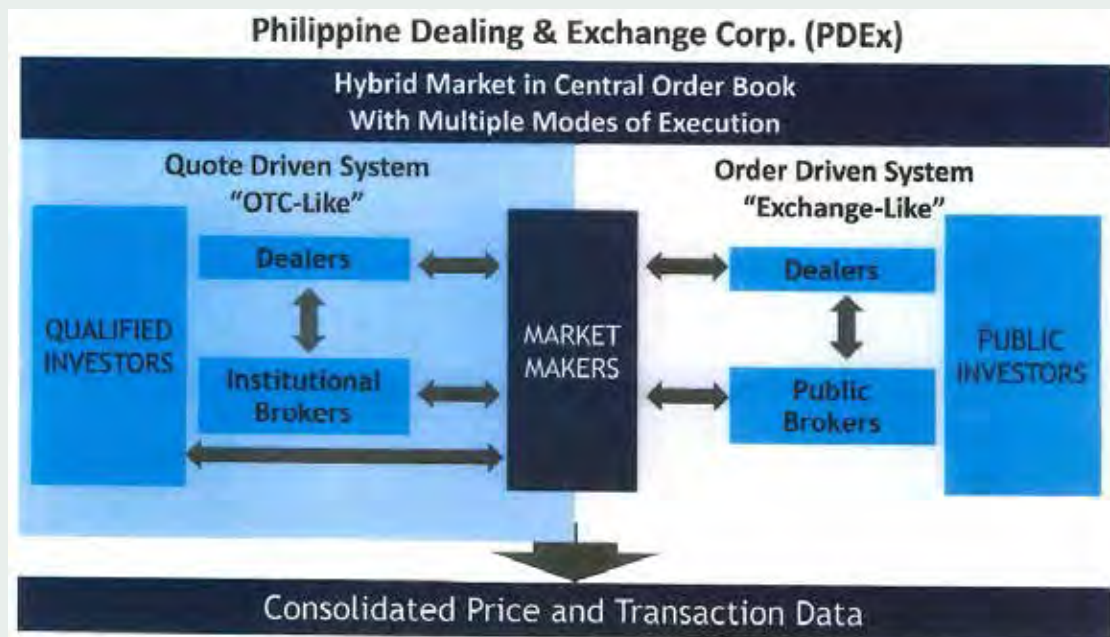
**Bond Settlement**

BTr is the CSD for government bonds. BTr established BTr-RoSS for depository and settlement of government securities in November 1996. BTr-RoSS settles transactions in delivery-versus-payment (DVP) Model 1 of the Bank of International Settlements (BIS) definition.

Under BTr-RoSS, GSEDs maintain a securities account for the official recording of scripless government securities. GSEDs also maintain securities sub-accounts in the name of their clients for the sake of segregating scripless government securities sold to clients in the secondary market under one account, provided that the GSED maintains complete records of ownership and other titles of their clients. GSEDs desiring to utilize DVP and Real-Time Gross Settlement (RTGS) systems in secondary market transactions shall open a settlement account

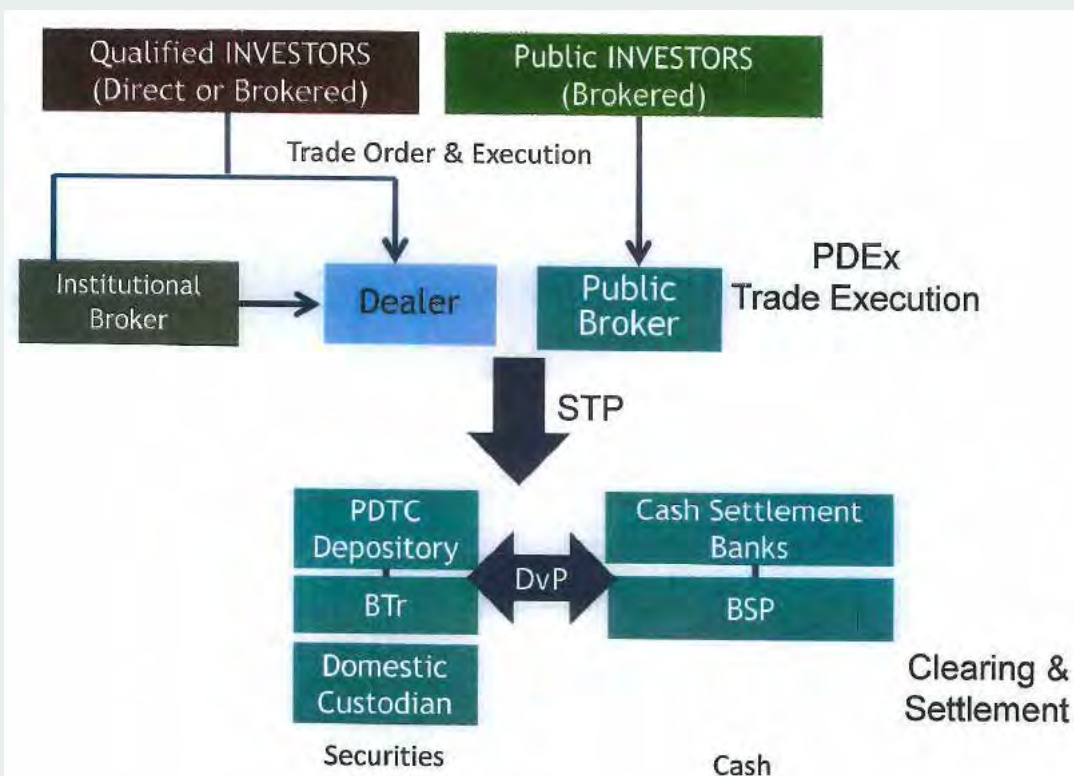


**Figure PH03: Trading Environment of Philippine Bond Market)**



Source: Philippine Dealing System Holdings Corp. and subsidiaries.

**Figure PH04: Domestic Investment Process**



Source: Philippine Dealing System Holdings Corp. and subsidiaries.

with BSP or any bank of their choice, which, like the BSP, shall agree to service their settlement of scripless securities trade immediately upon notice of a transaction concluded. All banks and financial institutions that have regular demand deposit accounts with BSP may serve as settlement banks in connection with the government securities transactions of BTr-RoSS account owners.

GSEDs have the option to (i) fund their settlement account before the start of trading hours at 9:30, or (ii) avail of an overnight credit line with the settlement bank, which shall be deemed drawn whenever a GSED's settlement account is negative or insufficient to settle a trade, otherwise the transaction shall be queued until sufficient funds are credited to the settlement account. Before the implementation of the familiarization period for Circular 266, trading starts at 9:30 and ends at 12:00. However under Circular 266, banks can now deal with BSP as well as among themselves until 15:00. GSEDs have until 14:00 to register their transactions with BTr-RoSS. This gives BTr-RoSS sufficient time until 16:00 within which to clear the scripless securities and settle the payment thereof. Trades can be settled manually or electronically.

BTr-RoSS checks securities in the sell side's securities account and earmarks these for transfer. After the cash settlement is processed, BTr-RoSS transfers the earmarked securities from the sell side's securities account to the buy side's account.

For non-GSEDs government securities trades, PDTC provides depository and settlement services as a sub-registry. PDTC also adopts DVP Model 1 of the BIS definition.

## Cash Settlement

Trading between GSEDs is settled by a central bank account. BSP administers the Philippines's RTGS system, which is called PhilPaSS. All GSEDs have their BTr-RoSS accounts for bond settlement and BSP PhilPass accounts for cash settlement. In this case, the RoSS-PhilPass DVP system sends settlement data to BSP-PhilPass. Cash settlement is made through the debit or credit of GSEDs' accounts. BSP also provides an intraday overdraft facility (**Figure PH05**).

When one or both parties of trade are non-GSEDs, and both do not have a BSP account, the trade is settled with a cash settlement bank.

## Overview of Corporate Bond

### Trading

#### OTC Trading

The Philippines has a quote-driven market for corporate bonds. Like the OTC market, trade participants negotiate before they input the trade data to PDEX.

#### Exchange Trading

In the Philippines, there is also an order-driven market for corporate bonds. Trade participants put orders into PDEX directly.

### CCP

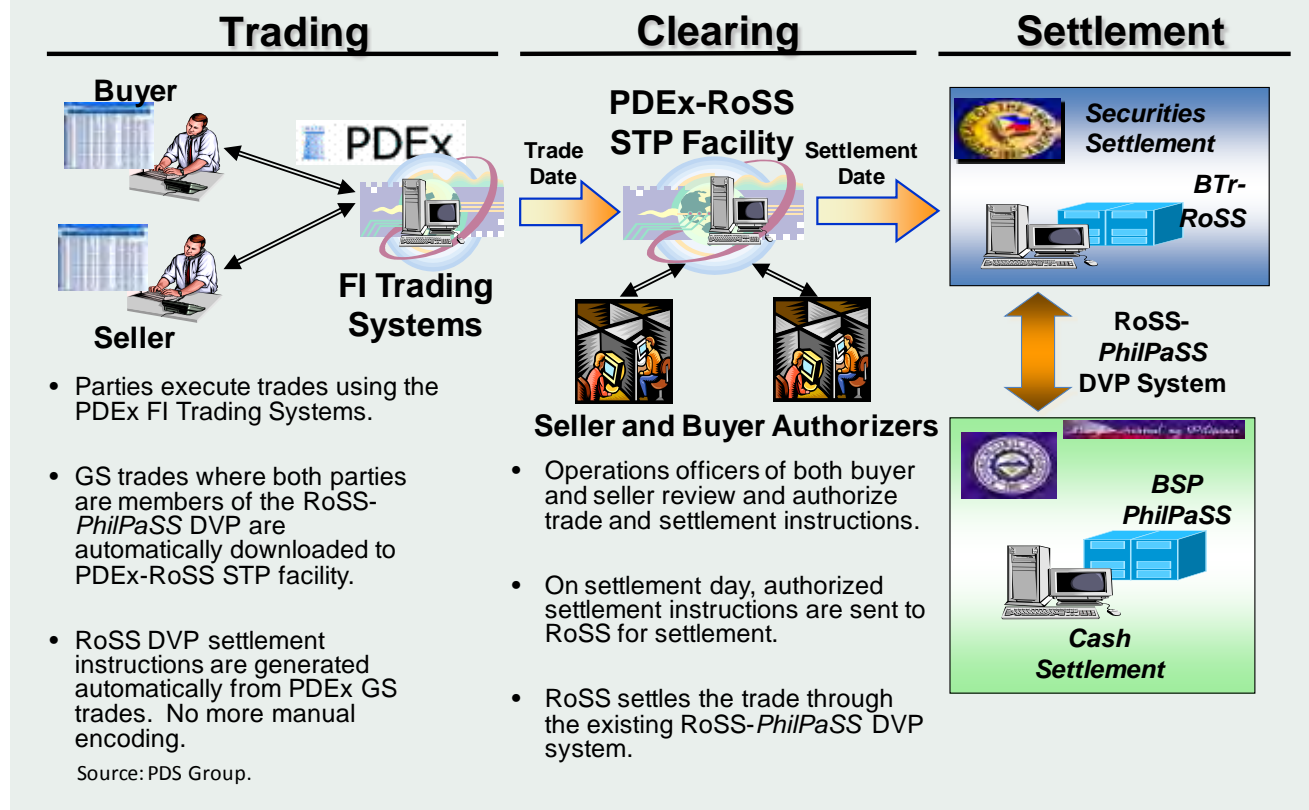
There is no CCP in the OTC market.

### Bond Settlement

PDTC is the CSD for corporate bonds. PDTC settles transactions in DVP Model 1 of the BIS definition. Securities held in the depository are registered under the name of the PDTC nominee with the beneficial ownership reflected via book-entry credits to the securities accounts of the depository participants. While PDTC conducts bond settlement, the eDVP System in PDEX handles the whole DVP process for corporate bond transactions.

### Cash Settlement

Cash settlement of corporate bond transactions is executed by BSP's PhilPaSS or cash settlement banks. If both sides have cash accounts with BSP, cash settlement is executed using PhilPaSS. If they do not have an account with BSP, cash settlement is conducted through accounts of cash settlement banks. On settlement day, bond settlement is executed on PDTC. After earmarking sold bonds in the selling investors account, PDTC

**Figure PH05: Settlement Process for Government Bond Trades where Both Parties are Government Securities Eligible Dealers (GSEDs)**

sends settlement status to the eDVP System, which sends cash settlement instruction to BSP or a cash settlement bank according to the status of the participants (**Figure PH06**).

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

Interest and coupon payments paid either quarterly, semi-annually, or annually are credited to the buy side and sell side's cash accounts upon the actual receipt of funds. Funds are usually received on the contractual payment date and credited to the buy side and sell side's accounts on the same day.

On interest payment and redemption, BTr credits the settlement account of each GSED with the amount of interest payment, net of tax on the coupon due date. Likewise, BTr credits the settlement account of each GSED with the redemption amount of the government securities on the maturity date.

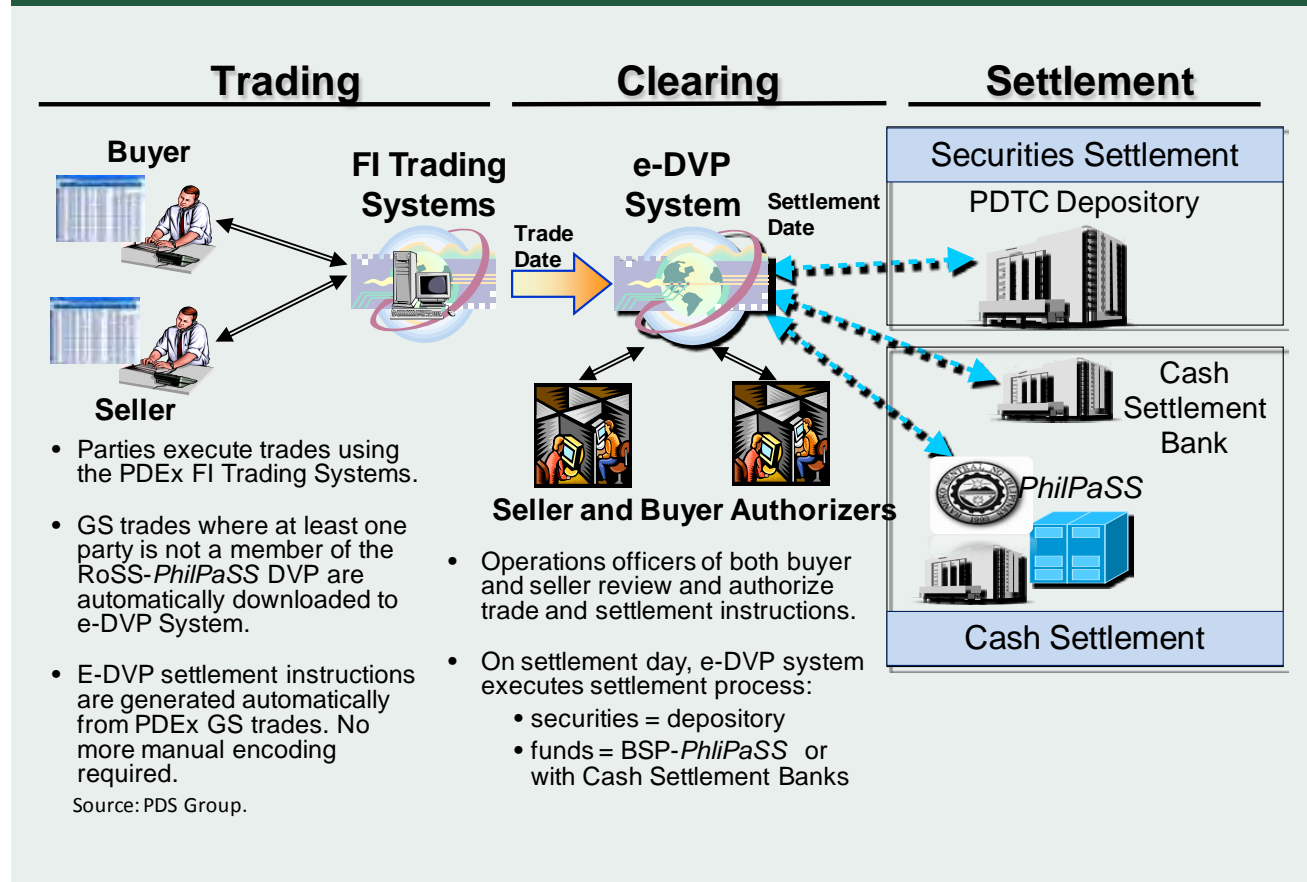
Custodians advise their clients of all income information available by SWIFT MT564 advice. Interest payment notification is sent 14 days before payment date, while redemption notification is sent 30 days before payment date.

On the day of credit, MT566 advice is sent giving details of the amount credited.

### Interest Payment and Redemption of Corporate Bonds

Interest income from corporate bonds is paid quarterly. Interest proceeds are disbursed to



**Figure PH06: Settlement Process for All Corporate Bond Trades and Government Bond Trades**

bond holders on the pay date, net of withholding tax deducted at source. Redemption proceeds are paid either gross or at face amount.

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

The business flow in Philippines government bond OTC market is analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are described below.

#### (i) Pre-Settlement Matching

PDEX also provides a pre-settlement matching function with PDEX-RoSS STP Facility or a eDVP System. The FI Trading

System automatically chooses the system used for the settlement process—either through the PDEX-RoSS STP Facility or the eDVP System—according to the parties involved in a trade. After the central post-trade matching, the FI Trading System sends trade data to the PDEX-RoSS STP Facility or the eDVP System internally. Then, the PDEX-RoSS STP Facility or the eDVP System sends settlement detail to trade participants, who authorize the details.

#### (ii) Bond Settlement

Government bonds are settled in a book-entry system called BTr-RoSS, which is owned and operated by BTr. After pre-settlement matching, the PDEX-RoSS STP Facility or eDVP System directly sends settlement data to the relevant CSDs. In cases of GSEDs, BTr-RoSS holds bonds in the sell side's account and sends the settlement data to BSP for DVP settlement. When BTr-RoSS receives the

notice of cash settlement from BSP, BTr-RoSS conducts bond settlement simultaneously. For the non-GSEDs market, the eDVP System controls the whole DVP process connected with PDTC as a sub-registry of BTr-RoSS.

(iii) **Cash Settlement**

For GSEDs transactions, after the receipt of settlement data from BTr-RoSS, BSP transfers cash from the buy side's account to the sell side's account. On the other hand, non-GSEDs transactions are settled by cash settlement banks instead of BSP, and settlement data is transferred from the eDVP System instead of BTr-RoSS.

For further details, please refer to **Part 3 PH03 (Government Bond Transaction Flow for Domestic Trades GSEDs Market / DVP)** and **Part 3 PH04 (Government Bond Transaction Flow for Domestic Trades non-GSEDs Market / DVP)**.

## DVP Flow of Corporate Bonds for Domestic Trades

The business flow in the Philippine corporate bond OTC market is analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are described below.

(i) **Pre-Settlement Matching**

In the Philippines corporate bond market, there is no pre-settlement system. The FI Trading System performs post-trade matching instead of pre-settlement matching.

(ii) **Bond Settlement**

Corporate bonds are settled in PDTC. After post-trade matching, the FI Trading System sends trade data to the eDVP system and PDEx sends settlement detail, based on the trade data, to both the sell side and buy side. If both the sell side and buy side affirm the settlement detail, they send settlement instruction for DVP to the eDVP System, which confirms the cash balance of the buy side and sends earmark instruction to PDTC Depository. PDTC Depository earmarks bond in the sell side's account and sends back settlement status to the eDVP System.

(iii) **Cash Settlement**

Cash settlement is executed by BSP or cash settlement banks, thus data are transferred between the eDVP System and BSP or cash settlement bank. For instance, the eDVP System sends cash settlement instruction to BSP, which executes cash settlement. After cash settlement, BSP sends a cash settlement report to the eDVP System as well as to both sides of settlement.

For further details, please refer to **Part 3 PH05 (Corporate Bond Transaction Flow for Domestic Trades)**.

## DVP Flow of Cross-Border Bond Transactions

Foreign investors are not subject to any restrictions regarding foreign exchange (FX) trades with underlying investment, pre-funding, and third-party FX.

The Consolidated Foreign Exchange Rules and Regulations of BSP, as outlined in Circular 1389, require foreign investments to be registered with BSP in order to obtain a Bangko Sentral Registration Document (BSRD). This document is needed if foreign exchange is purchased from the banking system to service future remittances of profits and earnings, and/or capital repatriation (**Figure PH07**).

Overdrafts for foreign investors are not allowed under local regulations.

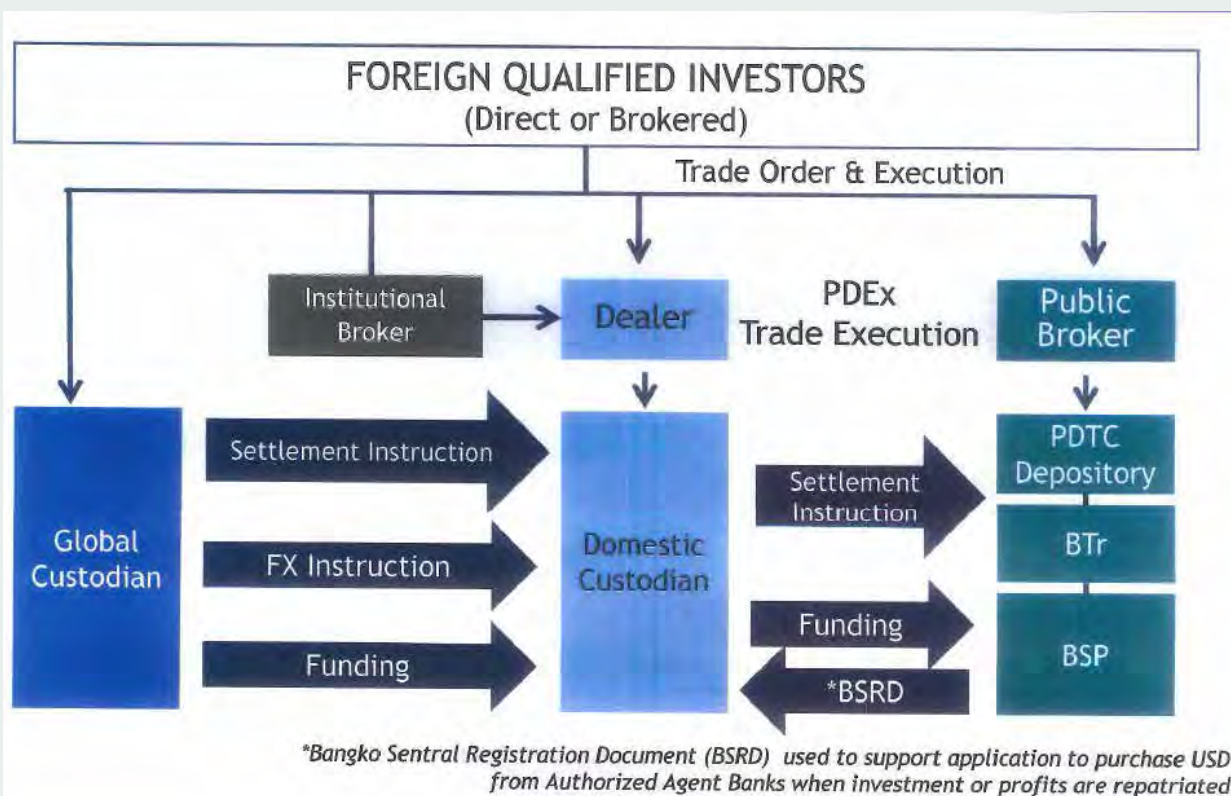
For further details, please refer to **Part 3 PH06 (OTC Bond Transaction Flow for Foreign Investors OTC Market / DVP)**.

## Interest Payment and Redemption of Government Bonds

Interest payment and redemption flows of government bond in Philippines are similar to a typical flow.

(i) **Paying Agent (PA)**

BTr plays multiple roles regarding government bond issuing. BTr is issuer of

**Figure PH07: Foreign Investment Process**

Source: Philippine Dealing System Holdings Corp. and subsidiaries.

government bonds and also functions as PA. BTr calculates the amount of interest and instructs BSP to pay interest to custodians.

(ii) **CSD**

BTr also functions as a CSD for government bonds through BTr-RoSS.

(iii) **Payment Flow**

Interest and principal are transferred from BTr's account to a BTr-RoSS participant account through a Regular Demand Deposit Account (RDDA) in BSP. Then, the participant credits the bond holder's account.

(iv) **Tax**

The Philippine government imposes income tax on government bonds. The tax on interest is deducted at source by the withholding agent. BTr, which is both the issuer and PA of government bonds, acts as the tax withholding agent.

(v) **Other Issues**

As mentioned above, BTr acts as both bond issuer and PA; as a result, there is no request and instruction between issuer and PA. The PA does not notify CSD participants of interest payments in advance. BSP transfers cash directly from BTr accounts to CSD participants account because BTr acts as the PA.

For further details, please refer to **Part 3 PH07 (Interest Payment Flow of Government Bond)** and **Part 3 PH08 (Redemption Payment Flow of Government Bond)**.

## Interest Payment and Redemption of Corporate Bonds

- (i) **PA**  
Issuers of corporate bonds appoint a commercial bank as a PA. In addition, PDTC, the designated CSD for corporate bonds, also plays a partial role as a PA because it sends payment instruction to BSP.
- (ii) **CSD**  
PDTC acts as the CSD for corporate bonds. PDTC has cash accounts in BSP for the sake of interest payments because it does not have a banking license and payment infrastructure.
- (iii) **Payment Flow**  
Interest and principal are transferred from an issuer's account to PDTC's RDDA in BSP via PDTC's account with the issuer's payment banks. Then, PDTC instructs BSP to transfer cash from its RDDA to a PDTC participant account. Finally, the participant credits the bond holder's account.
- (iv) **Tax**  
The Philippine government imposes income tax on corporate bonds. The tax on interest is deducted at source by the withholding agent. For corporate bonds, the issuer acts as the tax withholding agent.
- (v) **Other Issues**  
CSD shares PA functions. It sends the payment request and payment instruction to BSP. The PA does not notify CSD participants of interest payment in advance.

For further details, please refer to **Part 3 PH09 (Interest Payment Flow of Corporate Bond)** and **Part 3 PH10 (Redemption Payment Flow of Corporate Bond)**.

## Message Standard

### Message Format

BTr-RoSS adopts a proprietary format. PDTC also adopts a proprietary format.

## Message Items

PDEX provides an input interface for settlement instruction and confirmation to participants in both the government and corporate bond markets.

Regarding the 10 common elements as defined by the Securities Market Practice Group (SMPG), PDEX has all 10 common elements as mandatory items in its message format in settlement instruction and confirmation.

## Market Practice

### Operating Hours

For government bond settlement, BTr-RoSS opens at 9:30 and closes at 15:00. Participants must register their transaction with BTr-RoSS by the 14:00 cut-off time.

For corporate bond settlement, PDTC opens at 8:00 and closes at 18:00. The cut-off time for cash settlement instruction of corporate bond is 16:00.

### Settlement Cycle

Regarding government bonds, the settlement cycle varies from T to T+3. The corporate bond market does not have a standard settlement cycle. Rather, settlement is negotiable.

### Fails

Securities and Clearing Corporation of the Philippines (SCCP) imposes penalties on brokers immediately upon failure to pay cash or deliver securities for their clearing obligations at noon on T+3.

If a government bond transaction fails to settle by the deadline in BTr-RoSS, the trade is automatically canceled. A GSED can re-input the transaction once the availability of cash and securities is confirmed. BTr reserves the right to suspend or levy penalties against GSEDs that fail transactions.

Market regulations allow brokers to settle a trade until S+1 at 9:15, after which the SCCP executes a buy-in or sell-out on S+1 at 10:00 against the broker on any open trades.

A trade is bought-in at the prevailing offer or market price as of execution of the buy-in. If no offer price is set, the buy-in will be executed using the last closing price plus two ticks, the last transaction price or the current offer price, whichever is the lowest. The sell-out price is the prevailing bid or market price as execution of the sell-out. If no bid price is set, the sell-out is executed using the last closing price less two ticks, the last transaction price, or the current offer price, whichever is the highest. For both buy-ins and sell-outs, the defaulting broker must bear any negative cost differential between the buy-in or sell-out price and the contract price. The counterparty for failed trades assumes any financial loss. The broker may, at its own discretion, pass on incurred penalties and various costs to the defaulting client or final beneficial owner, including PDTC charges, commissions, and clearing charges.

SCCP released Memorandum No. 01-0112 to its clearing members in January 2012 to provide proposed amendments to the schedule of fees, fines, and penalties of SCCP rules and operating procedures. The SCCP proposed to differentiate penalties for late settlements versus settlement fails. Late settlements are those cash or securities settled after the 12:00 market cut-off, but not later than 14:00 on settlement date (T+3). A settlement made after 14:00 on SD is regarded as a settlement fail.

A penalty of PHP1,000 plus 0.00125% of the value of the cash or securities fail, compounded daily until paid, is levied for late cash or securities. For settlement fails, a penalty of PHP1,000 plus 0.0025% of the value of the cash or securities fail, compounded daily until paid, is imposed.

The proposal has no direct impact on foreign investors. However, trading participants may pass on penalties and fees to underlying investors if settlement failure in the market emanated from securities or cash obligations by the underlying investor.

The amended fees and penalties will be implemented with SEC approval.

## Numbering and Coding

### Numbering and Coding for the OTC and Exchange Markets

#### Securities Numbering

The International Securities Identification Number (ISIN) is used in BTr-RoSS for government securities, except for special purpose Treasury bonds and multi-currency Retail Treasury bonds. Local numbering is also used for most bond transactions. On the other hand, proprietary code is commonly used in PDTC.

#### Financial Institution Identification

Both Business Identifier Code (BIC) and local code are used in BTr-RoSS. PDS-assigned firm codes are used to identify the financial institution in its trading, depository, and settlement systems. However, mapping tables are used to convert these codes to their BIC equivalents when PDS systems interact with BSP or cash settlement bank systems. PDTC adopts proprietary code to identify financial institutions, which are PDS-assigned firms.

#### Securities Account

BTr-RoSS adopts a multi-layer and omnibus account structure. BTr-RoSS participants manage their own and their customers' securities separately in BTr-RoSS. PDTC also adopts a multi-layer and omnibus account structure. PDTC participants manage their own and their customers' securities separately in PDTC. BTr-RoSS is in text format and uses ISO20022. PDTC adopts proprietary code to identify securities accounts.

#### Cash Account

The BIC of the bank and the regular bank account number are used to identify cash accounts in BTr-RoSS. PDTC adopts a proprietary code to identify cash accounts.

#### Character Code and Language

UTF 8 is used for all trading, depository, and settlement systems in BTr (BTr-RoSS) and PDTC.



## Medium- to Long-Term Strategies

The PDS Group and regulators (BSP and SEC) are very conscious of promoting STP whenever possible. While there is no official initiative tasked to implement STP, each financial institution plans to mitigate risks and reduce operational costs. They promote STP in the following areas:

- (i) between the trading systems and back-office systems of trading participants,
- (ii) from trading systems to clearing and settlement systems,
- (iii) between the depository systems and back-office systems of depository participants,
- (iv) between the depository and registry systems for government and corporate bonds, and
- (v) between the depository or registry systems and the settlement bank systems for linkages with other depositories.

Each institution implements STP using proprietary conventions. For example, interfaces with settlement banks' deposit systems are governed by each bank's proprietary solution. This results in the feeder institution (such as the depository) having to customize the interface for each settlement bank that it connects to. The

development of a specific interface program for each connectivity point translates to multiple development and maintenance costs and increased operational risk. It is desired that an industry-wide initiative streamline STP connectivity requirements and promote use of a centralized infrastructure (such as an STP hub). Regulators could set deadlines for companies to be ISO20022 compliant.

## References

Asian Development Bank (ADB). *ASEAN+3 Bond Market Guide*.

ADB. *AsianBondsOnline*. <http://www.asianbondsonline.adb.org>

Bureau of the Treasury. <http://www.treasury.gov.ph/main.html#>

Executives' Meeting of East Asia Pacific Central Banks. *Payment, Clearing and Settlement Systems in the Philippines*.

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.



# Singapore (SG)

## Bond Market Infrastructure

### Overview of Bond Markets

Singapore's bond market comprises the over-the-counter (OTC) market and the exchange market. Both Singapore Government Securities (SGS) and corporate bonds can be traded on either the OTC or exchange market. Settlement of SGS and corporate bonds is carried out in the respective depository of the SGS and corporate bonds.

Please refer to **Part 3 SG01 (Government Bond Market Infrastructure Diagram)** and **Part 3 SG02 (Corporate Bond Market Infrastructure Diagram)**.

According to the Asian Development Bank's (ADB) *AsianBondsOnline* website, the absolute local currency (LCY) government bonds outstanding in Singapore at the end of 1Q13 was USD148.27 billion, while LCY corporate bonds stood at USD103.52 billion.<sup>1</sup>

<sup>1</sup> LCY bonds outstanding for Singapore include amounts of LCY bonds issued by nonresidents. The Monetary Authority of Singapore (MAS) publishes LCY corporate bonds outstanding on an annual basis only. Therefore, 1Q13 LCY corporate bonds outstanding data are *AsianBondsOnline* estimates based on actual 4Q12 MAS data.

### Description of Related Organizations

#### Ministry of Finance (MOF)

The Ministry of Finance (MOF) is responsible for administering and regulating financial institutions and structures in the Singapore bond market. The Government of Singapore issues domestic debt securities to enhance the efficiency and liquidity of the SGS market as part of its strategy to develop Singapore as an international debt hub. Two types of government securities are issued: (i) SGS to develop the domestic debt market; and (ii) Special SGS, which are issued as non-tradable bonds to meet the investment needs of the Central Provident Fund, Singapore's national pension fund.

#### The Monetary Authority of Singapore (MAS)

The Monetary Authority of Singapore (MAS) acts in a role similar to a central bank in serving as the agent for the Government of Singapore to issue SGS comprising Treasury bills and government bonds. MAS provides overall supervision to the financial industry, including the securities industry.

MAS is the central securities depository (CSD) for SGS. Settlement of SGS is conducted via the MAS Electronic Payment System plus SGS (MEPS+ SGS), a Real-Time Gross Settlement system (MEPS+ RTGS) with a cash settlement function for a full range of bonds. MEPS+ SGS holds government bonds and facilitates the

instantaneous and irrevocable transfer of SGS. It is linked to MEPS+ RTGS to provide delivery-versus-payment (DVP) for SGS transactions. Under the scripless settlement system, crediting or debiting the securities owner's account through the book-entry system affects any transfer of securities. Most SGS transactions are settled through DVP over MEPS+ SGS and MEPS+ RTGS.

### **Singapore Exchange (SGX)**

Singapore Exchange (SGX) is a self-regulating organization governed by its own rules and by-laws, but ultimately supervised by MAS. SGX was formed on 1 December 1999 as a holding company of some former exchange companies such as the Stock Exchange of Singapore (SES), Singapore International Monetary Exchange (Simex), and the Securities Clearing and Computer Services Pte. Ltd. (SCCS). Tokyo Stock Exchange, Inc. holds about 4% of SGX stock. Meanwhile, SGX holds a 20% stake in the Philippine Dealing System Holdings Corporation (PDS Group), which has become an associate company of SGX. Singapore Exchange Securities Trading Limited (SGX-ST) operates the securities trading market for SGX-listed securities.

### **The Central Depository (Pte.) Limited (CDP)**

CDP is the entity acting as both central clearing house and CSD for SGX-listed and -traded securities. CDP commenced operations in 1987 and is wholly owned by SGX.

CDP operates four systems for settlement and depository:

- (i) Pre-Settlement Matching System (PSMS) for pre-matching of settlement instructions,
- (ii) Clearing and Settlement System (C&S System) for settlement of SGX-listed and traded securities,
- (iii) Debt Securities Clearing and Settlement System (DCSS) for settlement of OTC-traded debt securities deposited with CDP, and
- (iv) Depository System for the book-entries of SGX-traded and OTC-traded securities (including SGX-traded and OTC-traded debt securities) deposited in CDP.

## Overview of Government Bonds

### **Trading**

#### **OTC Trading**

SGS could be traded in the OTC market or exchange market. Currently SGS are mainly traded in the OTC market. Investors buy or sell SGS (Treasury bills and bonds) through SGS dealers.

#### **Exchange Trading**

To facilitate secondary trading, SGX has provided secondary trading of SGS bonds since 8 July 2011. Investors can buy and sell SGS bonds through stockbrokers using the same CDP securities account and broker trading account that they have for exchange-traded securities. Exchange-traded SGS bonds are custodized with CDP.

### **Clearing and Central Counterparty**

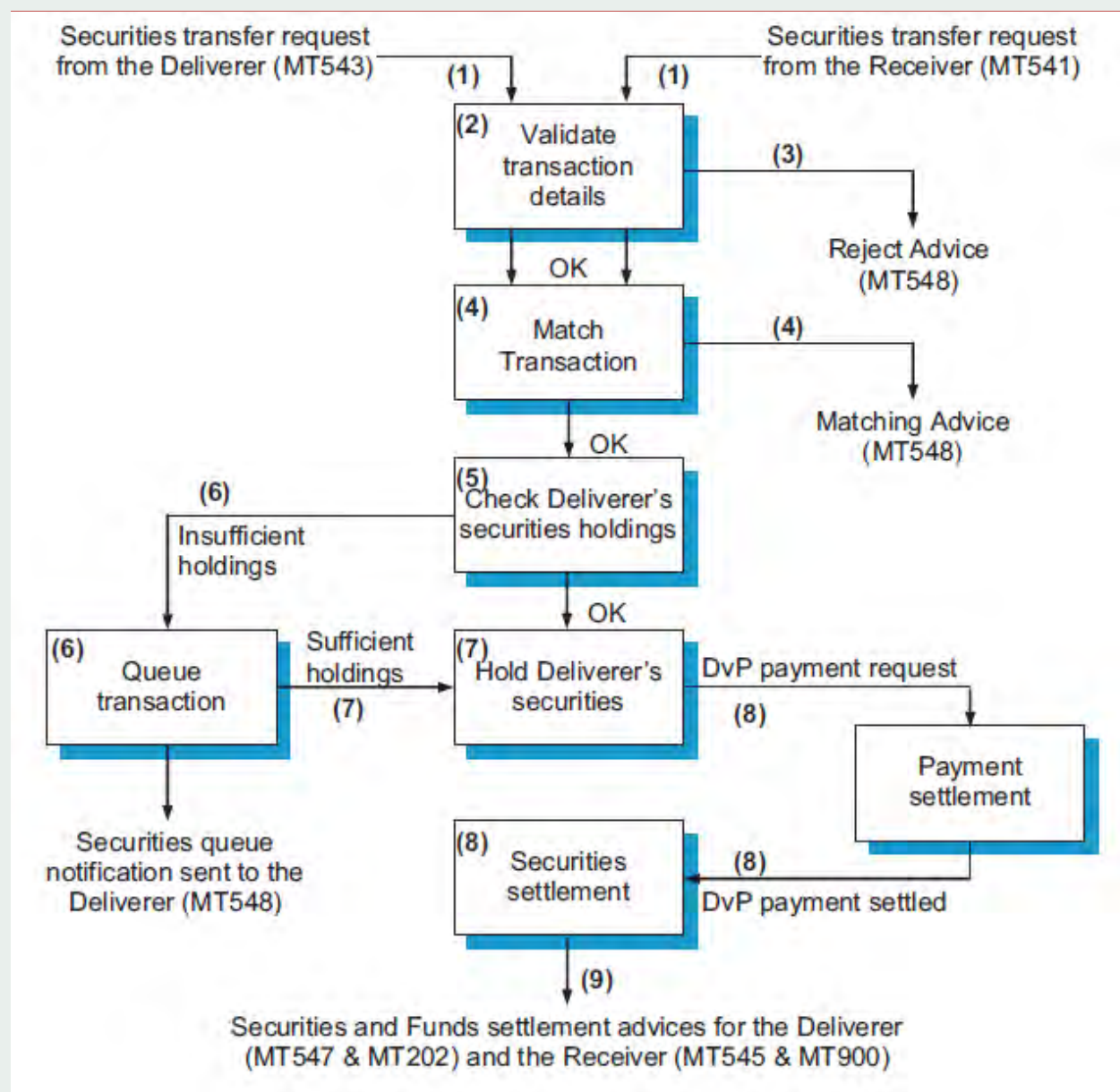
OTC-traded SGS have no clearing and central counterparty (CCP). CDP is the CCP for exchange-traded SGS.

### **Bond Settlement**

#### **Bond Settlement in the OTC Market**

MAS is the CSD of SGS. The ownership and transfer of SGS are reflected as book entries in the accounts with MAS. OTC trade is settled via MEPS+.

For OTC trades, trade instructions are submitted to MEPS+ SGS by 17:30 on settlement day (SD) by the delivering party and receiving counterparty. The buy side and sell side have an option to choose either DVP or free-of-payment (FOP) based settlement (most of them settled by DVP) in MEPS+ SGS. Upon matching, securities and cash are transferred between participants on a simultaneous, trade-by-trade basis. Settlement is completed on T+1 against MEPS+ RTGS payment. If the sell side of SGS has insufficient SGSs for delivery, the transaction is queued in MEPS+ SGS until sufficient SGS become available in the sell side's SGS account. When the sell side's account has sufficient SGS, they are

**Figure: SG01: Process Flow for DVP/RVP Transaction**

Source: The Monetary Authority of Singapore

earmarked for transfer to the buying bank and a payment instruction is sent to MEPS+ RTGS for funds settlement (**Figure SG01**).

#### **Bond Settlement in the Exchange Market**

CDP provides safekeeping of exchange-traded SGS for SGX investors. The ownership and transfer of SGS are reflected as book entries in

the accounts with CDP. CDP in turn maintains an account with MAS, which is the CSD for SGS.

For exchange-traded SGS, settlement and depository is similar to OTC-traded securities. Securities settlement instructions are pre-matched in PSMS, securities settlement are executed via the C&S System, and the SGS

are custodized in the CDP securities account maintained in the book-entry CDP Depository System.

An investor may also choose to trade SGS in the OTC market through SGS dealers but safekeep SGS with CDP, together with other exchange-traded securities.

PSMS provides a pre-settlement matching service for exchange trades and OTC trades. Both buyer and seller input settlement instruction, containing key details of the trade, into the PSMS for settlement via the Debt Securities Clearing and Settlement System (DCSS) for OTC-traded debt securities deposited with CDP. Upon matching the settlement instructions, the seller's debt securities are earmarked. Once DCSS receives confirmation that the transaction proceeds have been made to the seller, the debt securities will move by way of book entries into the CDP Depository System, similar to exchange trades (**Figure SG02**).

## Cash Settlement

SGS trades use MEPS+ RTGS for cash settlement. MEPS+ RTGS and MEPS+ SGS are directly linked for DVP settlement of SGS. If the buying bank has insufficient funds to pay for the SGS purchase, the payment is queued in MEPS+ RTGS. When the funds become available, the amount is debited from the buy side's RTGS account and credited to the sell side's RTGS account. MEPS+ RTGS simultaneously notifies MEPS+ SGS to transfer the securities to the buy side.

For SGS settlement in CDP DCSS system, payment is effected by the buy side and sell side directly via their respective MEPS+ RTGS accounts with MAS.

DVP settlement for OTC trades in MEPS+ SGS/ MEPS+ RTGS or CDP DCSS/MEPS+ RTGS are settled on a real-time and gross trade-for-trade basis.

For FOP settlement, transacting parties use MEPS+SGS or CDP DCSS for securities transfer. Funds transfers are arranged separately.

# Overview of Corporate Bond

## Trading

### OTC Trading

Corporate and statutory bonds may be traded in the OTC market via proprietary platforms or a platform provided by SGX. SGX introduced order matching for bond trading in 1995 via a bond quotation system, which is now known as the SGX Bond Market.

### Exchange Trading

Corporate bonds may be listed and traded on SGX similar to other exchange-traded securities.

## CCP

There is no CCP for bonds traded in the OTC market or the SGX Bond market. For corporate bonds that are listed and traded on SGX, CDP is the CCP.

## Bond Settlement

### Bond Settlement on the OTC Market

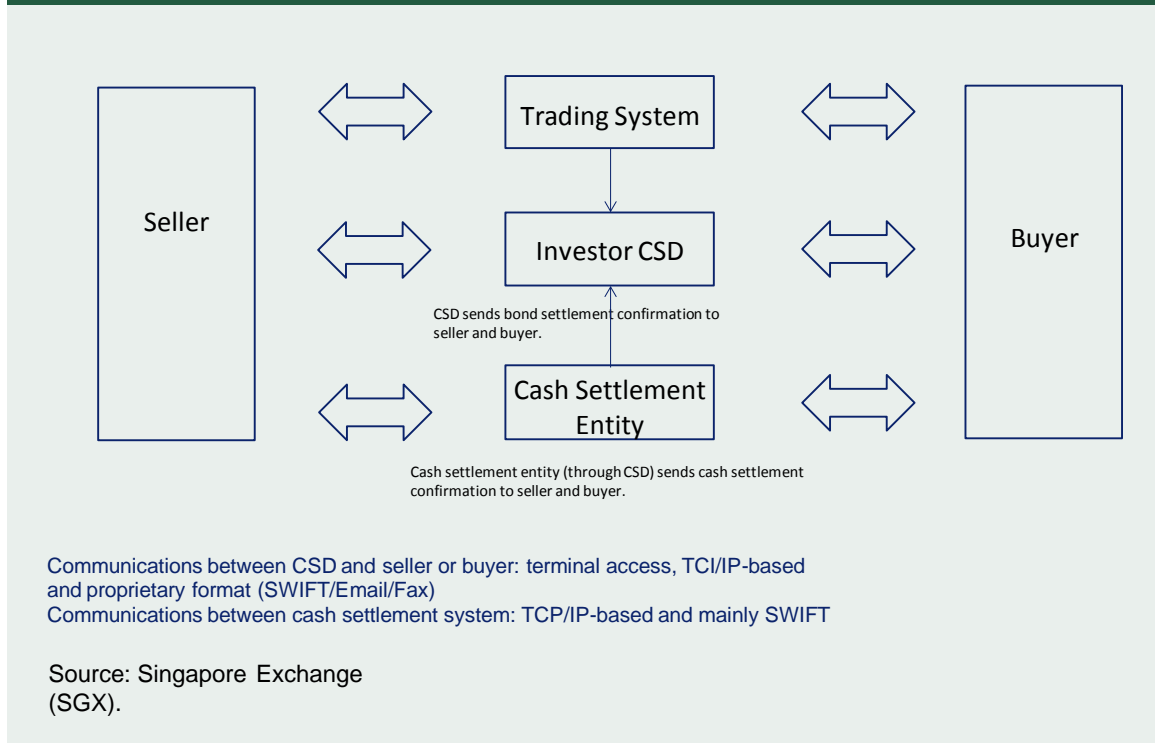
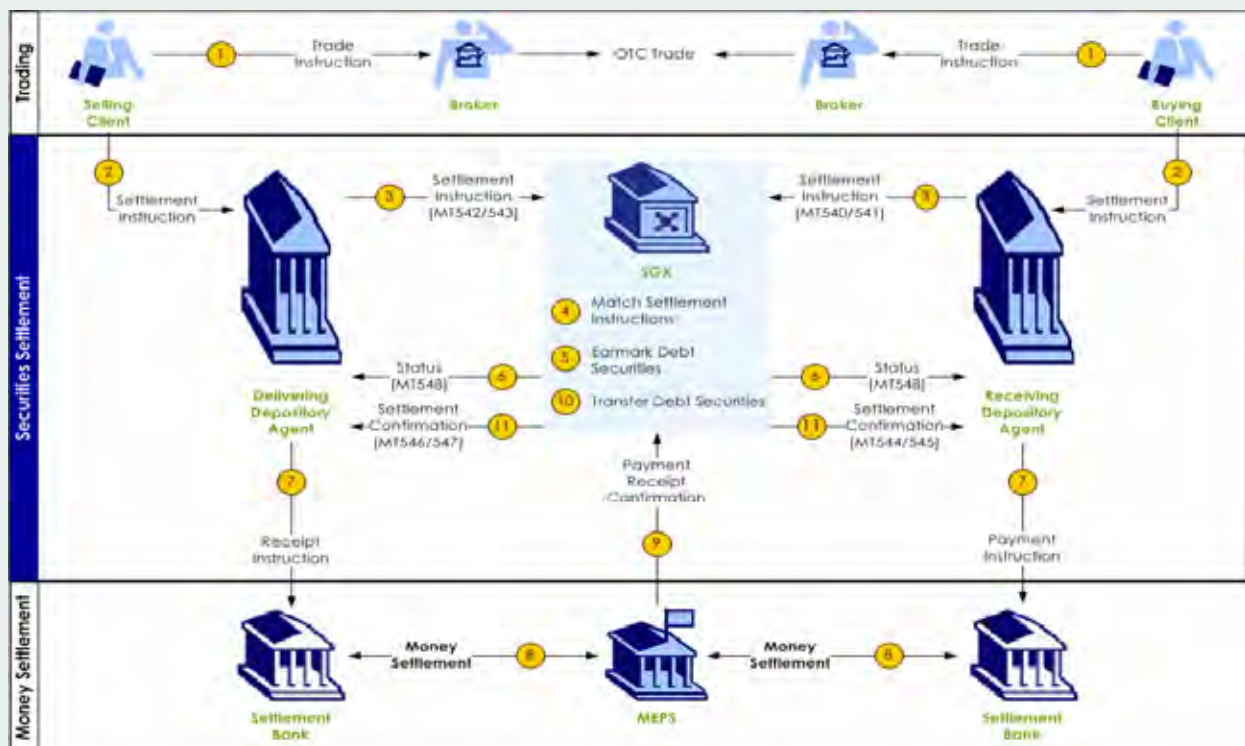
OTC trades conducted on proprietary trading platforms are settled bilaterally using fax, phone, or proprietary electronic systems.

### Bond Settlement in the Exchange Market

For corporate bonds that are custodized with CDP, the buy side and sell side may use PSMS and DCSS to pre-match the settlement instructions and settle the trades. Book entries are effected in the CDP Depository System. DVP and FOP settlement is available for DCSS settlement (**Figure SG03**).

## Cash Settlement

For OTC trades that are settled using PSMS/ DCSS and custodized with the CDP Depository System, cash settlement may occur using MEPS+ RTGS. The settlement is based on DVP Model 1 of the Bank for International Settlements (BIS) definition. Each traded bond is earmarked first. Transaction proceeds are settled through current accounts in MEPS+ RTGS based on the settlement instructions entered by the

**Figure SG02: Network between Market Infrastructures and Participants**

**Figure SG03: Corporate Bond Transaction Flow**


Source: Singapore Exchange (SGX).



participants. Cash settlement confirmation is transmitted from MEPS+ RTGS to DCSS. Then, earmarked bonds are released and credited to the buy side's securities accounts.

SGX-listed and traded corporate bonds are settled through the PSMS/C&S System and custodized with the CDP Depository System.

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

Fixed-interest payments for bonds are made semi-annually. As SGS are book-entry registered securities, it is important to establish the identity of the registered owner of SGS before the coupon interest payment date. For this reason, there is a short period just before the coupon interest payment date when an SGS is traded without entitlement to that coupon payment.

For SGS that are listed on SGX, the ex-interest date is 6 business days prior to the coupon date. For transactions settling on or before the ex-interest date, the buy side is entitled to the next coupon payment, in which case the accrued interest is positive; such transactions are said to be traded-cum-interest. For transactions settling after the ex-interest date, the sell side is entitled to the next coupon payment, and the accrued interest is negative, which represents the rebate to the buy side.

The coupon payment is calculated at the beginning of the ex-date according to the coupon rate and coupon frequency of the securities and the members' holdings. The ex-date period, coupon payment date, coupon payment rate, and coupon payment frequency are specified for each SGS issue at the start and the rest of the coupon payment schedule is derived accordingly.

On the coupon payment date, MEPS+ SGS automatically pays the calculated coupon amounts to the holder (as at ex-date) of SGS by debiting the MAS' MEPS+ RTGS account and crediting the holder's MEPS+ RTGS account.

For SGS redemptions within MEPS+ SGS, MEPS+ SGS automatically calculates the redemption proceeds that are due to holders on the maturity date. The maturity date is specified for each SGS issue in MEPS+ SGS. On the maturity date, MEPS+ SGS automatically calculates the redemption proceeds according to the quantity of SGS holdings. MEPS+ SGS then pays the redemption proceeds to the existing holder of SGS on a DVP basis by debiting the MAS' MEPS+ RTGS account and crediting the relevant member's MEPS+ RTGS account, while also redeeming SGS from the respective SGS accounts.

### Interest Payment and Redemption of Corporate Bonds

Interest is paid either at a fixed or floating rate (depending on the issuer) on a regular basis.

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

The business flow in the Singapore government bond OTC market is analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are described below.

#### (i) Pre-Settlement Matching

A pre-settlement matching service is available in the CDP settlement and depository environment. This is available for OTC trades where government bonds are deposited with the CDP.

#### (ii) Bond Settlement

There is no system interface between bond settlement systems and other systems. The buy side and sell side input settlement instruction data into MEPS+ SGS. For settlement matching, MAS adopts both



**Figure SG04: The Matching Criteria of PSMS**

No.	Message Item	Criteria
1	Type of Settlement Instruction	Exact Match
2	Counterparty (CDP Participant)	Exact Match
3	Trade Date	Exact Match
4	Settlement Date	Exact Match
5	Security	Exact Match
6	Quantity	Exact Match
7	Settlement Amount	Tolerance Match
8	Settlement Currency Code	Exact Match
9	Place of Settlement	Exact Match

Source: Singapore Exchange (SGX).

central and local matching. In general, the sell side sends delivery instruction to MAS and MAS forwards it to the buy side. Afterward, the buy side affirms it and sends it back to MAS. MAS matches the delivery instruction after receiving it from the buy side. After settlement matching, MAS sends matching confirmation to the sell side and buy side, and holds bonds within the account of MEPS+ SGS. For method of settlement, MAS adopts DVP Model 1 of the BIS definition. After bond settlement, MAS eventually sends a settlement report to both sides.

(iii) **Cash Settlement**

MAS sends cash settlement information from MEPS+ SGS to MEPS+ RTGS, but MAS does not send such data to settlement participants to reconfirm. After cash settlement, MAS sends a settlement report (cash) to the sell side and buy side. In the Singapore government bond market, MAS plays the role of cash settlement bank.

For further details, please refer to **Part 3 SG03 (Government Bond Transaction Flow for Domestic Trades)**.

## **DVP Flow of Corporate Bonds for Domestic Trades**

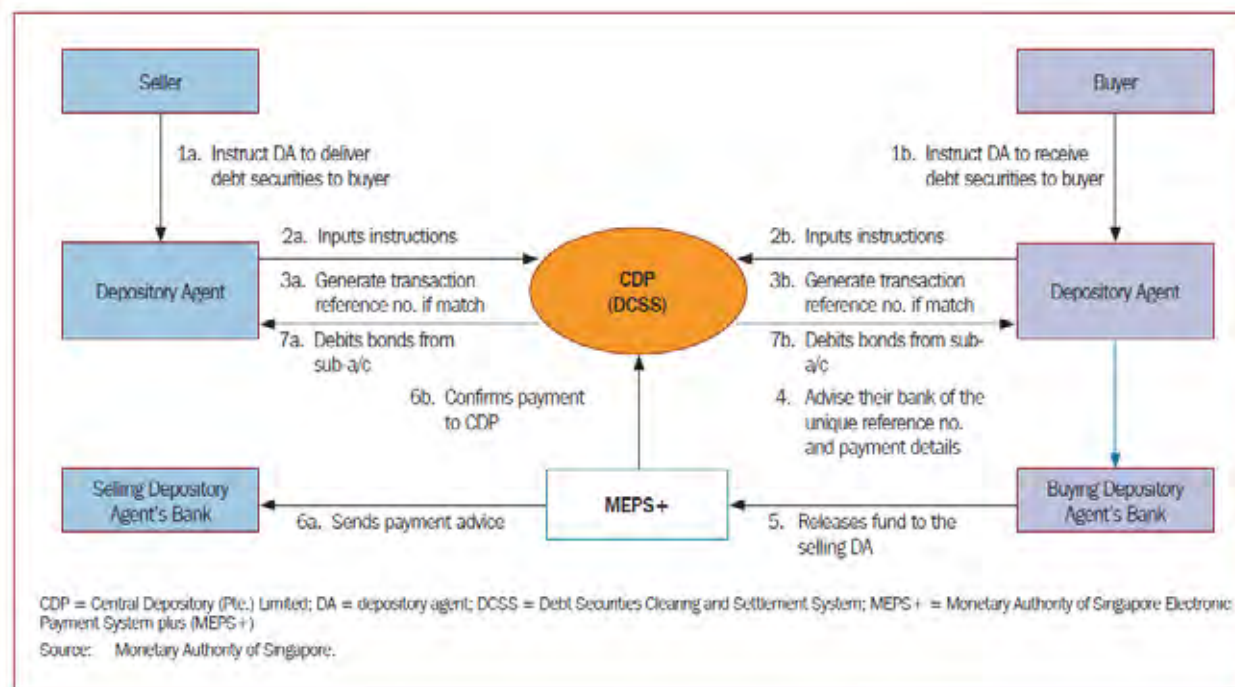
The business flow in the Singapore corporate bond OTC market, which is settled using the CDP post trade systems (PSMS and DCSS), is analyzed using a typical DVP flow. Key findings of the analysis are given below.

(i) **Pre-Settlement Matching**

Where bonds are custodized with CDP, they may use the CDP Pre-Settlement Matching System (PSMS) for pre-settlement matching. The matching criteria of PSMS are presented in **Figure SG04**.

(ii) **Bond Settlement**

For matched settlement instructions, CDP earmarks bonds within the relevant securities accounts of the custodian banks known as CDP Depository Agents (DAs). More specifically, CDP earmarks bonds to be delivered by moving them from the free balance to the available balance. The securities held in the free balance are unencumbered, the account holder has full legal title to them, while securities in the available balance are either bonds purchased by the account holder but not yet paid for, or bonds earmarked for subsequent transfers. Once the payment is received by the selling

**Figure SG05: Transaction Flow of Debt Securities Clearing and Settlement System**

DA's bank, MEPS sends an electronic confirmation to CDP DCSS to release the earmarked debt securities from the selling DA's account and transfer to the buying DA's account. Settlement is considered final and irrevocable upon the securities from the selling DA's account being transferred to the buying DA's account.

OTC bond transactions can be settled on a DVP or FOP basis. CDP adopts DVP Model 1 of the BIS definition for its book-entry system and also adopts central matching. On a FOP settlement basis, transacting parties use CDP only for bond transfers and arrange for funds transfer separately. After corporate bond settlement, DCSS sends settlement confirmation to both the sell side and buy sides (**Figure SG05**).

### (iii) Cash Settlement

Both the sell side and buy side send cash settlement instruction to MEPS+ RTGS operated by MAS. For securities settlement in DCSS operated by CDP, a real-time DVP arrangement is achieved through a live

link between DCSS and MEPS+. After cash settlement, MAS sends settlement instruction to both the sell side and buy side.

For further details, please refer to **Part 3 SG04 (Corporate Bond Transaction Flow for Domestic Trades)**.

## DVP Flow of Cross-Border Bond Transactions

No significant barrier exists in the Singapore money market. Foreign investors are not subject to any restrictions on foreign exchange (FX) trades with regard to underlying investment, pre-funding, or FX reporting. Offshore FX trading, third-party FX, and repatriation are permitted for foreign investors. Overdrafts of up to SGD5 million are also permitted, unless the overdrafts are backed by economic activity.

For further details, please refer to **Part 3 SG05 (Bond Transaction Flow for Foreign Investors OTC Market / DVP)**.

## Interest Payment and Redemption of Government Bonds

The business flow of interest payment and redemption of government bonds is analyzed using a typical flow. Key findings of the analysis are presented below.

### (i) Paying Agent

In Singapore, MAS plays a role as Paying Agent (PA), requesting issuers to send payment requests, and after receiving a funding request from an issuer, paying interest and principal to the custodian on the issuer's behalf. The PA also confirms the bondholder list and calculates interest. On the coupon payment date, MEPS+ SGS automatically calculates the coupon amounts paid to the holder (as at ex-date) of SGS by debiting the MAS MEPS+ RTGS account and crediting the holder's MEPS+ RTGS account. For SGS redemptions within MEPS+ SGS, MEPS+ SGS automatically calculates the redemption proceeds that are due to holders on the maturity date. The maturity date is specified for each SGS issue in MEPS+ SGS.

### (ii) CSD

MAS is the CSD for the Singapore government bond market. For the purpose of withholding tax, MAS receives a bondholder list from custodians because MAS does not manage the list of final beneficiaries. Custodians, which are CSD participants, manage bonds separately from their own bonds and customer's bonds within a book-entry system of CSD.

### (iii) Payment Flow

MAS uses MEPS+ RTGS for interest payment and redemption. On the maturity date, MEPS+ SGS automatically calculates the interest and redemption proceeds according to the quantity of SGS holdings. MEPS+ SGS then pays the redemption proceeds to the existing holder of SGS on a DVP basis by debiting the MAS' MEPS+ RTGS account and crediting the relevant member's MEPS+ RTGS account, redeeming SGS from the respective SGS accounts.

### (iv) Tax

Singapore imposes withholding tax on interest for residents in Singapore. Non-residents enjoy the privilege of tax exemption. MAS withholds income tax on behalf of issuers.

### (v) Other Issues

MAS as a PA sends a settlement report to participants after interest payment and redemption. MAS transfers cash directly from MOF's account to MAS participant accounts.

For further details, please refer to **Part 3 SG06 (Interest Payment Flow of Government Bond)** and **Part 3 SG07 (Redemption Payment Flow of Government Bond)**.

## Interest Payment and Redemption of Corporate Bonds

The business flow of interest payment and redemption of corporate bonds is analyzed using a typical flow. Key findings of the analysis are given below.

### (i) PA

Commercial banks are appointed as PAs in Singapore. PAs request interest payment instruction from issuers and after receiving fund requests from bond issuers, PAs pay interest and principle to custodians on issuers' behalf. CDP shares the role of PA with commercial banks. CDP sends payment requests to commercial banks and MEPS+ RTGS.

### (ii) CSD

CDP is CSD of corporate bonds listed and publicly traded in Singapore. CDP does not have a banking license but CDP has a cash account in the RTGS system of MAS, MEPS+ RTGS, and uses it for interest payment and redemption to the settlement banks of the depository agents. CDP receives bondholder's tax status from custodians for the sake of withholding tax. Custodians manage their own bonds and customer's bonds separately in CDP accounts.

**(iii) Payment Flow**

MEPS+ RTGS is used for interest payment and redemption. Money transfers are conducted through CDP's MEPS+ account.

**(iv) Tax**

The Government of Singapore imposes withholding tax on the interest of corporate bonds for residents of Singapore. Non-residents enjoy the privilege of tax exemption. PAs withhold income tax on behalf of issuers. On the other hand, custodians withhold local tax.

**(v) Other Issues**

PAs send a settlement report to custodian after redemption.

For further details, please refer to **Part 3 SG08 (Interest Payment Flow of Corporate Bond)** and **Part 3 SG09 (Redemption Payment Flow of Corporate)**.

## Message Standards

### Message Format

MAS adopts ISO15022 for its book-entry system. Currently, CDP uses a proprietary message format for its system. However, CDP has announced plans to adopt ISO20022 for its new settlement and depository system.

### Message Items

Typical message types of bond settlement are settlement instruction and settlement confirmation. The Securities Market Practice Group (SMPG) has defined 10 common elements of these two message types. Typical message items are compared with that of ISO20022 sese. 023 and sese. 025. In Singapore's government bond settlement system, the 10 common elements of MEPS+ SGS are almost all the same as ISO20022.

## Market Practices

### Operating Hours

For government bond settlement, opening time is 6:00 and closing time is 20:00. However, from 6:00 until 9:00 and 19:00 to 20:00, the system accepts forward-dated transactions only.

For corporate bonds, opening time is 8:30 and closing time is 17:30. The cut-off time for settlement instruction of corporate bonds in both DVP and FOP transactions is 12:00 on settlement date.

### Settlement Cycle

Both MAS and CDP infrastructure provides for settlement of SGS and corporate bonds on T+1. Participants in OTC trades outside the systems may agree to settle on a FOP basis with a different cash settlement period.

### Fails

Fail refers to a situation whereby a party receiving bonds has not received delivery of the relevant securities from the delivering party after the end of the scheduled settlement date in the Singapore market.

For corporate bonds that are listed and traded on SGX and deposited with CDP, the buy-in takes place from 15:00 to 17:00 on T+3 through a buy-in market, with the securities to be bought-in posted at 14:30 each day on the SGX website. If by the end of T+3, CDP has not been able to make up that shortfall, buy-in recommences from 15:00 to 17:00 on T+4. CDP charges a processing fee of SGD75.00 (SGD80.25 inclusive of Goods and Services Tax) for each failed contract. A brokerage rate of 0.75% is to be levied on each buy-in contract.

The starting buy-in price for any security is two minimum bids above either the previous day's closing price or any of the transacted or bid prices 1 hour prior to commencement of the buy-in, whichever is higher. The buy-in bid prices increase by two minimum bids from time to time.

throughout the day until the securities are bought or delivered to CDP.

From T+5 onwards, CDP will instruct the failed delivering clearing member to procure the securities and make good to CDP. CDP will also impose a penalty of SGD5,000 per day for late procurement. If the defaulting delivering clearing member is unable to procure, they would be referred to the SGX Disciplinary Committee. If found culpable, the dissenting clearing member faces a penalty of at least SGD20,000.

### Intraday Liquidity Facility

Subject to the agreement for the provision of a Real-Time Gross Settlement (RTGS) system, an intraday facility that is offered by MAS may be accessed by participants through MEPS+. MAS allows banks to place excess funds with it or borrow from MAS against SGS collateral. Such fund transfers and SGS transfers are executed in MEPS+.

## Numbering and Coding

### Numbering and Coding for the OTC and Exchange Markets

#### Securities Numbering

The International Securities Identification Number (ISIN) is used in the Singapore bond market.

#### Financial Institution Identification

MEPS+ SGS and MEPS+ RTGS adopt the Business Identifier Code (BIC) to identify financial institutions. MEPS+ SGS and MEPS+ RTGS non-participant members can either use BIC or an eight-character code assigned by MAS.

#### Securities Account

MAS adopts an omnibus account structure for its book entry and the account structure is multi-layer for its participants. CDP also adopts an omnibus account structure and multi-layer of account structure in its book-entry system as well as MAS.

There are three types of SGS accounts in MEPS+ SGS: SGS Reserve Account, SGS Trade Account, and SGS Customer Account.

#### (i) SGS Reserve Account

Banks deposit SGS for compliance with the Minimum Liquid Assets (MLA) requirement to hold at least 10% of the qualifying liabilities in SGS at all times in this account prior to the start of the 2-week maintenance period. Banks may not sell SGS in an SGS-MLA account directly. To give banks the flexibility to manage their holdings of SGS, transfers of SGS holdings between SGS Reserve Accounts and SGS Trade Accounts can be made at any time when MEPS+ SGS is in operation, subject to the 19:00 deadline for same-day transfers. Transfers of SGS holdings out of SGS Reserve Accounts to SGS Trade Accounts are permitted only if the remaining value of SGS holdings in SGS Reserve Accounts after the transfer is at least 10% of the quantifying liabilities. Transfers to or from SGS Reserve Accounts are not be queued for settlement; that is, if there are insufficient securities in the account (either SGS Trade or SGS Reserve) to be transferred out, the transaction will be rejected.

#### (ii) SGS Trade Account

SGS holdings in excess of the minimum 10% MLA requirement may be deposited in an SGS-Trade Account. SGS holdings in this account can be used for trading.

#### (iii) SGS Customer Account

Primary and approved SGS dealers maintain an additional SGS Customer Account for the SGS holdings of their customers. Holdings in an SGS Customer Account can be transferred FOP to the bank's SGS holdings, or to another bank's or its customer's SGS holdings. Purchases or sales on delivery against payment of SGS holdings in a bank customer's account from and/or to another bank or its customer's SGS holdings can also be transacted.

To maintain SGS that belong to a participant's non-resident customer, different accounts may be created for non-resident customers subject to various levels of withholding taxes.

**(iv) ILF Account**

To maintain SGS pledged under an intraday liquidity facility arrangement, CDP allows an omnibus account for foreign investors, but local Singaporean and permanent resident investors must have a segregated account.

**Cash Account**

Participants are required to maintain a current account with MAS. Banks' intraday minimum cash balance requirement, if any, is maintained in the current account.

Funds in the current account exceeding the intraday minimum cash balance requirement are transferred at the start of the day to the participant's RTGS account in MEPS+ RTGS, where they may be used for the settlement of interbank payments.

**Character Code and Language**

UTF-8 (Unicode) is adopted and English is chosen as a standard language for payment systems in Singapore.

## Medium- to Long-Term Strategies

CDP has announced plans to improve standardization in its market practices and messaging protocols. These include adopting ISO20022 for the post-trade environment. CDP also plans to introduce RTGS and multiple batch settlement for settlement of corporate bonds and SGX-listed securities.

## References

Asian Development Bank (ADB). *ASEAN+3 Bond Market Guide*.

ADB. *AsianBondsOnline*. <http://asianbondsonline.adb.org/index.php>

Monetary Authority of Singapore (MAS). *New MAS Electronic Payment and Book-Entry System Service Agreement for the Provision of a Real-Time Gross Settlement System*.

MAS. *Payment, Clearing, and Settlement Systems in the CPSS Countries (Volume 1)*.

MAS. *CDP Service Guide, April 2012*.

Executives' Meeting of East Asia Pacific Central Banks. *Payment, Clearing, and Settlement Systems in Singapore*.

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.



# Thailand

## (TH)

## Bond Market Infrastructure

### Overview of Bond Market

Bonds issued in Thailand can be divided into three major components: government debt securities, corporate debt securities, and foreign bonds. This report mainly focuses on government bonds and corporate bonds.

According to the Asian Development Bank's (ADB) *AsianBondsOnline*, the amount of local currency (LCY) government bonds outstanding in Thailand at the end of 1Q13 was USD231.66 billion, while corporate bonds reached USD62.80 billion.

The Thai government and corporate bond markets comprise the over-the-counter (OTC) market and the exchange market. In order to support the development of Thai, and subsequently Asian, bond markets, the Stock Exchange of Thailand (SET) launched a new division, Bond Electronic Exchange (BEX), on 26 November 2003. Prior to BEX, bonds were traded only in the OTC market where the players are mainly institutional investors. Small investors were unable to get into the OTC market due to its size and ambiguity, or simply due to a lack of information. However, even after the inauguration of BEX, over 95% of bond trading is still conducted through telephone or in the OTC market, while less than 5% is conducted

through BEX's systems, the Fixed-Income and Related Securities Trading System (FIRSTS) and Automatic Order Matching (AOM). Dealers, which are financial institutions holding debt securities licenses granted by the Securities and Exchange Commission (SEC), are required to report all bond transactions to the Thai Bond Market Association (BMA), which monitors, compiles, and disseminates prices to the public at the end of day. Prices disseminated by BMA are used as market reference. Investors in the bond market are mainly institutions such as banks, mutual funds, provident funds, government pension funds, and insurance companies. Government bonds are the most actively traded securities, accounting for approximately 50% of total trade in December 2010.

Parties report trade transactions to BMA with traded data entered into Post-Trade Integration (PTI) and settled using the PTI, which is the book-entry system of bonds in Thailand. PTI is owned and operated by the Stock Exchange of Thailand (SET) and shared by Thailand Clearing House (TCH) and Thailand Securities Depository (TSD), which are subsidiaries of SET. Cash settlement is effected through Bank of Thailand Automated High-Value Transfer Network (BAHTNET), which is a Real-Time Gross Settlement (RTGS) system owned, operated, and regulated by Bank of Thailand (BOT).

Please refer to **Part 3 TH01 (Government Bond Market Infrastructure Diagram)** and **Part 3 TH02 (Corporate Bond Market Infrastructure Diagram)**.

## Description of Related Organizations

### Ministry of Finance (MOF)

MOF is the pre-eminent regulator and oversees financial and capital markets in Thailand (**Figure TH01**). The activities of Bank of Thailand (BOT) and SEC are overseen by MOF.

### Securities and Exchange Commission (SEC)

SEC was established under the Securities and Exchange Act (SEC Act) B.E. 2535 (1992) on 16 May 1992. The SEC Act B.E. 2535 (1992) was amended by SEC Act B.E. 2551 (2008), which became effective 5 March 2008. The SEC's objectives are to supervise and develop the primary and secondary capital markets, as well as financial and securities market participants and institutions. Its primary roles are to formulate policies, rules, and regulations regarding the supervision, promotion, and development of securities businesses, as well as other activities pertaining to securities business.

### Bank of Thailand (BOT)

BOT was first set up as the Thai National Banking Bureau. The Bank of Thailand Act was promulgated on 28 April 1942, vesting upon BOT responsibility for all central banking functions. BOT started operations on 10 December 1942. It has developed an electronic, large-value fund transfer system, known as BAHTNET. It is designed to mitigate risk in payment systems to facilitate settlement in an effective, secured, and timely manner on an RTGS basis since 24 May 1995.

### Thailand Securities Depository Co., Ltd. (TSD)

TSD is a subsidiary of SET established on 16 November 1994. TSD is the sole central securities depository in Thailand using a scripless system. The services provided by TSD are securities deposit, withdrawal, transfer, pledge, and revocation for all government and state-owned enterprise bonds. TSD is also responsible for managing foreign holdings of securities traded on the main board and foreign board of SET in compliance with related rules and regulations.

### Thailand Clearing House Co., Ltd. (TCH)

TCH, a subsidiary of SET, was established on 9 August 2004 with registered capital of THB100 million. During 2004–09, TCH acted as a clearinghouse for derivatives traded on the Thailand Future Exchange (TFEX). To segregate risk associated with its clearinghouse role from its depository functions, TSD, which had acted as a clearinghouse for equities and bonds since 1 January 1995, transferred clearing and settlement functions for equities and bonds to TCH in 2010. Thus, TCH became the integrated clearinghouse for all financial products. TCH is governed by the Securities and Exchange Act B.E. 2535 (1992) for equities and bonds, and the Derivatives Act B.E. 2546 (2003) for derivatives. It is under the supervision of SEC.

### Bond Electronic Exchange (BEX)

The Bond Electronic Exchange (BEX) is a subsidiary of SET and was launched on 26 November 2003. BEX's main role is to support the secondary market for bond trading. As a majority of bond trading occurs in the OTC market, BEX's objective is to expand bond activities to individual investors.

### Thai Bond Market Association (BMA)

BMA is a securities business association formed under the Securities and Exchange Commission Act B.E. 2535. Its main purposes are to be a self-regulatory organization (SRO) to promote the fair and efficient operation of the bond market, and to serve as an information center for the Thai bond market. As a pricing agency, BMA provides Thai bond prices to Bloomberg and Reuters; in return, it receives trade details via Bloomberg's FIRST online capture. BOT stipulates that every bond dealer has to be BMA member.

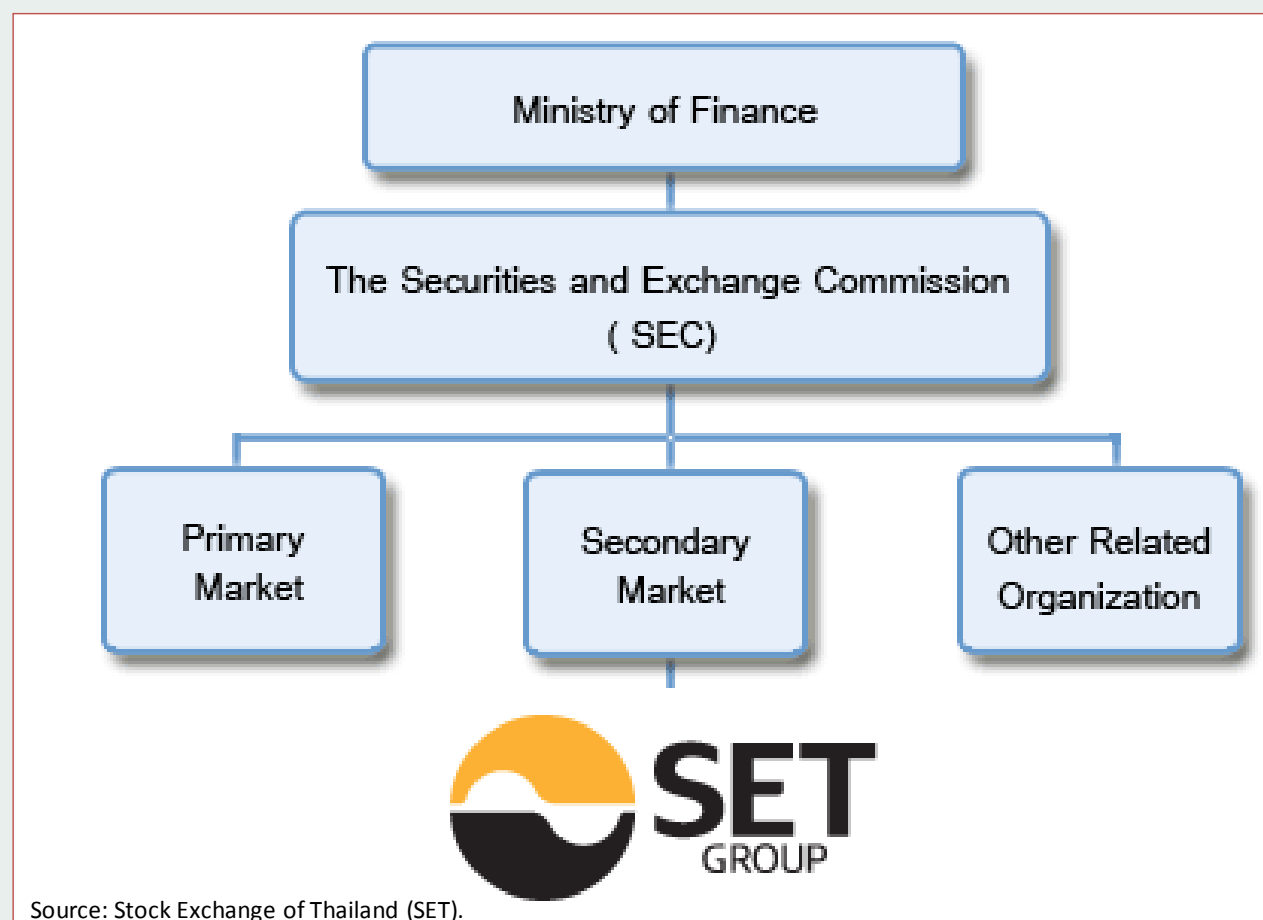
## Overview of Government Bonds

### Trading

#### OTC Trading

As mentioned above, most government bond trades take place in the OTC market, where quotes are typically obtained directly from

Figure TH01: Regulatory Framework of the Capital Market



money brokers and dealers over the phone. An agreement concluded over the telephone is then followed up with a confirmation order in writing. Dealers have to report trade details to BMA, as the pricing authority, within 30 minutes. BMA publishes trade reports upon receipt for government securities and twice daily for corporate bond trades.

### Exchange Trading

The exchange market for government bonds in Thailand is owned and operated by BEX. BEX was established to provide investors with additional investment instruments. In addition to better access to information for investors, BEX also provides investors with an easy way to conduct trading transactions. BEX enhances the bond's secondary market. Prior to BEX, bonds were traded on the OTC market, which was mainly the institutional investor's arena. Small investors

were unable to get into that particular market due to its size and ambiguity, or simply due to a lack of information. In order to attract bond activities in both retail and wholesale markets, BEX has been granted approval from SET's committee to include both government issues and corporate issues in its exchange.

BEX is currently working under the trade-by-price method. However, the committed price is converted into an indicative yield to assist in decision making. The commission fee associated with bond trading required by brokerage companies is not fixed and subject to negotiation between investors and their respective brokers. Dealers have to report trades to BMA within 30 minutes in a similar fashion as the OTC market.

BEX provides two independent trading systems for institutional investors, including their dealers

and retail investors. The system for institutional investors is called FIRSTS, which began its trading service on 1 March 2006. It was developed to serve certain groups of users comprising bond dealers, institutional investors, brokers, and underwriters of the investment units. BEX is also used for retail investors. It works either through the Automatic Order Matching (AOM) or Put-Through (PT) methods. Trading values over THB10 million are undertaken using the PT method where the counterparties negotiate the deal off-exchange. Once it is concluded, the sell side initiates the PT transaction in the system which then needs the buy sides to approve it. An investor can place an order through a member-broker of SET. Brokers enter orders into BEX's trading platform. If the bid or offer price and volume can be matched, the orders are matched automatically. At present, there are 12 active local brokers that provide brokerage services for BEX's bond trading.

## Clearing and Central Counterparty

### Clearing and Central Counterparty for the OTC Market

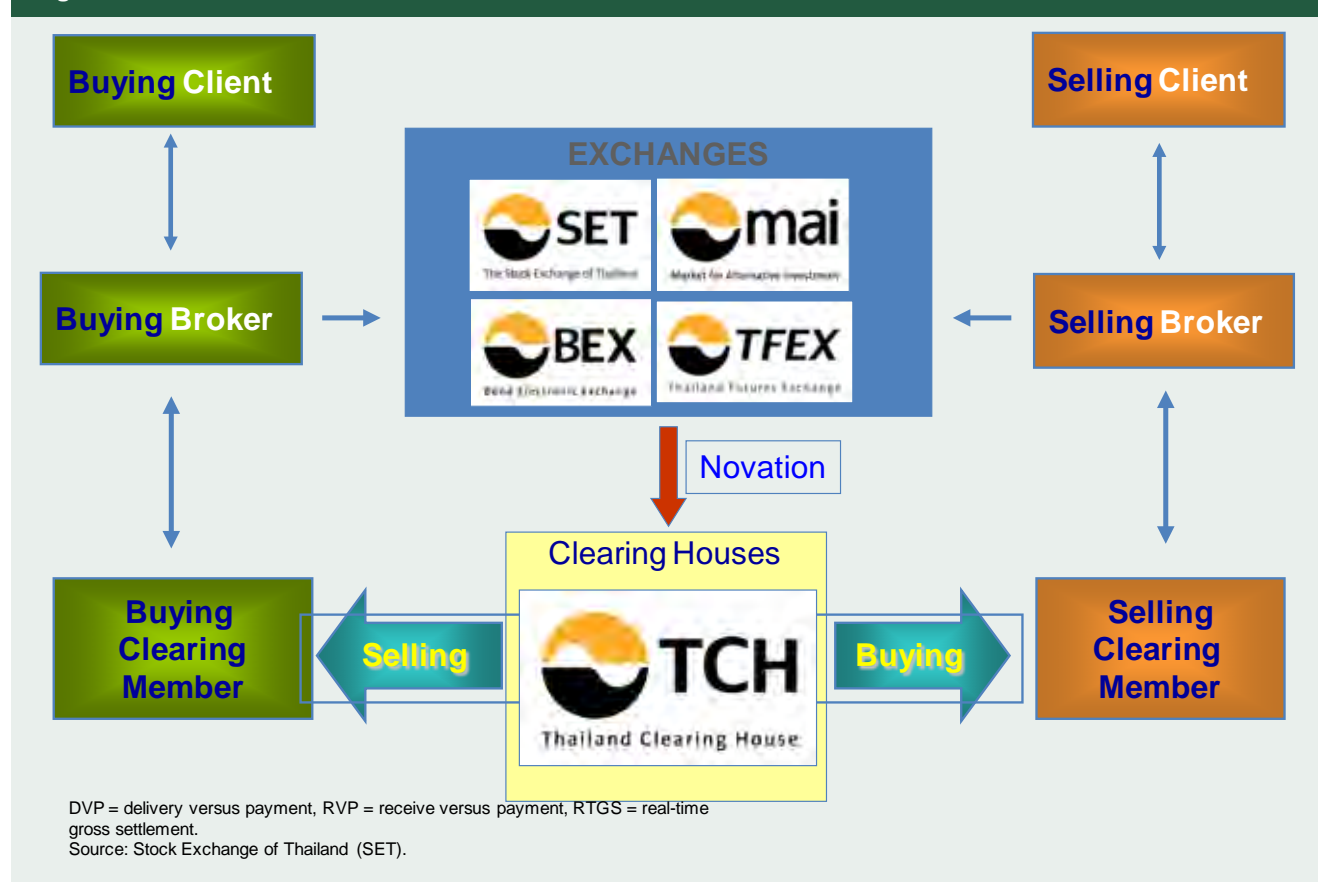
There is no clearing and central counterparty (CCP) in the OTC market.

### CCP in the Exchange Market

TCH acts as CCP for clearing and settlement of all listed fixed-income instruments in BEX. TCH guarantees the performance of payment and securities delivery of trading transactions on exchanges similar to those in SET and TFEX (Figure TH02).

The Post Trade Integration System (PTI) is a project of TSD to integrate all existing system

Figure TH02: Role of TCH



functions and enhance full back-office services for greater efficiency. The establishment of PTI paves the way toward shortening the settlement cycle and STP initiatives, as well as cross-border transactions and multi-instruments and -markets. The settlement process of scripless government bonds traded via BEX is similar to that of equities as both are settled through PTI on a net clearing basis.

## Bond Settlement

Bonds are settled via PTI on a RTGS basis. The buy side and sell side send settlement instructions to PTI. Once they are matched, TSD withholds the bonds from the sell side's account. TSD also sends settlement instruction to BOT to settle cash. After cash settlement is completed, TSD transfers the bond from the sell side's account to the buy side's account.

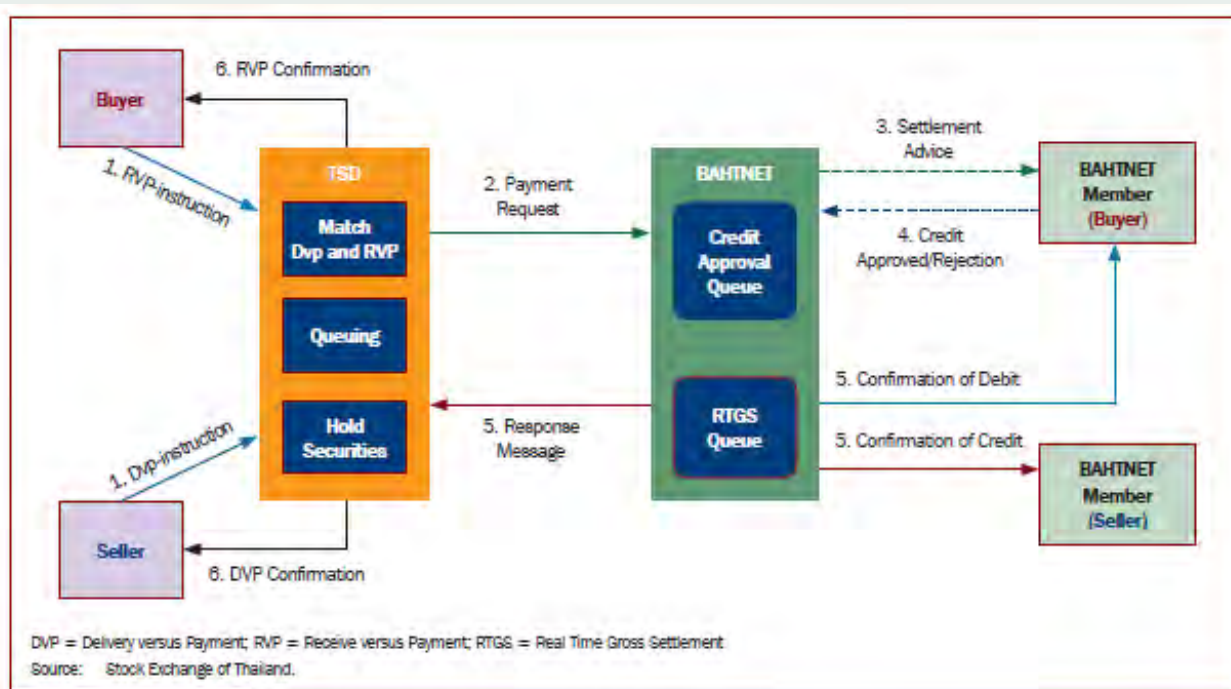
PTI as a core system combines settlement, depository, and registration functions and features. PTI allows for STP, connects with BAHTNET, and includes FOP transactions. PTI's messaging is based on Society for Worldwide

Interbank Financial Telecommunication (SWIFT) messages. PTI uses the International Securities Identification Number (ISIN) and Business Identifier Code (BIC), but a converter exists for local codes. Participants can utilize web-based capture, and uploading is possible. Each market participant can connect to a PTI screen. Although PTI is now a standalone system, with no interface with market participants' systems, TSD has plans to introduce interface connectivity with market participants to enhance the STP process.

## Cash Settlement

Cash settlement of government bonds relies on BAHTNET, an irrevocable funds transfer system that operates on an RTGS basis. BAHTNET is linked with TSD's system to facilitate delivery-versus-payment (DVP) for government securities. Intraday Liquidity Facility (ILF), which provides intraday overdraft, is available for BAHTNET members under BOT supervision. BAHTNET also provides a queuing mechanism and gridlock resolution system to provide adequate liquidity for cash settlement (**Figure TH03**).

**Figure TH03: Process for Gross Settlement for DVP**



As a high-value payment system, BAHTNET has implemented a sufficient level of security measures such as digital signature based on private keys and smart cards to secure integrity, confidentiality, authentication, and non-repudiation (including audit trail). Regarding foreign exchange (FX) controls, non-residents can open two types of baht accounts with commercial banks: a Non-Resident Baht Account for Securities (NRBS) and a Non-Resident Baht Account (NRBA). NRBS must be used for investment in securities and other financial instruments in Thailand (e.g., equity instruments, debt instruments, unit trusts, and exchange-traded derivatives), as well as any payments relating to such investments (e.g., tax payment relating to securities investment, brokerage fee, and custodian fee). NRBA is for general purposes other than those of NRBS. Outstanding balances of each type of account at the end of each day shall not exceed a limit of THB300 million per non-resident, which includes balances of all accounts opened by each non-resident with all financial institutions in Thailand.

## Overview of Corporate Bonds

The infrastructure and process of corporate bond transactions is just like that of government bonds.

### Trading

#### OTC Market

Corporate bonds are mostly traded in the OTC market.

#### Exchange Market

Exchange trading for corporate bonds takes place in BEX.

### CCP

#### CCP for the OTC Market

There is no clearing function in the OTC market.

#### CCP for the Exchange Market

TCH is the CCP in the exchange market for corporate bonds.

### Bond Settlement

Corporate bonds are settled via PTI in TSD on an RTGS basis.

### Cash Settlement

Cash settlement of corporate bond transactions takes place in BAHTNET.

## Interest Payment and Redemption

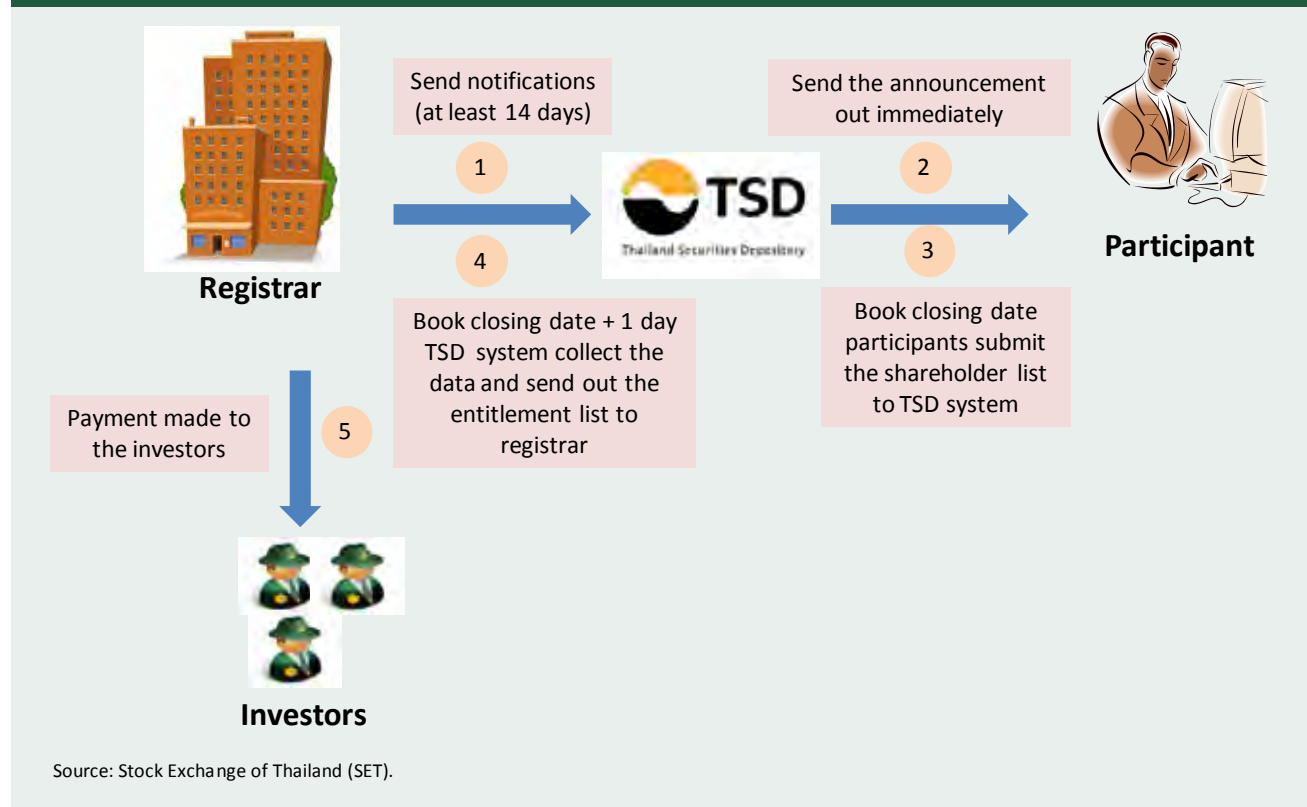
### Interest Payment and Redemption of Government Bonds

Most bonds pay interest on a semi-annual basis. Interest is calculated on a 365-day basis (366-day basis in a leap year). Withholding tax is deducted at the source (**Figure TH04**).

### Interest Payment and Redemption of Corporate Bonds

Interest payment and redemption of corporate bonds is same as that of government bonds. In addition to the rules for government bonds, for a corporate bond registered with BMA the interest is paid on the same date every year. In the event that the interest payment date is on a bank holiday, the interest is paid on the next business day, but the number of days in the interest calculation is unchanged and interest is calculated up to the interest payment period. The last interest payment is made on the maturity date. If the maturity date is a bank holiday, the payment is made on the next following business day and the additional interest is calculated on a daily basis.



**Figure TH04: Interest and Redemption Payment Process**

## Typical Business Flow

### DVP Flow of Government Bonds for Domestic Trades

The business flow in Thailand for government bonds is analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are described below.

#### (i) Pre-Settlement Matching

Pre-matching is mandatory and carried out between the counterparties via telephone and TSD, although there is no distinct system for pre-settlement matching.

#### (ii) Bond Settlement

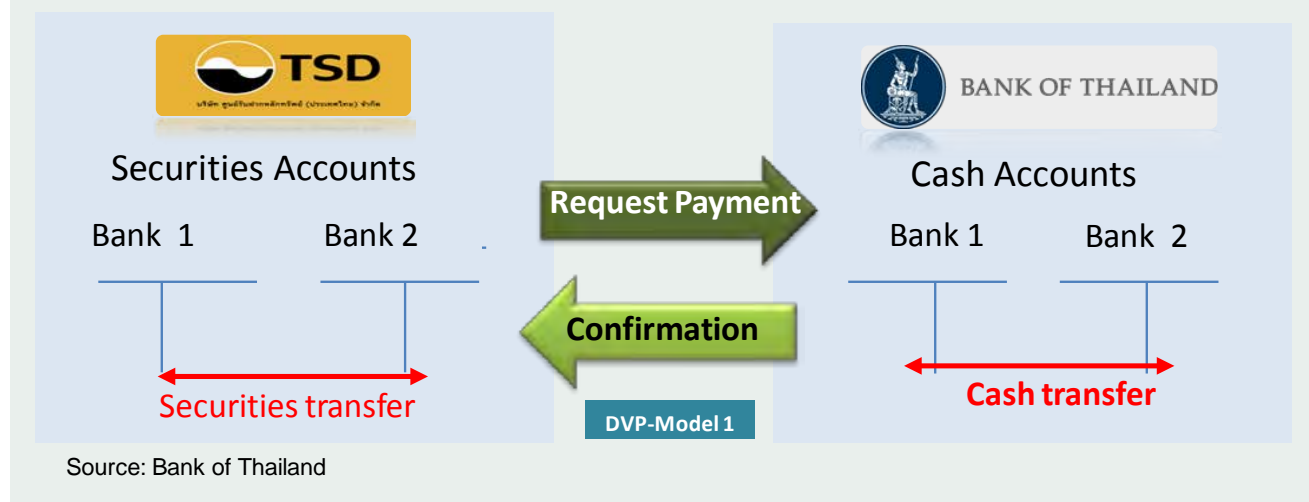
The matching and book-entry system, under PTI, is used by TSD. PTI does not receive any instruction from other systems, such as a pre-settlement matching system or trading system, while the sell side and buy side

input trade details into PTI. After receiving trade details from the sell side and buy side, TSD performs central matching and sends settlement confirmation to both sides.

TSD adopts DVP Model 1 of the BIS definition for government bond settlement. If trade details from both sides are matched, TSD holds bonds within PTI. Then TSD sends cash settlement details to BOT.

#### (iii) Cash Settlement

After receiving settlement details from TSD, BOT conducts cash settlement. BOT does not need to reconfirm for cash settlement by the sell side or buy side as they have already authorized TSD to send the money settlement instruction on their accounts. After cash settlement, BOT sends settlement confirmation to both sides of the trade (**Figure TH05**).

**Figure TH05: DVP Settlement**

For further details, please refer to **Part 3 TH03 (Government Bond Transaction Flow for Domestic Trades)**.

### DVP Flow of Corporate Bonds for Domestic Trades

Typical corporate bond transaction flows are just like those for government bond flows.

For further details, please refer to **Part 3 TH04 (Corporate Bond Transaction Flow for Domestic Trades)**.

### DVP Flow of Cross-Border Bond Transactions

The Thai baht is freely convertible for SPOT value. FX against baht for all other value dates requires proper underlying transactions. Offshore FX trading for investment is allowed for all investors. Foreign investors are also not subject to any restrictions on pre-funding, third-party FX, and repatriation. Regarding FX reporting, any payments made from or received into accounts from residents THB account requires proper documentation support. In terms of overdraft and cash balances for non-residents, foreign investors have an end-of-day limit of THB300 million for each type of account (NRBS and NRBA). Overdrafts for non-residents are allowed, but BOT does

require the foreign investor to sign an overdraft agreement with the onshore commercial bank prior to having the credit facility in place.

For further details, please refer to **Part 3 TH05 (Bond Transaction Flow for Foreign Investors OTC Market / DVP)**.

### Interest Payment and Redemption of Government Bonds

Business flows of interest payment and redemption in Thailand are analyzed using a typical flow. Key findings of the analysis are given below.

#### (i) Paying Agent (PA)

For government bonds, BOT is appointed as the PA for MOF. BOT requests payment for an issuer, receives a record book of bondholders from TSD, calculates interests, and conducts interest payment and redemption on behalf of the issuer.

#### (ii) CSD

There is a designated central securities depository (CSD) called TSD for government bonds in Thailand that has no banking license and no account with BOT.

**(iii) Payment Flow**

Central bank cash settlement system is used for interest payment and redemption, and a commercial bank is used as cash settlement infrastructure. Central bank money is more secure than commercial bank money.

**(iv) Tax**

Thailand imposes withholding tax on interest for both resident and non-residents. BOT withholds income tax on behalf of the issuer (MOF).

**(v) Other Issues**

BOT as a PA does not notify CSD participants of interest payment and redemption in advance.

For further details, please refer to **Part 3 TH06 (Interest Payment Flow of Government Bond)** and **Part 3 TH07 (Redemption Payment Flow of Government Bond)**.

## Interest Payment and Redemption of Corporate Bonds

The typical flow of corporate bonds is the same as for government bonds.

For further details, please refer to **Part 3 TH08 (Interest Payment Flow of Corporate Bond)** and **Part 3 TH09 (Redemption Payment Flow of Corporate Bond)**.

## Message Standard

### Message Format

TSD adopts ISO15022.

### Message Items

Regarding the 10 common elements of settlement instruction and confirmation defined by the Securities Market Practice Group (SMPG), TSD has same message items as ISO15022 for MT543 and MT545.

## Market Practice

### Operating Hours

The CSD in Thailand, TSD, opens at 7:00. The cut-off time is 17:00 and closing is at 20:30.

### Settlement Cycle

Although the bond settlement system can be on real-time basis, most market participants settle OTC bonds on a T+2 basis. In addition, bond trading in BEX is also settled on T+2. In the case of an investor from the US, the settlement cycle for OTC bonds is T+3.

### Fails

For bond trading in BEX, if a transaction fails to settle on T+2 since a sell side's broker account with TSD is short of bonds, the transaction settles only in TSD's books with no real securities transferred. Therefore, the buy side's account is credited and the sell sides' account debited, which causes a pending securities. In the early afternoon of T+2, TCH immediately tries to borrow the securities on behalf of the sell side's account. If successful, no penalty is levied and the failing party only takes over the borrowing charges. If it is not successful, TCH tries again to borrow securities at the end of T+2. If successful, a "one day late" settlement penalty is levied and the sell side must bear borrowing costs. If a second borrowing attempt fails, the broker has time to regularize its position until 10:30 on T+3. If the account is still short after that time, TCH enforces a mandatory buy-in with same day settlement.

In the case of T+3, the buy-in price is the previous closing price or last bid plus five spreads (whichever is higher). In the case of T+4, the buy-in price is the previous buy-in price, closing price, or last bid price plus two spreads, whichever is higher.

The executed buy-in transaction is settled on the same day in the net clearing system between 13:30 and 14:15.

Buy-in procedures are rarely applied, since pre-matching is mandatory on SD-1 and counterparties are unlikely to match trades without having the relevant securities in their account. Penalties for late deliveries are detailed in **Figure TH06**.

The minimum penalty amount applied is THB300 per security per occurrence. In addition, SET also imposes a penalty on the broker for late settlement as outlined in **Figure TH07**.

At the Thai Bond Dealing Center, for a failed payment, a penalty of a maximum of twice the payment amount may be considered. For a failed delivery, a penalty at a rate of 5% of the value of the securities may be considered.

## Bilateral Netting

A multilateral netting model for clearing and settlement for securities trading is applied in BEX, Market Alternative Investment (MAI), and SET. Thus, not all OTC bond trading uses a multilateral netting model.

## Numbering and Coding

In Thailand, there is one CSD, TSD, for government bonds and corporate bonds. This section describes the numbering and coding schemes of TSD.

## Numbering and Coding for the OTC and Exchange Markets

### Securities Numbering

ISIN is used for bond trades. However, local numbering is also used.

### Financial Institution Identification

BIC is used for financial institution identification. However, a proprietary code is also used

**Figure TH06: Penalties for Late Deliveries**

Delay (business days)	Penalty (% of the consideration)
≤ 1	0.50
> 1 ≤ 2	0.75
> 2 ≤ 3	1.00
> 3 ≤ 5	1.75
> 5 ≤ 7	2.50
> 7 ≤ 14	3.75

Source: Thailand Clearing House Co., Ltd.

**Figure TH07. Penalty on the Broker for Late Settlement**

Delay (business days)	Additional charge
≤ 2	THB 500 per trade per day
> 2	THB 1000 per trade per day

Source: Thailand Clearing House Co., Ltd.

### Securities Account

The security account structure is an omnibus type and multi-layer. TSD participants manage bonds separately from their own bonds and customer's bonds in CSD. ISO20022 has not been adopted in Thai bond market. A settlement system uses proprietary account numbers to transfer bonds.

### Cash Account

The International Bank Account Number (IBAN) is not used. Since market participants are banks and the fund is settled via BOT, participants use a BOT account number as a reference to transfer funds.

### Character Code and Language

SWIFT format is used as the character code for bond and cash instructions. English is adopted as the standard language for payment systems.

## Medium- to Long-Term Strategies

Currently, STP is being implemented for bond transactions. Most bonds are traded in the OTC market. After entering data into the PTI of TSD, the data are processed automatically without significant manual intervention, except necessary affirmation. As such, the domestic bond settlement process is sufficiently automated.

Regarding cross-border trade, messages are compliant with ISO15022 and have a high likelihood of being processed with less manual intervention by custodians. Adoption of ISIN and BIC may have some advantages in directly connecting with other CSDs in the near future.

In the very near future, both government and corporate bonds will be listed on BEX. While only publicly listed companies' bonds are currently allowed to trade on BEX, non-listed companies will soon be able to have their bonds traded on the exchange as well. However, there is not yet an electronic trading platform. In 2010, BMA signed

a multilateral memorandum of understanding with four key authorities—BOT, the Public Debt Management Office, SET, and SEC—to establish the Thailand Financial Instruments Information Center (TFIIC), an infrastructure project under the Capital Market Development Master Plan 2009–14. TFIIC will centralize storage of financial instrument data and information for public access and cross-agency sharing within domestic financial markets (**Figures TH08, TH09, TH10**).

## References

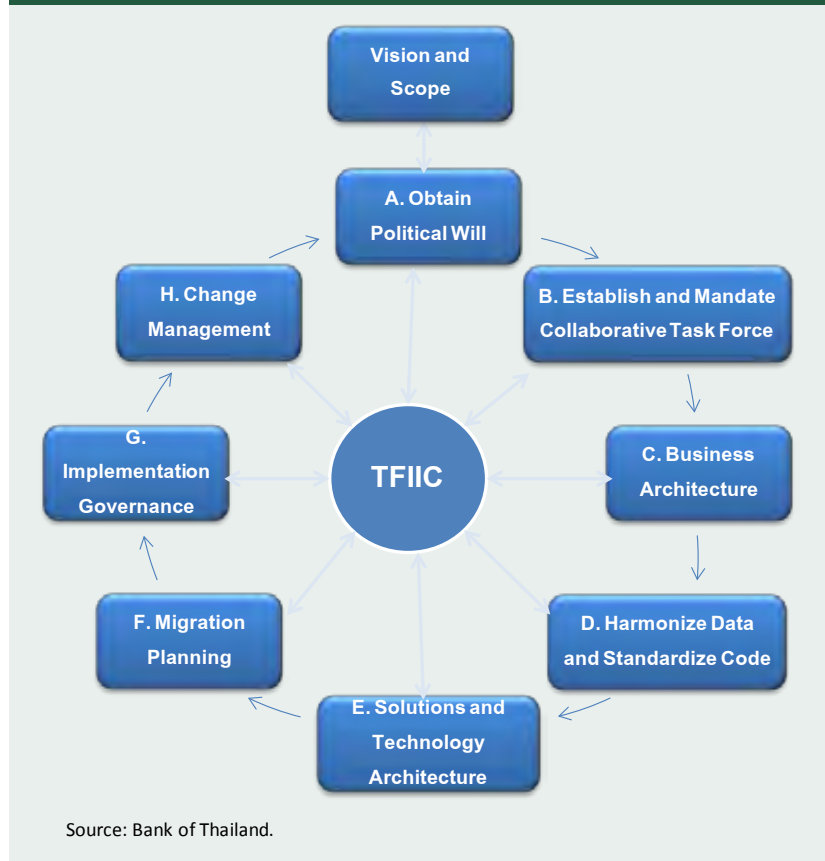
Asian Development Bank (ADB). *ASEAN+3 Bond Market Guide*.

ADB. *AsianBondsOnline*. <http://www.asianbondsonline.adb.org>

Executives' Meeting of East Asia Pacific Central Banks. *Payment, Clearing, and Settlement Systems in Thailand*.

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.

**Figure TH08: TFIIC Implementation Framework**



**Figure TH09: Benefits from TFIIC**

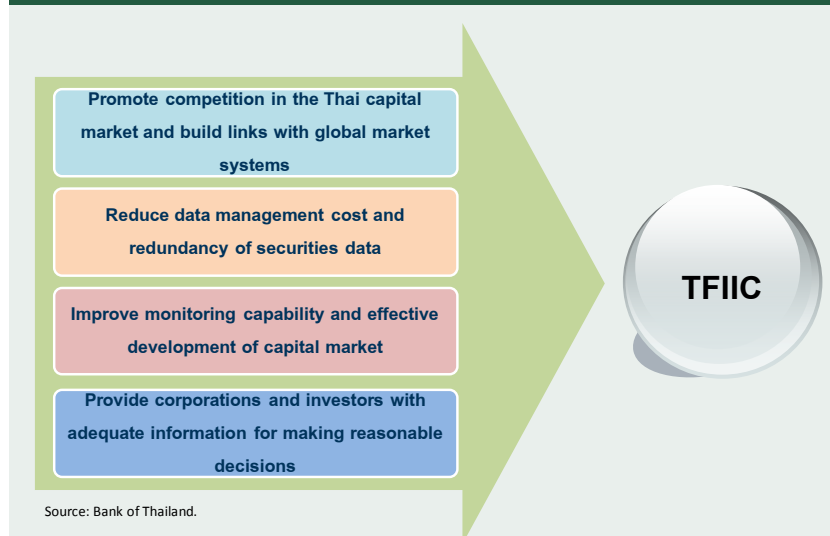
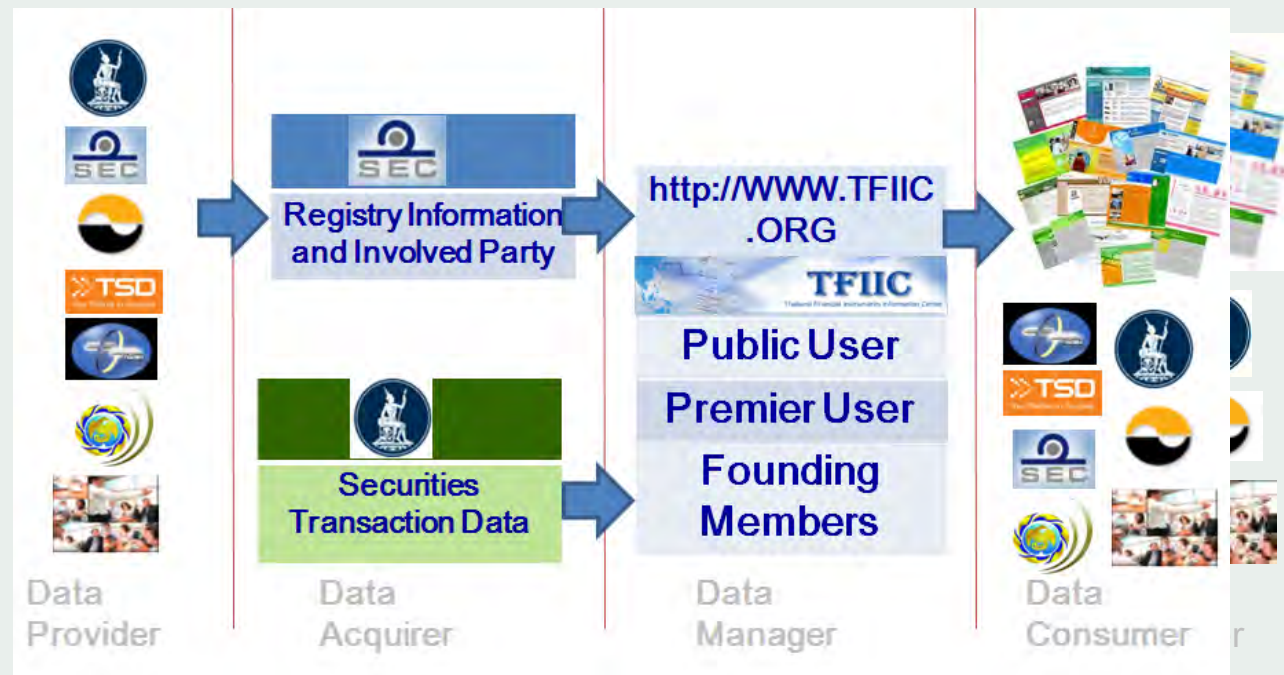




Figure TH10: TFIIIC Architecture Overview)



# Viet Nam (VN)

## Bond Market Infrastructure

### Overview of Bond Markets

In Viet Nam, there are two bond markets: the over-the-counter (OTC) market and the exchange market. Most bonds are traded in the OTC market bilaterally by phone or some other measure, which is similar to other economies in the Association of Southeast Asian Nations (ASEAN)+3. Trade data are mainly entered into one of the two exchanges in Viet Nam: Hanoi Stock Exchange (HNX) and Hochiminh Stock Exchange (HOSE). Government bonds—comprising central government bonds, government-guaranteed bonds, and municipal bonds—and foreign currency-denominated bonds are traded in the specialized government bond market, which is operated by HNX. Corporate bonds listed on HNX and HOSE are dealt on these two exchanges, although trading volumes and values are very small compared with those of unlisted bonds. Unlisted corporate bonds are traded in the OTC market.

According to the Asian Development Bank's (ADB) *AsianBondsOnline* website, local currency (LCY) government bonds outstanding in Viet Nam reached USD29.15 billion at the end of 1Q13, while corporate bonds were valued at USD1.05 billion.

Vietnam Securities Depository (VSD) is the central securities depository (CSD) for all bonds listed on HNX and HOSE. Bond transactions are settled by VSD, with VSD in charge of bond delivery. The Bank for Investment Development of Viet Nam (BIDV) is in charge of fund transfers (cash settlement) using delivery-versus-payment (DVP) subject to the clearing result sent by VSD.

Please refer to **Part 3 VN01 (Government Bond Market Infrastructure Diagram)** and **Part 3 VN02 (Corporate Bond Market Infrastructure Diagram)**.

### Description of Related Organizations

#### Ministry of Finance (MOF)

MOF is a government agency with the function of implementing the state's management of finance, including the state budget (taxes, fees, other revenues, national reserves, state financial funds, and financial investment), corporate finance and financial services, customs, accounting, independent auditing, insurance, prices, and securities. MOF also holds the ownership rights of the state's investment capital in enterprises. Finally, MOF issues government bonds and participates in stock market management.

#### State Bank of Viet Nam (SBV)

Viet Nam National Bank was established in 1951 and changed its name to State Bank of Viet Nam

(SBV) in 1960. SBV is the central bank in Viet Nam. Its main functions are to formulate and implement national monetary policy, stabilize the currency, control inflation, and improve socio-economic development. In managing the currency and all banking activities, SBV contributes to the development of market structures. It regulates foreign exchange controls for stock market activities and has plans to develop a high-value payment system for cash and bond settlement.

### **State Securities Commission (SSC)**

SSC is responsible for the day-to-day monitoring and supervision of the securities market and securities businesses in Viet Nam. SSC regulates and acts as the supervisory agency for the securities market and the exchanges, including HOSE and HNX. All exchange regulations are issued by SSC, which has the power to suspend trading in securities, delete listings of companies to protect investor interests, and grant or revoke licenses relating to securities issuance, brokerage, and custody services. Effective March 2004, SSC came under the jurisdiction of MOF.

### **Hanoi Stock Exchange (HNX)**

HNX is a government-owned and -operated exchange under the oversight of SSC. HNX serves as the secondary market for fixed income in Viet Nam, focusing on government bonds, government-guaranteed bonds, and municipal bonds. In September 2009, HNX launched a specialized market to trade in government bonds. Innovations in the new market include a system of Internet-based databases that are updated frequently, as well as the quoting of prices and yields of bond trades.

### **Hochiminh Stock Exchange (HOSE)**

HOSE is a government-owned and -operated exchange under the oversight of SSC. HOSE serves as the secondary market for fixed income in Viet Nam (focusing on municipal bonds and corporate bonds). In June 2008, all government bonds with maturity dates at least 6 months in the future were moved from HOSE to HNX.

### **Vietnam Securities Depository (VSD)**

VSD provides the following services: registration, depository, clearing, settlement, and corporate action services for securities listed on stock exchanges and the securities of unlisted public companies. VSD also acts as a dividend and bond

interest payment agent for issuers, transferring ownership for those transfers which do not arise from securities transactions. VSD conducts registration, depository, and transfer agent services for other securities upon agreement with issuers. VSD was established under the Securities Law on 27 July 2005 as the sole agent providing support services to complete transactions in the Viet Nam securities market. It commenced operations in May 2006. It is headquartered in Hanoi, with a branch in Ho Chi Minh City. Securities can be deposited at either the headquarters or the Ho Chi Minh branch, based on the securities holders' convenience. Securities are immobilized at VSD and participant positions are updated via book entry. On 18 December 2008, VSD was re-organized from a state income-generating service delivery agency into a wholly state-owned company. Under the new structure, VSD is a limited liability company that is 100% owned by MOF with responsibility for monitoring securities registration, deposit, clearing, and settlement.

### **Bank for Investment and Development of Viet Nam (BIDV)**

BIDV is the oldest commercial bank in Viet Nam. BIDV has been designated as a settlement bank for cash settlement for the bond market. All market members are required to maintain a cash account with the designated clearing bank for cash settlement of trades.

## Overview of Government Bonds

### **Trading**

#### **Over-the-Counter Trading**

In Viet Nam, government bonds—comprising central government bonds, government-guaranteed bonds, and municipal bonds—are traded in the specialized government bond market under the operation of HNX. Government bond trading is performed through a direct negotiation method, including electronic negotiation and conventional negotiation. After trading, all traded data are entered into stock

exchanges. The trading results are transmitted to VSD for clearing and settlement through an online connection.

### Exchange Trading

The exchange market is utilized as the infrastructure for trade settlement, but the form of trading is direct negotiation.

## Clearing and Central Counterparty

There is no central counterparty (CCP) for the government bond market in Viet Nam. For all government bond transactions traded on stock exchanges, trading results are sent to VSD.

## Bond Settlement

After receiving transaction results from the exchange markets, VSD performs confirmation between trading parties, netting, and settlement processes. Settlement is considered irrevocable after the market deadline, and it becomes obligatory to settle the trades. If the sell side or buy side neither affirms nor disputes the trades, it is deemed to have been affirmed by default and such trades are included in its settlement obligations. In fact, VSD sends transaction settlement data to BIDV in the form of files in a manner of straight-through-processing (STP).

Matching at HNX is proprietary matching. The sell side and buy side enter traded data into HNX and forward the data to VSD after it has been matched. They access the VSD system and check the stored data to be correct. If both the sell side and buy side confirm that the traded data are correct, it means that bond settlement instructions are matched (**Figure VN01**).

DVP Model 3 of the Bank for International Settlements (BIS) definition applies in the Viet Nam bond market.<sup>1</sup> VSD does the netting for both cash and securities by calculating the net payment and delivery obligations of each member, and accordingly sends settlement instructions to BIDV. A proprietary network without a specific

name is used. The types of lines are leased line, Internet Protocol-Virtual Private Network (IP-VPN), and Multi-Protocol Label Switching (MPLS). The protocol is Transmission Control Protocol/Internet Protocol (TCP/IP). The interface to access to the system is a terminal and the message format is Extensible Markup Language (XML).

## Cash Settlement

On settlement day, participants must transfer the net cash obligations trades to their appropriate cash settlement accounts at BIDV after netting. Depository members have to transfer cash to their relevant accounts at BIDV (usually through the interbank system). BIDV then processes this through BIDV's system based on netting results (**Figure VN02**).

# Overview of Corporate Bonds

## Trading

### OTC Trading

Corporate bonds are mainly non-listed and traded on the OTC market. The trading results are transmitted to VSD for clearing and settlement. Bond settlement is made by VSD and cash payment is made by BIDV.

### Exchange Trading

In Viet Nam, some corporate bonds are listed and traded on HNX and HOSE, though the number and value is limited compared to those of non-listed bonds. Corporate bond trades are entered into stock exchanges for matching.

## CCP

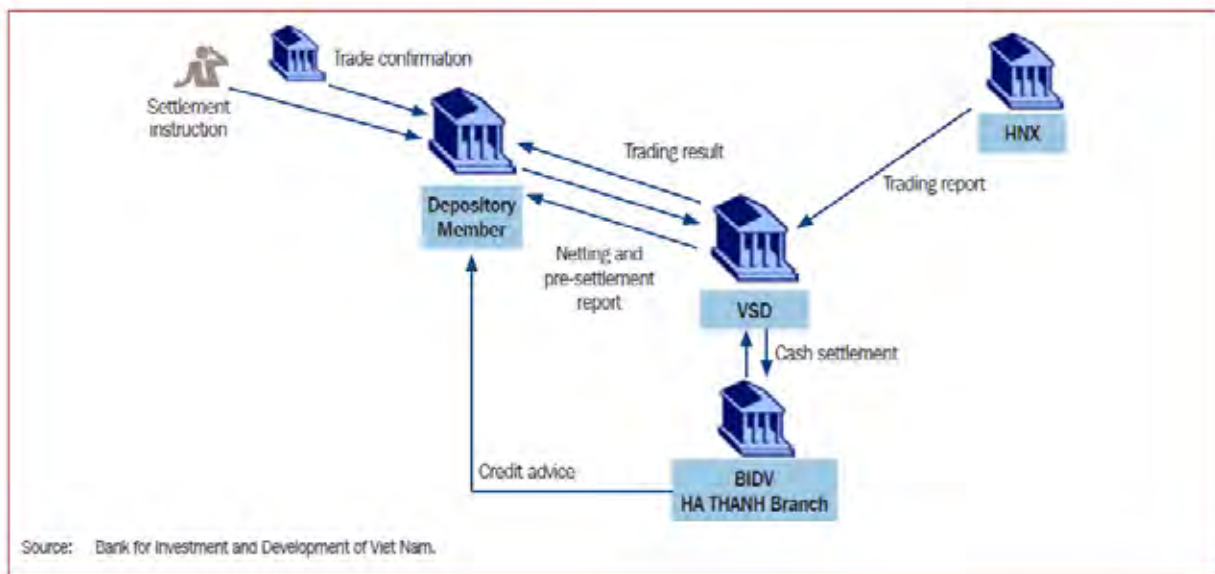
There is no CCP for the bond market in Viet Nam.

## Bond Settlement

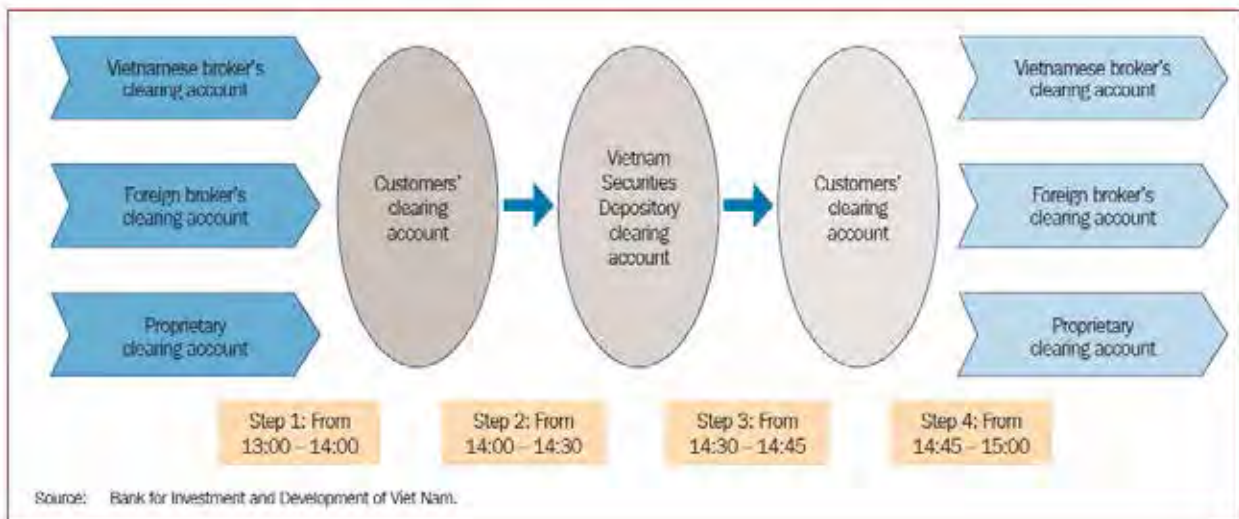
While all governments bonds traded data are entered into the stock exchanges, some corporate bonds data traded on OTC market are not entered.

<sup>1</sup> This refers to systems that settle transfer instructions for both securities and funds on a net basis, with final transfers of both securities and funds occurring at the end of the processing cycle. BIS DVP Model 1 applies to bonds denominated in US dollars.

**Figure VN01: Bond Settlement Process in the Viet Nam Bond Market**



**VN02: Cash Settlement Process in the Viet Nam Bond Market**





For corporate bond trade data entered into the stock exchange, the method of corporate bond settlement is similar to that for government bonds.

## Cash Settlement

Cash settlement is made by BIDV. The method of cash settlement is similar to that for government bonds.

## Interest Payment and Redemption

### Interest Payment and Redemption of Government Bonds

Government bonds have tenors of 2, 3, 5, 7, 10, or 15 years, and are issued by MOF through the State Treasury and auctioned via HNX. The redemption amount of government bonds is fully paid back on the maturity date, and interest is paid every 6 months or 1 year until maturity.

According to Decree No.160/2006/ND-CP, non-residential investors (as foreign investors) must open Vietnamese dong indirect investment accounts at licensed credit institutions in order to conduct indirect investment activities in Viet Nam. According to Circular 213/2012/TT-BTC, foreign investors shall register the securities trading code at VSD before directly performing securities investment trading through the purchase and sale of stocks, bonds, securities, and capital contribution investments in accordance with securities laws and other relevant legal documents.

Each foreign investor entitled to open one indirect investment capital account at one depository bank is permitted to conduct the business of foreign exchange to perform indirect investment activities in Viet Nam. All money transfers to carry out trading and investment operations specified above and other payments related to securities investment operations of foreign investors; the receipt and use of dividends, divided profits, purchase of foreign currency at credit institutions

licensed to conduct foreign exchange business in Viet Nam for transfer abroad; and other related transactions must be conducted through this account.

### Interest Payment and Redemption of Corporate Bonds

Corporate bonds are issued by companies and state-owned enterprises (SOEs) for their funding needs. They are issued in bearer or registered form with a minimum face value of VND100,000 or multiples of VND100,000 and a tenor of 1 year or more. Bonds can be convertible. Interest payment of Viet Nam corporate bonds vary depending on the cash flow of the issuer.

## Typical Business Flows

### DVP Flow of Government Bonds for Domestic Trades

The business flow in the Viet Nam government bond exchange market is analyzed by means of comparison with a typical DVP flow. Key findings of the analysis are described below.

#### (i) Pre-Settlement Matching

Pre-settlement matching is completed manually on S-1. There is no automated pre-settlement matching in the Viet Nam bond market. Pre-settlement matching using forward-dated transactions to be entered on S-1 is also not utilized.

#### (ii) Bond Settlement

Traded data are entered into HNX and matched before being transmitted to VSD.<sup>2</sup> The trades are netted and settled through the accounts in VSD for bonds and in BIDV for cash settlement. Therefore, it is not a Real-Time Gross Settlement (RTGS) system. HNX sends trade data, instead of settlement instruction data, to VSD. After receiving the trade results from HNX, VSD conducts cash

<sup>2</sup> Government and government-guaranteed bonds are traded only on HNX; however, both municipal and corporate bonds are traded on HOSE and HNX.



and securities multilateral netting. There are no messages transmitted either from HNX or VSD to participants for settlement instruction data. Participants need to access an application-based terminal or physically visit the sites to obtain information. Based on the confirmation, VSD effects the settlement without changing the status of the transaction in the central database from the participants. VSD notifies the summary of cash multilateral netting to BIDV for cash settlement, and the data are processed in a manner of STP from VSD to BIDV. VSD blocks bonds within a book entry-system before sending notice of the transaction results.

(iii) **Cash Settlement**

VSD sends cash settlement instruction data after netting. BIDV, a commercial bank, plays a role as cash settlement bank. There is no confirmation sent after settlement to either the sell side or buy side.

For further details, please refer to **Part 3 VN04 (Government Bond Transaction Flow for Domestic Trades)**.

### **DVP Flow of Corporate Bonds for Domestic Trades**

Corporate bonds are mainly non-listed and instead traded in the OTC market through direct negotiation. The flow of corporate bond transactions is similar to the government bond transaction flow in Viet Nam.

For further details, please refer to **Part 3 VN05 (Corporate Bond Transaction Flow for Domestic Trades)**.

### **DVP Flow of Cross-Border Bond Transactions**

Foreign exchange (FX) funding to the domestic custodian on the buy side needs to be completed before sending a trade order. Prefunding is also required.

For foreign Investors, there are some points to be considered before participating in the Viet Nam bond market since the Vietnamese dong is a restricted currency and can only be traded onshore

with an authorized financial institution. In regard to FX trades with an underlying investment, custodians provide foreign investors with both foreign currency and dong cash accounts for the purpose of facilitating the funding of securities transactions and repatriation of proceeds. For pre-funding, FX should be completed, at the latest, for value 1 day before the settlement date to fund purchases. Market practice requires all securities transactions to be 100% pre-funded. Also, when foreign investors purchase foreign currency against dong, they are subject to strict conditions and documentation requirements. The documents include the client's incoming remittance instructions, foreign exchange conversion instructions, securities sales proceeds advice, and settlement instructions. Overdrafts are not allowed for foreign investors. Interest income and capital gains can be repatriated with the provision of supporting documents indicating that the money has been remitted and invested in the Viet Nam market and evidence (clearance) from the tax office that all tax obligations have been fulfilled. There is no restriction on third-party FX for foreign investors.

For further details, please refer to **Part 3 VN05 (Bond Transaction Flow for Foreign Investors OTC Market)**.

### **Interest Payment and Redemption of Government Bonds**

The business flow of interest payment and redemption of government bonds is analyzed using a typical flow. Key findings of the analysis are given below.

(i) **Paying Agent (PA)**

For government bonds, VSD is appointed as the paying agent (PA), according to the Decision No. 1393/OD-BTC of the MOF on the Organizational and Operational Charter of VSD dated 6 June 2009. VSD sends data to MOF instead of a payment request, and MOF sends instruction of cash transfer to settlement banks.

(ii) **CSD**

VSD is designated as CSD in Viet Nam, and has no banking license. VSD has an own cash account in the RTGS system of BIDV, which is designated as a settlement bank

for cash settlement. VSD generates and sends members the bondholder list and the receiving members send VSD written confirmation of the lists.

(iii) **Payment Flow**

For interest and redemption payment, MOF transfers funds for principal and interest into VSD's cash account from which principal and interest are distributed to related depository members. Interest and redemption payment is conducted through BIDV.

(iv) **Tax**

According to Circular No. 111/2013/TT-BTC of MOF dated 15 August 2013, residential and non-residential investors are exempt from tax on interest from government bonds.

For further details, please refer to **Part 3 VN06 (Interest Payment Flow of Government Bond)** and **Part 3 VN08 (Redemption Payment Flow of Government Bond)**.

## Interest Payment and Redemption of Corporate Bonds

The business flow of interest payment and redemption of corporate bonds is analyzed using a typical flow. Key findings of the analysis are given below.

(i) **PA**

For corporate bonds, VSD is appointed as the PA, according to Decision No. 1393/QĐ-BTC dated 6 June 2009 on the Organizational and Operational Charter of VSD. VSD sends a list of bondholders entitled to interest payment to the bond Issuer instead of a payment request. Within 2 business days of settlement day, the issuer must transfer cash to VSD's account at BIDV. Then, VSD distributes cash to relative members.

(ii) **CSD**

VSD is designated as CSD in Viet Nam, though it has no banking license. VSD has an own cash account in the cash settlement system of BIDV, which is designated as a settlement bank for cash settlement. VSD receives the bondholder list with tax data from CSD participants.

(iii) **Payment Flow**

For interest and redemption payment, the issuer transfers funds for principal and interest into VSD's cash account from which principal and interest are distributed to related depository members. Interest and redemption payment is conducted through BIDV.

(iv) **Tax**

There are withholding taxes for both of residents and non-residents. The bond issuer directly pays tax to the tax office as withholding tax agent. As for corporate bonds, according to Circular No. 111/2013/TT-BTC of the MOF dated 15 August 2013, non-residential and residential individual investors are imposed a 5% tax on interest and redemption payment. As for non-residential investors (institutional and individual), according to Circular No.60/2012/TT-BTC, the withholding tax on income received from fixed-income investments is 5% of taxable income.

For further details, please refer to **Part 3 VN08 (Interest Payment Flow of Corporate Bond)** and **Part 3 VN9 (Redemption Payment Flow of Corporate Bond)**.

## Message Standard

### Message Format

VSD has not adopted ISO15022 or ISO2002 for its book-entry system.

### Message Items

VSD uses its own format for transferring data with exchanges, settlement banks, and members. However, VSD has been researching international standards such as ISO15022 and ISO20022 and may apply them to VSD's system in the near future.

Regarding the 10 common elements of settlement instruction and confirmation defined by the

Securities Market Practice Group (SMPG), VSD has elements of instruction identification, trade data, and a client receiving–delivering agent in its proprietary format, and uses ISIN for financial instruments in its settlement instruction and confirmation. In VSD, the element of the effective settlement date is automatically calculated from the trade date, so it is not included in the settlement confirmation while it is contained in the instruction. VSD gets the element of receiving–delivering agent from the trading system right before the settlement instruction from the sell side and buy side, so it is not included in settlement instruction or confirmation. VSD does not have the elements of effective quantity of financial instruments, effectively settled amount, safekeeping account, or place of settlement in its settlement instruction and confirmation.

## Market Practices

### Operating Hours

Operating hours are from 8:00 to 17:00. The cutoff time is 9:00 for bond settlement and 11:00 for cash settlement on the settlement date. The cut-off time is the time to close the balance of listed securities clearing and settlement deposit accounts of VSD members at the settlement bank, and the balance of securities accounts at VSD to determine the solvency of members.

The government bond market is open from 8:30 to 11:00 on business days. Listing on the bond market takes place from 9:00 to 11:30 and from 13:00 to 14:15.

### Settlement Cycle

The settlement cycle for both government bonds and corporate bonds is T+1. However, the definition of trade date in Viet Nam is different from that of other ASEAN+3 markets. In Viet Nam, the date when trade data are entered into HNX is regarded as the trade date instead of the date when the bond is actually traded and agreed upon by phone or some other measure.

### Fails

A fail means that a party does not have sufficient balance (either cash or bond) at the cut-off time set by VSD to fulfill relevant securities transaction settlement obligations.

In the case a good-faith effort to resolve a fail is conducted, VSD shall automatically cover the shortage of funds in accordance with the settlement compensation mechanism and procedures set out in VSD's Guideline on Securities Clearing and Settlement.

A penalty is assessed for a fail due to insufficient bonds resulting in the cancellation of a transaction. Members having cancelled settlement transactions shall be completely responsible for client losses and relevant members if the transaction is not settled. The compensation is negotiated between members but is not to exceed 10% of the value of the cancelled transaction.

A penalty is also assessed for a fail due to insufficient funds. In cases of funds from a settlement compensation fund, an interest rate on loaned funds of 0.1% per day is assessed for the first 5 days and 0.15% per day for every day thereafter. In cases of using funds supported from the settlement bank, an interest rate is assessed regulated at loan supportive contract for ensuring payment ability signed between the failing party and the settlement bank. In cases of using funds supported from the settlement bank, such as a shortage of funds of more than VND25 billion, an interest rate is assessed regulated at loan supportive contract for ensuring payment ability signed between the failing party and the settlement bank.

### Bilateral Netting

There is no bilateral netting scheme in Viet Nam.

### Taxation

For corporate bonds, according to the Circular No. 111/2013/TT-BTC of the MOF dated 15 August 2013, non-residential and residential individual investors are imposed a 5% tax on interest and redemption. For non-residential investors

(institutional and individual), according to the Circular No. 60/2012/TT-BTC, the withholding tax on income received from fixed-income investments is 5% of taxable income.

## Numbering and Coding

### Numbering and Coding for the OTC and Exchange Markets

#### Securities Numbering

VSD issues International Securities Identification Number (ISIN) for all bonds registered with VSD and listed in the stock exchanges since VSD is a full member of the Association of National Numbering Agencies (ANNA). Local code is used domestically and needs to be converted to ISIN. The market allows investors the option of using ISIN code and local code. However, local code is

always used for domestic trades. ISIN codes are alternatively used subject to specific conditions.

#### Financial Institution Identification

Local code is used domestically. VSD does not accept Business Identifier Code (BIC). Therefore, the participants of VSD need to convert BIC into local code when BIC is used by foreign investors.

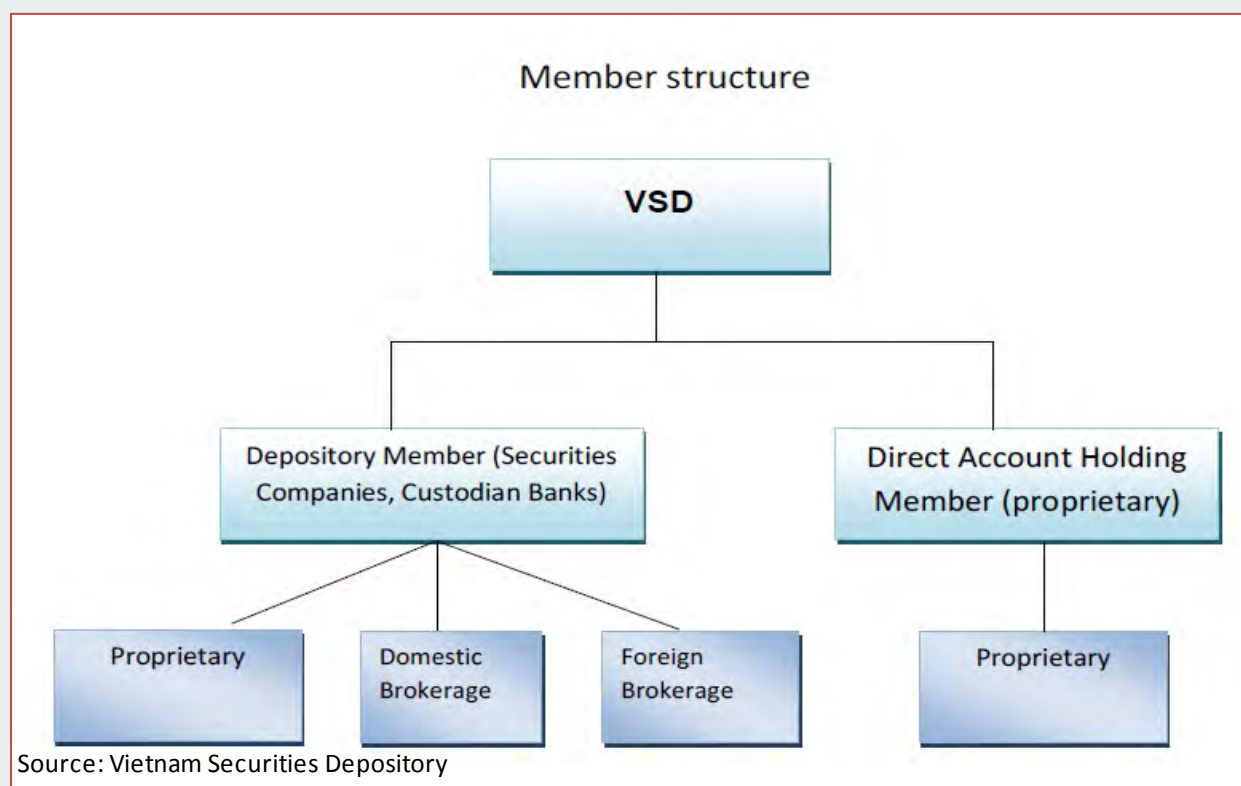
#### Securities Account

The security account structure is omnibus type and multi-layer. CSD participants manage their own bonds and customer's bonds separately in CSD. A local securities account is used. VSD's mechanism of account management is described in **Figure VN03**.

#### Cash Account

Local cash account numbering is used.

**Figure VN03: VSD Mechanism of Account Management**



### Character Code and Language

Unicode (UTF-8) is used. Vietnamese is used as the official language for bond trade and settlement infrastructures.

## Medium- to Long-Term Strategies

STP is realized given the current situation in Viet Nam in which data are processed and transmitted to BIDV for cash settlement through VSD after entering traded data into HNX. However, there are still many paper-based processes between participants (sell side and buy side) and infrastructure operators (HNX, VSD, and BIDV), which need to be improved. Therefore, VSD is working on development of bond trade- and settlement-related infrastructures based on international standards. New IT-related initiatives to introduce STP from trade to settlement, including depository, are being planned by the stock exchanges and VSD. New investments to meet technical criteria set up by the stock exchanges and VSD also need to be considered.

There is no system infrastructure for CCP in Viet Nam. However, Viet Nam market is working on a CCP project and will implement a CCP model.

Viet Nam has been researching international standard such as ISO15022 and ISO20022 and is expected to apply them to VSD's system in the near future.

Viet Nam is also pursuing an initiative to switch the payment function for government bond transactions from BIDV to SBV.

## References

Asian Development Bank (ADB). *ASEAN+3 Bond Market Guide*.

ADB. *AsianBondsOnline*. <http://asianbondsonline.adb.org/index.php>

Hanoi Stock Exchange  
<http://www.hnx.vn/en/web/guest/faqs-du-lieu-giao-dich>

Hanoi Stock Exchange. *Annual Report 2011*.  
<http://hnx.vn/documents/18/30030/HNX+Annual+Report+2011.pdf?version=1.0>

Viet Nam Securities Depository. <http://vsd.vn/en/home.htm>

Note: Some parts in this report are quoted from sources, such as the above references, and the websites of bond market infrastructure operators.





# Questionnaire for Phase2 of ABMF SF2

For all ABMF SF2 members and experts

<b>Economy or country</b>	
Contact person	
Institution	
Mailing address	
Phone number	
e-mail address	
Alternate person	
Institution	
Mailing address	
Phone number	
e-mail address	

**Notes:**

National members (and experts) are expected to answer the following questions to the extent possible. If International Experts could voluntarily answer the following questions for all possible economies, ADB Consultant for SF2 will be extremely appreciative.

ADB consultant for SF2 does understand this is an extremely demanding request, but very much appreciates the kind support of SF2 members and experts wherever possible in order to develop efficient and smooth cross-border bond trading and settlement for liquid and stable bond markets in ASEAN+3.

Could you please post all answers on the ADB site for phase 2, or send answers back to Dr. Taiji Inui, ADB Consultant for SF2 by the end of May? All questions and comments are welcome. Taiji Inui, e-mail: [inuit@nttdata.co.jp](mailto:inuit@nttdata.co.jp)

## Introduction

The scope of the phase 2 activities of ABMF SF2, reported to and approved by ABMI TF3 Meeting on 2 March in 2012 in Siem Reap, Cambodia is as follows:

- A) Continue identification of transaction flows, messaging, and market practices.
  - DVP flows and procedures for corporate bonds
  - Interest payment and redemption of government bonds
  - Interest payment and redemption of corporate bonds
- B) ISO 20022 fit-and-gap analysis
- C) Propose a roadmap and policy recommendations to standardize and harmonize transaction flows
- D) Information sharing: LEI, data collection, etc.

## General explanations of the questionnaire

- 1) As a result of ABMF SF2 phase 1 survey, the Government Bond Market Infrastructure Diagram in ASEAN+3 was reported to ABMI TF3 and published. The Corporate Bond Market Infrastructure Diagram in ASEAN+3 will be presented as a result of phase 2 survey of ABMF SF2.
  - Phase 1 report of ABMF SF2 mainly discussed government bond markets in ASEAN+3. But, for the phase2 survey and report of ABMF SF2, corporate bond markets will also be discussed.
  - SF2 members are expected to provide the Government Bond Market Infrastructure Diagram and Corporate Bond Market Infrastructure Diagram separately.
- 2) ABMF SF2 report to ABMI TF3 will be expanded including corporate bond market descriptions. DVP flows of corporate bonds will also be surveyed and analyzed as a phase 2 activity.
  - SF2 members are expected to update and refine the phase 1 report based on the new contents shown in the Appendix describing government bond markets and corporate bond markets separately.
  - ADB Consultant of SF2 will try to include bond markets and settlement infrastructures, including future plans and initiatives in Brunei Darussalam, Cambodia, Lao PDR, and Myanmar, as much as possible in the phase 2 report with the kind support of the four respective countries.
- 3) During the phase 1 of ABMF activities, ABMF SF2 mainly discussed DVP transactions for government bonds. As a phase 2 activity, the SF2 will survey the processes of interest payment and redemption of government and corporate bonds in each economy.
  - Some members and experts have expressed the intentions that corporate actions should be included in the scope of phase 2 activities. The importance of corporate actions has been pointed out from the standpoint of enhancing straight-through-processing (STP). For example, Statement on the Need for Universal, Standardized Messaging in Corporate Actions, written by the Association of Global Custodians (AGC), recommended that issuers should comply with international standard, ISO15022, when they contact with market participants.
  - In this regard, if market participants conform to ISO20022, information distributions about various types of corporate actions will become more flexible because of using XML. Also, issues about corporate actions have been discussed in various institutional frameworks. Therefore, discussions of ABMF need to be focused on the main purposes of ABMF.

- Considering the current situation of ASEAN+3 and the outcome of phase 1, interest payment and redemption of government and corporate bonds would be appropriate topics to start our survey on corporate action.
- 4) In terms of DVP transaction for government bonds, SF2 shows a model message flow based on the discussions during Phase 1. SF2 members and experts are expected to discuss characteristics of each bond market based on the model message flow. Barriers and impediments to cross-border DVP transactions in each market will also be discussed based on the model message flow.
  - 5) SF2 will try to conduct gap analysis of message instructions and confirmations of government bond DVP transactions. SF2 will compare messages between ISO20022 and proprietary messages of each CSD. This fit-and-gap analysis will be made based on the 10 common elements provided by SMPG. Further, detailed analysis which is out of the scope of SF2 phase 2 activities will be necessary when actually migrating bond market infrastructures to be compliant with ISO20022.
  - 6) As for a phase 2 activities, cross-border DVP flows directly connecting a CSD and a RTGS located in different economies will be discussed. This will provide some information for future possibilities of new types of bond-related trades and settlements such as cross-border collateral and cross-border repo in an automated real-time manner. “Model cross-border DVP flow is presented as an example of such a trade and settlement. SF2 members and experts are expected to point out some issues and challenges related to market practices and standardization. Related cases are shown in the Attachment.
    - As a result of phase 1 survey, there are some extra transaction flows for foreign exchange (FX) control in some countries. This FX control barriers may be removed by direct connections between CSD and RTGS systems utilizing cross-border DVP.
  - 7) SF2 will try to draw the Roadmap. SF2 will rearrange the barriers, which are pointed out from gap analysis of phase 2 activities and the GoE Report of Task Force 4, and will discuss how to overcome these barriers. Members and experts need to argue the short-, mid-, and long term solutions for these barriers.
    - Practical issues such as settlement-related barriers, including market practices regulated by SROs, will be discussed.
    - Laws and regulations, including taxes, will be discussed as long as the issues are related to message flows of government and corporate bonds.
  - 8) SF2 will continue to follow up the phase 1 activities by refining and updating the issues identified by GoE and ABMF SF2.
  - 9) In terms of Legal Entity Identifier (LEI), SF2 will collect and update information for SF2 members and experts to further discuss this issue and find out some direction in each economy (possibly having some consensus in ASEAN+3).
  - 10) In order to enhance cross-border bond transactions, the transparency of market information—such as listed bonds, information on limits placed on non-residents, and pricing and interest rates—is important. SF2 will try to share information to discuss some infrastructures for data collection and dissemination.
  - 11) If there are some pre-conditions to answer these questions, please describe these conditions.

Premises

## Bond Market Infrastructure Diagram

### Could you draw the following diagrams, please?

- If you have some relevant information, documents, and websites (URL), please provide and share them with the ADB Consultant.
- ADB Consultant for SF2 would very much appreciate it if Brunei Darussalam, Cambodia, Lao PDR, and Myanmar could draw these diagrams to the extent possible.

### Government Bond Market Infrastructure Diagram

#### ANSWER

(Please use PowerPoint template) Also, could you refer to the case of Japan, please?

Could you describe (update) government bond market in your economy, please?

#### ANSWER

(Could you refer to phase 1 report, please?)

### Corporate Bond Market Infrastructure Diagram

#### ANSWER

(Please use PowerPoint template) Also, could you refer to the case of Japan, please?

Could you describe (update) corporate bond market in your economy, please?

#### ANSWER

(Could you refer to phase 1 report, please?)

### Delivery-versus-Payment (DVP) flows of corporate bond in each market

Identifying DVP flow and procedure of corporate bond in each market to discuss cross-border STP.

Draw the typical business flowchart of corporate bonds, domestic DVP transactions, and cross-border DVP transactions, based on the template of phase 1 activities.

If you have some relevant information, documents, and websites, please provide and share with the ADB consultant.

#### ANSWER

(Please use PowerPoint template) When you draw them, please use sample answers as a reference.

# Interest Payment and Redemption

## Interest payment of government bonds

Draw the typical business flowchart for interest payment of a typical government bond to domestic investors.

ANSWER

(Please use PowerPoint template)

In cases of investment by non-residents, are there any different procedures or market practices in your economy compared with domestic investors? If yes, please write down details of the differences.

ANSWER

Present issues and challenges including barriers, short-term solutions, and medium- to long- term solutions.

ANSWER

## Interest payment of corporate bonds

Draw the typical business flowchart for interest payment of a typical corporate bond to domestic investors.

ANSWER

(Please use PowerPoint template)

In cases of investment by non-residents, are there any different procedures or market practices in your economy compared with domestic investors? If yes, please write down details of the differences.

ANSWER

Present issues and challenges including barriers, short-term solutions, and medium- to long- term solutions.

ANSWER

## Redemption of government bonds (with final interest payment)

Draw the typical business flowchart for redemption of a typical government bond to domestic investors. If redemption includes final interest payment, please write the comments in the process definition.

ANSWER

(Please use PowerPoint template)

In case of investment by non-residents, are there any different procedures or market practices in your economy compared with domestic investors? If yes, please write down details of the differences.

ANSWER

Present issues and challenges including barriers, short-term solutions, and medium- to long- term solutions.

ANSWER

### Redemption of corporate bonds (with final interest payment)

Draw the typical business flowchart for redemption of a typical corporate bond to domestic investors. If redemption includes final interest payment, please write the comments in the process definition.

ANSWER

(Please use PowerPoint template)

In cases of investment by non-residents, are there any different procedures or market practices in your economy comparing with domestic investors? If yes, please write down details of the differences.

ANSWER

Present issues and challenges including barriers, short-term solutions, and medium- to long- term solutions.

ANSWER

### Other issues

If there are any issues and challenges including barriers, could you explain them and provide us with short-term solutions, and medium- to long- term solutions, please?

ANSWER



## Fit-and-gap analysis for a channel using global custodians to settle cross-border trade.<sup>1</sup>

In ASEAN+3, cross-border bond transactions are usually conducted through global custodians and settled as a DVP transaction in the same market (country) domestically. Therefore, the cross-border line is located between the global custodian and local custodian as shown in Figure 4.1.

The purpose of fit-and-gap analysis of business flows and market practices is to identify gaps in the DVP flow of government bonds in each market in comparison with a model cross-border DVP flow in order to realize cross-border STP. Discuss the solutions against barriers and the enhancement of cross-border DVP in each market, based on the phase 1 survey of DVP transaction flows. Output of analysis is to identify technical barriers, including market practices preventing the flow from cross-border STP.

### Fit-and-gap analysis between typical cross-border DVP transaction and local procedures

Based on the model cross-border DVP transaction flow (refer to Figure 4.1), challenges and barriers in each market in terms of market practices and business processes will be discussed from a cross-border STP perspective.

- Could you focus on new issues and issues related to each infrastructure, please?

#### Order-management system

Do you have a system for OTC market handling an order between investment manager and agent (local broker-dealer) in your economy? If yes, could you describe it, including the types of transactions (i.e. customer side trades as well as domestic securities trades or foreign securities trades), please? What is the name of the system? Who developed the system? What are specific characteristics (differences) of the system? When did the system start production operation? What are current challenges?

ANSWER

#### Trading system for the OTC market

Do you have a trading system, which also has a trade matching function, between the sell side and buy side (local brokers-dealers) of the OTC market in your economy? If yes, could you describe it, including the types of eligible transactions (i.e. broker-dealer trades or customer side trades as well as domestic securities trades or foreign securities trades), please? What is the name of the system? Who developed the system? What are specific characteristics (differences) of the system? When did the system start production operations? What are current challenges?

ANSWER

<sup>1</sup> Channel using global custodians means that settlement processes go through not only global custodians but also local custodians in each economy instead of directly connecting CSD with ICSD or other CSDs.

**Post-trade matching**

- A) Do you have a post-trade matching system other than the trading system? If yes, what is the name of the system? Also, could you describe the system, please? Who developed the system? What are specific characteristics (differences) of the system from conventional and/or standard processes? When did the system start production operations? What are current challenges?

ANSWER

- B) How you process allocation between investors and brokers for cross-border bond transactions? What are challenges for cross-border transactions?

ANSWER

Do you have standing settlement instruction (SSI) database for cross-border transactions? If yes, who is maintaining it? Also, how is it maintained? What are challenges from a cross-border transaction perspective?

ANSWER

**Pre-settlement matching**

Are there any system infrastructures for pre-settlement matching in your economy? If yes, what is the name of the system? Also, could you describe the system, please? When is pre-settlement matching carried out? For what purposes is pre-settlement matching needed? Do you have any other alternative measure to conduct pre-settlement matching such as using future date data entry in a book-entry system? If there is no pre-settlement matching system infrastructure, how is pre-settlement matching conducted (e.g., telephone, facsimile, or e-mail)? Is it required by regulation or market practice to conduct pre-settlement matching? If yes, is the use of a pre-settlement matching system mandatory?

Note: If a market already has post-trade matching process, pre-settlement matching does not seem to be essential. What do you think about this?

ANSWER

**CSD (book-entry system)**

What are the characteristics and differences of practices from other CSD systems?

- During the phase 1 survey, CSDs and its book-entry systems were mainly discussed. Ten ASEAN+3 economies have book-entry systems.

ANSWER

**Central bank (RTGS system)**

What are the characteristics and differences of practices from other RTGS systems?

- During the phase 1 survey, central banks and RTGS systems were mainly discussed. In ASEAN+3, 9 economies have RTGS systems.

ANSWER

**CCP**

Are there any system infrastructures for CCP in your economy? If yes, please describe the name of system(s) and explain the details of the system. In addition, are there any intentions to apply the clearing procedures to the non-residential transactions?

- There is no CCP for cross-border transactions in ASEAN+3 economies.

ANSWER

**Details of message flows (refer to Figure 4.1)**

Please make specifications for each message listed below.

**C.1 / C.2 Order and Affirmation (between OTC Market or Trading System and Investment Manager and International Broker)**

	Answer
Manual operation or system interface	
Type of line(s)	
Protocol(s)	
Interface(s)	
Message Format(s)	

**C.3-2 Instruction (between post-trade matching system and pre-settlement matching system)**

	Answer
Manual operation or system interface	
Type of line(s)	
Protocol(s)	
Interface(s)	
Message Format(s)	

**C.7 Instruction and matching status**

	Answer
Manual operation or system interface	
Type of line(s)	
Protocol(s)	
Interface(s)	
Message Format(s)	

**C9-2. Instruction (from pre-settlement matching)**

	Answer
Manual operation or system interface	
Type of line(s)	
Protocol(s)	
Interface(s)	
Message Format(s)	

**C10. Instruction and settlement confirmation**

	Answer
Manual operation or system interface	
Type of line(s)	
Protocol(s)	
Interface(s)	
Message Format(s)	

**C11. Settlement data (DVP)**

	Answer
Manual operation or system interface	
Type of line(s)	
Protocol(s)	
Interface(s)	
Message Format(s)	

**C13. Settlement confirmation (Cash)**

	Answer
Manual operation or system interface	
Type of line(s)	
Protocol(s)	
Interface(s)	
Message Format(s)	

**S2. Instruction and settlement data**

	Answer
Manual operation or system interface	
Type of line(s)	
Protocol(s)	
Interface(s)	
Message Format(s)	

## Network between market infrastructures and the infrastructures and participants

Could you discuss how to connect each other by referring to the Figure 4.4: Network Between Market Participants, Table 4.1: Settlement Instructions and Confirmation of Bond and Cash, and Table 4.2: Protocols and Message Formats in ASEAN+3 Bond Markets of ABMF SF2 Report Part 1, please?

ANSWER

## Market practices for government bond settlement

On the basis of assuming the observance of the government bond trade and settlement-related regulations, practices that market participants must follow to ensure fair and efficient trades, to reduce settlement risks in changing environment, and to facilitate smooth settlements in government securities transactions are to be compared across markets.

Harmonization of market practices that are not stipulated by laws or acts but agreed as rules by stakeholders such as SRO members will be an important issue for cross-border STP.

### Limitation on size of settlements

The upper limit on size of bond settlements

- Each market participant should set an upper limit on the size of settlements processed in order to curb the daytime accumulation of settlements outstanding and to resolve the delay of settlements by reducing the amounts of government securities and funds necessary per settlement.

Do you have an upper limit on the size of bond settlement? If yes, what is the size of and reason for the limit? How do you handle transactions with face values exceeding the upper limit? Do you have exceptions to the upper limit on size of settlements? If yes, what kinds of transactions are exceptions?

ANSWER

### Establishment of cut-off time and reversal time

A) Establishment of cut-off time

- For the purpose of recognizing fails aimed at completing all settlements on the day, cut-off time shall be the deadline decided by market participants for government securities settlements prior to the closing time of the book-entry system of the CSD.

Do you have a cut-off time in your market? If yes, what time is cut-off time in your market? What is the definition of cut-off time? Do custodians set different cut-off times for domestic and cross-border customers? Could you explain it, please?

ANSWER

## B) Establishment of reversal time

- Reversal time is the period during which parties executing the relevant transaction can resolve fails if they have agreed to extend the delivery deadline over cut-off time, and correct errors in the case of any errors in settlement procedures.

Do you have reversal time in your market? If yes, what time is reversal time? What is the definition of reversal time? Could you explain it, please?

ANSWER

**Guidelines for activities of market participants on settlement day**

Do you have any other guidelines and/or market practices for market participants to observe? Are those guidelines and/or market practices (e.g., through-put guidelines) applicable to cross-border transactions? If yes, could you explain them, please?

ANSWER

**Guidelines concerning fails**

## A) Definition of a fail

- In general a fail means a situation whereby a party receiving government securities has not received delivery of the relevant securities from the delivering party after the end of the scheduled settlement date.

What is the definition of a fail in your market? What is the concept such as good-faith efforts to resolve fails? What are conditions to the guidelines concerning fails?

ANSWER

## B) Guidelines related to fails

Do you have guidelines related to fails? If yes, what are guidelines related to Fails?

ANSWER

## C) Cost of fails

Could you explain your policy regarding costs incurred under fails?

ANSWER

## D) Fails charges

Could you explain how you handle fails charges, please?

ANSWER

## E) Other issues related to fails

ANSWER



### Guidelines concerning bilateral netting

Do you have bilateral netting scheme? If yes, what is the netting scheme such as netting structure, face value applicable to netting, settlement type (DVP or not), contract time of original transactions (by what time), transaction types, mode of possession (only book-entry transfer government securities), transaction accounts applicable to netting, pairing method, effective timing of netting in the case of the same settlement amount, and the account for fund settlement?

ANSWER

What are operational procedures in netting such as pairing instructions, exchange of comparison notices, deadline for comparisons, method to send comparison notices, principle for sending of comparison notices, notice of objection, and sections in charge of comparison?

ANSWER

Do you have prior confirmation, prior notice, and their relation with the comparison notice?

ANSWER

### Any other market practices

Any other market practices related to DVP transaction flows may be discussed. If you have any ideas, please mention them. Are there any guidelines that specialize in cross-border transactions?

ANSWER

## Fit-and-gap analysis for government bond DVP transactions

The purpose of fit-and-gap analysis of message items is to identify gaps in government bond settlement instruction (sese 023.001.01 of ISO 20022 and MT541, MT543 of ISO15022) and confirmation (sese 025.001.01 of ISO 20022 and MT545, MT547 of ISO15022). Comparing the messages between international standards and local proprietary codes, SF2 will provide information about similarities and uniqueness of each market. In some cases, market practices in ASEAN+3 may be better than in other regions outside of ASEAN+3. In such cases, ASEAN+3 may contribute to forming international standards positively though ABMF activities. Also, when each economy will develop a new book-entry system complying with ISO20022, this analysis may help in the creation of a requirement definition document for the new system.

Regarding ISO15022, the following sites are referred:

<http://www.iso15022.org/UHB/uhb2006/finmt543.htm>

<http://www.iso15022.org/UHB/UHB2005/finmt545.htm>

Regarding ISO20022, the following site is referred:

[http://www.iso20022.org/documents/general/Securities\\_SnR\\_Maintenance\\_2011.zip](http://www.iso20022.org/documents/general/Securities_SnR_Maintenance_2011.zip)

The goals of fit-and-gap analysis are to identify message items in each market different from international standards. The dissolution of gaps will lead to enhance the interoperability and promote straight-through-processing of cross-border bond transactions.

The scope of fit-and-gap analysis is government bond messages only. If there are some CSDs of government bonds, please mention them.

**Fit-and-gap analysis of the 10 common Elements for securities settlement instruction between ISO20022 and local practices in terms of business element name, definition, format, multiplicity, optional or mandatory, and others. The 10 Common Elements are listed below:**

**Elements of answer:**

- Business element name  
Please specify the element name of each CSD in accordance with each ISO20022 message item
- Definition and explanation  
Please describe the definition and explanation of business elements in each CSD
- Message format  
Which is the message format in your market, ISO20022 compliant or proprietary? If it is ISO20022 compliant, please describe further details about tag structure.
- Element format  
Please describe the format of each message item, text, or number types and length (minimum and maximum) of each message item.
- Multiplicity  
Please check each message item, single or multiple?
- Optional or mandatory  
Please check each message item, optional or mandatory?
- Others  
Other relevant information, if any.

**Instruction Identification (16x)**

**Reference assigned by the sender to unambiguously identify the message.**

(MT 543: Mandatory Sequence A General Information>Sender's Message Reference)

ISO20022(sese.023.001.02)	
Element Name	Transaction Identification
Tag Structure	<SciesSttlmTxInstr> <TxId>
Element Format	Text maxLength: 35 minLength: 1
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

### Trade Date (Date and Time)

#### Date and time at which the trade was executed.

(MT 543: Mandatory Sequence B Trade Details> Trade Date and Time)

ISO20022(sese.023.001.02)	
Element Name	Trade Details >Trade Date
Tag Structure	<SciesSttlmTxInstr> <TradDtIs> <TradDt> <Dt>/<DtTm>
Element Format	ISODate: YYYY-MM-DD ISODateTime: UTC time format (YYYY-MMDDThh: mm:ss.sss), local time with UTC offset format (YYYY-MM-DDThh: mm:ss.sss +/-hh:mm), or local time format (YYYY-MM-DDThh: mm:ss.sss)
Multiplicity	Single
Optional or Mandatory	Optional

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Settlement Date (Date and Time)****Date and time at which the financial instruments are to be delivered or received.**

(MT 543: Mandatory Sequence B Trade Details&gt; Settlement Date and Time)

ISO20022(sese.023.001.02)	
Element Name	TradeDetails >SettlementDate
Tag Structure	<SciesSttlmTxInstr> <TradDtIs> <SttlmDt> <Dt>/<DtTm>
Element Format	ISODate:YYYY-MM-DD ISODateTime: UTC time format (YYYY-MMDDThh:mm:ss.sssZ), local time with UTC offset format (YYYY-MM-DDThh:mm:ss.sss +/-hh:mm), or local time format (YYYY-MM-DDThh:mm:ss.sss)
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Quantity of Financial Instrument (Expressed as face amount)****Original par or nominal value of a financial instrument.**

(MT 543: Optional Subsequence B1 Financial Instrument Attributes&gt;Quantity of Financial Instrument&gt; Original Face Amount)

ISO20022(sese.023.001.0(ii))	
Element Name	QuantityAndAccountDetails >SettlementQuantity
Tag Structure	<SciesSttlmTxInstr> <QtyAndAcctDtIs> <SttlmQty> <Qty> <FaceAmt>
Element Format	fractionDigits: 5 minInclusive: 0 totalDigits: 18
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

### Financial Instrument (International Securities Identification Number [ISIN])

**This field identifies the financial instrument.**

(MT 543: Optional Subsequence B1 Financial Instrument Attributes>Identification of the Financial Instrument)

ISO20022(sese.023.001.02)	
Element Name	FinancialInstrumentIdentification>ISIN
Tag Structure	<SctiesSttlmTxInstr> <FinInstrmId> <ISIN>
Element Format	[A-Z0-9]{12,12}
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Settlement amount (currency and amount)****Total amount of money to be paid or received in exchange for the financial instrument**

(MT 543: Repetitive Mandatory Sequence C Financial Instrument/Account&gt;Settlement Amount)

ISO20022(sese.023.001.02)	
Element Name	Settlement Amount >Amount
Tag Structure	<SctiesSttlmTxInstr> <SttlmAmt> <Amt>
Element Format	ActiveCurrencyAndAmount fractionDigits: 5 minInclusive: 0 totalDigits: 18 ActiveCurrencyCode [A-Z]{3,3}
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Safekeeping account to be credited or debited (35x)****Account where financial instruments are maintained.**

(MT 543: Repetitive Mandatory Sequence C Financial Instrument/Account&gt;Account &gt;Safekeeping Account)

ISO20022(sese.023.001.02)	
Element Name	DeliveringSettlementParties/ReceivingSettlementParties >Party1 >SafekeepingAccount >Identification
Tag Structure	<SctiesSttlmTxInstr> <DlvrgSttlmPties/RcvgSttlmPties> <Pty1> <SfkpgAcct> <Id>
Element Format	Text maxLength: 35 minLength: 1
Multiplicity	Single
Optional or Mandatory	Mandatory



Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

### Place of Settlement (ISO9362 Bank Identifier Codes [BIC])

#### Place of settlement.

(MT 543: Repetitive Mandatory Subsequence E1 Settlement Parties> Party> Place of Settlement)

ISO20022(sese.023.001.02)	
Element Name	StandingSettlementInstructionDetails > Delivering/ Receiving SettlementParties > Depository > Identification > AnyBIC
Tag Structure	<SctiesSttImTxInstr> <StgSttImInstrDtIs> <DlvrSttImPties/ RcvgSttImPties > <Dpstry> <Id> <AnyBIC>
Element Format	[A-Z]{6,6}[A-Z2-9][A-NP-Z0-9]([A-Z0-9]{3,3}){0,1}
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Receiving–Delivering Agent (ISO9362 Bank Identifier Codes (BIC) or CSD Local Code)****Receiving–Delivering party that interacts with the place of settlement.**

(MT 543: Repetitive Mandatory Subsequence E1 Settlement Parties&gt;Receiving–Delivering Agent)

ISO20022(sese.023.001.02)	
Element Name	CashParties >DebtorAgent/CreditorAgent >Identification >AnyBIC/ProprietaryIdentification >Identification
Tag Structure	<SctiesSttlmTxInstr> <StgSttlmInstrDtls> <CshPties> <DbtrAgt/CdtrAgt> <Id> <BICFI>  <SctiesSttlmTxInstr> <StgSttlmInstrDtls> <CshPties> <DbtrAgt/CdtrAgt> <Id> <PrtryId> <Id>
Element Format	BICFI <BICFI> [A-Z]{6,6}[A-Z2-9][A-NP-Z0-9]([A-Z0-9]{3,3}){0,1} Id <Id> Text maxLength: 35 minLength: 1
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Client of Receiving–Delivering Agent (ISO9362 Bank Identifier Codes [BIC])****Party that receives or delivers the financial instrument.**

(MT 543: Repetitive Mandatory Subsequence E1 Settlement Parties&gt; Party&gt; Buyer–Seller)

ISO20022(sese.023.001.02)	
Element Name	CashParties >Debtor/Creditor >Identification >AnyBIC/ProprietaryIdentification >Identification
Tag Structure	<SctiesSttlmTxInstr> <StgSttlmInstrDtls> <CshPties> <Dbtr/Cdtr> <Id> <AnyBIC>  <SctiesSttlmTxInstr> <StgSttlmInstrDtls> <CshPties> <Dbtr/Cdtr> <Id> <PrtryId> <Id>
Element Format	AnyBIC [A-Z]{6,6}[A-Z2-9][A-NP-Z0-9]([A-Z0-9]{3,3}){0,1} Id Text maxLength: 35 minLength: 1
Multiplicity	single
Optional or Mandatory	mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Country specifics as per local market practice (if any)**

If there are any messages which are specific in each economy, please write down the details in matrix below.

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	
Reason and background why the specific messages are necessary	

**Fit-and-gap analysis of the 10 common elements for securities settlement confirmation between ISO20022 and local practices in terms of business element name, definition, format, multiplicity, and optional or mandatory. The 10 common elements are listed below.**

**Instruction Identification (16x)****Reference assigned by the Sender to unambiguously identify the message.**

(MT 545: Mandatory Sequence A General Information> Sender's Reference)

ISO20022(sese.025.001.02)	
Element Name	TransactionIdentificationDetails >AccountOwnerTransactionIdentification
Tag Structure	<SciesSttlmTxConf> <TxIdDtls> <AcctOwnrTxId>
Element Format	Text maxLength: 35 minLength: 1
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Trade Date (Date and Time)****Date/time on which the deal was agreed**

(MT 545: Mandatory Sequence B Trade Details&gt; Trade Date and Time)

ISO20022(sese.025.001.0(ii))	
Element Name	TradeDetails >TradeDate
Tag Structure	<SctiesSttImTxConf> <TradDtIs> <TradDt> <Dt>/<DtTm>
Element Format	ISODate:YYYY-MM-DD ISODateTime: UTC time format (YYYY-MMDDThh:mm:ss.sssZ), local time with UTC offset format (YYYY-MM-DDThh:mm:ss.sss +/-hh:mm), or local time format (YYYY-MM-DDThh:mm:ss.sss)
Multiplicity	Single
Optional or Mandatory	Optional

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Effective Settlement Date (Date and Time)****Date/time on which the settlement effectively took place.**

(MT 545 Receive A(MT 545: Mandatory Sequence B Trade Details&gt;Effective Settlement Date and Time)

ISO20022(sese.025.001.02)	
Element Name	TradeDetail >EffectiveSettlementDate
Tag Structure	<SctiesSttImTxConf> <TradDtIs> <FctvSttImDt> <Dt>/<DtTm>
Element Format	ISODate:YYYY-MM-DD ISODateTime: UTC time format (YYYY-MMDDThh:mm:ss.sssZ), local time with UTC offset format (YYYY-MM-DDThh:mm:ss.sss +/-hh:mm), or local time format (YYYY-MM-DDThh:mm:ss.sss)
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

### Effectively Settled Quantity of Financial Instrument (Expressed as face amount)

Quantity of financial instrument deposited into specified account (MT 545: Repetitive Mandatory Sequence C Financial Instrument/Account>Quantity of Financial Instrument> Quantity of Financial Instrument Settled)

ISO20022(sese.025.001.02)	
Element Name	QuantityAndAccountDetails >SettledQuantity >Quantity > FaceAmount
Tag Structure	<SctiesSttImTxConf> <QtyAndAcctDtls> <SttldQty> <Qty> <FaceAmt>
Element Format	fractionDigits: 5 minInclusive: 0 totalDigits: 18
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	



**Financial Instrument (International Securities Identification Number: ISIN)** This field identifies the financial instrument.

(MT 545:Mandatory Sequence B Trade Details> Identification of the Financial Instrument)

ISO20022(sese.025.001.02)	
Element Name	FinancialInstrumentIdentification > ISIN
Tag Structure	<SctiesSttlmTxConf> <FinInstrmId> <ISIN>
Element Format	[A-Z0-9]{12,12}
Multiplicity	Single
Optional or Mandatory	Optional

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

### Effectively Settled Amount (Currency and amount)

**Amount effectively settled and which will be credited to / debited from the account owner's cash account. It may differ from the instructed settlement amount based on market tolerance level.**

(MT 545: Repetitive Mandatory Sequence C Financial Instrument/Account>Amount>Settled Amount)

ISO20022(sese.025.001.02)	
Element Name	SettledAmount>
Tag Structure	<SctiesSttlmTxConf> <SttldAmt> <Amt>
Element Format	ActiveCurrencyAndAmount fractionDigits: 5 minInclusive: 0 totalDigits: 18 ActiveCurrencyCode [A-Z]{3,3}
Multiplicity	Single
Optional or Mandatory	Mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

### Safekeeping Account effectively credited or debited (35x)

#### Safekeeping account held by the party specified in this sequence.

(MT 545: Repetitive Mandatory Subsequence E1 Settlement Parties>Account> Safekeeping Account)

ISO20022(sese.025.001.02)	
Element Name	DeliveringSettlementParties/ReceivingSettlementParties >Party1 >SafekeepingAccount >Identification
Tag Structure	<SctiesSttImTxConf> <DlvrgSttImPties/RcvgSttImPties> <Pty1> <SfkpgAcct> <Id>
Element Format	Text maxLength: 35minLength: 1
Multiplicity	single
Optional or Mandatory	mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Place of Settlement (ISO9362 Bank Identifier Codes (BIC) )****Place of Settlement.**

(MT 545: Repetitive Mandatory Subsequence E1 Settlement Parties&gt;Party&gt;Place of Settlement)

ISO20022(sese.025.001.02)	
Element Name	StandingSettlementInstructionDetails > Delivering/ Receiving SettlementParties > Depository > Identification > AnyBIC
Tag Structure	<SctiesSttlmTxInstr> <StgSttlmInstrDtls> <DlvrSttlmPties/ RcvgSttlmPties > <Dpstry> <Id> <AnyBIC>
Element Format	[A-Z]{6,6}[A-Z2-9][A-NP-Z0-9]([A-Z0-9]{3,3}){0,1}
Multiplicity	Single
Optional or Mandatory	mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Receiving/Delivering Agent (ISO9362 Bank Identifier Codes (BIC) )****Receiving/Delivering Agent. (MT 545:Repetitive Mandatory Subsequence E1 Settlement Parties>Party> Receiving/Delivering Agent)**

ISO20022(sese.025.001.02)	
Element Name	CashParties >DebtorAgent/CreditorAgent >Identification >AnyBIC/ProprietaryIdentification >Identification
Tag Structure	<SctiesSttlmTxConf> <StgSttlmInstrDtls> <CshPties> <DbtrAgt/CdtrAgt> <Id> <BICFI>  <SctiesSttlmTxConf> <StgSttlmInstrDtls> <CshPties> <DbtrAgt/CdtrAgt> <Id> <PrtryId> <Id>
Element Format	BICFI <BICFI>  [A-Z]{6,6}[A-Z2-9][A-NP-Z0-9]([A-Z0-9]{3,3}){0,1}  Id <Id>  Text maxLength: 35 minLength: 1
Multiplicity	single
Optional or Mandatory	mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Client of Receiving/Delivering Agent (ISO9362 Bank Identifier Codes (BIC) )**

Buyer/Seller. (MT 545:Repetitive Mandatory Subsequence E1 Settlement Parties&gt;Party&gt; Buyer/Seller)

ISO20022(sese.025.001.02)	
Element Name	CashParties >Debtor/Creditor >Identification >AnyBIC/ProprietaryIdentification >Identification
Tag Structure	<SctiesSttlmTxConf> <StgSttlmInstrDtls> <CshPties> <Dbtr/Cdtr> <Id> <AnyBIC>  <SctiesSttlmTxConf> <StgSttlmInstrDtls> <CshPties> <Dbtr/Cdtr> <Id> <PrtryId> <Id>
Element Format	AnyBIC [A-Z]{6,6}[A-Z2-9][A-NP-Z0-9]([A-Z0-9]{3,3}){0,1} Id Text maxLength: 35 minLength: 1
Multiplicity	Single
Optional or Mandatory	mandatory

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	

**Country specifics as per local market practice (if any)**

If there are any messages which are specific in each economy, please write down the details in matrix below.

Answer	
Element Name	
Definition and Explanation	
Message Format	
Element Format	
Multiplicity	
Optional or Mandatory	
Reasons and background why the specific message items are necessary	

**Fit and gap analysis for securities settlement instruction (sese 02(iii) and confirmation (sese02(v) between ISO 20022 and local practices. Through the survey of all message items, identify country specifics as per local market practices and unsupported mandatory message items of ISO 20022.**

ANSWER

**Fit and gap analysis other than securities settlement instruction and securities settlement confirmation. SF2 may analyze other message items or not.**

ANSWER

## Cross-border transaction flows (Case 6 and 8)

In ASEAN+3, the most prevalent cross-border bond transactions are through global custodians and settled as a DVP transaction in same market (country) domestically. Therefore, the cross-border line is located between global custodian and local custodian as shown in Figure 4.1.

In this section, a cross-border DVP transaction settling bond and cash in different countries simultaneously (bond should be settled when and only when cash is settled) is to be discussed as a model cross-border DVP transaction as shown in Figure 6.1.

Possible barriers and impediments including market practices will be discussed.



There are 16 possible cross-border DVP patterns. In case 6, which was presented at the Hong Kong, China Meeting, there are several premises: bond issued by economy A must settle in the system of CSD in economy A, and currency issued by economy B must settle in the cash settlement system in economy B. Offshore trading is out of scope in case 6.

### Cross-border OTC market (including repo market)

Currently there may be no significant cross-border bond OTC market in ASEAN+3 though a few companies are providing trading systems.

Could you explain the current situation of the cross-border OTC market relating to your economy, please? What are the barriers to foster such a market? What are the benefits to promoting cross-border OTC market from your perspective (investor perspective, issuer perspective, international broker perspective, local broker perspective, global custodian perspective, local custodian perspective, trading system provider perspective, CSD perspective, and central bank perspective)?

ANSWER

### Linkage between CSD and CSD

In case of connection between a CSD in your economy and another CSD located in another economy, please mention issues and impediments as much as possible (refer to Figure 6.1 and 6.2). A buyer approved by the access control of CSD-B needs to be allowed to access to CSD-A via CSD-B. Do you think it is acceptable for CSD in your country? If yes, what are the conditions for CSD-to-CSD link? If not, is it prohibited by legislation, regulation or CSD rules? What are the reasons for not allowing remote access from foreign CSD (e.g., risk concerns, system limitation, tax issues)? What kinds of authentication systems to mutually accept access control will be necessary? What kinds of communication protocols will be appropriate? Who will control settlement matching? How do you handle queue and offsetting?

		Answer
General comment		
*Access control		
(Pre-settlement) matching		
Operating hours		
System	Type of line(s)	
	Protocol(s)	
	Interface(s)	
	Message Format(s)	
Priority of queue or offsetting		
Any other issues and impediments		

\*Access control: CSD can admit to participation of non-residents which are approved or registered by other countries' CSD.

## Linkage between CSD and Central Bank

In case of connection between CSD in your economy and a central bank located in another economy for DVP settlement of cross-currency transactions, please mention impediments as much as possible. To what extent, are cross-currency transactions of domestic bonds (or transactions of foreign-currency denominated bonds) carried out in your country? How do you evaluate the potential needs for such cross-currency transactions? Are there any barriers (e.g., regulation or banking guidelines) for the conduct of cross-currency securities transactions or foreign currency-denominated bonds? When conducting DVP for a government bond, the seller's bond is locked (earmarked, blocked, or transferred to a temporary account) and released when cash payment is completed. What kind of status does the locked bond has? Who is the owner of the locked bond? Does CSD have its own securities account in the book-entry system? If yes, for what purposes does the CSD have the account? What kinds of communication protocols will be appropriate? How do you handle queue and offsetting?

		Issues and Impediments
Types of BIS DVP model		
General comment		
Operating hour		
System	Type of line(s)	
	Protocol(s)	
	Interface(s)	
	Message Format(s)	
Any other issues and impediments		

## Roadmap

When answering this section (Roadmap) of questions, please refer to Table 10.2: Summary of Market Barriers Assessment of ASEAN+3 Bond Market Guide Volume 1 Part2 and Re-Assessment of ABMI Group of Experts Report on Legal and Regulatory Feasibility. In the GOE Report one of the general recommendations encourages the publishing of a roadmap for reducing the barriers in each market. Having said that this does not necessary means that those barriers remain as barriers for ever. Also, the GOE Report recommended refining the assessment. As a matter of fact, technological advancement could turn the barriers into advantages.

When discussing a roadmap, the following are definitions of terms used:

Short-term: by 2015 or without having any system infrastructure

Medium-term: from 2016 to 2020

Long-term: after 2020

Could you share information on current activities and plans addressing the barriers and list all plans (in particular related to 7.4 Regulatory barriers pointed by GoE Report), please?

## ISO 20022 migration plan

Registration agency is expected to explain migration plan of ISO 20022 world- wide and each country for each message type.

ANSWER

## Follow up and refinement of barriers

### Messaging standards

#### A) Trading system (including trade and post-trade matching system)

Do you have a trading system in your economy? If yes, what kind of messaging standard does the system use, proprietary standard, ISO15022, or ISO20022? If the message standard is not ISO20022, please describe short-term, medium-term, and long-term plans. When did the current system start production operations? Could explain this issue generally, please?

ANSWER	
System Name	
Standard	(proprietary, ISO15022, or ISO20022)
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	
General description of the system	

#### B) Clearing system or CCP

Do you have a clearing system or CCP in your economy? If yes, what kind of messaging standard does the system use, proprietary standard, ISO15022, or ISO20022? If the message standard is not ISO20022, please describe short-term, medium-term, and long-term plans. When did the current system start production operations? Could you explain this issue generally, please?

ANSWER	
System Name	
Standard	(proprietary, ISO15022, or ISO20022)
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	
General description of the system	

## C) Pre-settlement matching system

Do you have a pre-settlement matching system in your economy? If yes, what kind of messaging standard does the system use, proprietary standard, ISO15022, or ISO20022? If the message standard is not ISO20022, please describe short-term, medium-term, and long-term plans. When the current system started production operations? Could explain this issue generally, please?

ANSWER	
System Name	
Standard	(proprietary, ISO15022, or ISO20022)
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	
General description of the system	

## D) CSD book-entry system

Do you have a book-entry system in your economy? If yes, what kind of messaging standard does the system use, proprietary standard, ISO15022, or ISO20022? If the message standard is not ISO20022, please describe short-term, medium-term, and long term plans. When the current system started production operation? Could explain this issue generally, please?

ANSWER	
System Name	
Standard	(proprietary, ISO 15022, or ISO 20022)
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	
General description of the system	

## E) RTGS system

Do you have an RTGS system in your economy? If yes, what kind of messaging standard does the system use, proprietary standard, ISO15022, or ISO20022? If the message standard is not ISO20022, please describe short-term, medium-term, and long-term plans. When did the current system start production operations? Could explain this issue generally, please?

ANSWER	
System Name	
Standard	(proprietary, ISO 15022, or ISO 20022)
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	
General description of the system	

## F) Bond trading and settlement system of market participants

This question is for International Experts (and National Experts). Do you have bond trade and settlement related system of your company? If yes, what kind of messaging standard does the system use, proprietary practice, ISO15022, or ISO20022? If the message standard is not ISO20022, please describe short-term, medium-term and long-term plans. When the current system started production operation? Could you explain this issue generally, please?

ANSWER	
System Name	
Standard	(proprietary, ISO 15022, or ISO 20022)
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	
General description of the system	

## Settlement cycle as a market rule

### A) Settlement cycle as a domestic market rule

Do you have a settlement cycle made as a common rule by a neutral organization such as a SRO (self-regulatory organization) in your market? If yes, please describe it for government bond and corporate bond. Is a domestic market rule for settlement cycle also applicable to cross-border transactions? If no, please describe future plan to have such a rule.

ANSWER	
Current rule if any for domestic players	Government bond: Corporate bond:
Current rule if any for non-residents	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

### B) Settlement cycle as an ASEAN+3 market rule

Do you think common settlement cycle as a rule in ASEAN+3 market for cross-border transactions is necessary? If yes, what is an appropriate period (such as T+3 or T+2) for government bond trade and corporate bond trade? How do you set up this kind of common settlement cycle in the region?

- Settlement cycles for cross-border transactions with out-side ASEAN+3 such as with Europe and North America may be different from those inside ASEAN+3 considering time differences. Could you also comment on this issue, please?

ANSWER	
Possible goal	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

## Securities numbering

### A) ISIN (International Securities Identification Number) issuance

In many economies, domestic securities identification numbers are still widely used. In some countries, significant period is necessary to disseminate the information. What is current situation of acceptance of ISIN in the market? What is your short, medium, and long-term plans?

ANSWER	
Current situation	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	



**B) Migration to ISIN for related infrastructures**

Adopting ISIN is one of the important steps to implement cross-border STP in ASEAN+3. Could you describe migration plans from proprietary numbering to ISIN, for trading, clearing, pre-settlement matching, book-entry, and RTGS systems, please?

ANSWER	
Current situation	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

**C) ANNA (Association of National Numbering Agencies)**

In 10 economies which have already bond markets, there is a full member in each economy. But, 4 countries which do not have full-fledged bond market yet, may need to establish a numbering agency. What is your plan related to numbering agency? What is your short, medium, and long-term plans?

ANSWER	
Current situation	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

**Party identification****A) BIC (Business Identifier Code)**

In many economies, domestic securities identification numbers are still widely used. In some countries, significant period is necessary to disseminate the information. What is current situation of acceptance of BIC in the market? What is your short, medium, and long-term plans?

ANSWER	
Current situation	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

## B) Migration to BIC for related infrastructures

Adopting BIC is one of the important steps to implement cross-border STP in ASEAN+3. Could you describe migration plans from proprietary code to BIC, for trading, clearing, pre-settlement matching, book-entry, and RTGS systems, please?

ANSWER	
Current situation	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

**Matching**

Please refer to the Table 6.1 Matching types in ASEAN+3 Markets of SF2 report Part1 page 25.

## A) Trade matching including matching system and post-trade matching

Trade matching including trading system functions is very important to develop cross-border STP. What is current situation of trade matching? What is your short, medium, and long-term plans?

ANSWER	
Current situation	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

## A) Pre-settlement matching

What is current situation of pre-settlement matching? What is your short, medium, and long-term plans?

ANSWER	
Current situation	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

### Dematerialization

Please refer to the Table 1.5 Exchangeability of Scripless Bonds to Physical Bonds of SF1 report Part1 page 5.

Only People's Republic of China and Japan have complete dematerialization policy.

What is current and future policy of dematerialization? What is your short, medium, and long-term plans?

ANSWER	
Current situation	Government bond: Corporate bond:
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

### Omnibus account or segregated account

If IT capacity such as database capacity, processing power, and network speed increases, segregated accounts can be handled without any system performance problem. Segregated account may be more transparent than omnibus account. Refer to Re-assessment of ABMI Group of Experts Report on legal and regulatory feasibility.

- A) Beneficial ownership  
How beneficial ownership is recognized?

ANSWER

- B) Omnibus account or segregated account  
What is current and future policy on omnibus account or segregated account? What is your short, medium, and long-term plans?

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

### Events in ASEAN+3

Members and experts present the events, projects and other plans which may have some impacts on bond trading and settlement.

ANSWER

**Members and experts explain purposes and policies of each events and projects.****ANSWER****Technology advancement related to bond trading and settlement**

Members and experts express their ideas about technology advancement: available schedule, merits of using these technologies. If possible, they illustrate the grounds and reasons.

**ANSWER****Regulatory barriers pointed by GoE Report****Foreign investor quota**

The existence of a quota implies an application process and period of waiting for a quota to become available.

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

**Foreign investor registration**

The requirement for investor registration may potentially cause problems such as: onerous or unclear documentation requirements, length of time needed to gain approval and uncertainty of timing or outcome.

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

**Currency Exchange controls**

Market participants may potentially experience difficulties caused by: Delays or uncertainty in the time taken to secure such approval, onerous documentation or lack of flexibility in the amount.

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

There are some FX related transaction flows for DVP trade and settlement. Could you answer FX related future plans, if possible, please?

#### Convertibility

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

#### Pre-funding

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

#### Rate management

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

#### Reporting by non-residents

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

#### Spot and tri-party repo

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

**Repatriation**

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

**Any other barriers related to foreign exchange**

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

**Cash controls – credit balances**

Rules setting a limit on the local currency balances that may be held by non-resident investors, restrictions on investment in money market instruments or restrictions on interest-bearing accounts.

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

**Cash control – overdrafts**

The restrictions or prohibitions on non-residents borrowing in local currency.

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

**Tax****A) Withholding tax**

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	



## B) Capital gain tax

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

## C) Transaction tax

ANSWER	
Current situation	
Short-term plan	
Medium-term plan	
Long-term plan	
General description	

## Roadmap of payment related infrastructures

## A) Trading system (including trade and post-trade matching system)

What is current platform of trading system? What are the short-, medium-, and long-term plans of the platform? When did the current system (platform) start production operations? Could explain this issue generally, please?

ANSWER	
System Name	
Platform	
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	
General description of the system	

## B) Clearing system or CCP

What is current platform of clearing system? What are the short-, medium-, and long-term plans of the platform? When did the current system (platform) start production operations? Could explain this issue generally, please?

ANSWER	
System Name	
Platform	
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	

## C) Pre-settlement matching system

What is current platform of pre-settlement matching system? What are the short-, medium-, and long-term plans of the platform? When did the current system (platform) start production operations? Could explain this issue generally, please?

ANSWER	
System Name	
Platform	
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	

## D) CSD Book-entry system

What is current platform of book-entry system? What are the short-, medium-, and long-term plans of the platform? When did the current system (platform) start production operations? Could explain this issue generally, please?

ANSWER	
System Name	
Platform	
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	

## E) RTGS system

What is current platform of RTGS system? What are the short-, medium-, and long-term plans of the platform? When did the current system (platform) start production operations? Could explain this issue generally, please?

ANSWER	
System Name	
Platform	
Short-term plan	
Medium-term plan	
Long-term plan	
Inauguration year of the system	

## Connection with other CSDs

### Plans for connection with other CSDs in ASEAN+3

ANSWER

**Plans for connection with other CSDs of outside ASEAN+3****ANSWER****Plans for connection with ICSDs (Euroclear or Clearstream)****ANSWER****Plans for cross-border collateral**

Are there any collateral management systems in your country for repo or other types of transactions, or are there any plans to develop collateral management system? What types of collateral (domestic securities or foreign securities, and collateral for repo or securities lending transactions) are eligible for these collateral management systems?

Do you have any plans to establish links between domestic RTGS systems and domestic or foreign collateral management systems?

**ANSWER****Plans for development of reporting system**

<b>ANSWER</b>	
Date	
New functions	
New Technologies	

**Connection with central bank RTGS system in other countries****Plans for connection with RTGS systems in ASEAN+3****ANSWER****Plans for connection with RTGS systems outside ASEAN+3****ANSWER**

## Other barriers related to bond transaction

### Allocation

In case of cross-border bond transactions, allocation may be executed by manual operation.

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

### SSI (Standing Settlement Instruction)

In case of cross-border bond transaction, SSI may be handled by manual operation.

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

### Direct participant of CSD

Foreign institutions cannot be direct participants of some CSDs.

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

### Settlement tolerance level

Settlement tolerance level differ from each CSD.

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

**Disclosure requirement**

Some economies stipulate the report to authority trade by trade basis.

ANSWER	
Current conditions	
Short-term plan	
Mid-term plan	
Long-term plan	
General comment	

**Changes in rules and regulations for bond markets from the standpoint of STP)**

ANSWER

**Changes in rules and regulations for non-resident transactions**

ANSWER

**Measurements for enhancement of secondary market transactions**

ANSWER

Note:

Policy recommendations relating to barriers on technical aspects and business processes, including market practices, will be discussed.

Policy recommendations relating to regulatory changes, including tax and foreign exchange regime, will not be primary issues discussed, but rather shared as reference information. Information on regional infrastructures will also be shared.

## Follow-up of phase 1 surveys

**Filling in the blank spaces in Phase 1 report**

ADB Consultant for SF2 would very much appreciate it if national members and experts could fill in the blank spaces of tables in Phase 1 report as much as possible. Could you check the attachment file (Figure 8.2) and fill in the blanks, please, if possible?

ANSWER	
Please use PowerPoint template	

## Review and update the bond market diagrams and flowcharts

In phase 2 surveys, we will study corporate bond markets: overview of market, related organization, trading, CCP, and security and cash settlement. For comparison to other corporate bond markets, members and experts will update phase 1 surveys as necessary.

ANSWER

(Please use PowerPoint template)

## Cross-border STP

In order to identify business processes (such as cross-border repo, securities lending, and cross-border collateral) with a high priority from cross-border STP viewpoint, further input from members and experts will be appreciated.

ANSWER

Cut-off time of each market may be surveyed and discussed from cross-border STP perspective.

ANSWER

Remote accesses: Sell side or buy side accesses from one country to other country's CSD.

ANSWER

## Structure of accounts

### Securities account

Members provide the information about structure of securities account in each CSD. (e.g., structure of registry)

ANSWER

(Please use PowerPoint template)

### Cash account

Does central bank have its own account(s) in central bank?

ANSWER

In your economy, other economies are possible to open their own cash account in your economy's central bank or not.

ANSWER



## Country codes

Could you comment on using international standard (ISO 3166-1 alpha2) as country codes for the Phase 2 report to the ABMI TF3, please?

ANSWER

## Currency code

Currency code is also important for market harmonization. SF2 also recommends adopting ISO4217. If you have any idea, please present your ideas and backgrounds.

ANSWER

## Detailed transaction flowchart of Government bonds

During the phase 1 activities, SF2 drew a Typical Business Flowchart for Government Bond DVP Transactions. In order to promote cross-border DVP and cross-border STP, SF2 would like to clear up the detail process of government bond DVP transaction flow in each market. Try drawing the detailed transaction flowchart as much as possible.

ANSWER

(Please use PowerPoint template)

## Other issues

### LEI (Legal Entity Identifier)

What is your policy on LEI? What is your current situation? How do you identify counterparties (investors), currently?

ANSWER

### Data collection

What is your policy on data collection? What is your current situation on data collection? In order to enhance cross-border bond transaction, transparency of market information, such as listed bonds, limitation of non-residents, pricing and interest rate, is important. Infrastructures for data collection and dissemination could be a topic for ABMF. If you have any ideas, could you share it with members, please?

ANSWER

### Contribution to ISO-related financial transactions

How do you think you can contribute to the ISO activities?

How you can contribute to sharing cost of standardization?

ANSWER

### Challenges and future issues

Could you describe current challenges and future issues relating to bond markets, trading, clearing (CCP), and settlement, including cash settlement, please?

ANSWER

### Any other issues related to SF2

If there are any other issues to be discussed as a topic of phase 2 of ABMF SF2 studies, could you propose them, please?

ANSWER

## Fostering cross-border STP

How do you think we can foster cross-border STP in ASEAN+3?

ANSWER

# **Part 3**

Bond Market  
Infrastructure Diagrams,  
Domestic Bond  
Transaction Flows, and  
Cross-border Bond  
Transaction Flows



# Contents

ASEAN+3 Bond Market Diagram.....	320
ASEAN+3 Government Bond Market Diagram.....	321
ASEAN+3 Corporate Bond Market Diagram.....	322
<b>Brunei Darussalam (BN) .....</b>	<b>325</b>
Bond Market Infrastructure Diagram.....	326
Bond Transaction Flow for Domestic Trades (proposed by ADB) .....	328
Profit & Redemption Payment Flow of Government Sukuk Al-Ijarah .....	332
<b>People's Republic of China (CN).....</b>	<b>336</b>
Bond Market Infrastructure Diagram .....	337
Bond Transaction Flow for Domestic Trades (Government Bond) .....	340
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	345
Bond Transaction Flow for Foreign Investors.....	352
Interest & Redemption Payment Flow (Government Bond) .....	357
Interest & Redemption Payment Flow (Corporate Bond) .....	366
<b>Hong Kong, China (HK) .....</b>	<b>375</b>
Bond Market Infrastructure Diagram .....	376
Bond Transaction Flow for Domestic Trades (Government Bond) .....	379
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	382
Bond Transaction Flow for Foreign Investors.....	385
Interest & Redemption Payment Flow (Government Bond) .....	388
Interest & Redemption Payment Flow (Corporate Bond) .....	393
<b>Indonesia (ID) .....</b>	<b>398</b>
Bond Market Infrastructure Diagram .....	399
Bond Transaction Flow for Domestic Trades (Government Bond) .....	402
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	405
Bond Transaction Flow for Foreign Investors.....	409
Interest & Redemption Payment Flow (Government Bond) .....	412

Interest & Redemption Payment Flow (Corporate Bond) .....	417
---	-----

## **Japan (JP) ..... 423**

Bond Market Infrastructure Diagram .....	424
Bond Transaction Flow for Domestic Trades (Government Bond) .....	427
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	433
Bond Transaction Flow for Foreign Investors .....	436
Interest & Redemption Payment Flow (Government Bond) .....	439
Interest & Redemption Payment Flow (Corporate Bond) .....	444

## **Cambodia (KH) ..... 449**

Bond Market Infrastructure Diagram .....	450
Bond Transaction Flow for Domestic Trades (Government Bond) .....	453
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	456
Interest & Redemption Payment Flow (Government Bond) .....	459

## **Republic of Korea (KR)..... 464**

Bond Market Infrastructure Diagram .....	465
Bond Transaction Flow for Domestic Trades (Government Bond) .....	468
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	473
Bond Transaction Flow for Foreign Investors .....	478
Interest & Redemption Payment Flow (Government Bond) .....	481
Interest & Redemption Payment Flow (Corporate Bond) .....	486

## **Lao PDR (LA) ..... 491**

Bond Market Infrastructure Diagram .....	492
Bond Transaction Flow for Domestic Trades (Government Bond) .....	495
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	498
Interest & Redemption Payment Flow (Government Bond) .....	501

## **Myanmar (MM) ..... 506**

Bond Market Infrastructure Diagram .....	507
Bond Transaction Flow for Domestic Trades (Government Bond) .....	509
Interest & Redemption Payment Flow (Government Bond) .....	512

## **Malaysia(MY) ..... 517**

Bond Market Infrastructure Diagram .....	518
Bond Transaction Flow for Domestic Trades (Government Bond) .....	521
Bond Transaction Flow for Foreign Investors .....	525
Interest & Redemption Payment Flow (Government Bond) .....	528
Interest & Redemption Payment Flow (Corporate Bond) .....	533



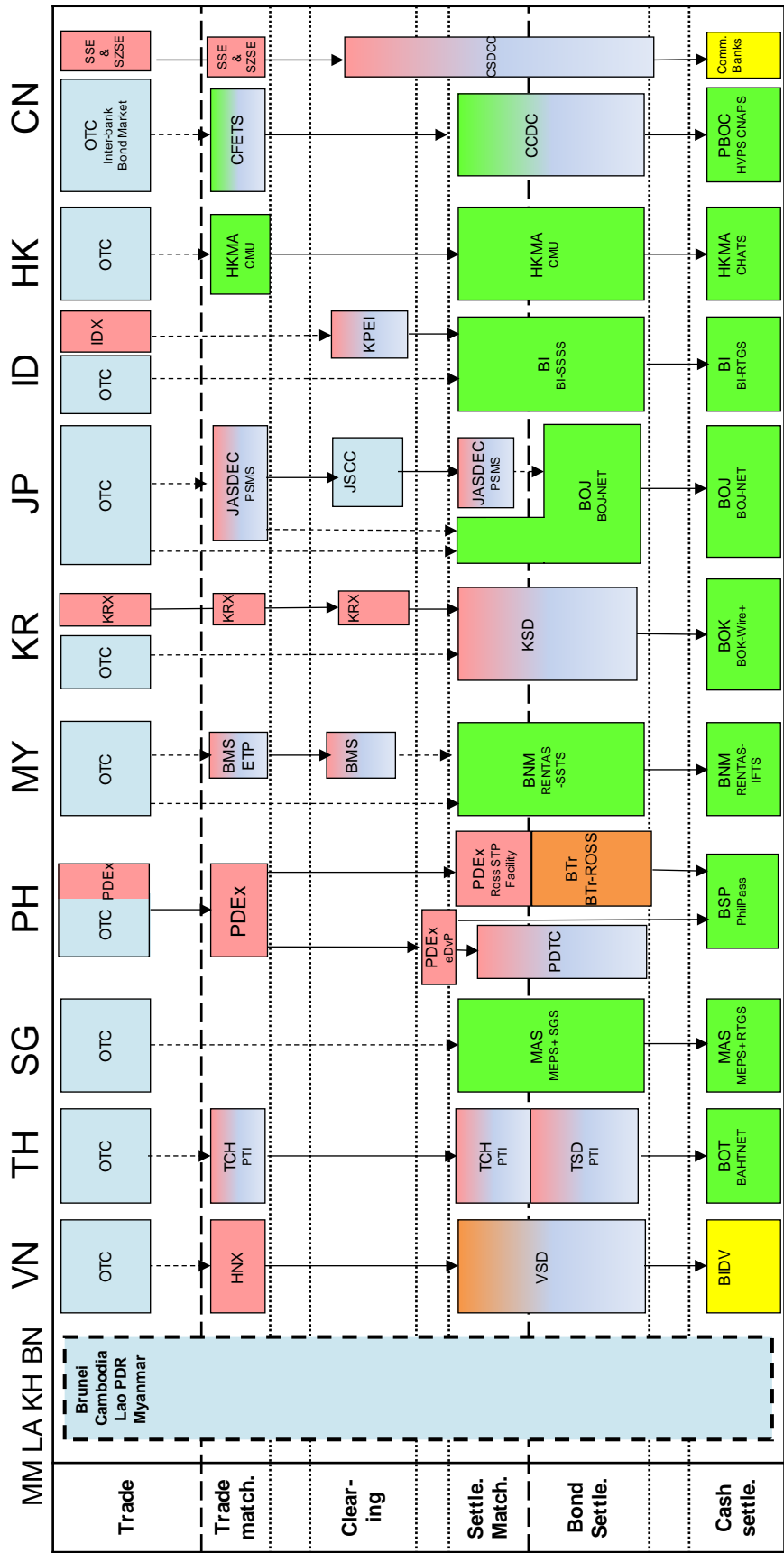
<b>Philippines (PH)</b> .....	<b>538</b>
Bond Market Infrastructure Diagram .....	539
Bond Transaction Flow for Domestic Trades (Government Bond) .....	542
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	547
Bond Transaction Flow for Foreign Investors.....	550
Interest & Redemption Payment Flow (Government Bond) .....	553
Interest & Redemption Payment Flow (Corporate Bond) .....	558
 <b>Singapore (SG)</b> .....	 <b>563</b>
Bond Market Infrastructure Diagram .....	564
Bond Transaction Flow for Domestic Trades (Government Bond) .....	567
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	570
Bond Transaction Flow for Foreign Investors.....	573
Interest & Redemption Payment Flow (Government Bond) .....	576
Interest & Redemption Payment Flow (Corporate Bond) .....	581
 <b>Thailand (TH)</b> .....	 <b>586</b>
Bond Market Infrastructure Diagram .....	587
Bond Transaction Flow for Domestic Trades (Government Bond) .....	590
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	593
Bond Transaction Flow for Foreign Investors.....	596
Interest & Redemption Payment Flow (Government Bond) .....	599
Interest & Redemption Payment Flow (Corporate Bond) .....	605
 <b>Viet Nam (VN)</b> .....	 <b>611</b>
Bond Market Infrastructure Diagram .....	612
Bond Transaction Flow for Domestic Trades (Government Bond) .....	615
Bond Transaction Flow for Domestic Trades (Corporate Bond) .....	618
Bond Transaction Flow for Foreign Investors.....	621
Interest & Redemption Payment Flow (Government Bond) .....	624
Interest & Redemption Payment Flow (Corporate Bond) .....	629

### ASEAN+3 Bond Market Diagram

#### ■ Diagram of each Economy

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

ASEAN+3 Government Bond Market Diagram



NOTE:



\* This diagram shows entities which is involved in major types of transactions.  
\*\* Retail bond market is not included in this diagram.

### ASEAN+3 Government Bond Market Diagram

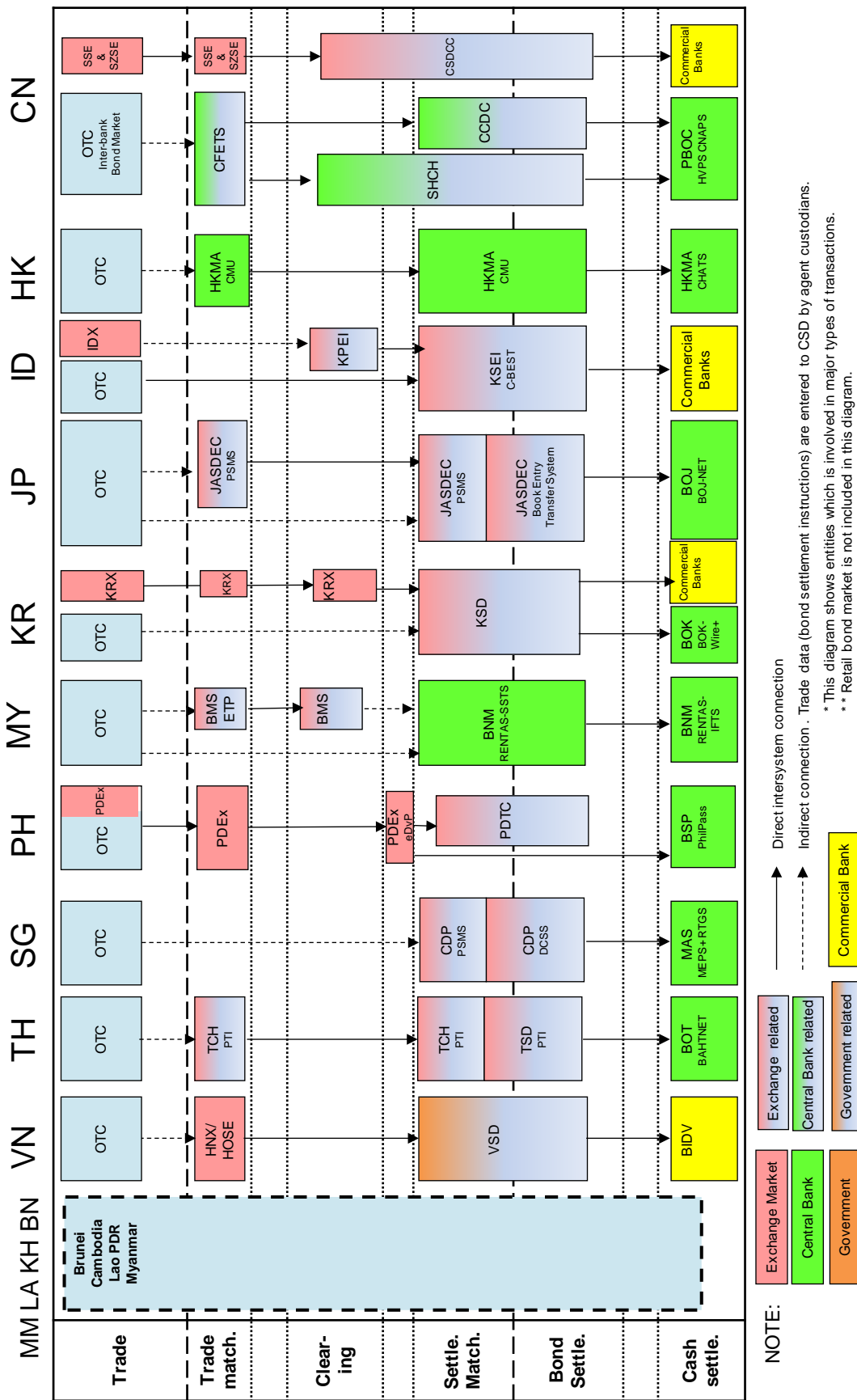
	CN	HK	ID	JP	KR	MY	PH	SG	TH	VN
Trade	OTC EX	OTC	OTC EX	OTC	OTC EX	OTC	OTC EX	OTC	OTC	OTC
Clearing	Y*	N	Y*	Y	Y*	Y*	N	N	N	N
Bond Settlement	Central bank Related CSD **	Central bank Owned CSD	Central bank Owned CSD	Central bank Owned CSD	Exchange Related CSD	Central bank Owned CSD	Bureau of Treasury, Exchange Related CSD	Central bank Owned CSD	Exchange Related CSD	Exchange Related CSD
Cash Settlement	Central bank money	Central bank money	Central bank money	Central bank money	Central bank money	Central bank money	Central bank money	Central bank money	Central bank money	Commercial bank money

Note: EX (Exchange)

\*: CCP exists an exchange function. But, transaction volume/value through exchange is small.

\*\*: There is an exchange related CSD But, transaction volume/value through exchange is small.

ASEAN+3 Corporate Bond Market Diagram



## ASEAN+3 Corporate Bond Market Diagram

	CN	HK	ID	JP	KR	MY	PH	SG	TH	VN
Trade	OTC EX	OTC	OTC EX	OTC	OTC EX	OTC	OTC EX	OTC	OTC	OTC
Clearing	Y*	N	Y*	N	Y*	Y*	N	N	N	N
Bond Settlement	CB and EX Related CSD	Central bank Owned CSD	Exchange Related CSD	Exchange Related CSD	Exchange Related CSD	Central bank Owned CSD	Exchange Related CSD	Exchange Related CSD	Exchange Related CSD	Exchange Related CSD
Cash Settlement	Commercial and Central bank money	Central bank money	Commercial bank money	Central bank money	Commercial and Central bank money	Central bank money	Central bank money	Central bank money	Central bank money	Commercial bank money

Note: EX (Exchange)

\*: CCP exists an exchange function. But, transaction volume/value through exchange is negligibly small.

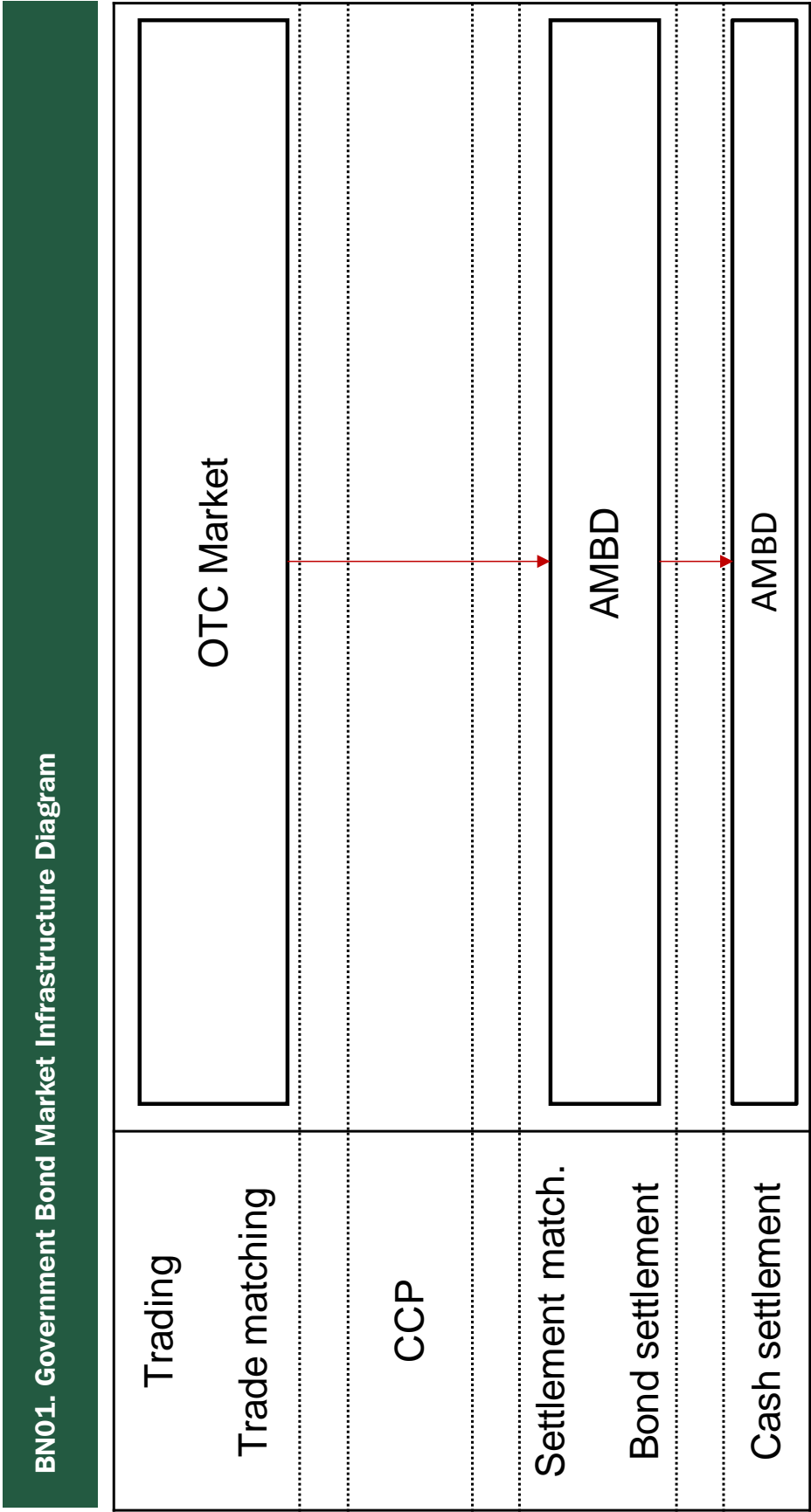
# Brunei

# Darussalam (BN)

- Bond Market Infrastructure Diagram (Government Bond)
- Bond Transaction Flow for Domestic Trades (proposed by ADB)
- Profit & Redemption Payment Flow of Government Sukuk Al-Ijarah

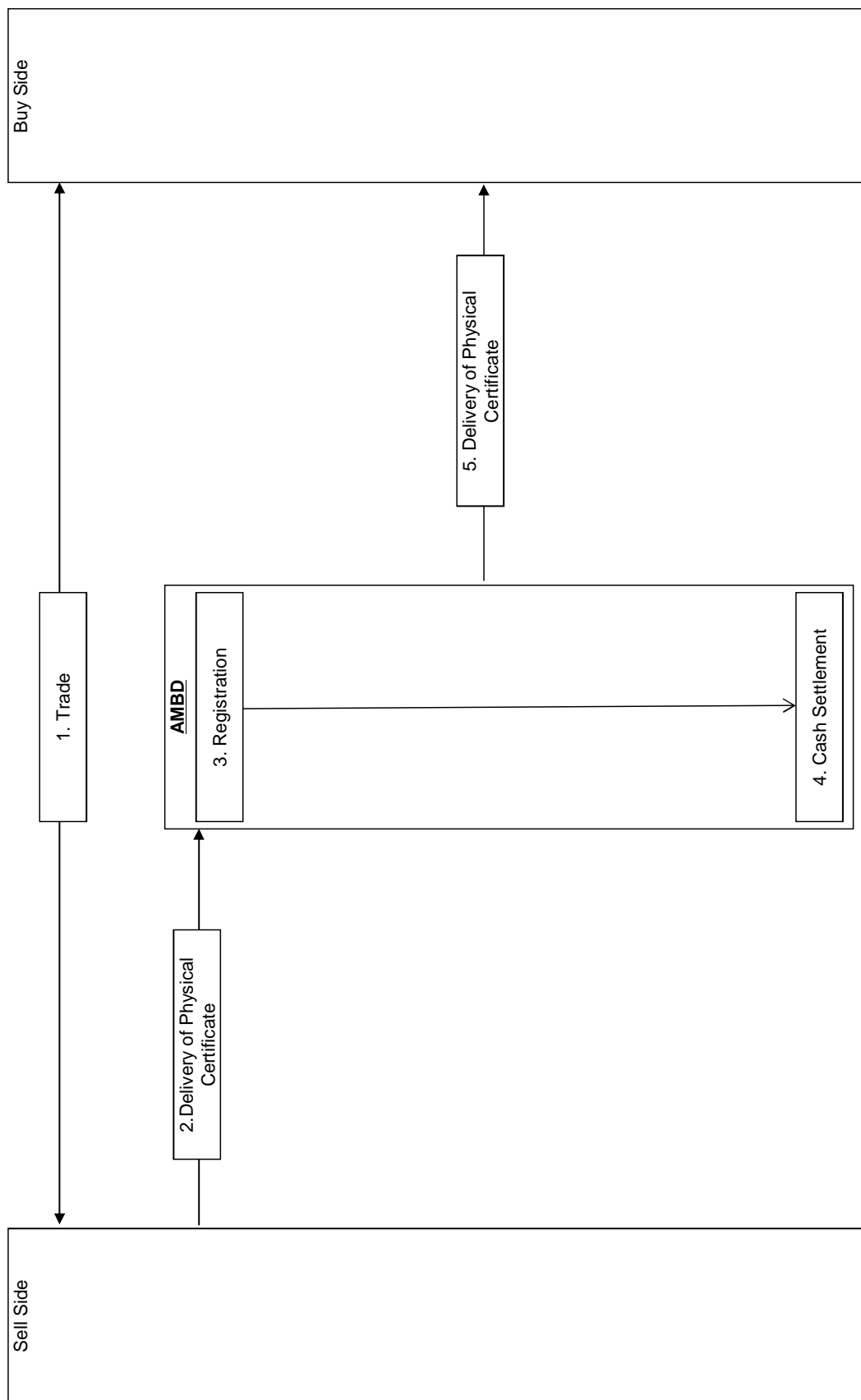


1. Bond Market Infrastructure Diagram (Government Bond)
2. Bond Transaction Flow for Domestic Trades (proposed by ADB)
3. Profit & Redemption Payment Flow of Government Sukuk Al-Ijarah



1. Bond Market Infrastructure Diagram (Government Bond)
2. Bond Transaction Flow for Domestic Trades (proposed by ADB)
3. Profit & Redemption Payment Flow of Government Sukuk Al-Ijarah

**BN02. Government Bond Transaction Flow for Domestic Trades**



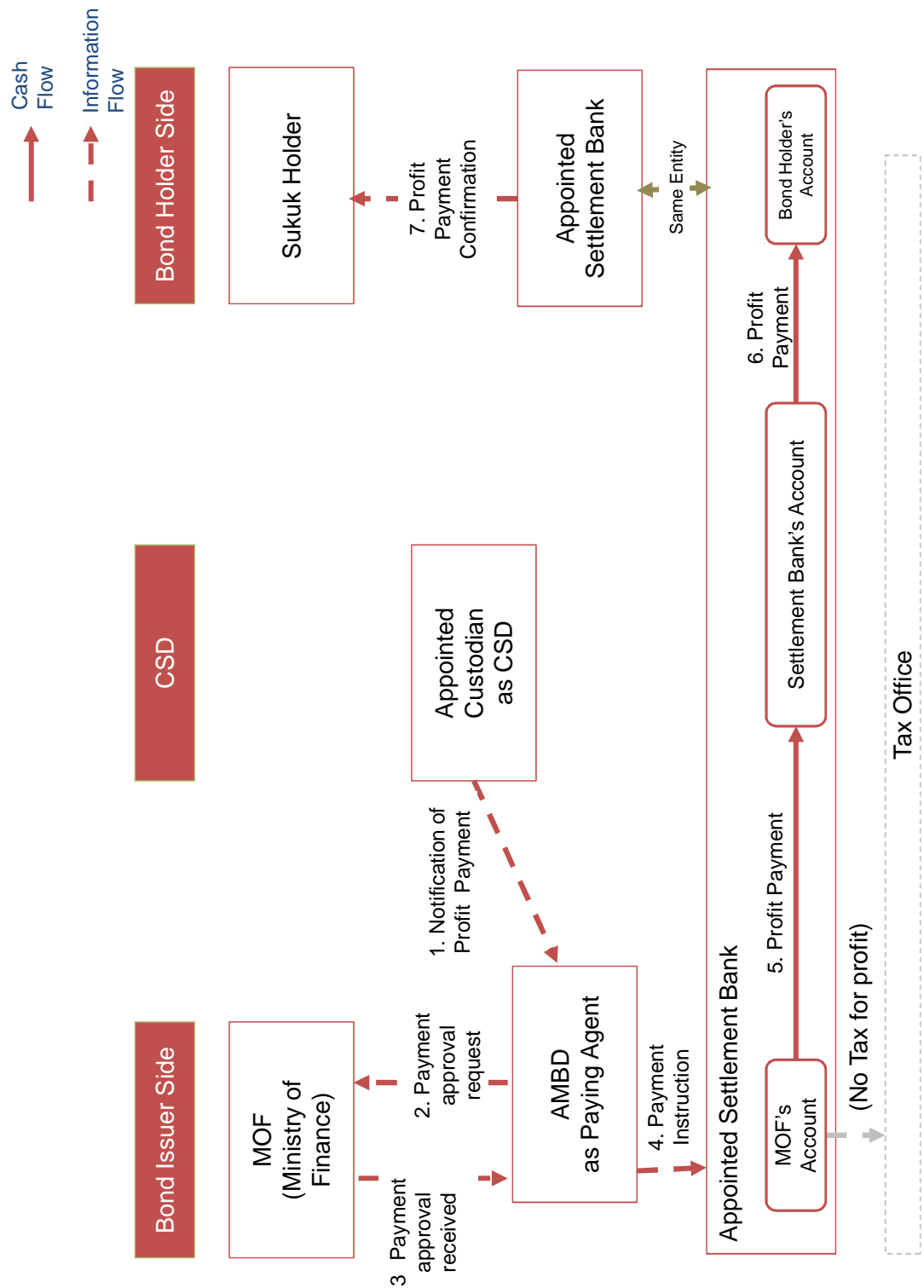
## BN02. Government Bond Transaction Flow for Domestic Trades

### OTC Market

---

1. Sell side and buy side trade via OTC market by telephone or by FAX in the form of physical certificate.
2. Sell side deliver physical certificate with evidence of trade to AMBD.
3. AMBD registers trade on book.
4. AMBD makes cash settlement from buy side to sell side.
5. Buy side brings back physical certificate from AMBD.

BN03. Profit Payment Flow of Government Sukuk Al-Ijarah



1. Bond Market Infrastructure Diagram (Government Bond)
2. Bond Transaction Flow for Domestic Trades (proposed by ADB)
3. Profit & Redemption Payment Flow of Government Sukuk Al-Ijarah

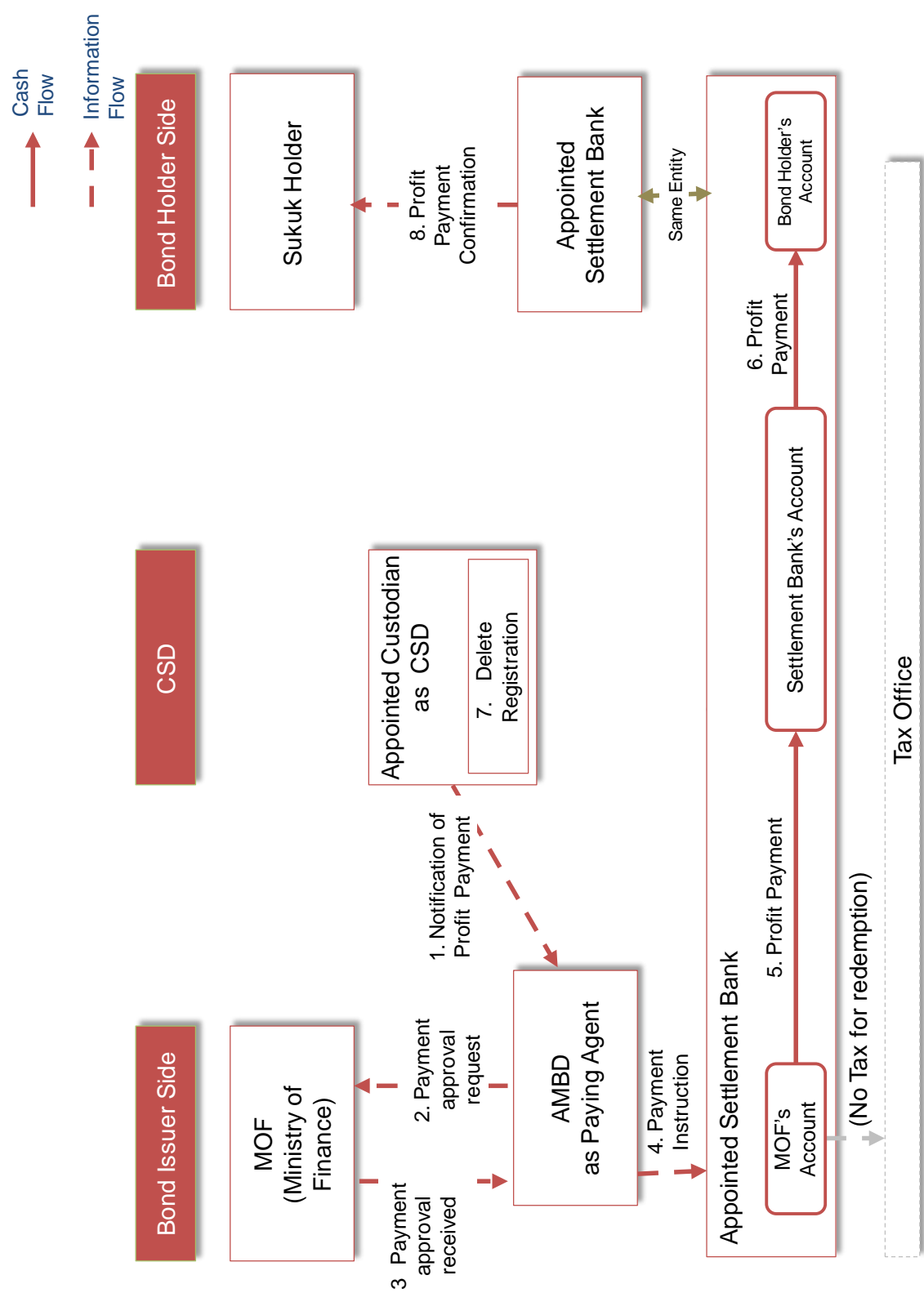


### BN Profit Payment Flow of Government Sukuk Al-Ijarah

## Process of Profit Payment

1. The appointed custodian notifies Autoriti Monetari Brunei Darussalam (AMBD) of the profit payment.
2. AMBD, as a paying agent, requests for approval and payment from Ministry of Finance (MOF).
3. MOF approves payment.
4. AMBD notifies the appointed cash settlement bank of payment details.
5. Appointed cash settlement bank transfers cash from MOF's account to settlement bank's account.
6. Appointed cash settlement bank credits to sukuk holders' accounts profit paid by MOF.
7. Appointed cash settlement bank notifies sukuk holder of profit payment.

BN04. Redemption Payment Flow of Government Sukuk Al-Ijarah” as shown on P13 of new one



#### BN04. Redemption Flow of Government Sukuk Al-Ijarah

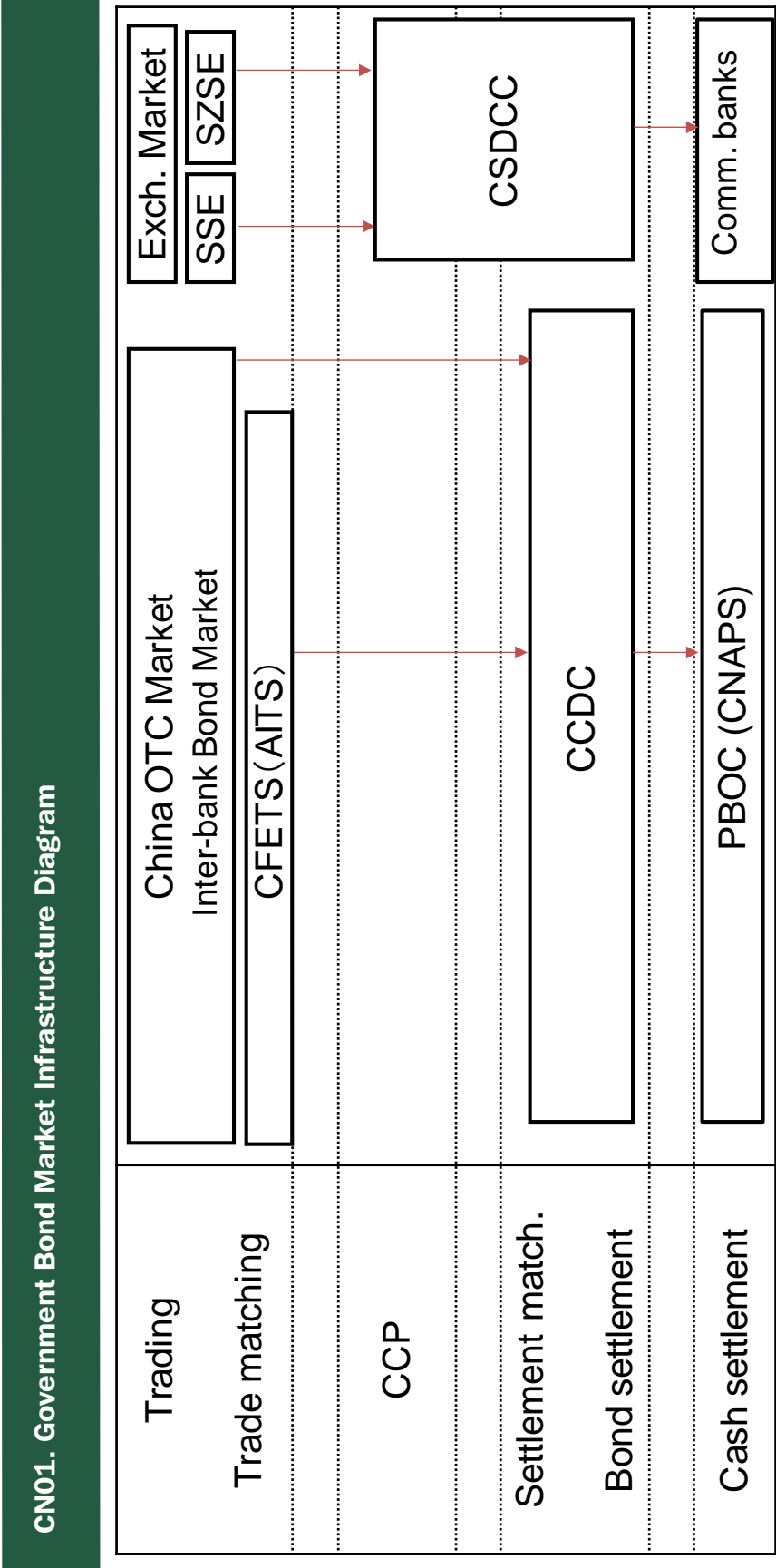
### Process of Redemption

1. The appointed custodian notifies Autoriti Monetari Brunei Darussalam (AMBD) of the redemption.
2. AMBD, as a paying agent, requests for approval and payment from Ministry of Finance (MOF).
3. MOF approves payment.
4. AMBD notifies the appointed cash settlement bank of payment details.
5. Appointed cash settlement bank transfers cash (principal and profit) from MOF's account to settlement bank's account.
6. Appointed cash settlement bank credits to sukuk holders' accounts principal and profit paid by MOF.
7. Appointed Custodian as CSD deletes sukuk registration.
8. Appointed cash settlement bank notifies sukuk holder of profit payment.

# People's Republic of China (CN)

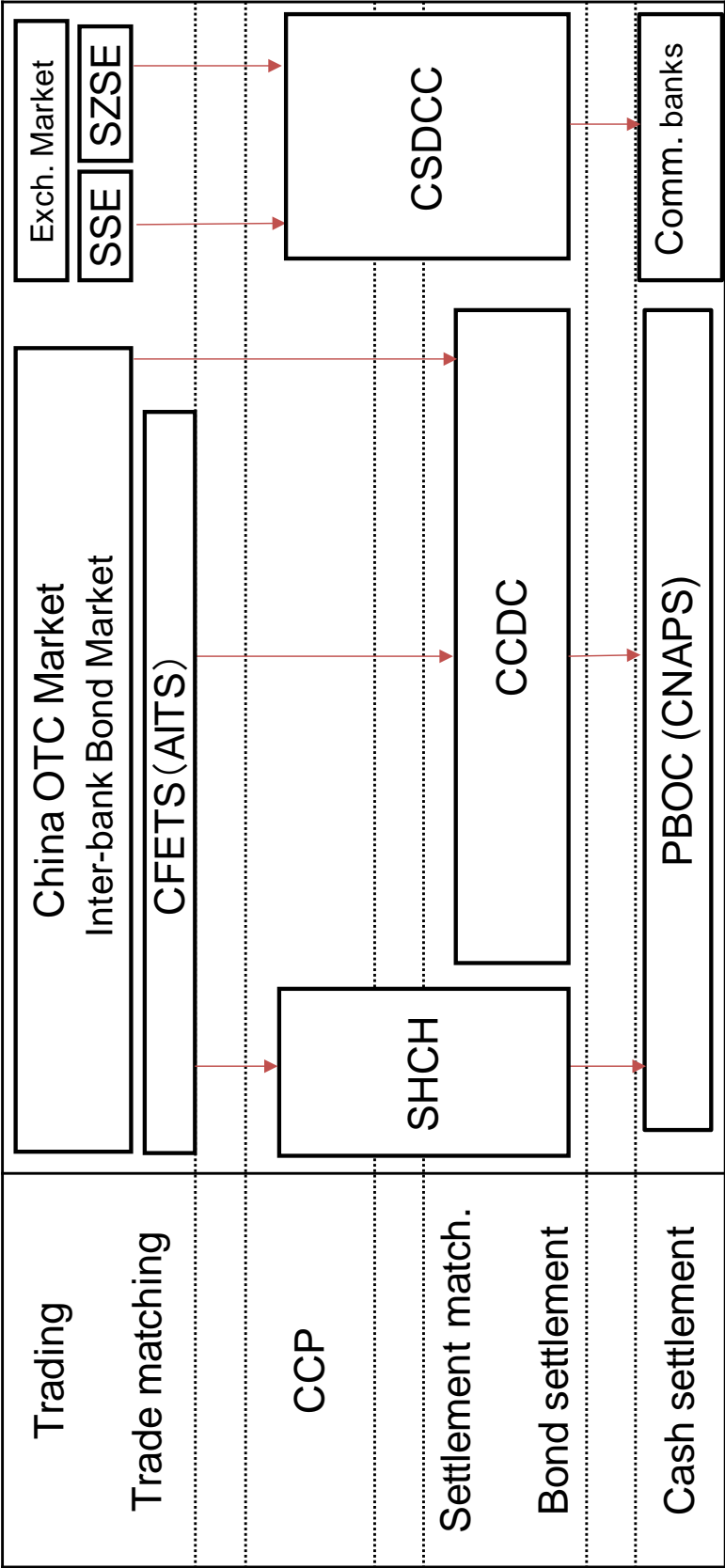
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Bond Transaction Flow for Domestic Trades  
(Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow  
(Government Bond)
6. Interest & Redemption Payment Flow  
(Corporate Bond)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



CFETS & NIFC: China Foreign Exchange Trade System & National Interbank Funding Center, SSE: Shanghai stock exchange, SZSE: Shenzhen stock exchange, CCDC: China Central Depository and Clearing Corporation, CSDCC: China Securities Depository and Clearing Corporation, SHCH (Shanghai Clearing House), CNAPS: China National Automatic Payment System, AITS: Automated Interbank Trading System  
Note: Commercial Bank Counter Market is not shown here.

CN02. Corporate Bond Market Infrastructure Diagram

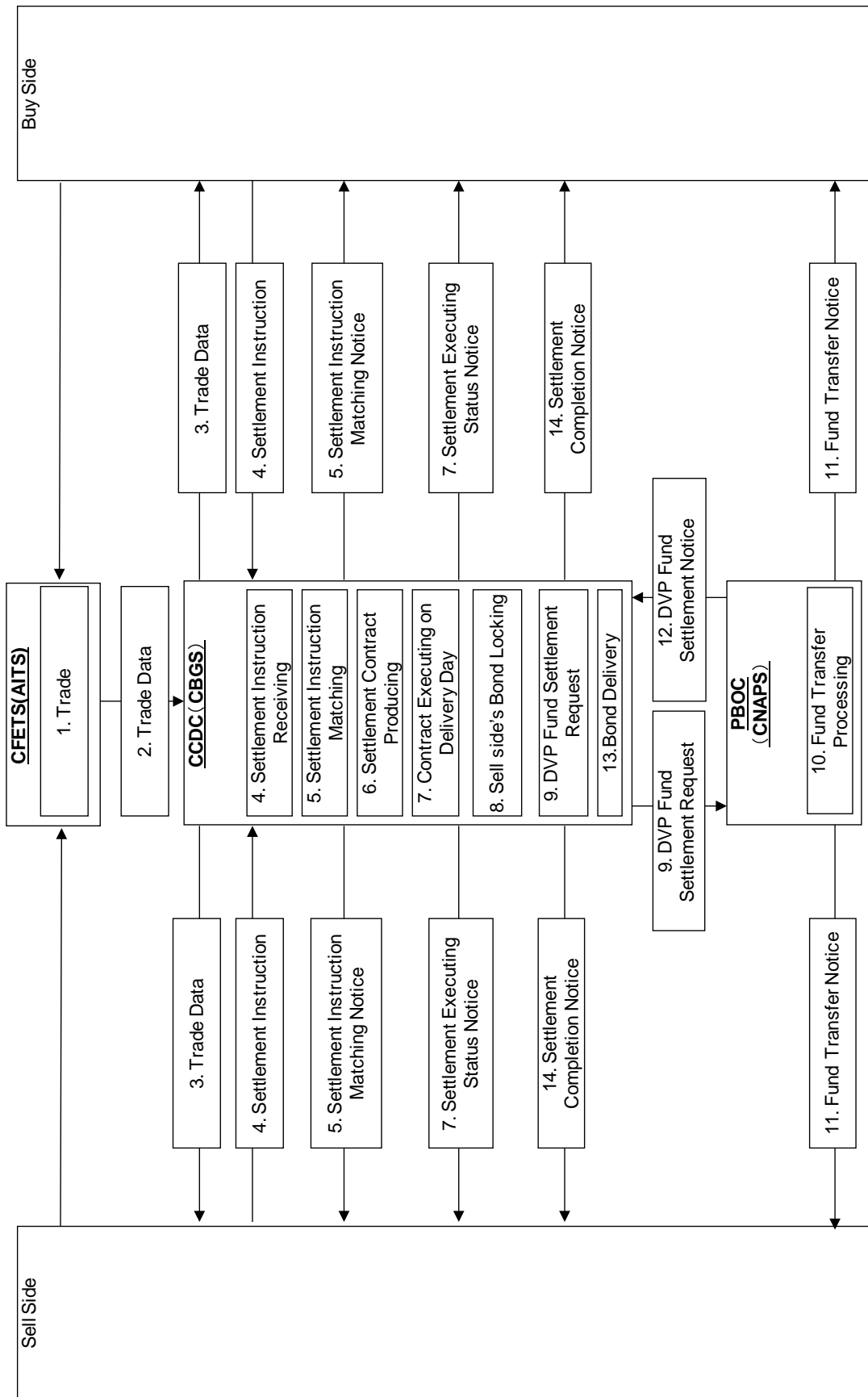


CFETS & NIFC: China Foreign Exchange Trade System & National Interbank Funding Center, SSE: Shanghai Stock Exchange, SZSE: Shenzhen Stock Exchange, CCDC: China Central Depository and Clearing Corporation, CSDCC: China Securities Depository and Clearing Corporation, SHCH (Shanghai Clearing House), CNAPS: China National Automatic Payment System, AITS: Automated Interbank Trading System  
Note: Commercial Bank Counter Market is not shown here.



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### CN 03. Government Bond Transaction Flow for Domestic Trades (OTC)

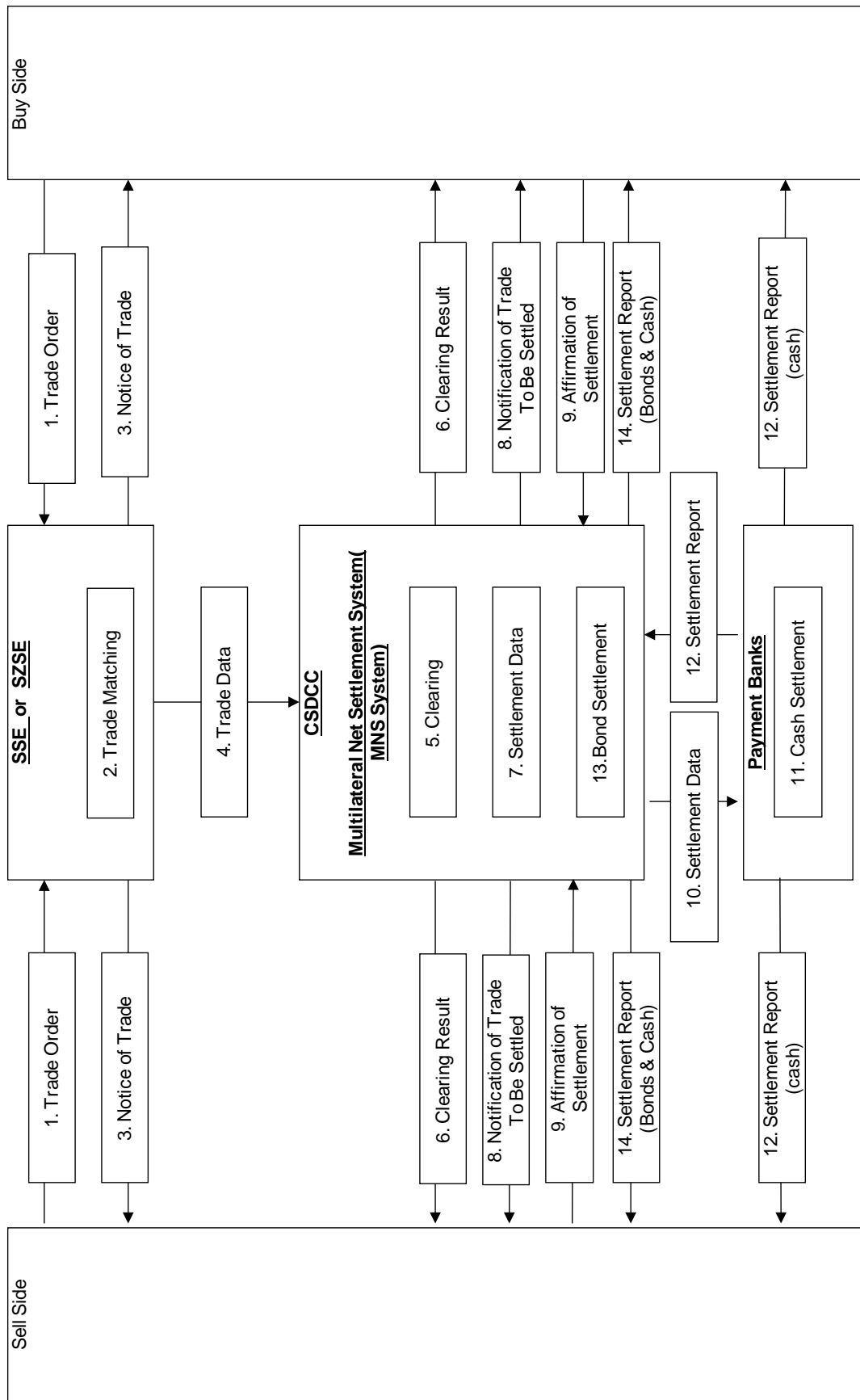


### CN03. Government Bond Transaction Flow for Domestic Trades (OTC)

## OTC Market

1. Sell side and buy side trade bond via China Foreign Exchange Trade System (CFETS). CFETS provides automatic trade matching function. But, most of the bonds are traded bilaterally in PRC 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 sell side and buy side (refer to 4. Settlement instruction).
3. CCDC sends trade data to sell side and buy side for verification.
4. When sell side and buy side received trade data from CCDC, sell side and buy side verify the data. If the data are correct, sell side and buy side 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 PRC OTC Market. In this case, one party (either sell side or buy side) 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 asks the other party to confirm. If not, CCDC doesn't process settlement. After matching the order (local matching), CCDC settles the trade in FOP or DVP as requested by customers.
5. CCDC matches settlement instructions from sell side and buy side 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 sell side and buy side.
8. CCDC blocks sell side'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 buy side's current account to sell side's current account by High Value Payment System (HVPS) of CNAPS.
11. PBOC sends fund transfer notice to the sell side and buy side.
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 sell side and buy side.

**CN04. Government Bond Transaction Flow for Domestic Trades (Exchange)**



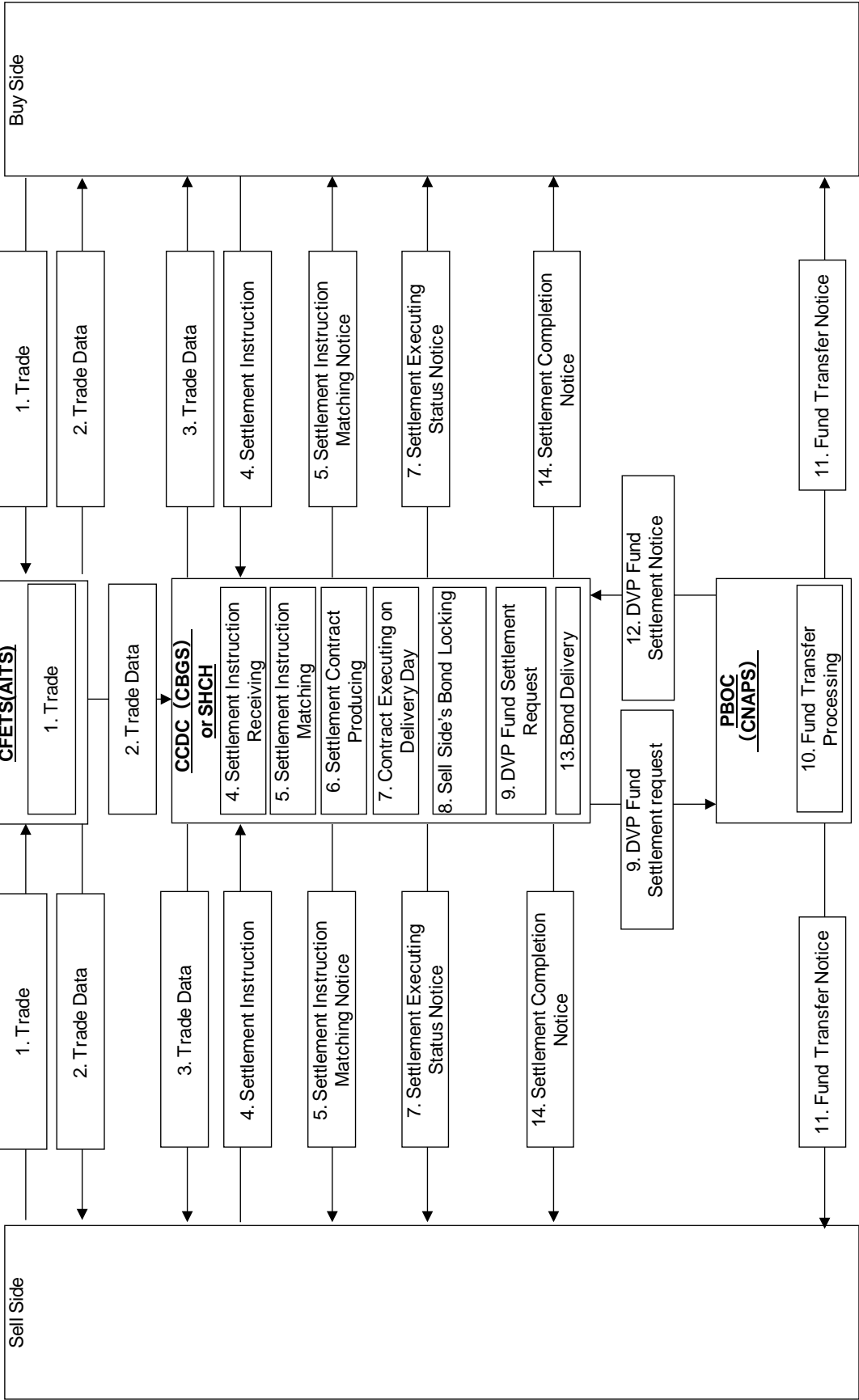
#### CN04. Government Bond Transaction Flow for Domestic Trades (Exchange)

### Exchange Market

1. Sell side and buy side trade via Shanghai Stock Exchange (SSE) or Shenzhen Stock Exchange (SZSE).
2. SSE/SZSE matches orders from sell side and buy side.
3. SSE/SZSE sends notice of trade to sell side and buy side.
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 sell side and buy side.
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 sell side and buy side.
9. Sell side and buy side send affirmation of settlement to CSDCC.
10. CSDCC sends settlement data to payment banks.
11. Payment banks perform cash settlement.
12. Payment banks send settlement reports to CSDCC, sell side and buy side.
13. CSD function in CSDCC executes bond settlement.
14. CSDCC sends settlement reports (bonds & cash) to sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

CN05. Corporate Bond Transaction Flow for Domestic Trades (OTC)



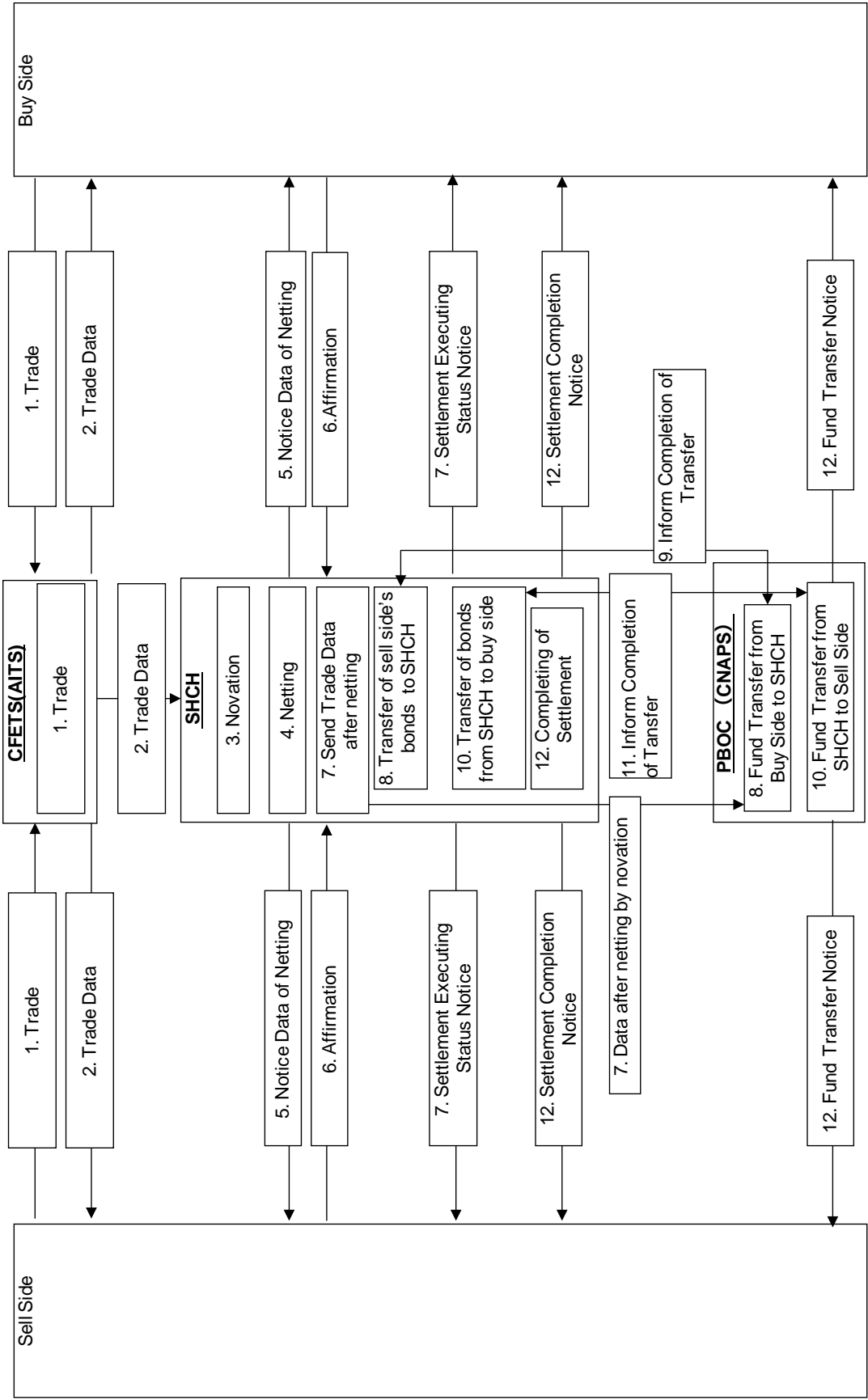


## CN05. Corporate Bond Transaction Flow for Domestic Trades (OTC)

### OTC Market

1. Sell side and buy side trade bond via China Foreign Exchange Trade System (CFETS). CFETS provides automatic trade matching function. But, most of the bonds are traded bilaterally in PRC 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) or Shanghai Clearing House (SHCH). CFETS also sends trade data to sell side and buy side.
3. CCDC or SHCH sends trade data to sell side and buy side for verification.
4. When sell side and buy side receive trade data from CCDC or SHCH, sell side and buy side verify the data. If the data are correct, sell side and buy side send affirmative message to CCDC. The messages are regarded as “settlement instructions” to CCDC or SHCH.  
Some of trades are directly entered to CCDC after traded in PRC OTC Market. In this case, one party (either sell side or buy side) needs to send settlement instruction into CCDC system. The settlement instruction needs to contain full message items necessary for the settlement. CCDC system automatically asks the other party to confirm. If not, CCDC doesn't process settlement. After matching the order (local matching), CCDC settles the trade in FOP or DVP as requested by customers.
5. CCDC or SHCH matches settlement instructions from sell side and buy side and notifies matched result.
6. CCDC or SHCH produces settlement contract.
7. On the settlement day, CCDC or SHCH executes the settlement contract and notifies the status to sell side and buy side.
8. CCDC or SHCH blocks sell side's bond to secure DVP transaction.
9. CCDC or SHCH sends DVP fund settlement request to People's Bank of China (PBOC).
10. PBOC executes fund settlement. Fund is transferred from buy side's current account to sell side's current account by High Value Payment System (HVPS) of CNAPS.
11. PBOC sends fund transfer notice to sell side and buy side.
12. PBOC sends DVP fund settlement notice to CCDC or SHCH.
13. CCDC or SHCH executes bond delivery (release blocked bond).
14. CCDC or SHCH sends settlement completion notice to sell side and buy side.

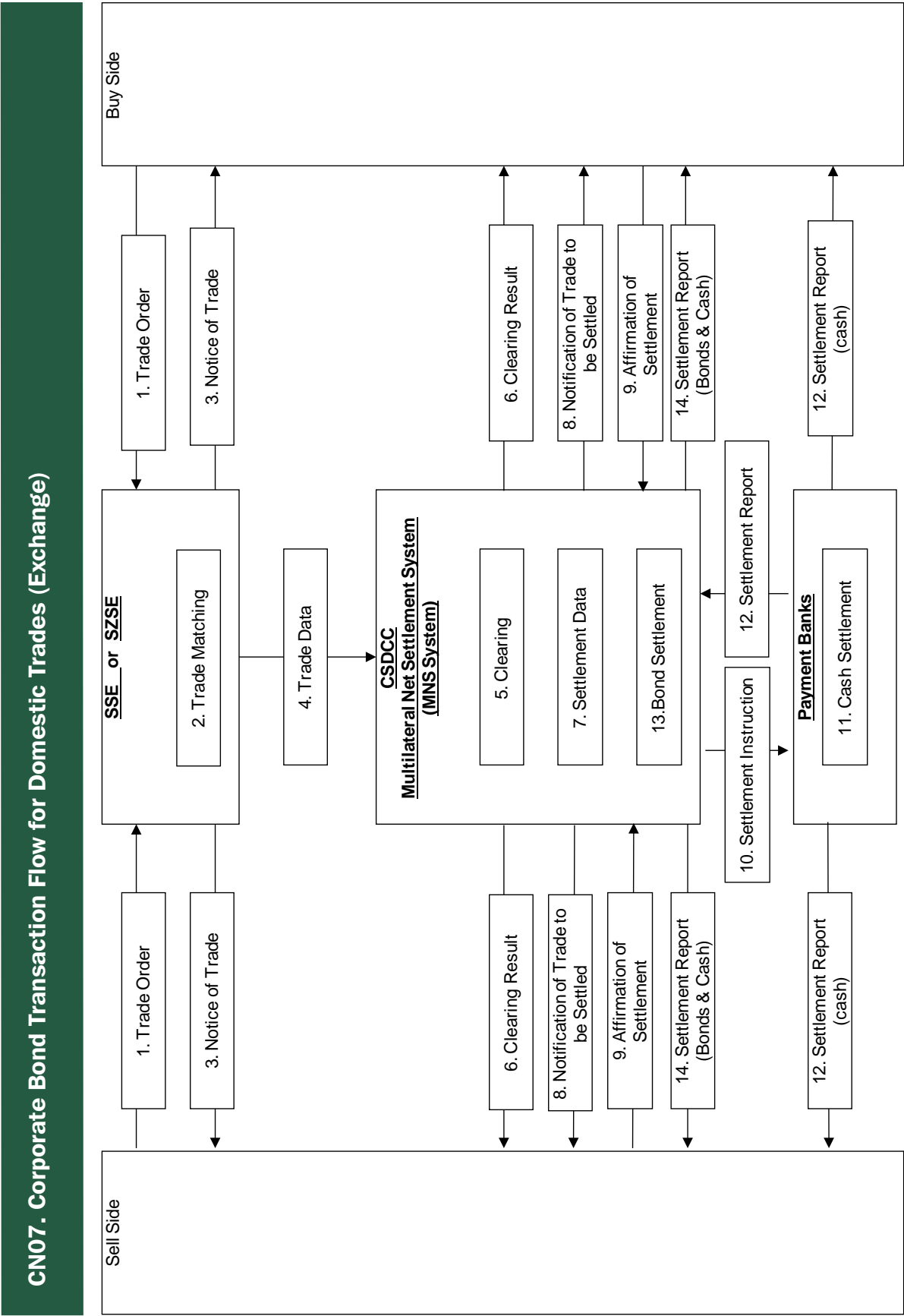
CN06. Corporate Bond Transaction Flow for Domestic Trades (OTC)



## CN06. Corporate Bond Transaction Flow for Domestic Trades (OTC) SHCH

### OTC Market

1. Sell side and buy side 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 Shanghai Clearing House (SHCH) as CCP & CSD. CFETS also sends trade data to sell side and buy side.
3. SHCH makes novation.
4. SHCH executes netting process.
5. SHCH notifies sell side and buy side of netting.
6. sell side and buy side affirms the netting.
7. SHCH sends data after netting to People's Bank of China (PBOC) .
8. SHCH transfers bonds from sell side account to SHCH while PBOC transfers money from buy side account to SHCH.
9. SHCH and PBOC inform completion of bond and money transfer each other.
10. SHCH transfers bonds from SHCH to buy side's account while PBOC transfers money from SHCH to sell side's account.
11. SHCH and PBOC inform completion of bond and money transfer each other.
12. SHCH notifies sell side and buy side of bond settlement completion while PBOC notifies sell side and buy side of cash settlement completion.



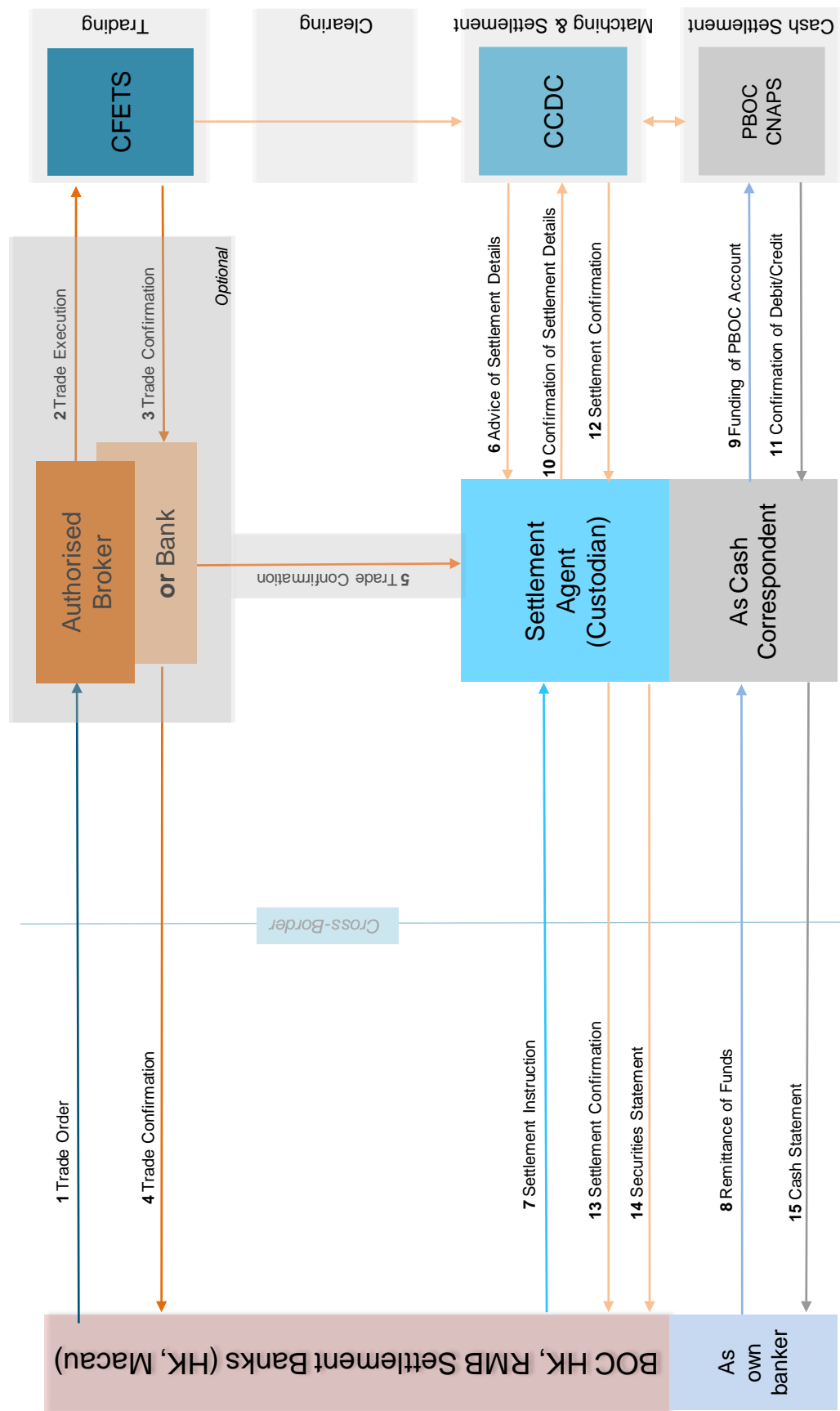
## CN07. Corporate Bond Transaction Flow for Domestic Trades (Exchange)

### Exchange Market

1. Sell side and buy side trade via Shanghai Stock Exchange (SSE) or Shenzhen Stock Exchange (SZSE) .
2. SSE/SZSE collates orders from sell side and buy side.
3. SSE/SZSE sends notice of trade to sell side and buy side.
4. SSE/SZSE sends trade data to China Securities Depository & Clearing Co., Ltd. (CSDCC).
5. Clearing function in CSDCC executes clearing process.
6. Clearing function in CSDCC sends clearing result to sell side and buy side.
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 sell side and buy side.
9. The clearing participants (i.e., the buyer/seller) shall confirm to CSDCC which of the trades shall be settled.
10. CSDCC sends cash settlement instructions to payment banks.
11. Payment banks perform cash settlement.
12. Payment banks send settlement reports to CSDCC, sell side and buy side.
13. CSD function in CSDCC executes bond settlement.
14. CSDCC sends settlement report (bonds & cash) to sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

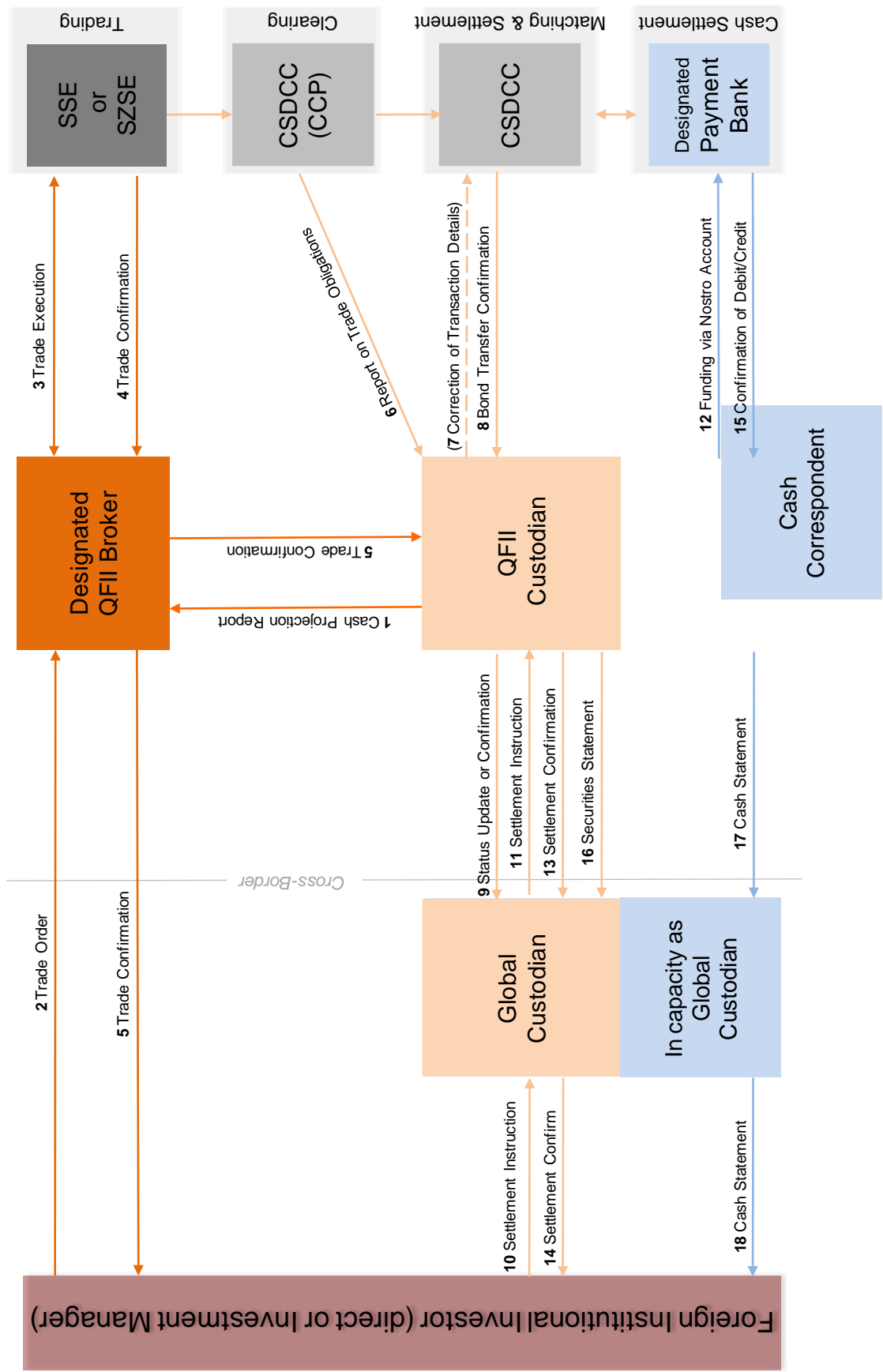
# CN08. Bond Transaction Flow for Foreign Investors OTC Market / RMB Banks

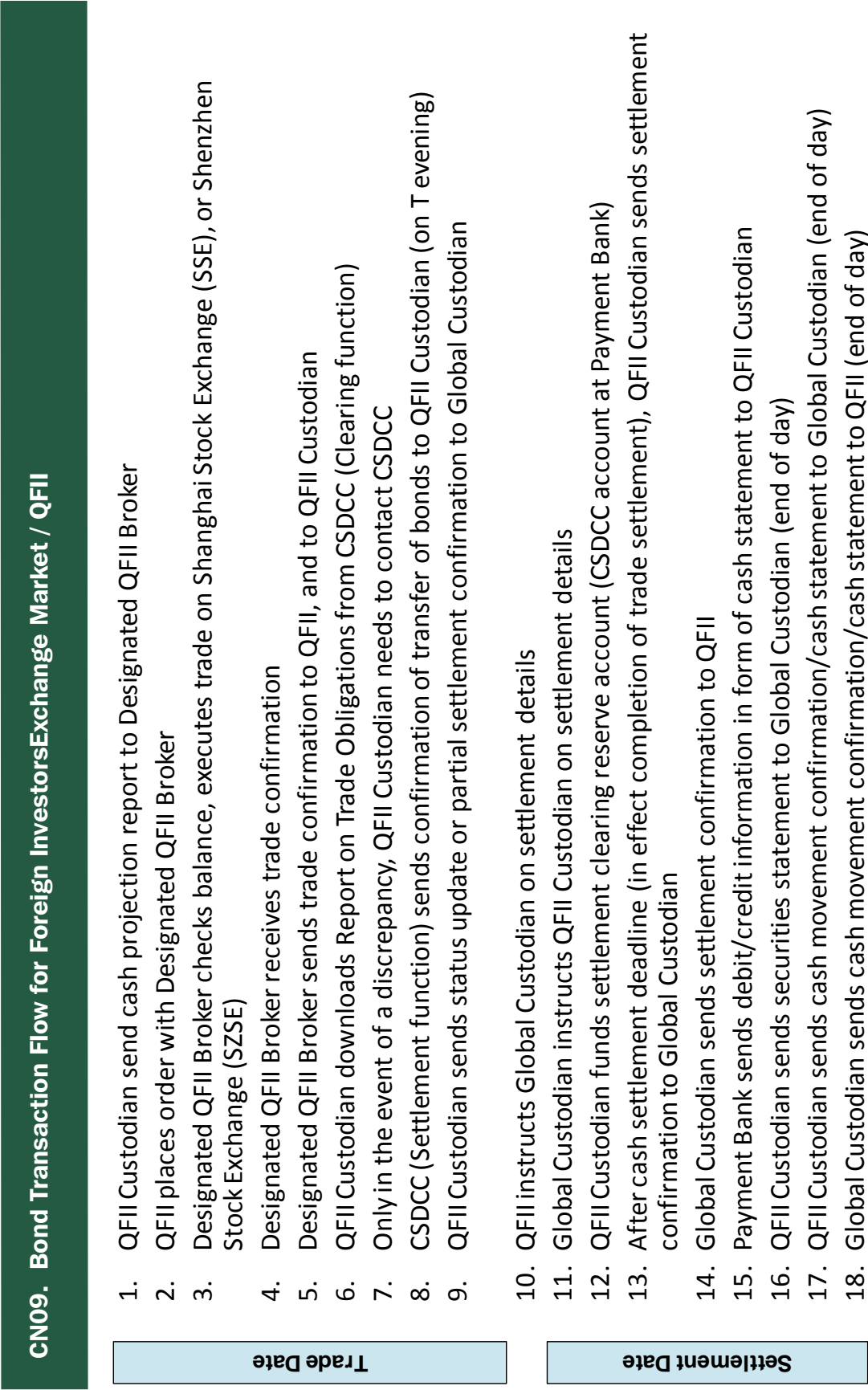






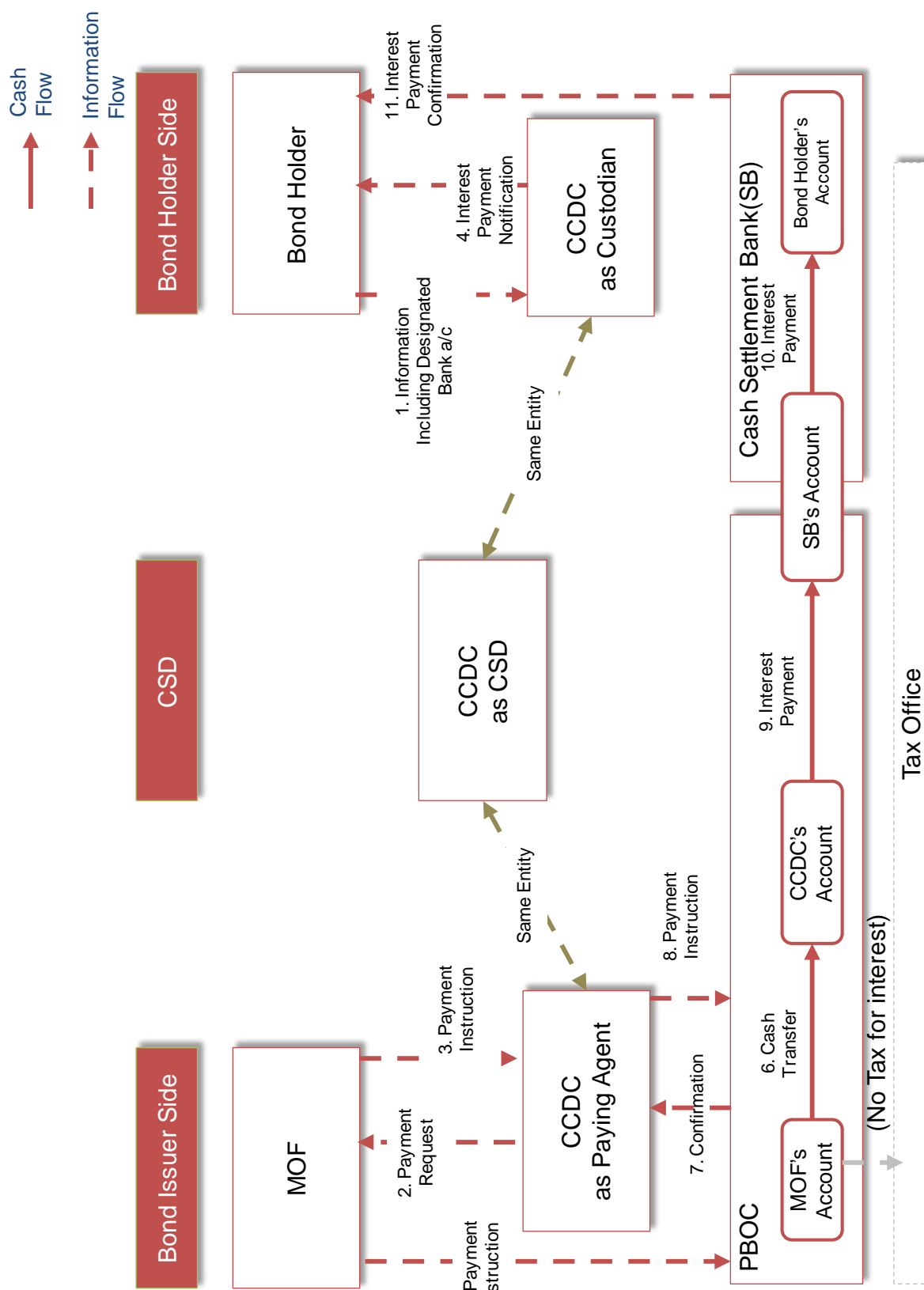
**CN09. Bond Transaction Flow for Foreign InvestorsExchange Market / QFII**





1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### CN10. Interest Payment Flow of Government Bond OTC Market

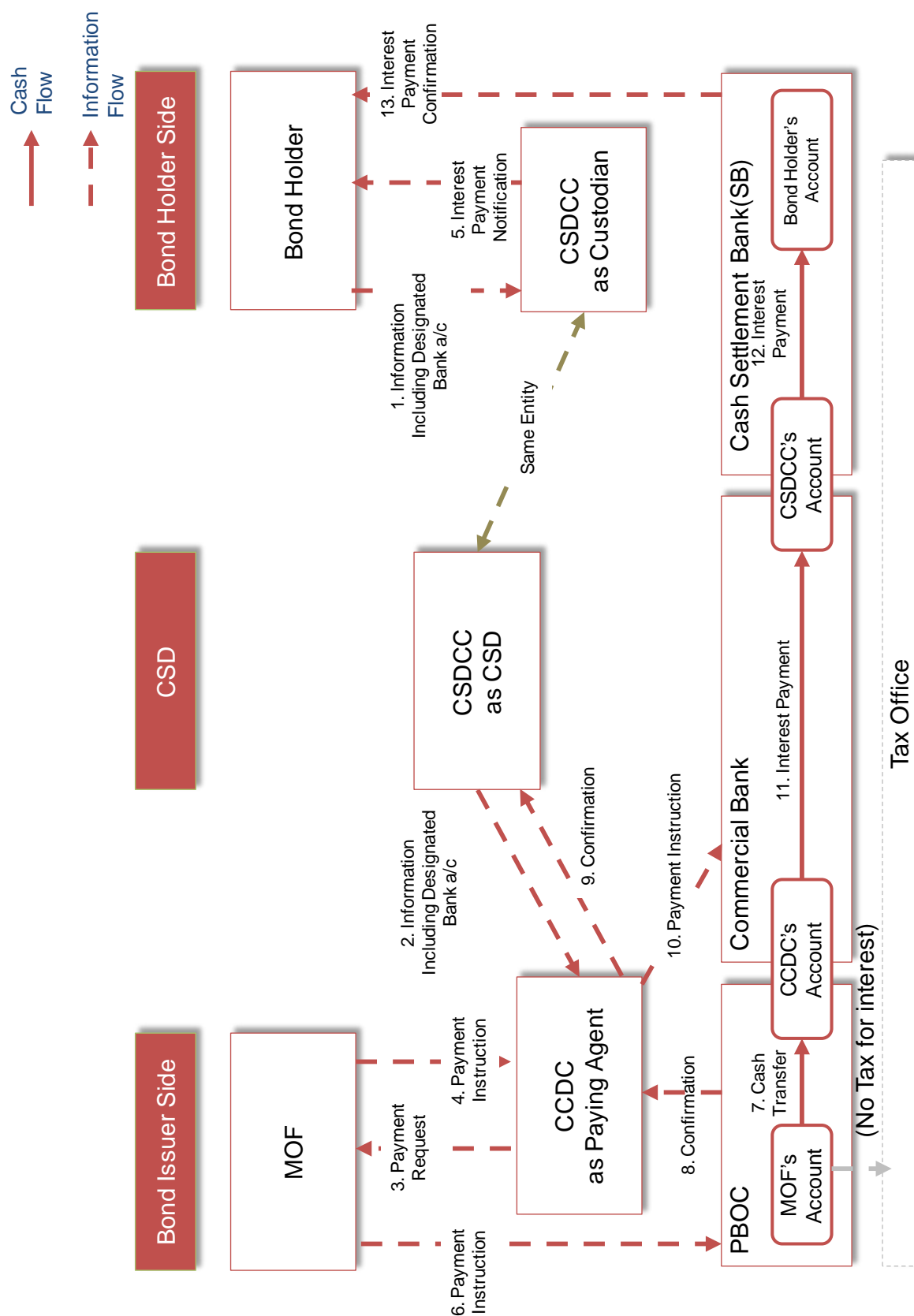


## CN10. Interest Payment Flow of Government Bond OTC Market

### Process of Interest Payment

1. Bond holders send information including designated bank account to China Central Depository & Clearing Co., Ltd. (CCDC)
2. CCDC requests interest payment of Ministry of Finance (MOF).
3. MOF instructs CCDC to pay interests.
4. CCDC as custodian notifies bond holders of interest payment.
5. MOF instructs People's Bank of China (PBOC) to transfer cash for interest to CCDC's account.
6. PBOC transfers cash from MOF's account to CCDC's account.
7. PBOC sends payment confirmation to CCDC.
8. CCDC instructs PBOC to transfer cash for interest to cash settlement banks' accounts via CNAPS with detailed instructions to credit bond holders' accounts with interest..
9. PBOC transfers cash from CCDC's account to cash settlement banks' accounts with detailed instructions.
10. Cash settlement banks credit bond holders' accounts with interests.
11. Cash settlement banks notify bond holders of interest payment.

### CN11. Interest Payment Flow of Government Bond Exchange Market



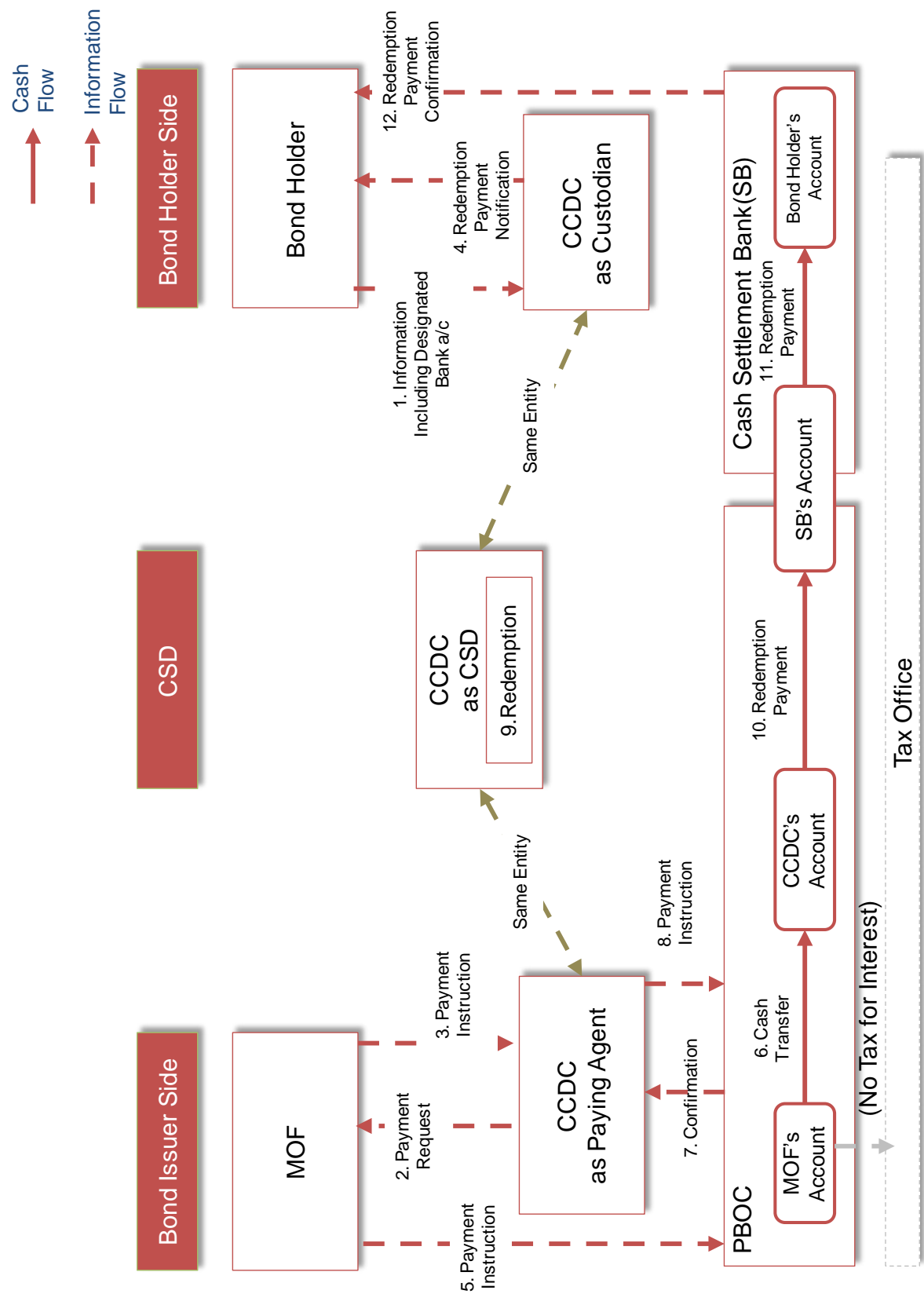


### CN11. Interest Payment Flow of Government Bond Exchange Market

## Process of Interest Payment

1. Bond holders send information including designated bank account to China Securities Depository and Clearing Corporation (CSDCC).
2. CSDCC sends information including designated bank account to China Central Depository & Clearing Co. Ltd. (CCDC) as paying agent.
3. CCDC requests interest payment of Ministry of Finance (MOF).
4. MOF instructs CCDC to pay interests.
5. CSDCC as custodian notifies bond holders of interest payment.
6. MOF instructs People's Bank of China (PBOC) to transfer cash from MOF's account to CCDC's account.
7. PBOC transfers cash from MOF's account to CCDC's account.
8. PBOC sends payment confirmation to CCDC.
9. CCDC sends payment confirmation to CSDCC.
10. CCDC instructs a commercial bank to transfer cash from CCDC's account to cash settlement banks' account via CNAPS with detailed instructions to credit holders' accounts with interest.
11. Commercial bank transfers cash from CCDC's account CSDCC's account with detailed instructions.
12. Cash Settlement banks credit bond holders' accounts with interests.
13. Cash Settlement banks notify bond holders of interest payment.

CN12. Redemption Flow of Government Bond OTC Market

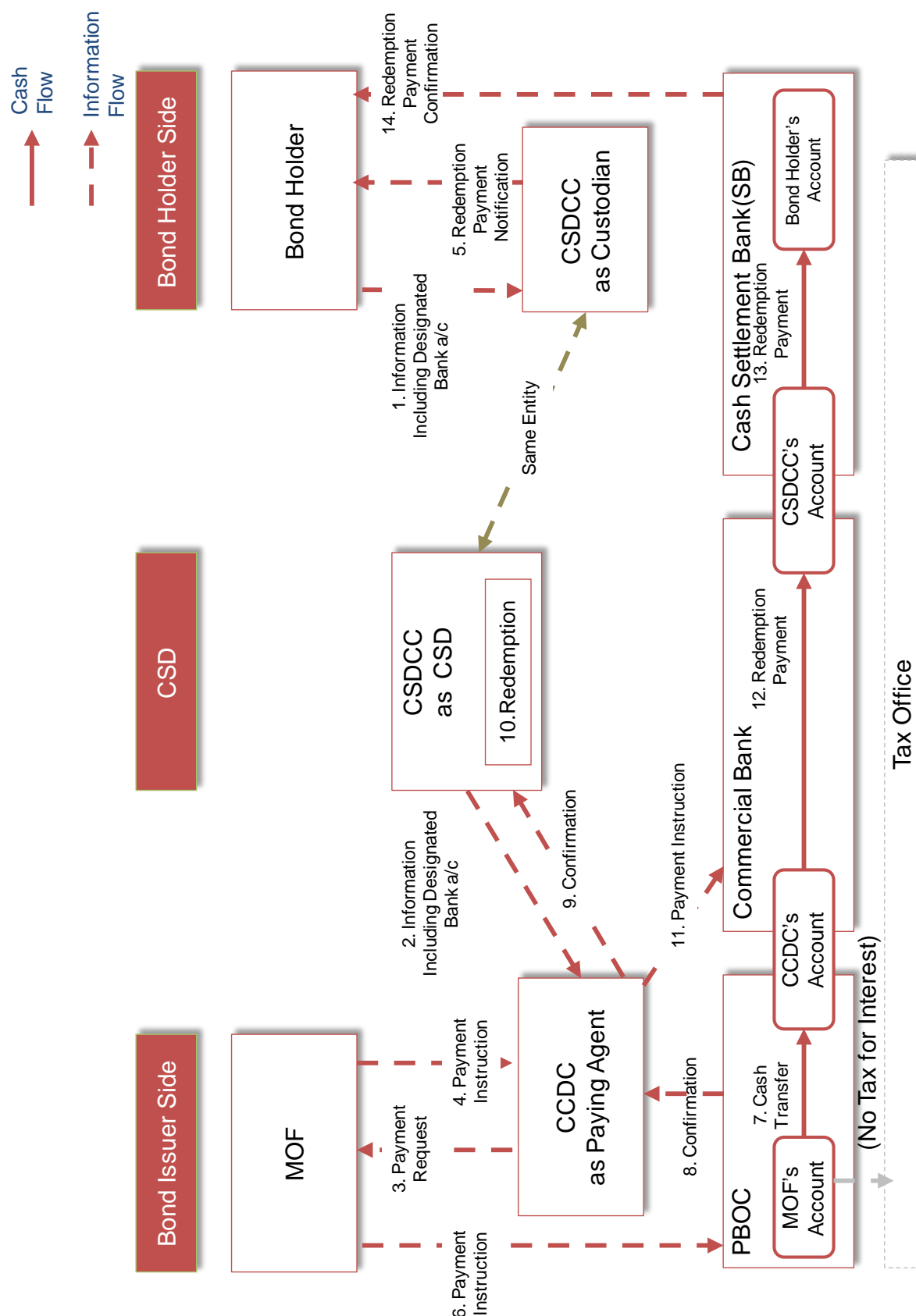


## CN12. Redemption Payment Flow of Government Bond OTC Market

### Process of Redemption Payment

1. Bond holders send information including designated bank account to China Central Depository & Clearing Co., Ltd. (CCDC) as custodian.
2. CCDC requests redemption payment of Ministry of Finance (MOF).
3. MOF instructs CCDC to pay redemption.
4. CCDC as custodian notifies bond holders of redemption payment.
5. MOF instructs People's Bank of China (PBOC) to transfer cash for redemption to CCDC's account.
6. PBOC transfers cash from MOF's account to CCDC's account.
7. PBOC sends payment confirmation to CCDC.
8. CCDC instructs PBOC to transfer cash from CCDC's account to cash settlement banks' account via CNAPS with detailed instructions to credit holders' accounts.
9. CCDC makes bond redemption.
10. PBOC transfers cash from CCDC's account to cash settlement banks' account with detailed instructions.
11. Cash settlement banks credit bond holders' accounts with redemption.
12. Cash settlement banks notify bond holders of redemption payment.

## CN13. Redemption Flow of Government Bond Exchange Market



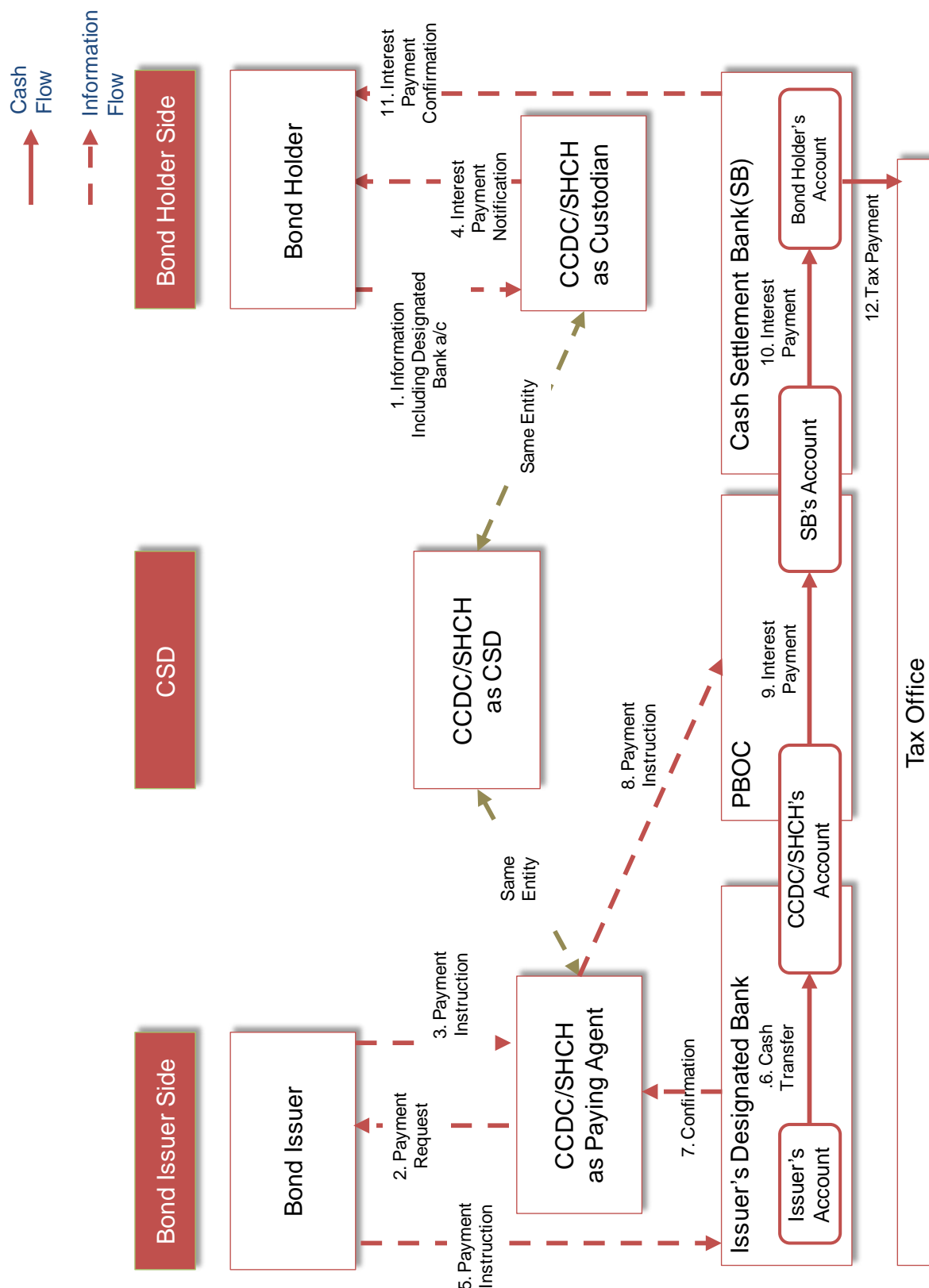
### CN13. Redemption Payment Flow of Government Bond Exchange Market

## Process of Redemption Payment

1. Bond holders send information including designated bank account to China Securities Depository and Clearing Corporation (CSDCC).
2. CSDCC sends information including designated bank account to China Central Depository & Clearing Co., Ltd. (CCDC) as paying agent.
3. CCDC requests redemption payment of Ministry of Finance (MOF).
4. MOF instructs CCDC to pay redemption.
5. CSDCC as custodian notifies bond holders of redemption payment.
6. MOF instructs People's Bank of China (PBOC) to transfer cash from MOF's account to CCDC's account.
7. PBOC transfers cash from MOF's account to CCDC's account.
8. PBOC sends payment confirmation to CCDC.
9. CCDC sends payment confirmation to CSDCC.
10. CSDCC makes bond redemption.
11. CCDC instructs a commercial bank to transfer cash from CCDC's account to cash settlement banks' accounts via CNAPS with detailed instructions to credit holders' accounts with redemption.
12. Commercial bank transfers cash from CCDC's account to cash CSDCC's accounts with detailed instructions.
13. Commercial banks credit bond holders' accounts with redemption.
14. Commercial banks notify bond holders of redemption payment.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### CN14. Interest Payment Flow of Corporate Bond OTC Market



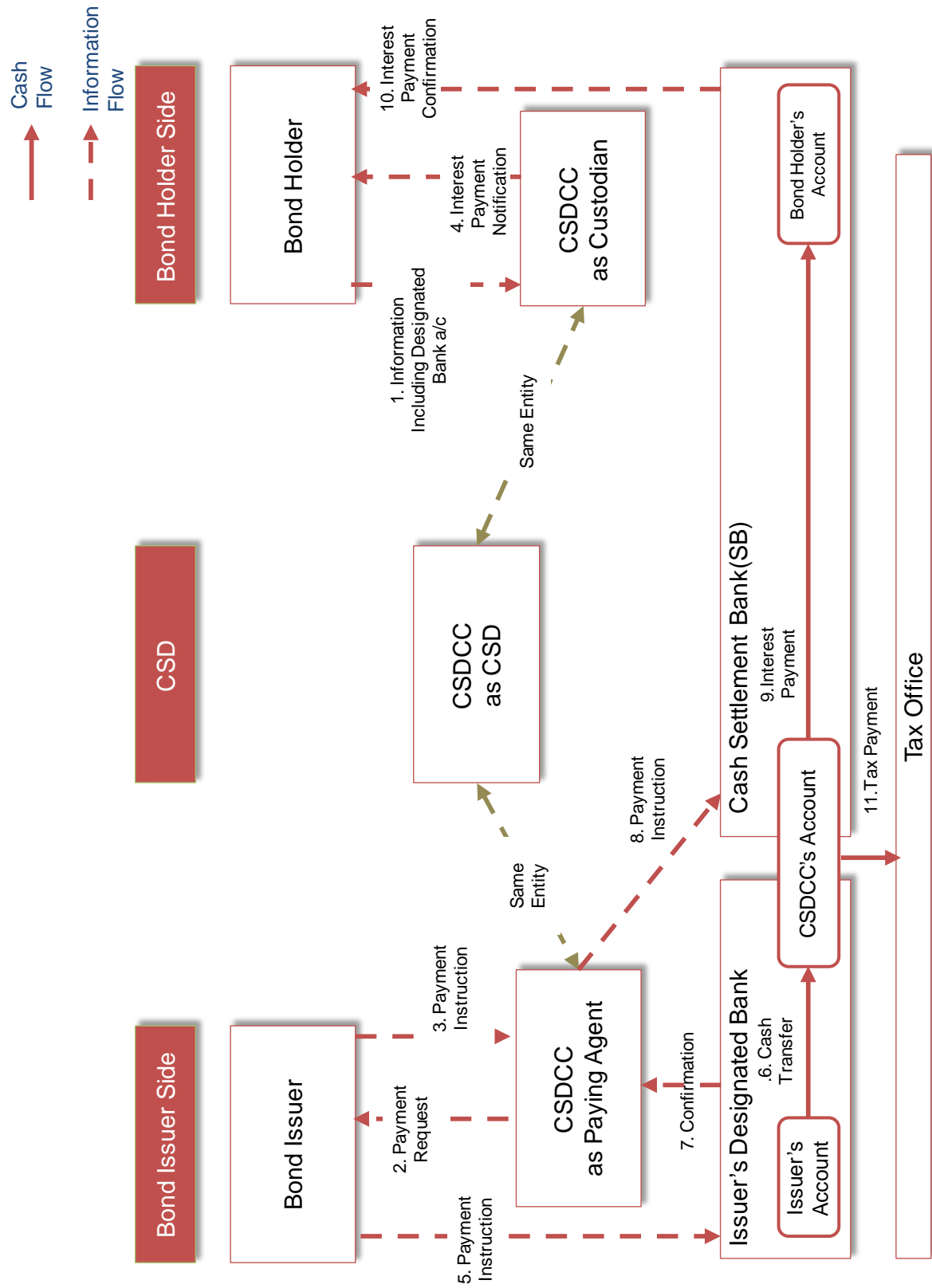


#### CN14. Interest Payment Flow of Corporate Bond OTC Market

### Process of Interest Payment

1. Bond holders send information including designated bank account to China Central Depository & Clearing Co., Ltd (CCDC) or Shanghai Clearing House (SHCH).
2. CCDC or SHCH as paying agent requests interest payment of bond issuer.
3. Bond issuer instructs CCDC or SHCH to pay interests.
4. CCDC or SHCH as custodian notifies bond holders of interest payment.
5. Bond issuer instructs its designated bank to transfer cash from issuer's account to CCDC's or SHCH's account.
6. The designated bank transfers cash from issuer's account to CCDC's or SHCH's account.
7. The designated bank sends payment confirmation to CCDC or SHCH.
8. CCDC or SHCH instructs People's Bank of China (PBOC) to transfer cash from CCDC's or SHCH's account to cash settlement banks' accounts via CNAPS.
9. PBOC transfers cash from CCDC's /SHCH's account to cash settlement banks' accounts via CNAPS with instructions to credit holders' accounts.
10. Cash settlement banks credit bond holders' accounts with interest.
11. Cash settlement banks notify bond holders of interest payment.
12. Bond holders pay tax to tax office.

### CN15. Interest Payment Flow of Corporate Bond Exchange Market

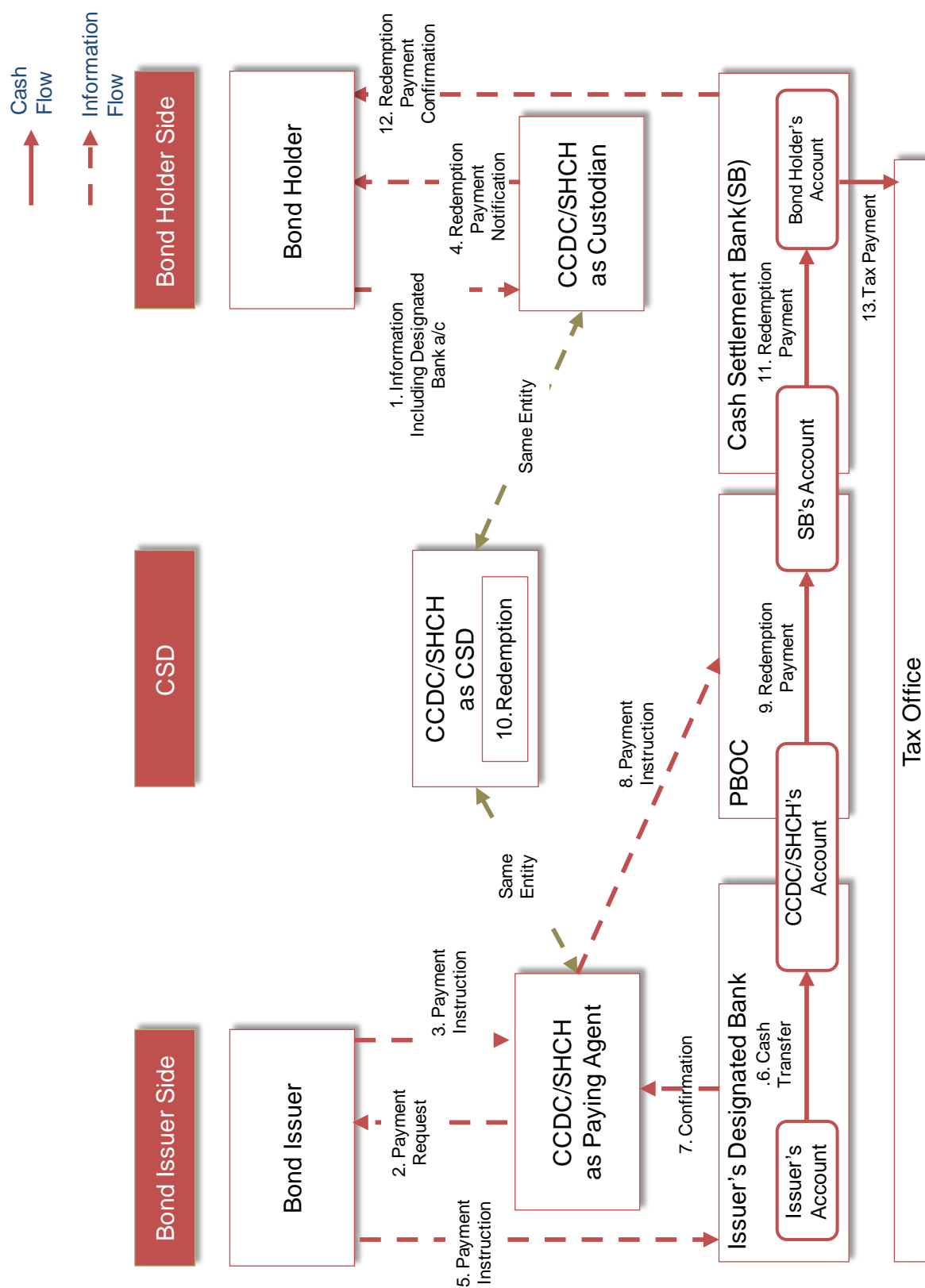


## CN15. Interest Payment Flow of Corporate Bond Exchange Market

### Process of Interest Payment

1. Bond holders send information including designated bank account to China Securities Depository and Clearing Corporation (CSDCC).
2. CSDCC as paying agent requests interest payment of bond issuer.
3. Bond issuer instructs CSDCC to pay interests.
4. CSDCC as custodian notifies bond holders of interest payment.
5. Bond issuer instructs its designated bank to transfer cash from issuer's account to CSDCC's account.
6. Designated bank transfers cash from issuer's account to CSDCC's account.
7. Designated bank sends payment confirmation to CSDCC.
8. CSDCC instructs cash settlement bank to transfer cash to bond holder's account.
9. Cash settlement banks credit bond holders' accounts with interest deducting tax if applicable.
10. Cash settlement banks notify bond holders of interest payment.
11. CSDCC pays tax to tax office.

### CN16. Redemption Flow of Corporate Bond OTC Market

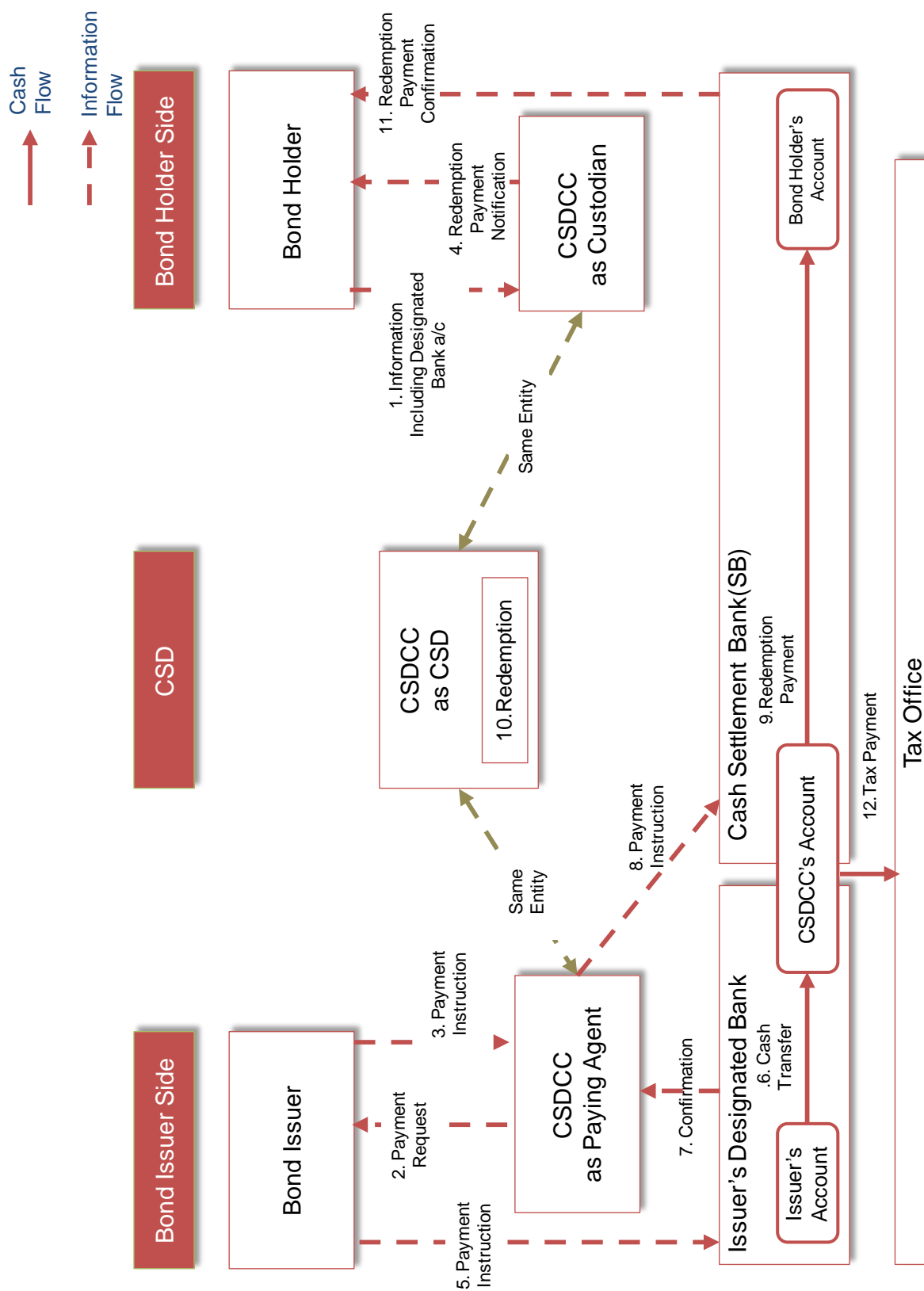


## CN16. Redemption Payment Flow of Corporate Bond OTC Market

### Process of Redemption Payment

1. Bond holders send information including designated bank account to China Central Depository & Clearing Co., Ltd (CCDC) or Shanghai Clearing House (SHCH).
2. CCDC or SHCH requests redemption payment of bond issuer.
3. Bond issuer instructs CCDC or SHCH to pay redemption.
4. CCDC or SHCH as custodian notifies bond holders of redemption payment.
5. Bond issuer instructs its designated bank to transfer cash from issuer's account to CCDC's or SHCH's account.
6. Designated bank transfers cash from issuer's account to CCDC's or SHCH's account.
7. Designated bank sends payment confirmation to CCDC or SHCH.
8. CCDC or SHCH instructs People's bank of China (PBOC) to transfer cash to cash settlement banks' account via CNAPS.
9. PBOC transfers cash from CCDC's or SHCH's account to cash settlement banks' account via CNAPS with instructions to credit holders' accounts.
10. CCDC or SHCH as CSD makes bond redemption.
11. Cash settlement banks credit bond holders' accounts with redemption.
12. Cash settlement banks notify bond holders of redemption payment.
13. Bond holders pay tax to tax office.

### CN17. Redemption Flow of Corporate Bond Exchange Market



### CN17. Redemption Payment Flow of Corporate Bond Exchange Market

## Process of Redemption Payment

1. Bond holders send information including designated bank account to China Securities Depository and Clearing Corporation(CSDCC).
2. CSDCC as paying agent requests redemption payment of bond issuer.
3. Bond issuer instructs CSDCC to pay redemption.
4. CSDCC notifies bond holders of redemption payment.
5. Bond issuer instructs it's designated bank to transfer cash from issuer's account to CSDCC's account.
6. Designated bank transfers cash from issuer's account to CSDCC's account.
7. Designated bank sends payment confirmation to CSDCC.
8. CSDCC instructs cash settlement banks to transfer cash to cash settlement banks' account.
9. Cash settlement banks transfer cash from CSDCC's account to cash settlement banks' account with instructions to credit holders' accounts.
10. CSDCC as CSD makes bond redemption.
11. Cash settlement banks notify bond holders of redemption payment.
12. CSDCC pays tax to tax office.

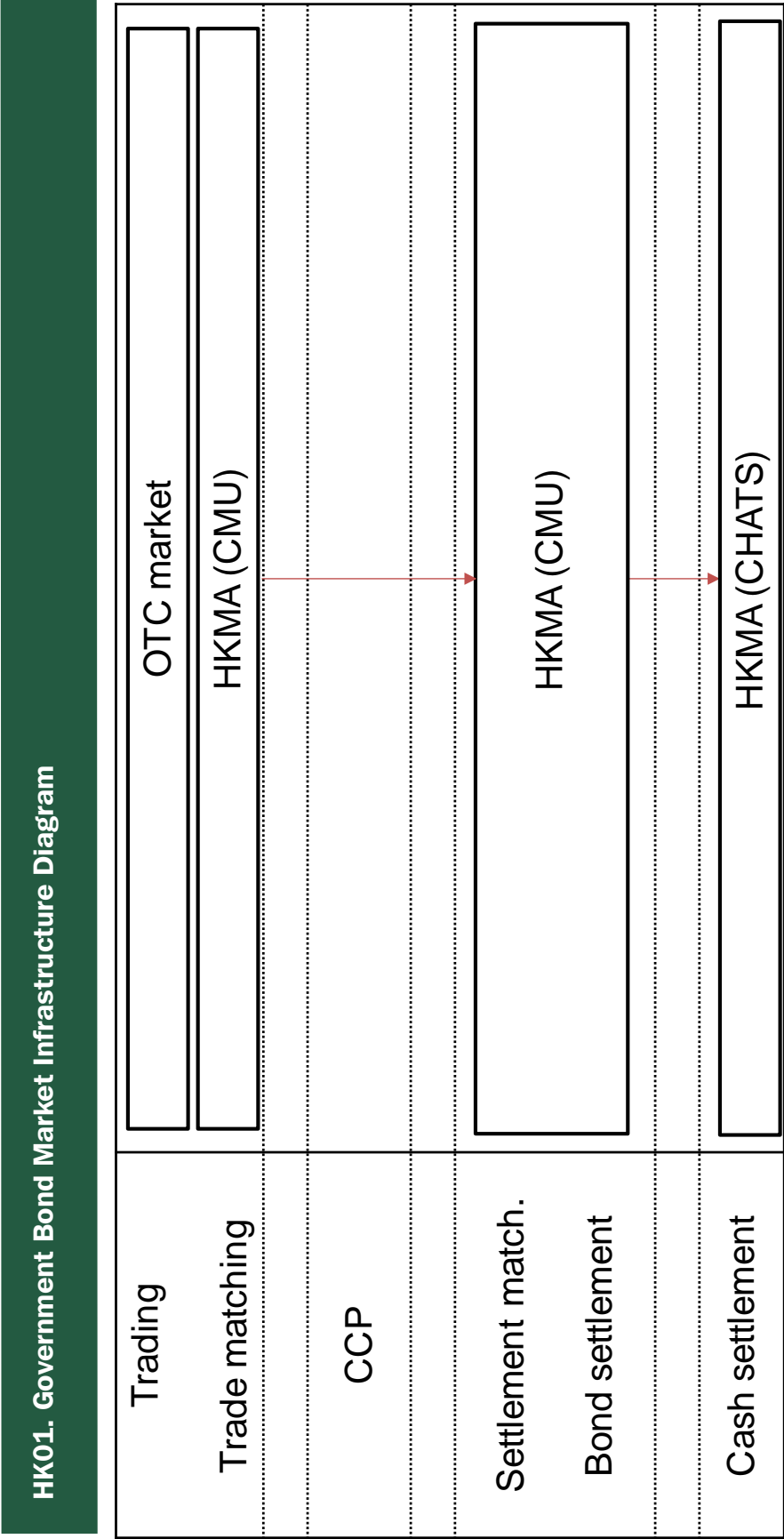


# Hong Kong, China (HK)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Bond Transaction Flow for Domestic Trades  
(Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow  
(Government Bond)
6. Interest & Redemption Payment Flow  
(Corporate Bond)

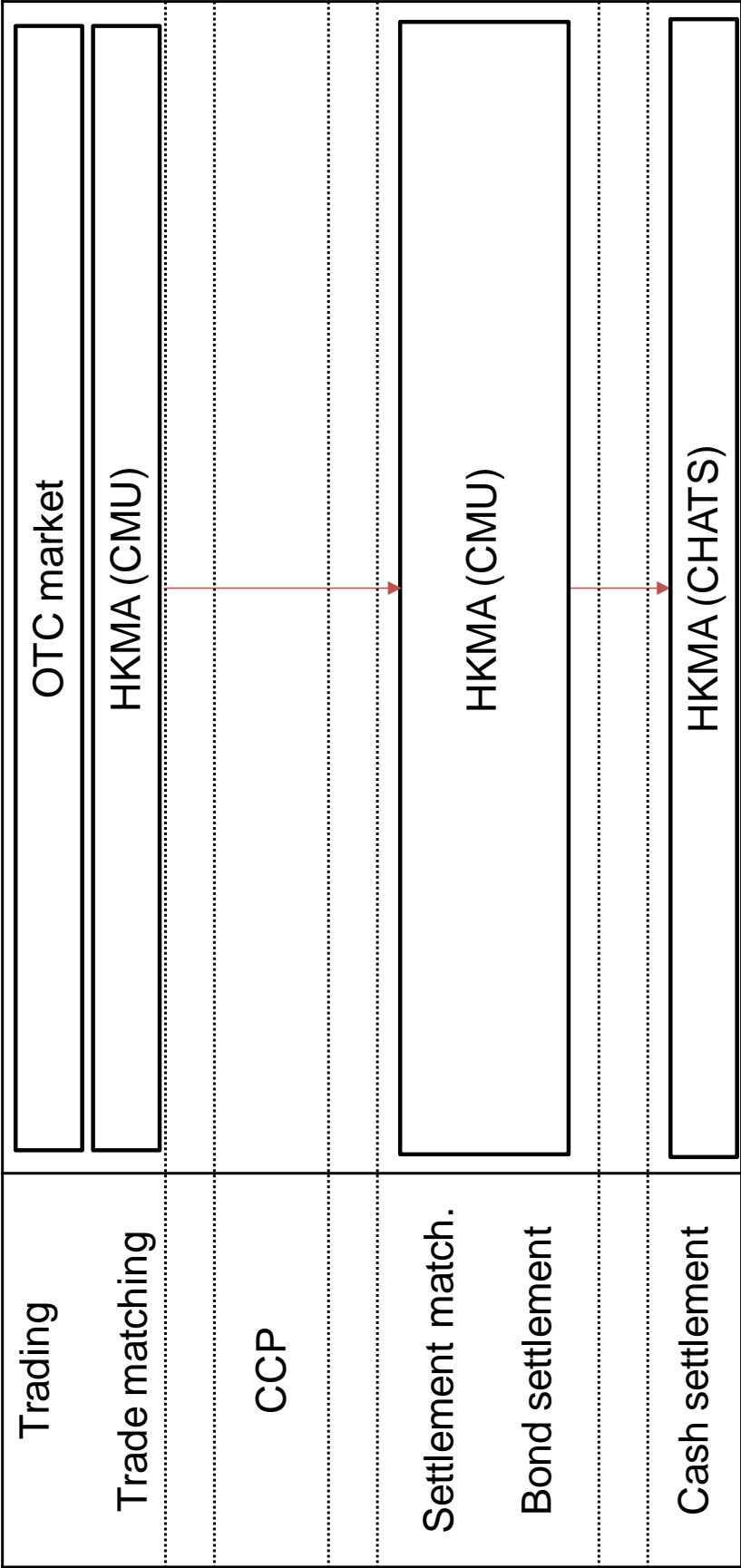
# 1. Bond Market Infrastructure Diagram

2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



HKMA – Hong Kong Monetary Authority  
CMU – Central Money Markets Unit  
CHATS – Clearing House Automated Transfer System (HKD, USD, EUR and RMB)

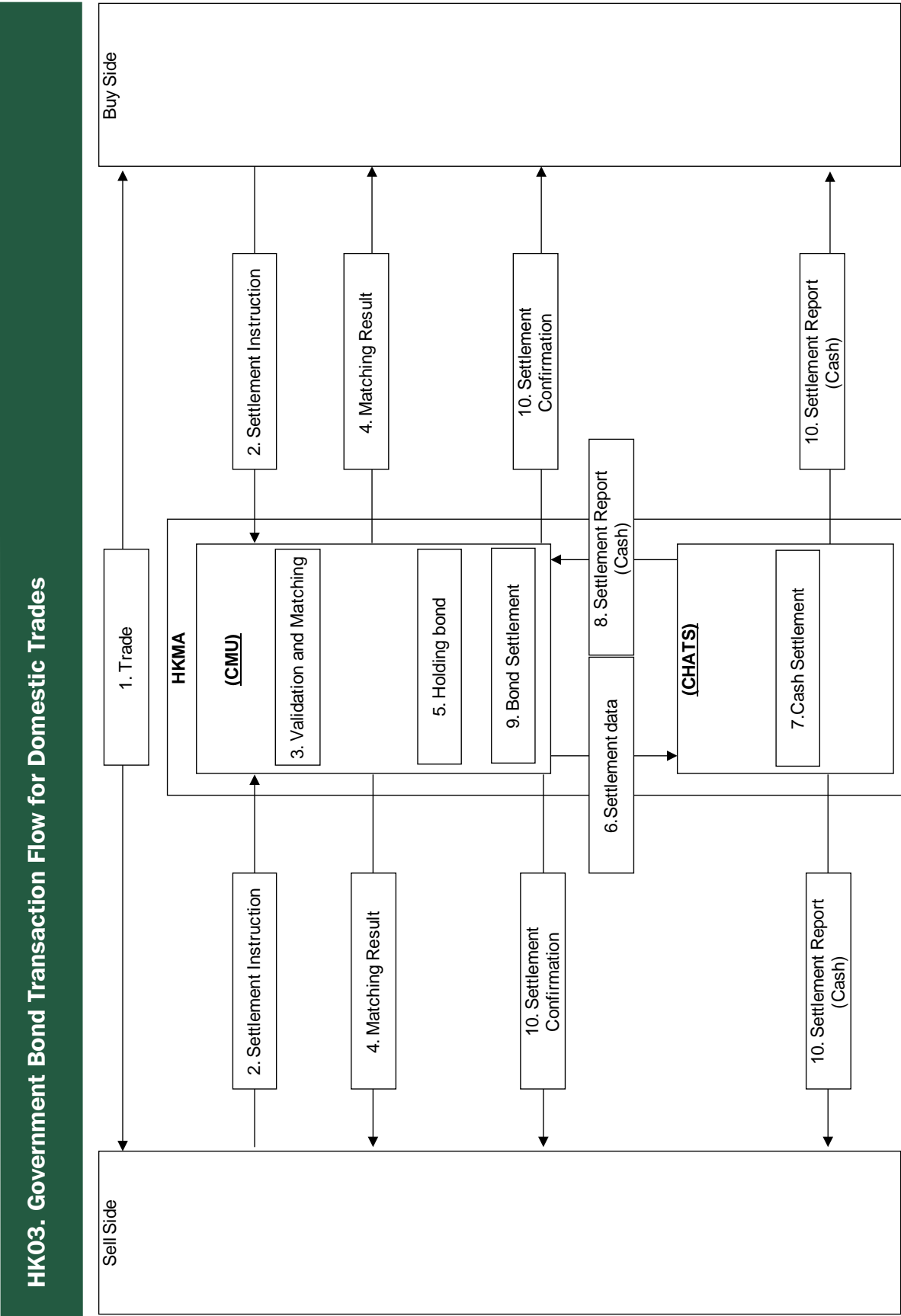
HK02. Corporate Bond Market Infrastructure Diagram



HKMA – Hong Kong Monetary Authority  
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

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



### HK03. Government Bond Transaction Flow for Domestic Trades

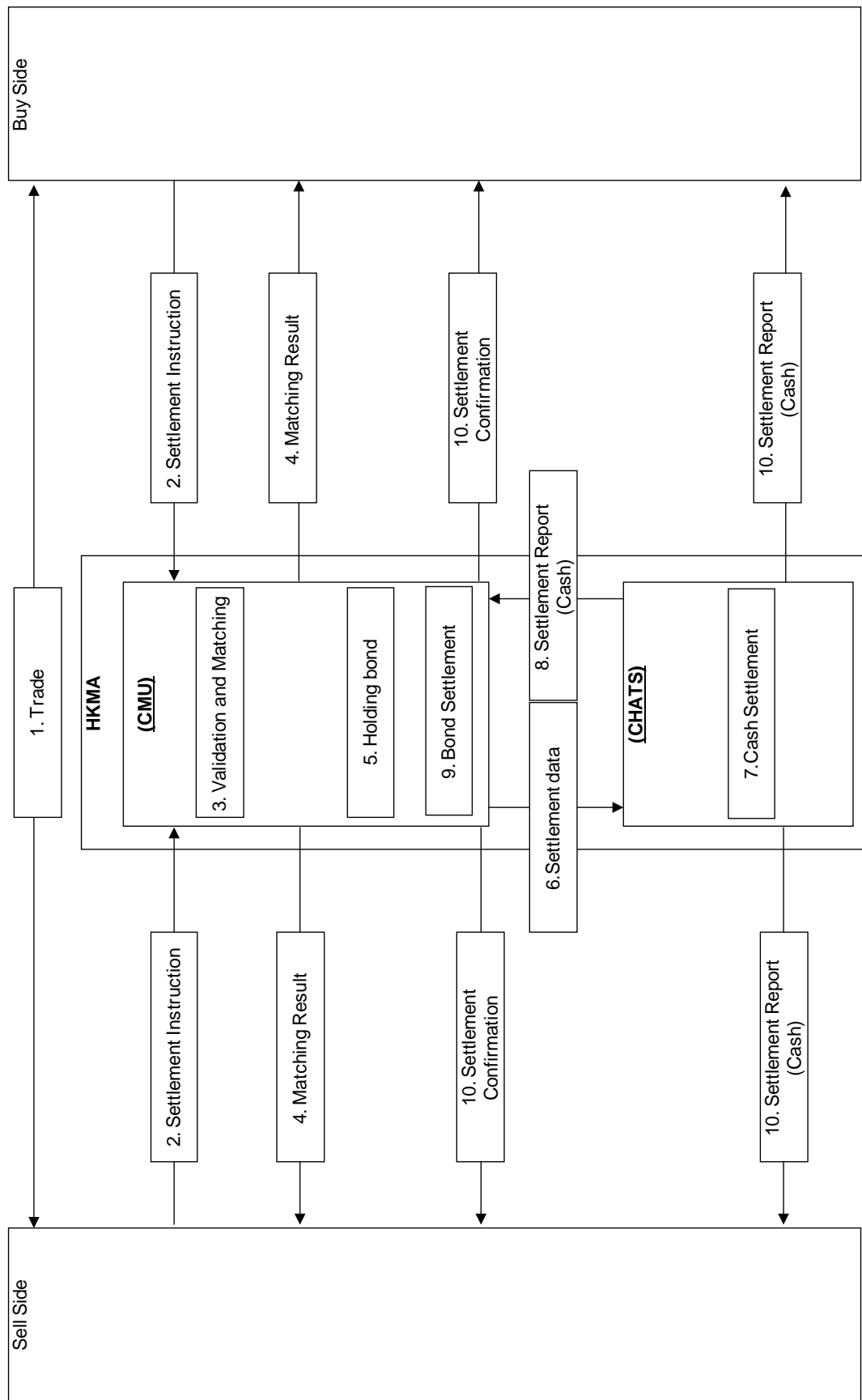
## OTC Market

1. Sell side and buy side trade over the counter.
2. Sell side and buy side send instructions to Central Moneymarkets Unit(CMU) via eCMT, SWIFT, Fax, AFT or by hand. When they use system, both sell side and buy side enters trade data. Participants need to send the message instructions before the cutoff time (4:00 p.m.) on settlement day.
3. CMU performs validation and matching.
4. CMU sends matching result to the sell side and buy side.
5. CMU holds the bond.
6. CMU sends settlement data to CHATS.
7. CHATS executes cash settlement. CHATS will auto-debit the buy sides' RTGS account.
8. CHATS sends cash settlement report to CMU.
9. CMU executes bond settlement.
10. CHATS sends cash settlement report to the buy side and sell side respectively, while CMU sends securities settlement confirmation to the sell side and buy side.



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

**HK04. Corporate Bond Transaction Flow for Domestic Trades**

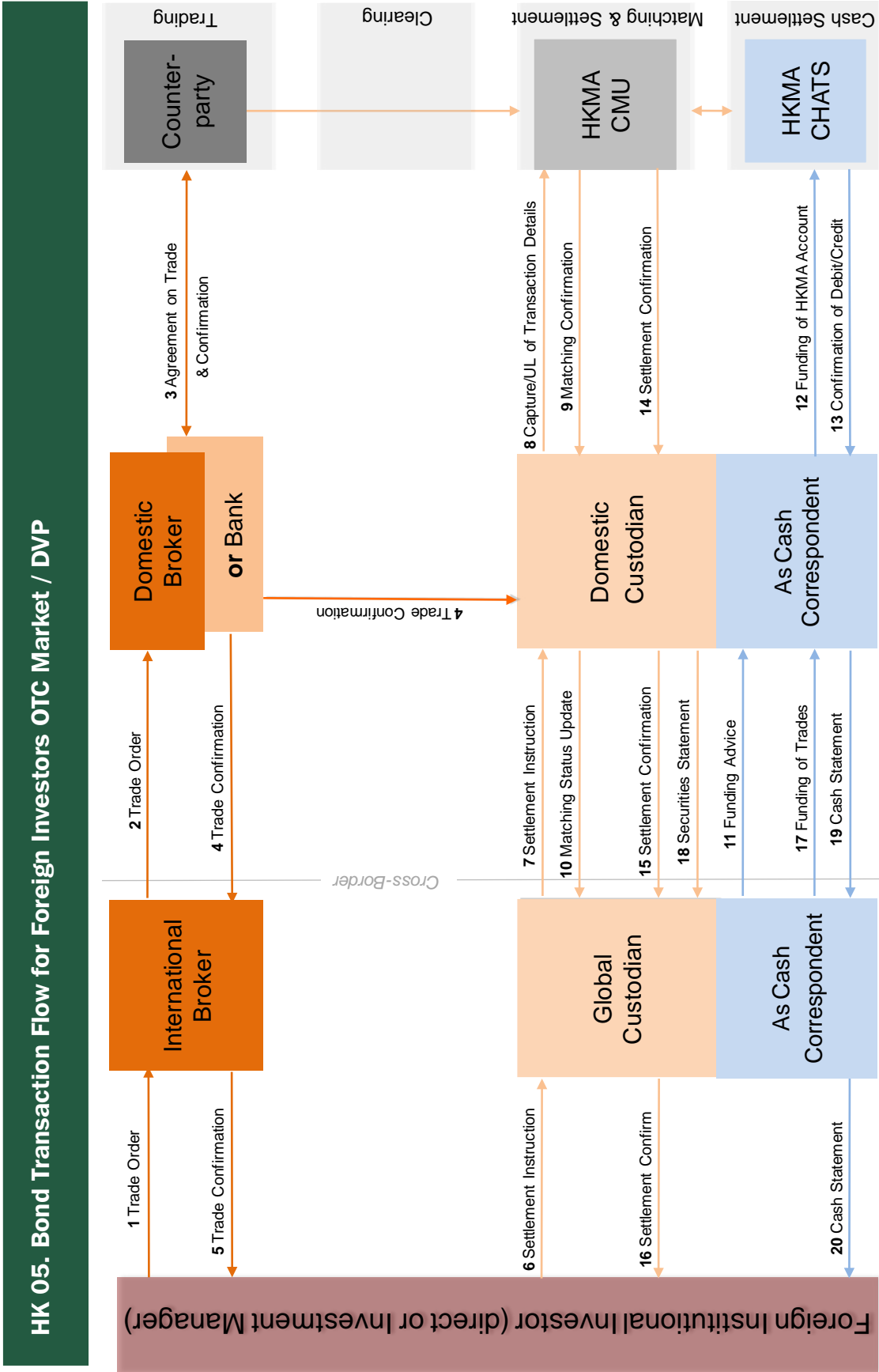


#### HK04. Corporate Bond Transaction Flow for Domestic Trades

### OTC Market

1. Sell side and buy side trade over the counter.
2. Sell side and buy side send instructions to Central Moneymarkets Unit(CMU) via eCMT, SWIFT, Fax, AFT or by hand. When they use system, both sell side and buy side enters trade data. Participants need to send the message instructions before the cutoff time (4:00 p.m.) on settlement day.
3. CMU performs validation and matching.
4. CMU sends matching result to the sell side and buy side.
5. CMU holds the bond.
6. CMU sends settlement data to CHATS.
7. CHATS executes cash settlement. CHATS will auto-debit the buy sides' RTGS account.
8. CHATS sends cash settlement report to CMU.
9. CMU executes bond settlement.
10. CHATS sends cash settlement report to buy side and sell side respectively, while CMU sends securities settlement confirmation to the sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



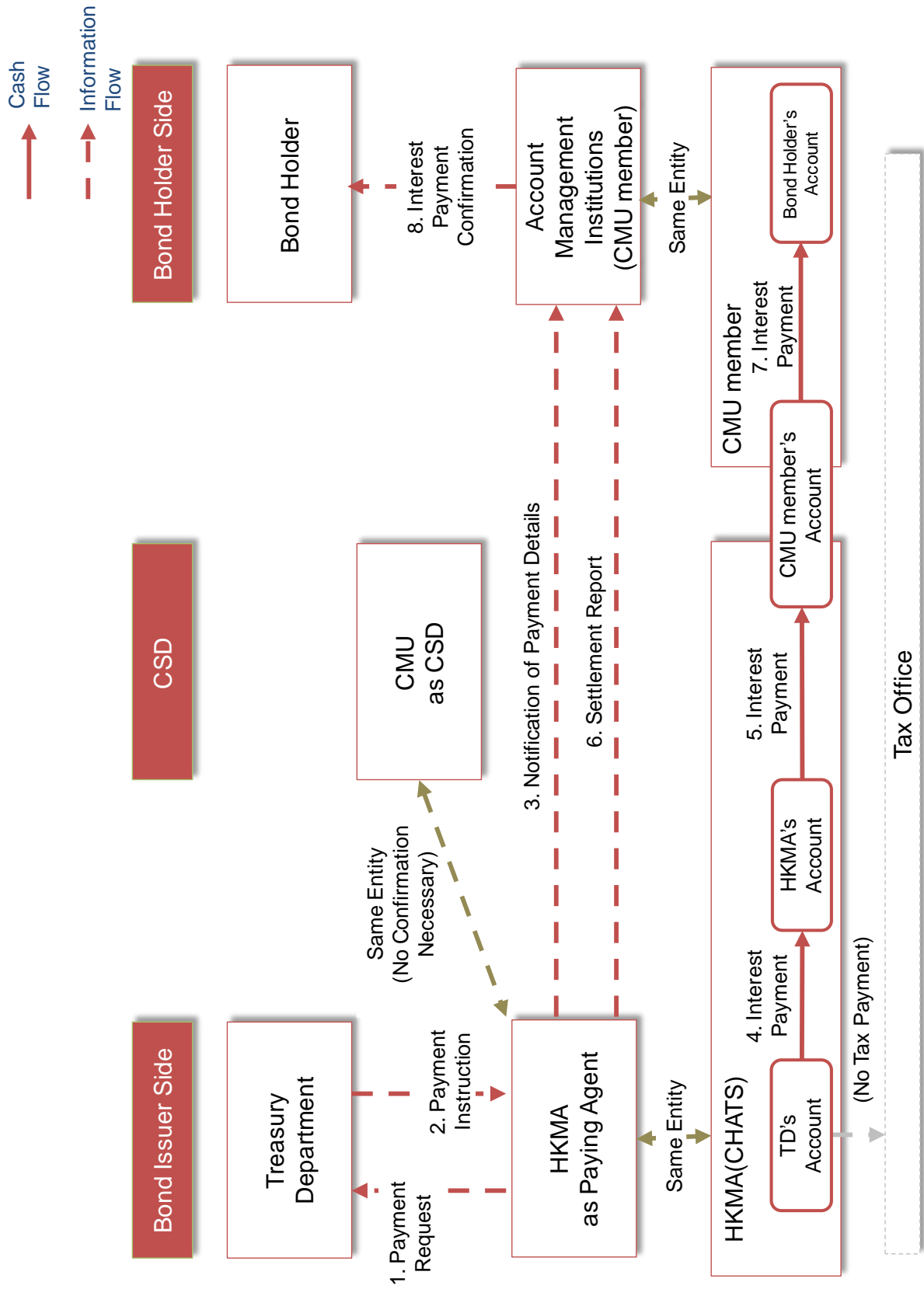
### HK05. Bond Transaction Flow for Foreign Investors OTC Market / DVP

Trade Date	
	<ol style="list-style-type: none"> <li>Foreign Institutional Investor places order with International Broker</li> <li>International Broker places order with Domestic Broker/Bank</li> <li>Domestic Broker/Bank trades OTC with Counterparty (via phone or, e.g., Bloomberg)</li> <li>Domestic Broker/Bank sends trade confirmation to International Broker</li> <li>Foreign Institutional Investor receives trade confirmation</li> <li>Foreign Institutional Investor instructs Global Custodian, on securities settlement and cash funding details</li> </ol>
T+1	
	<ol style="list-style-type: none"> <li>Global Custodian instructs Domestic Custodian on securities settlement</li> </ol>
Settlement Date	
	<ol style="list-style-type: none"> <li>Domestic Custodian captures (eCMT or upload) settlement instructions into CMU</li> <li>Domestic Custodian receives transaction matching confirmation from CMU, or status updates</li> <li>Domestic Custodian sends matching status update to Global Custodian, either as report or, typically, per individual transaction</li> <li>Global Custodian advises funding details to Domestic Custodian</li> <li>Domestic Custodian effects funding of HKMA account via CHATS</li> <li>Upon transfer of cash, HKMA sends cash settlement confirmation to Domestic Custodian</li> <li>Upon transfer of bonds, CMU sends bond settlement confirmation to Domestic Custodian</li> <li>Domestic Custodian sends settlement confirmation to Global Custodian</li> <li>Foreign Institutional Investor receives settlement confirmation from Global Custodian</li> <li>Global Custodian funds trades into Domestic Custodian HKD account, or into FCY nostro</li> <li>Domestic Custodian sends securities statement to Global Custodian (end of day)</li> <li>Domestic Custodian sends debit/credit confirmation as cash statement to Global Custodian (end of day)</li> <li>Global Custodian sends debit/credit confirmation in cash statement to Foreign Institutional Investor (end of day)</li> </ol>

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



### HK06. Interest Payment Flow of Government Bond OTC Market

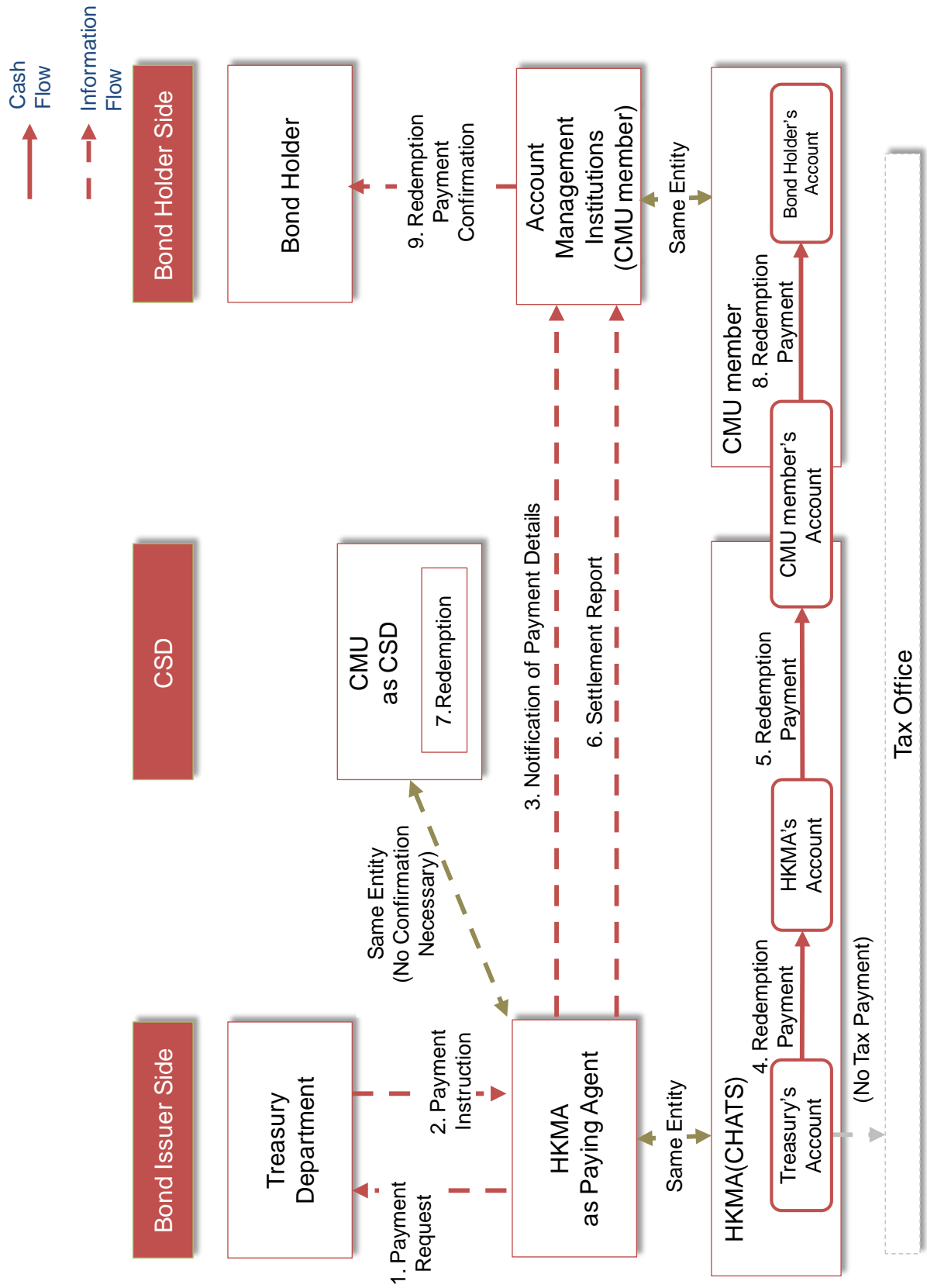


#### HK06. Interest Payment Flow of Government Bond

### Process of Interest Payment

1. 3 days before the interest payment date, Hong Kong Monetary Authority (HKMA), as the payment agent, sends interest payment notification to Treasury Department.
2. Treasury Department instructs HKMA to pay interest.
3. HKMA sends Coupon/Dividend and Redemption Notification Report to CMU Members one business day before the payment date.
4. HKMA transfer cash for interest from Treasury Department's account to its own account.
5. On interest payment date, HKMA pays interest proceeds to account management institutions (CMU Members) via CHATS.
6. Upon completion of payment, CMU sends settlement reports to account management institutions (CMU Members).
7. Account management institutions (CMU Members) subsequently pay the interest proceeds to the bond holders.
8. Account management institutions (CMU Members) notifies bond holders of interest payment.

# HK07. Redemption Payment Flow of Government Bond OTC Market



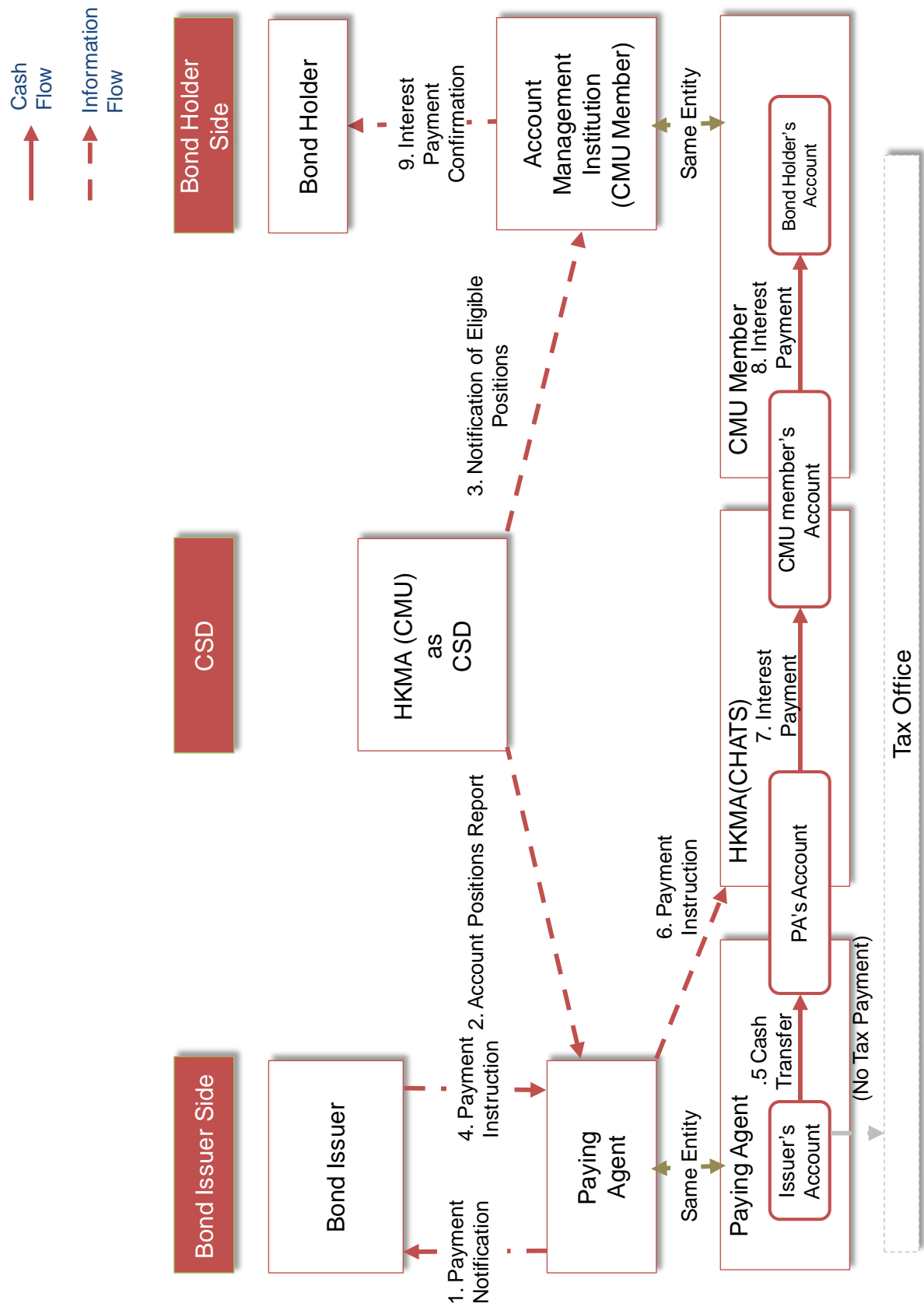
## HK07. Redemption Payment Flow of Government Bond

### Process of Redemption Payment

1. 3 days before the redemption payment date, Hong Kong Monetary Authority (HKMA), as payment agent, sends redemption payment notification to Treasury Department.
2. Treasury Department instructs HKMA to pay last interest and principal.
3. HKMA sends Coupon/Dividend and Redemption Notification Report to CMU Members one business day before the payment date.
4. HKMA transfers cash for interest and redemption payment from Treasury Department's account to its own account.
5. On redemption payment date, HKMA pays last interest and principal proceeds to account management institutions (CMU Members) via CHATS.
6. Upon completion of payment, CMU sends settlement reports to account management institutions (CMU Members).
7. HKMA as CSD makes bond redemption.
8. Account management institutions (CMU Members) subsequently pay last interest and principal proceeds to bond holders.
9. Account management institutions (CMU Members) notifies bond holders of redemption payment.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### HK08. Interest Payment Flow of Corporate Bond



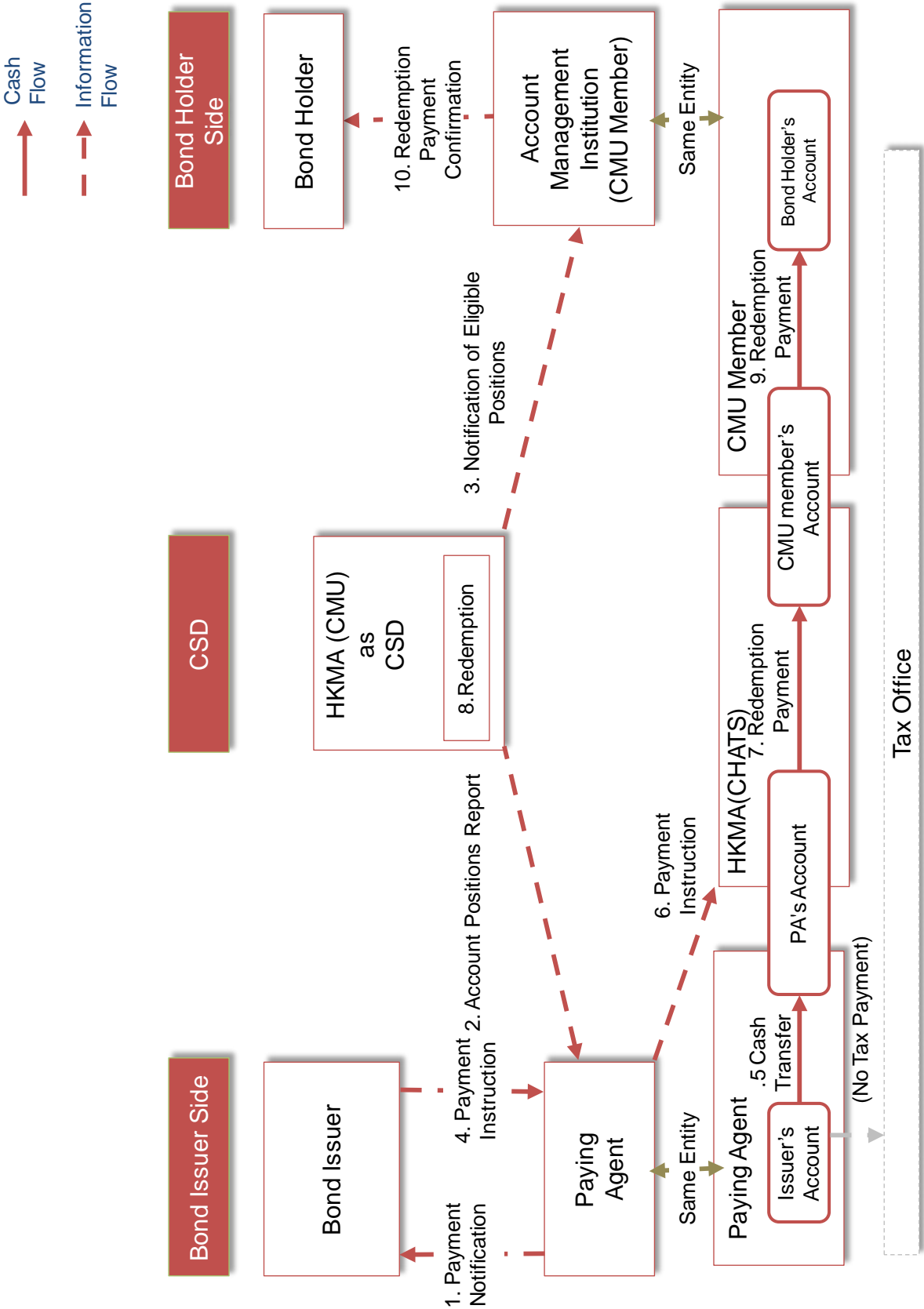
## HK08. Interest Payment Flow of Corporate Bond

### Process of Interest Payment

1. Paying agent notifies bond issuer of interest payment.
2. 1 day before the interest payment date, CMU sends Account Positions Report to paying agent.
3. 1 day before the interest payment date, CMU sends notification of eligible positions to account management institutions (CMU Members).
4. On interest payment date, bond issuer instructs its paying agent to make interest payment.
5. Paying agent transfers cash from issuer's account to its own account.
6. Paying agent instruct Hong Kong Monetary Authority (HKMA) to pay interest to CMU members via CHATS.
7. On interest payment date, the HKMA transfers the interest proceeds to the account management institutions (CMU Members) via CHATS.
8. CMU members subsequently pay the interest proceeds to the bond holders.
9. CMU members notifies bond holders of interest payment.



HK09. Redemption Payment Flow of Corporate Bond



## HK09 Redemption Payment Flow of Corporate Bond

### Process of Redemption Payment

1. Payment agent notifies bond issuer of redemption payment.
2. 1 day before the redemption payment date, CMU sends Account Positions Report to paying agent.
3. 1 day before the redemption payment date, CMU sends notification of eligible positions to account management institutions (CMU Members).
4. On redemption payment date, bond issuer instructs its paying agent to make redemption payment.
5. Paying agent transfers cash from issuer's account to its own account.
6. Paying agent instructs Hong Kong Monetary Authority (HKMA) to pay last interest and principal to CMU members via CHATS.
7. On redemption payment date, HKMA transfers last interest and principal proceeds to account management institutions (CMU Members) via CHATS.
8. HKMA as CSD carries out redemption.
9. CMU members subsequently pay last interest and principal proceeds to bond holders.
10. CMU members notifies bond holders of redemption payment.

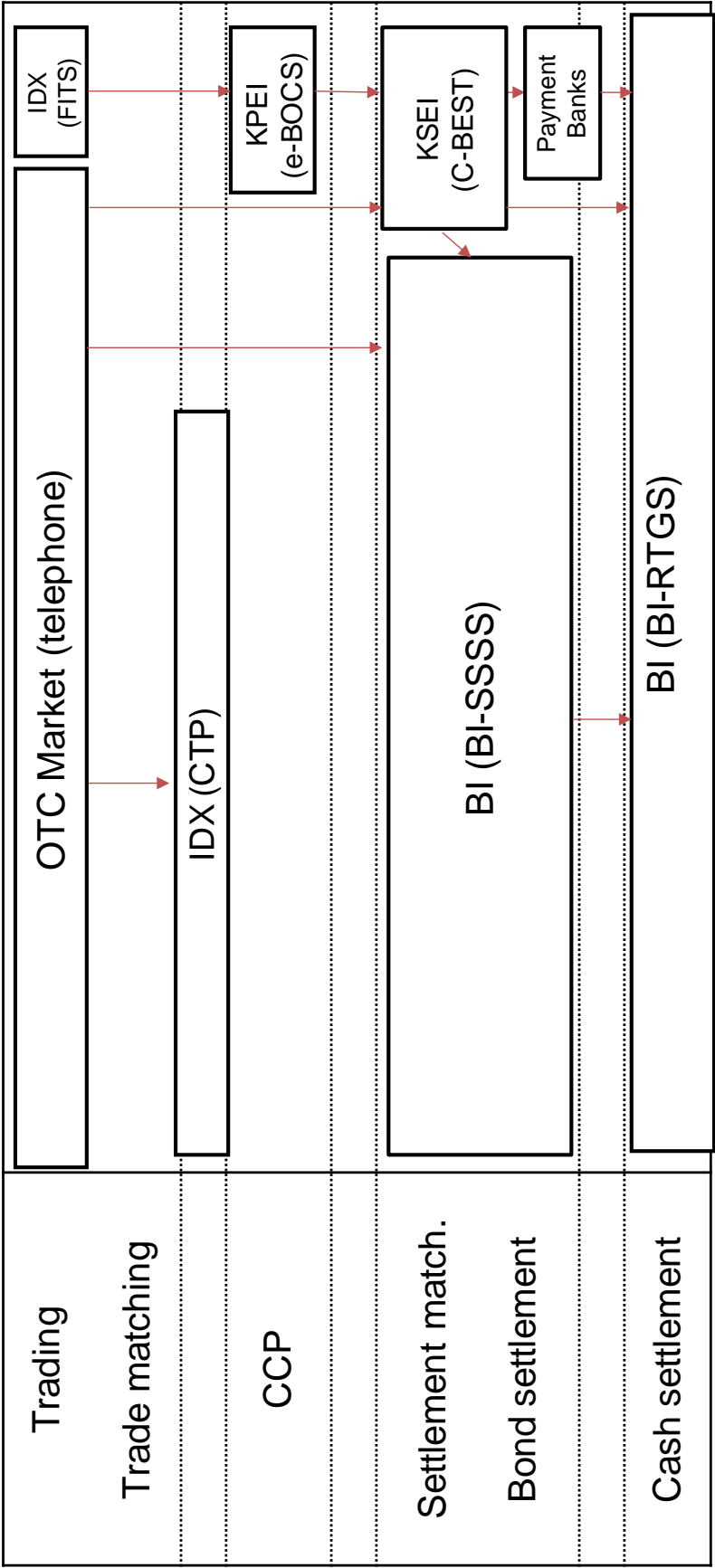
# Indonesia

## (ID)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

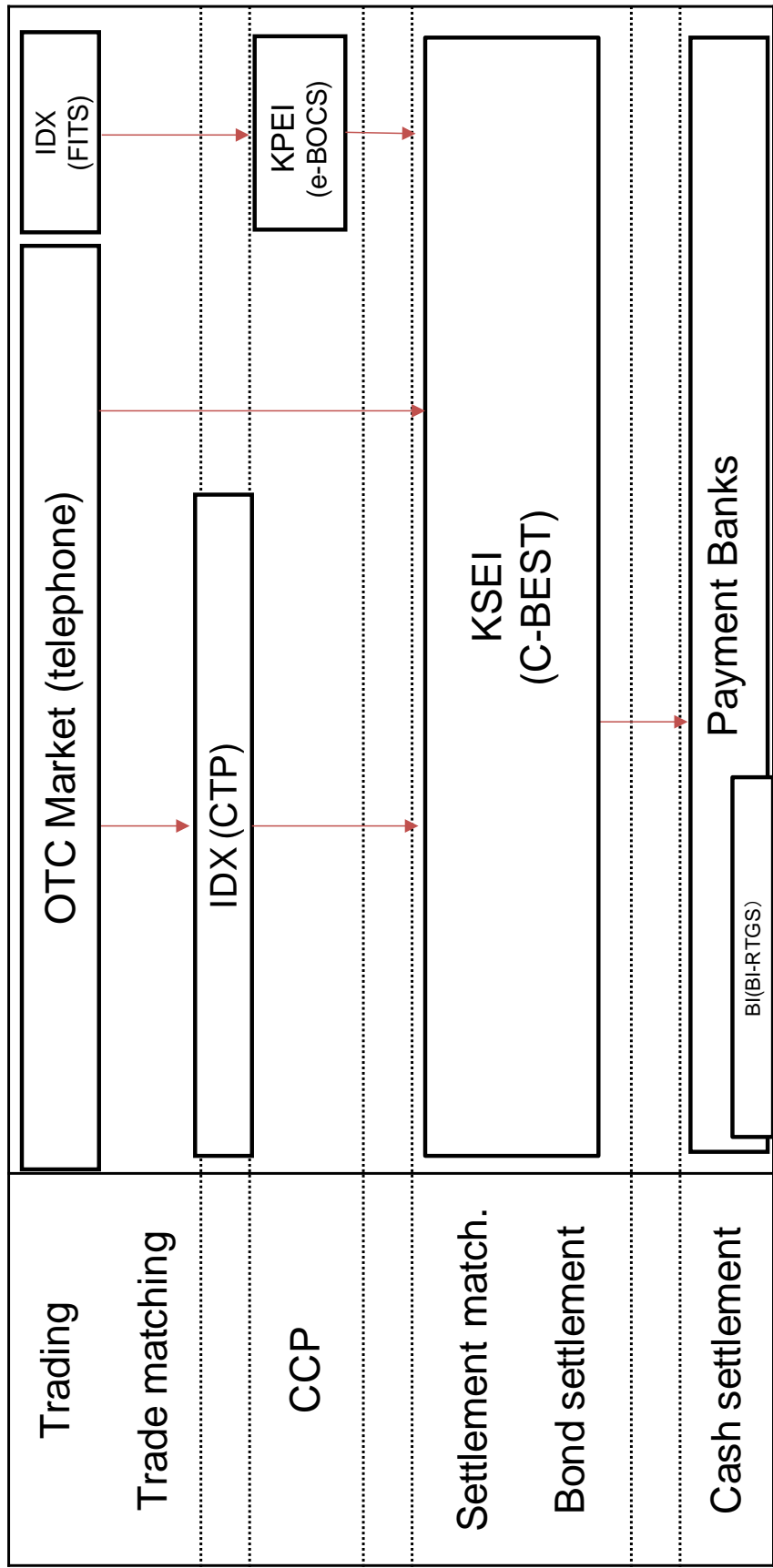
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

ID01. Government Bond Market Infrastructure Diagram



IDX – Indonesian Stock Exchange    FITS - Fixed-Income Trading System    CTP – Centralized Trading Platform    KSEI – Indonesian Central Securities Depository    KPEI – Indonesia Clearing and guarantee Corporation    BI – Bank Indonesia  
e-BOCS – Electronic Bond Clearing System    C-BEST – Central Depository and Book Entry Settlement    BI-SSSS – Bank Indonesia Scripless Securities Settlement System

ID02. Corporate Bond Market Infrastructure Diagram



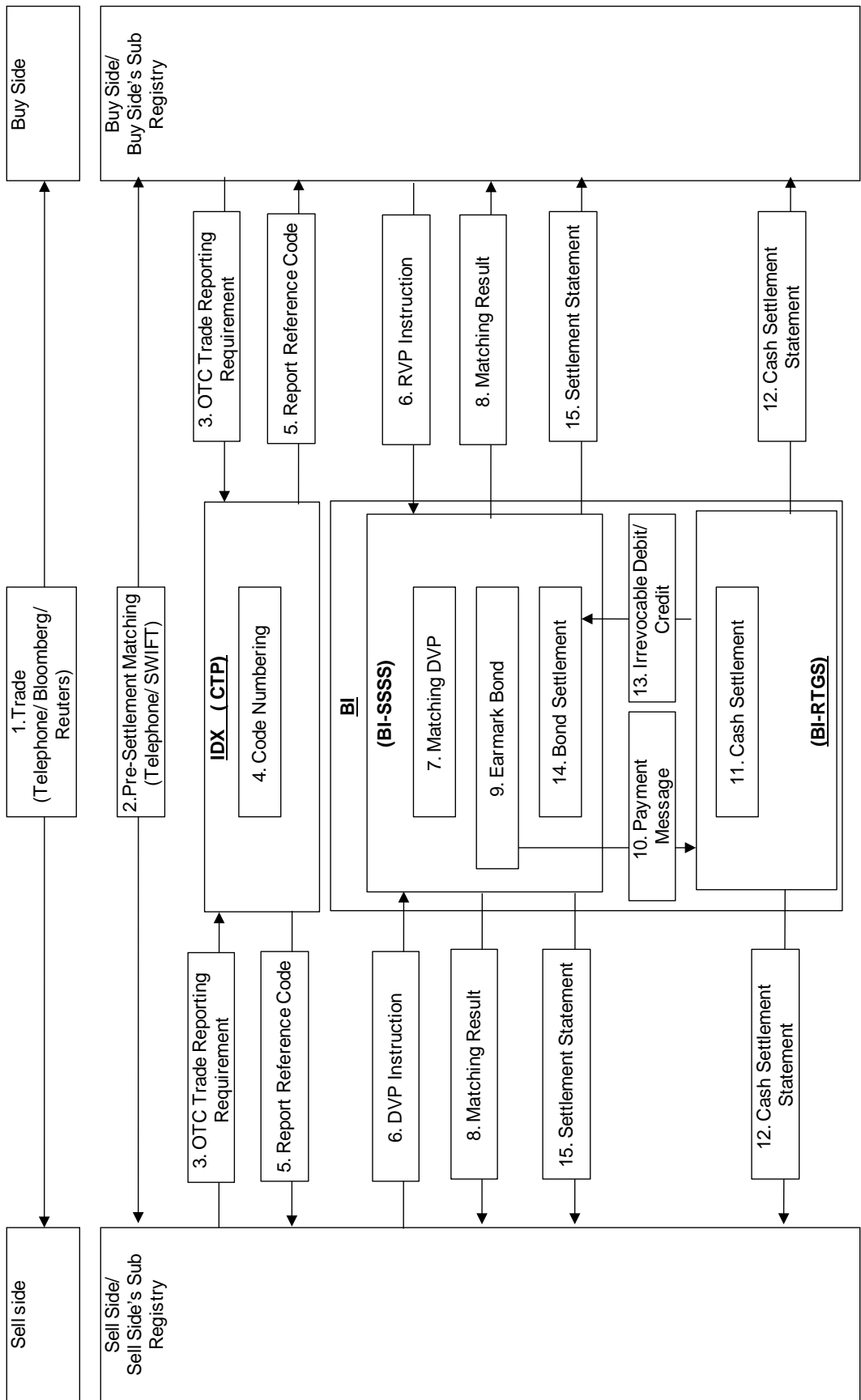
IDX – Indonesian Stock Exchange  
FITS - Fixed-Income Trading System  
CTP – Centralized Trading Platform  
KSEI – Indonesian Central Securities

KPEI – Indonesia Clearing and guarantee Corporation  
BI – Bank Indonesia  
e-BOCS – Electronic Bond Clearing System  
C-BEST – Central Depository and Book Entry Settlement

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



### ID03. Government Bond Transaction Flow for Domestic Trades

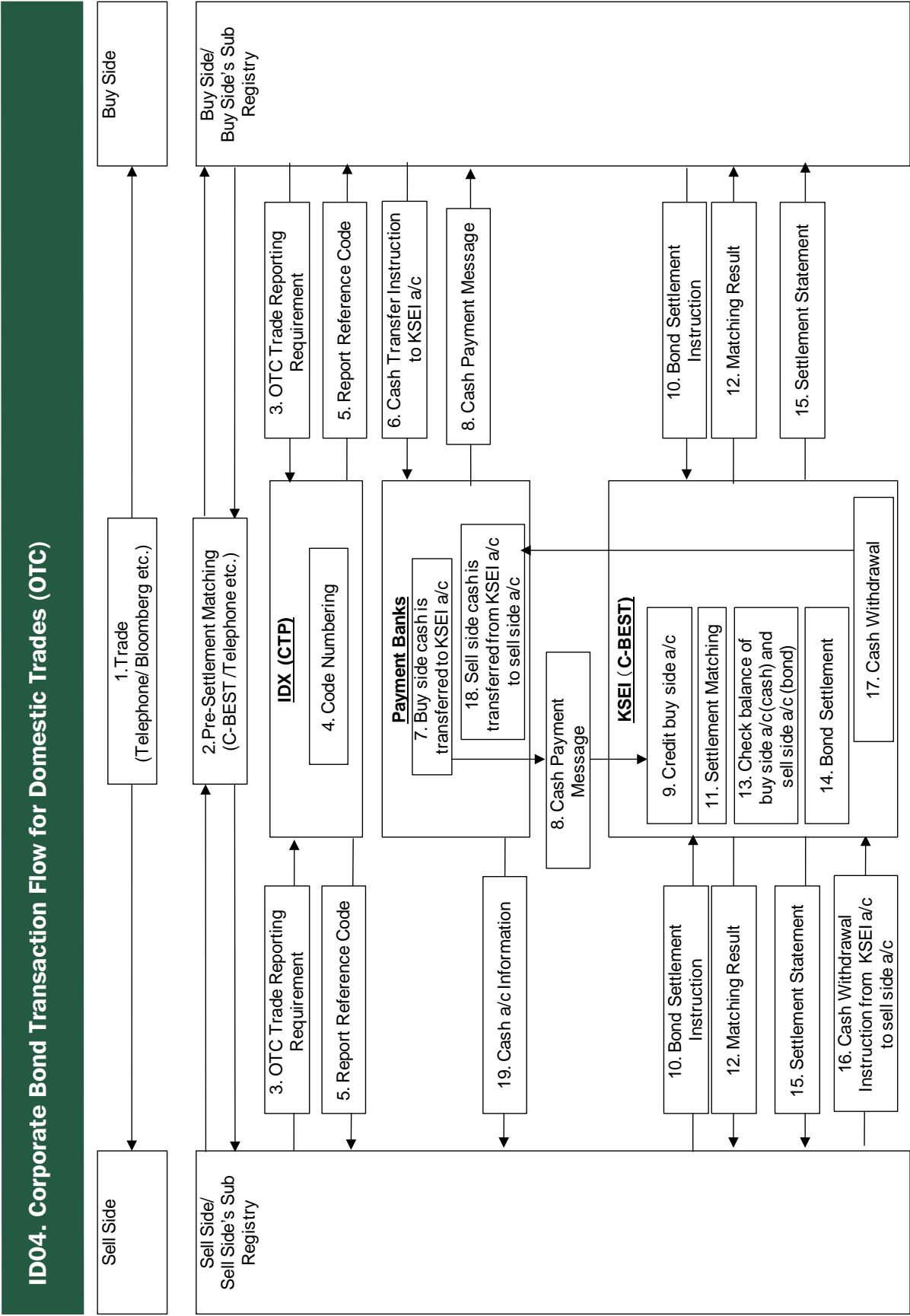


### ID03. Government Bond Transaction Flow for Domestic Trades

## OTC Market (Direct Connection to BI-SSSS )

1. Sell side and buy side trade government bonds over-the-counter. Most of trades are done by telephones.
2. Both sell side and buy side 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. Sell side or buy side have to report trade data to Centralized Trading Platform (CTP) of Indonesia Stock Exchange (IDX) within 30 minutes of trade.
4. IDX puts the code on each trade.
5. Sell side and buy side receive report reference code from IDX.
6. Sell side and buy side key in the DVP and RVP instructions to BI-SSSS, respectively.
7. BI-SSSS performs the matching.
8. BI-SSSS reports the matching results to the sell side and buy side.
9. Bond is earmarked to secure the DVP.
10. Payment message for DVP is sent to Bank Indonesia Real Time Gross Settlement (BI-RTGS)
11. When the funds are available, the amount is debited from the buy side's cash account and credited to the sell side's cash account.
12. BI-RTGS sends the cash settlement statements to the sell side and buy side.
13. BI-RTGS notifies the irrevocable debit/credit status to BI-SSSS.
14. BI-SSSS completes bond settlement.
15. BI-SSSS reports the settlement status to both sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



#### ID04. Corporate Bond Transaction Flow for Domestic Trades

### OTC Market

1. Sell side and buy side trade corporate bonds over-the-counter. Most of trades are done by telephones.
2. Sell side calculate preliminary value of capital gain and accrued interest during holding period of sell side bond holder. Then, the sell side informs such information with other trade data to buy side. Buy side calculate with holding tax on the accrued interest and capital gain. Then, buy side inform net payment value to sell side. Also, both sell side and buy side affirm trade data each other over the telephone (trade confirmation in fax or e-mail format).
3. Sell side or buy side have to report trade data to Centralized Trading Platform (CTP) of Indonesia Stock Exchange (IDX) within 30 minutes of trade during the reporting hours determined by the IDX..
4. IDX puts code on each trade in order to settlement.
5. Sell side and buy side receive report reference code from IDX, they also receive evidence of securities transaction and List of Report on Securities Transactions from IDX, which may be downloaded from the CTP.
6. In the case of settlement transaction done in DVP, buy side sends instruction to its bank regarding cash transfer from buy side's cash account to KSEI cash account. Accordingly, amount of remittance is no need to be equal to transaction value, however the total amount available in the buy side's KSEI cash account must cover the transaction value, however the total amount available in the buy side's KSEI cash account must cover the transaction value.
7. The relevant payment bank receives cash transfer from buy side's cash account into KSEI cash account.
8. Payment banks send cash payment message to KSEI.
9. KSEI credits buy side account in C-BEST.
10. Sell side and buy side send bond settlement instructions to KSEI(C-BEST), respectively. The instruction must specify whether it is a DVP (Delivery Versus Payment) or a DFOP (Delivery Free of Payment) instruction.

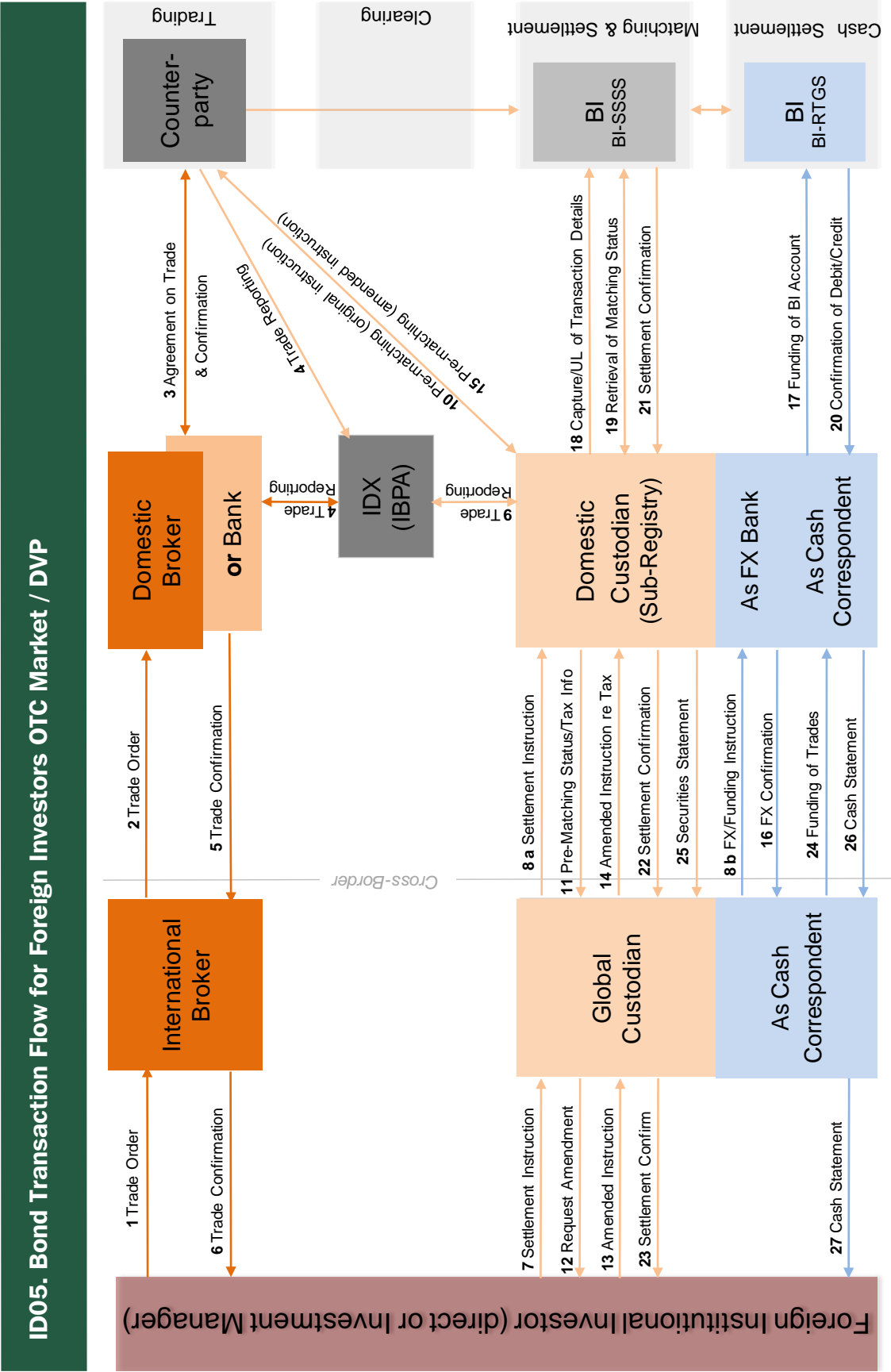
## ID04. Corporate Bond Transaction Flow for Domestic Trades

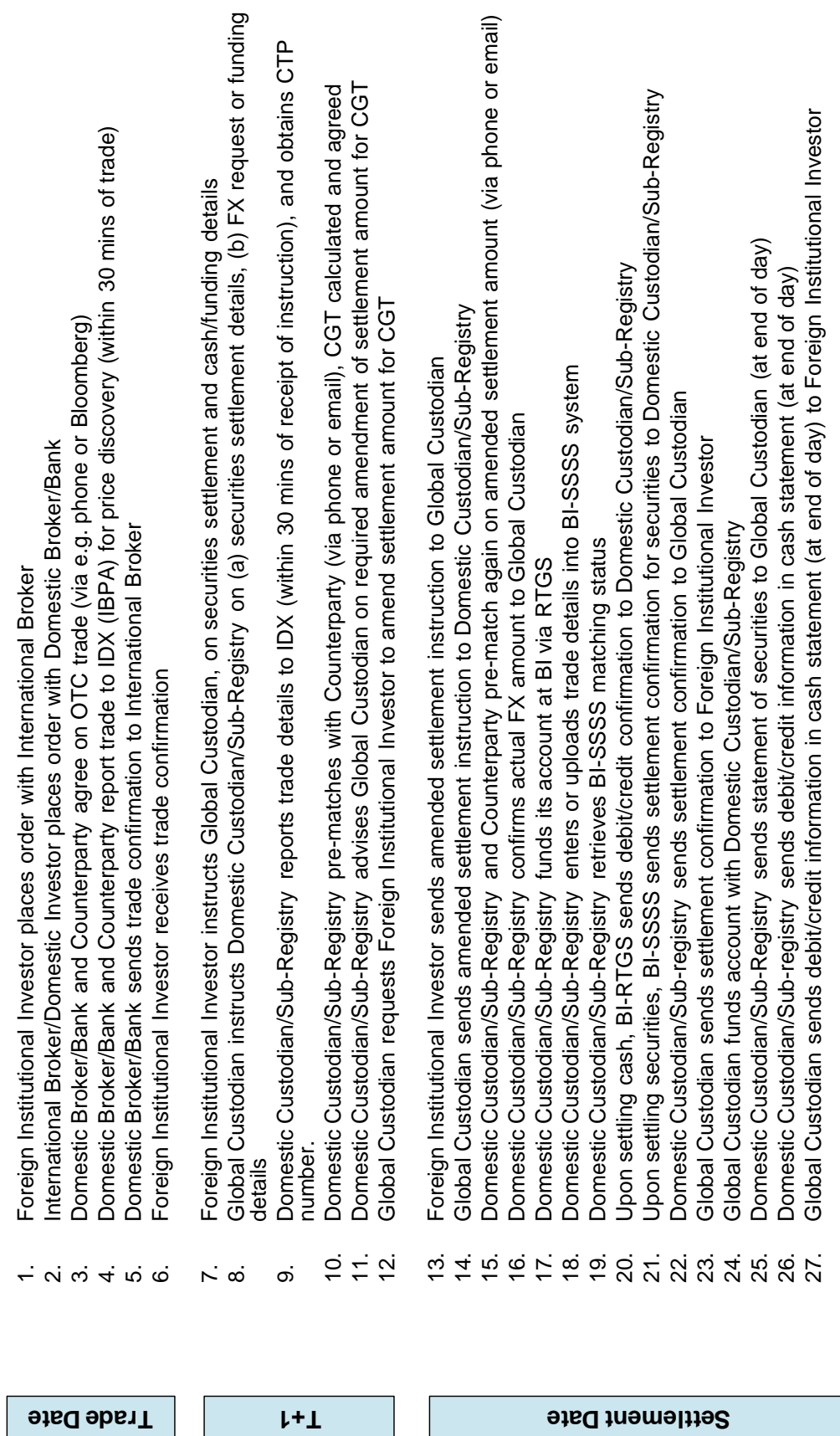
### OTC Market

11. KSEI performs settlement matching.
12. KSEI reports matching result to sell side and buy side, if both the bonds and the cash are available in the respective accounts.
13. For DVP instruction, KSEI checks balance of buy side cash account and sell side bond account.
14. KSEI performs bond settlement at the time designated by the buy side and the sell side subject to KSEI's business hours.
15. KSEI sends settlement statement to sell side and buy side.
16. Sell side sends instruction to KSEI regarding cash withdrawal from sell side's KSEI cash account to sell side cash account. Fund transfer from KSEI cash account can only be done by transferring the fund into an operational account opened by sell side at a payment bank. Amount of remittance is no need to be equal to transaction value.
17. KSEI sends cash withdrawal instruction to the relevant payment bank. Payment bank provides intraday facility for KSEI in case there is not sufficient cash balance in the relevant payment bank.
18. The relevant payment banks transfer cash from sell side's KSEI cash account to sell side's operational account in the relevant payment bank.
19. Payment banks send cash account information to sell side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

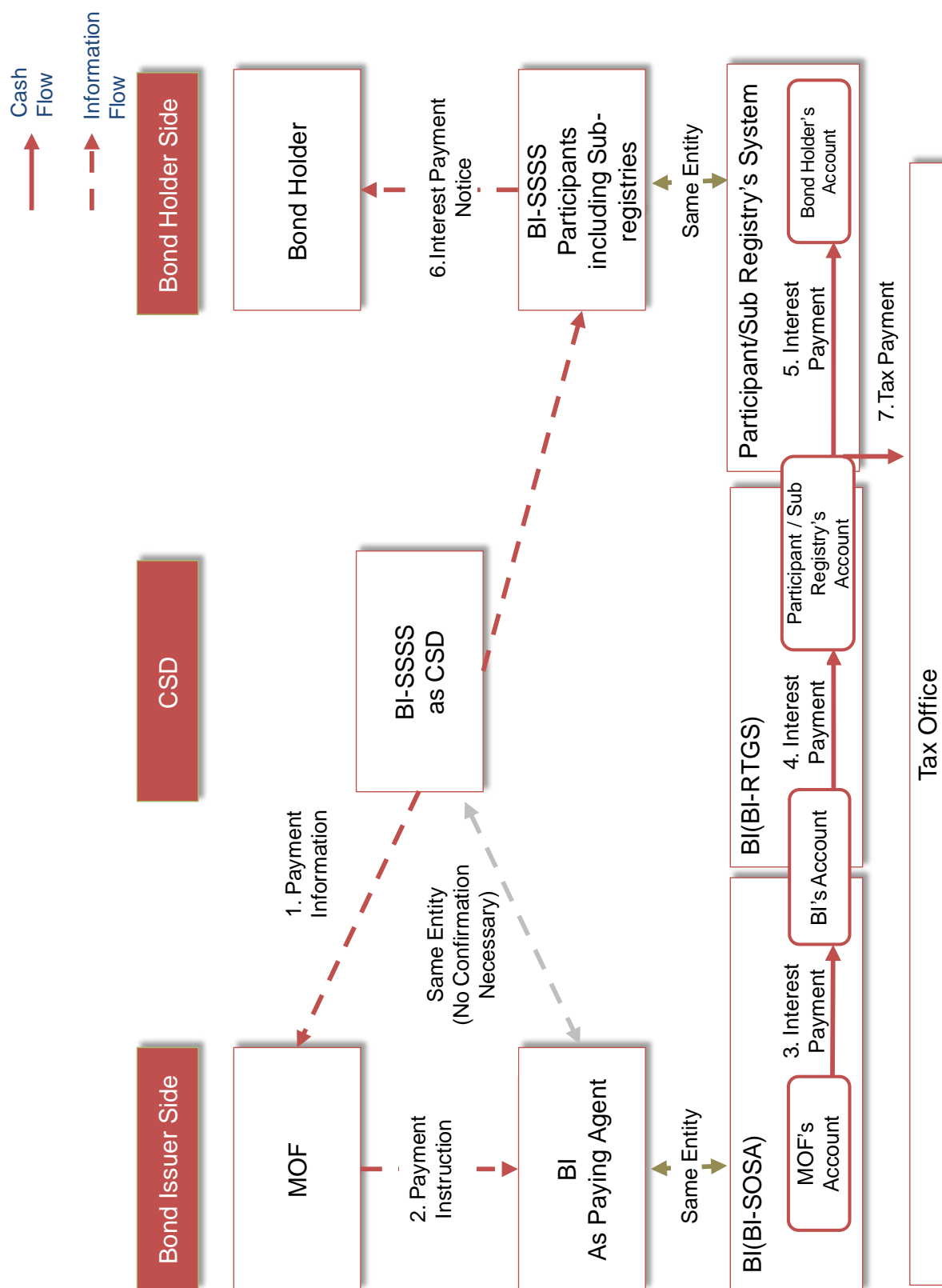




**ID05. Bond Transaction Flow for Foreign Investors OTC Market / DVP**

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

## ID06. Interest Payment Flow of Government Bond



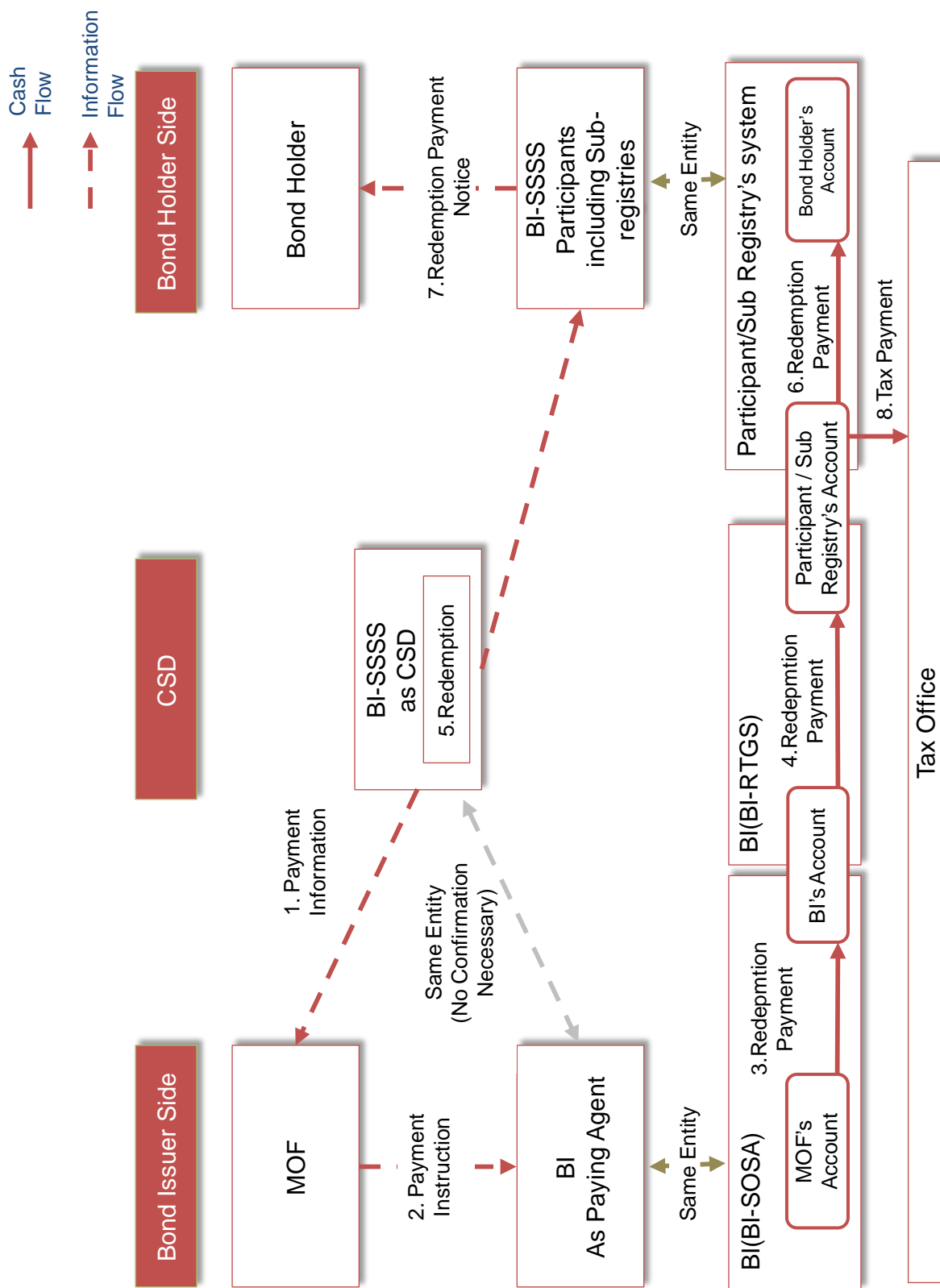
#### ID06. Interest Payment Flow of Government Bond

### Process of Interest Payment

1. Bank Indonesia (BI) notifies Ministry of Finance (MOF) of payment information.
2. MOF instructs Bank Indonesia (BI) to pay interest.
3. BI transfers cash for interest payment from MOF's account to BI's own account.
4. BI makes interest payment to BI-SSSS participant including sub-registries.
5. BI-SSSS participants credit bond holders' account with interest.
6. BI-SSSS participants notify bond holder of interest payment.
7. BI-SSSS participants pay income tax to tax office.

※ BI-SSSS : Bank Indonesia Scripless Securities Settlement System

## ID07. Redemption Payment Flow of Government Bond



### ID07. Redemption Payment Flow of Government Bond

## Process of Redemption Payment

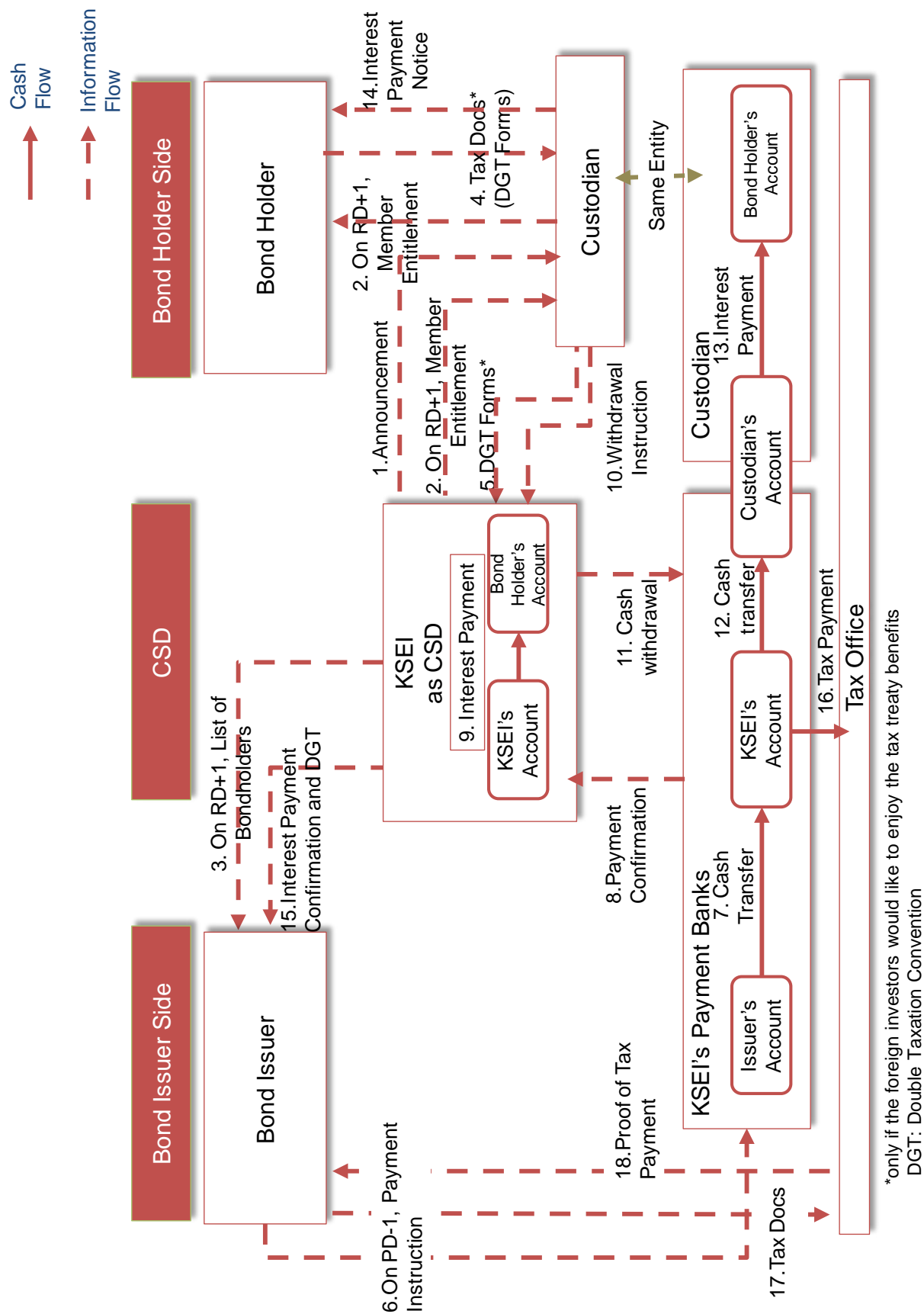
1. BI notifies Ministry of Finance (MOF) of payment information.
2. MOF instructs Bank Indonesia (BI) to pay redemption.
3. BI transfers cash for redemption payment from MOF's account to BI's own account.
4. BI makes redemption payment to BI-SSSS participant including sub-registries.
5. BI makes bond redemption.
6. BI-SSSS participants credit bond holders' account with redemption.
7. BI-SSSS participants notify bond holder of redemption payment.
8. BI-SSSS participants pay income tax and capital gain tax to tax office.

※ BI-SSSS : Bank Indonesia Scripless Securities Settlement System



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

## ID08. Interest Payment Flow of Corporate Bond



## ID08. Interest Payment Flow of Corporate Bond

### Process of Interest Payment (1/2)

1. Upon receiving notice from the bond issuer on the proposed payment of interest, KSEI announces the proposed payment of interest to custodian banks.
2. On recording date, KSEI calculates interest amount on behalf of each bond holders, including tax obligation. On recording date +1, KSEI carries out member entitlement to custodians. Custodian informs the entitlement to the bond holder.
3. On recording date +1, KSEI sends list of bond holders and request for payment to bond issuer (at the latest 3 business days prior to payment date). On the other hand reminder of interest payment confirmation (gross amount) will be sent to the bond issuer 10 business day before payment.
4. Bond holders who want to enjoy tax treaty benefit send tax docs in Double Taxation Agreement in DGT forms to custodian banks for submission to KSEI. .
5. Custodians send tax docs in DGT forms to KSEI.
6. Not latest than 1 business day prior to payment date (payment date -1), Bond issuer must instructs one of appointed KSEI's payment banks transfer interest payment to KSEI's account. Amount is gross before tax.
7. Payment bank transfers cash to KSEI's account.
8. Payment bank sends confirmation of cash transfer to KSEI.
9. KSEI processes interest payment to bond holders account in C-BEST.
10. Custodians input cash withdrawal instruction to KSEI.
11. KSEI sends instruction to transfer interest payment (net of tax) from KSEI's account to relevant custodian's account.
12. Payment bank transfers cash from KSEI's account to custodians' accounts.

## ID08. Interest Payment Flow of Corporate Bond

### Process of Interest Payment (2/2)

13. Custodians credit to bondholder's accounts with interest paid by KSEI's payment bank.
14. Custodians notify bond holders of interest payment..
15. KSEI submits interest payment confirmation and DGT form to the bonds issuer.
16. KSEI as paying agent pays tax to tax office through payment bank.
17. Bond issuer reports and sends tax docs to tax office.
18. Tax office clarifies and proof tax payment to Bond issuer .

NOTE: Foreign investors who are not domiciled or who do not wish to enjoy treaty benefits, are not required to submit any tax document.



## ID09. Redemption Payment Flow of Corporate Bond

### Process of Redemption Payment

1. Upon receiving notice from the bond issuer on the proposed redemption payment, KSEI announces payment to custodian banks.
2. On recording date, KSEI calculates redemption amount on behalf of each bond holders, including tax obligation. On recording date + 1, KSEI carries out member entitlement to custodians. Custodian informs the entitlement to the bond holder.
3. On recording date + 1, KSEI sends list of bond holders and request for payment to the bond issuer (at the latest 3 business days prior to payment date). On the other hand, reminder of redemption payment confirmation (gross amount) is sent to the bond issuer 10 business day before.
4. Bond holders who want to enjoy tax treaty benefit send tax docs in Double Taxation Agreement in DGT forms to custodian banks for submission to KSEI.
5. Custodians send tax docs in DGT forms to KSEI.
6. Not latest than 1 business day prior to payment date (Payment date – 1), Bond issuer instructs one of appointed KSEI's payment banks to transfer cash for redemption payment to KSEI's account. Amount is gross before tax.
7. Payment bank transfers cash to KSEI's account.
8. Payment bank sends confirmation of cash transfer to KSEI.
9. KSEI processes redemption in C-BEST.
10. Custodians input cash withdrawal instruction.
11. KSEI sends instruction to transfer principal and last interest payment (net of tax) from KSEI's account to relevant custodian's account.
12. Payment bank transfers cash from KSEI's account to custodians' accounts
13. Custodians credit to bondholder's accounts with redemption and last interest payment paid by KSEI's payment bank.
14. Custodians notify bond holders of redemption and last interest payment.
15. KSEI submits redemption payment confirmation and DGT form to the bonds issuer.
16. KSEI as a paying agent pays tax to tax office through payment bank.
17. Bond issuer reports and sends tax documents to tax office.
18. Tax office clarifies and proofs tax payment to Bond Issuer.

# Japan (JP)

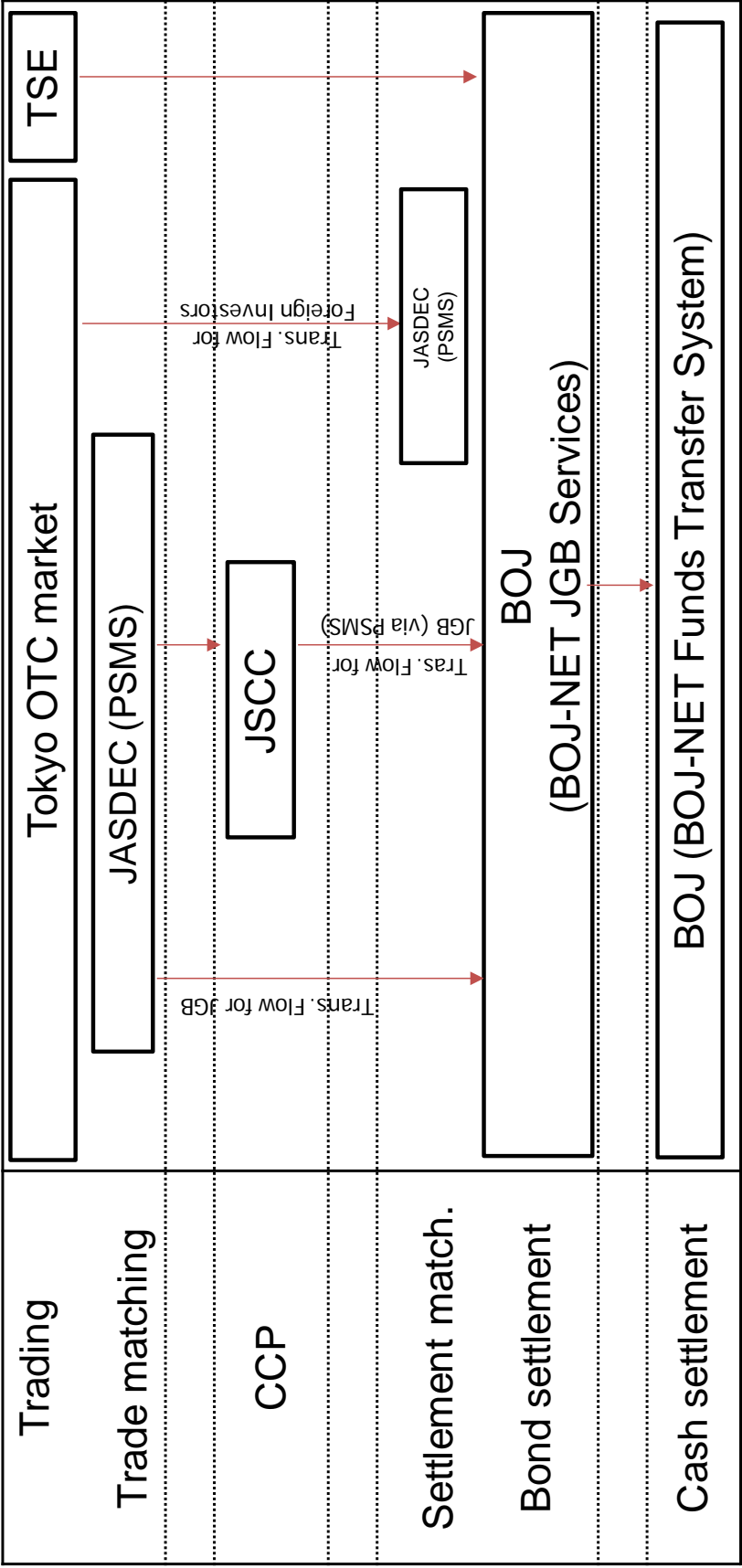
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Bond Transaction Flow for Domestic Trades  
(Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow  
(Government Bond)
6. Interest & Redemption Payment Flow  
(Corporate Bond)



## 1. Bond Market Infrastructure Diagram

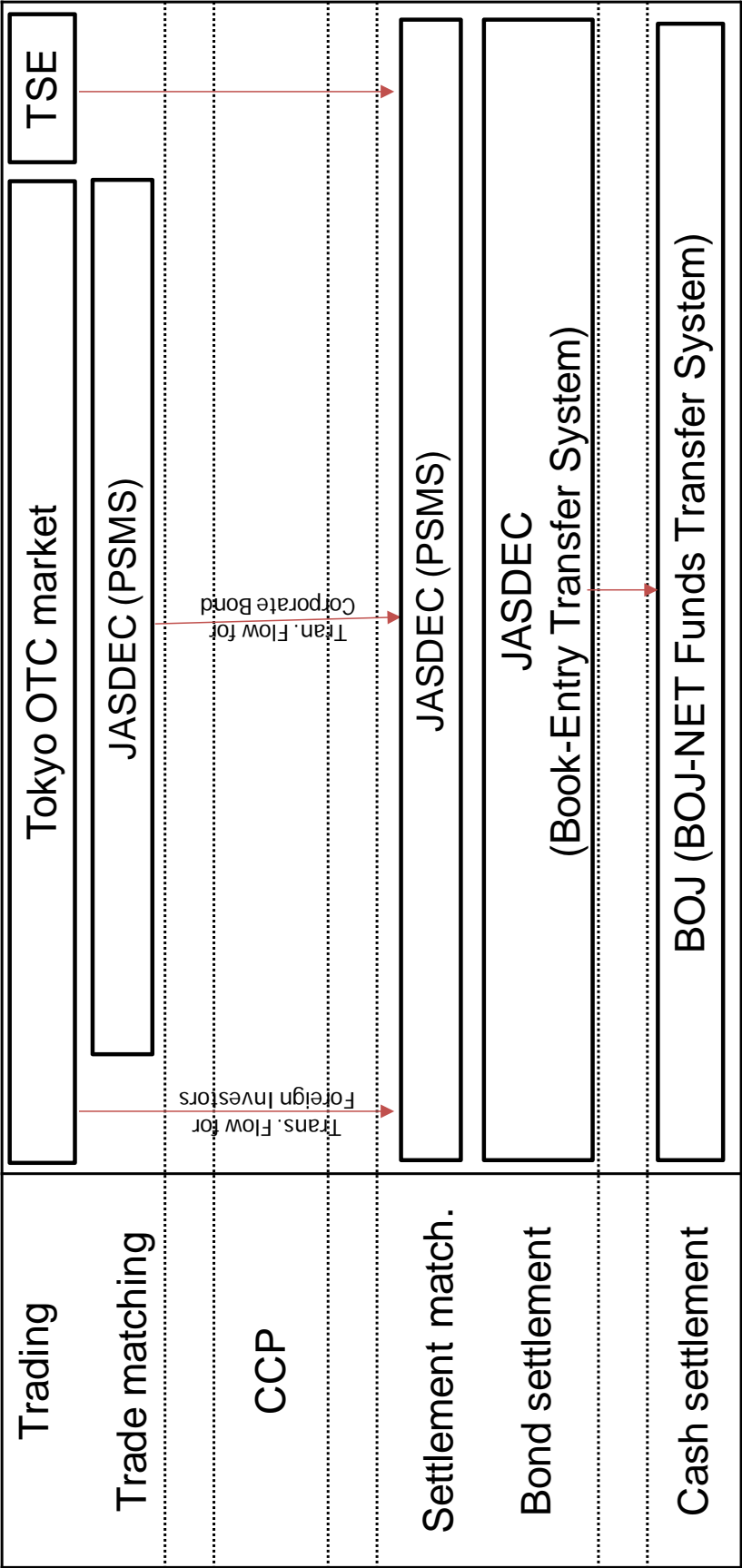
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

JP01. Government Bond Market Infrastructure Diagram



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

JP02. Corporate Bond Market Infrastructure Diagram



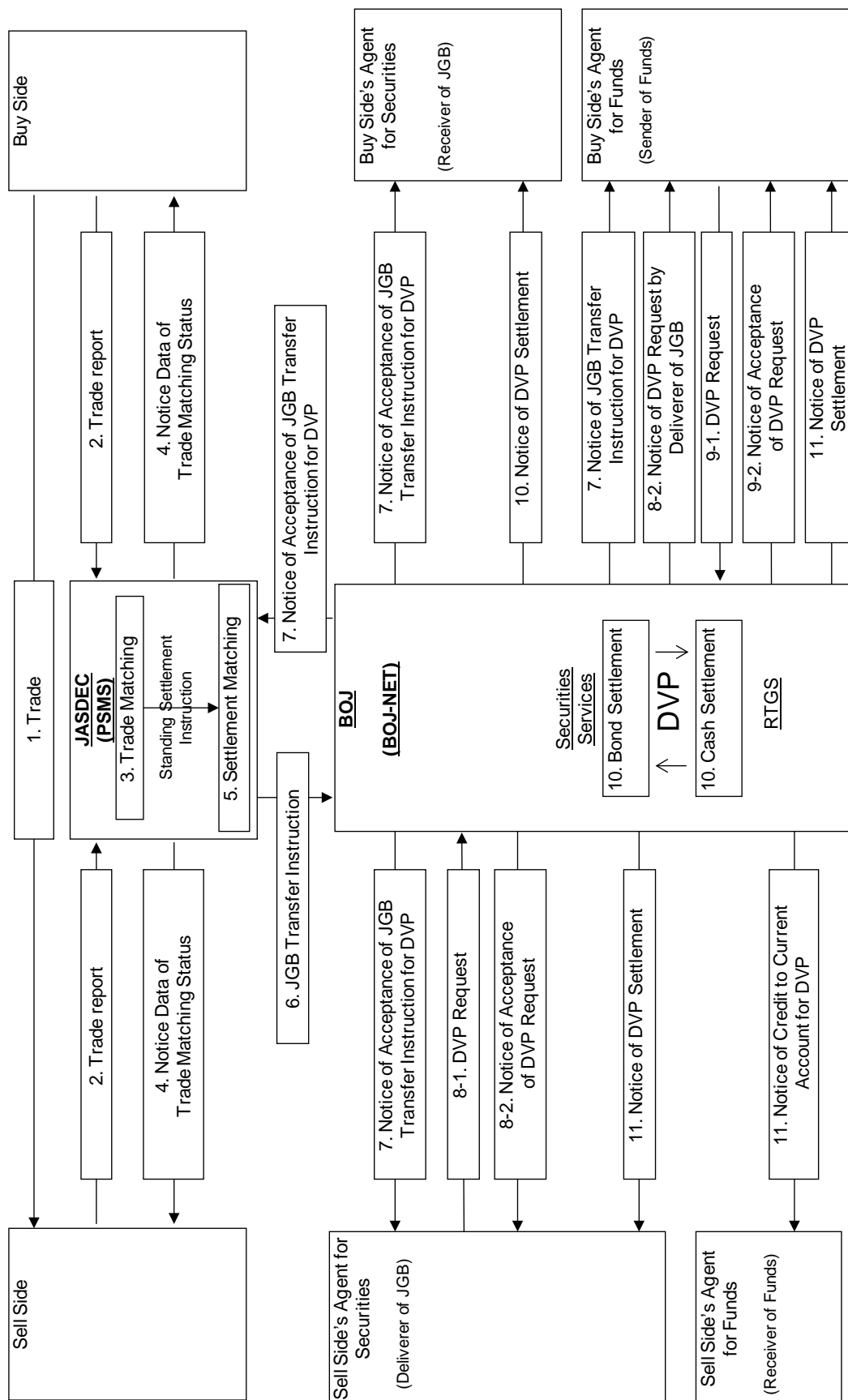
BOJ: Bank of Japan  
JASDEC: Japan Securities Depository Center, Inc.

OTC: Over the Counter  
PSMS: Pre-Settlement Matching System  
TSE: Tokyo Stock Exchange

Note1: Non fixed income bonds such as convertible bonds are not included here.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

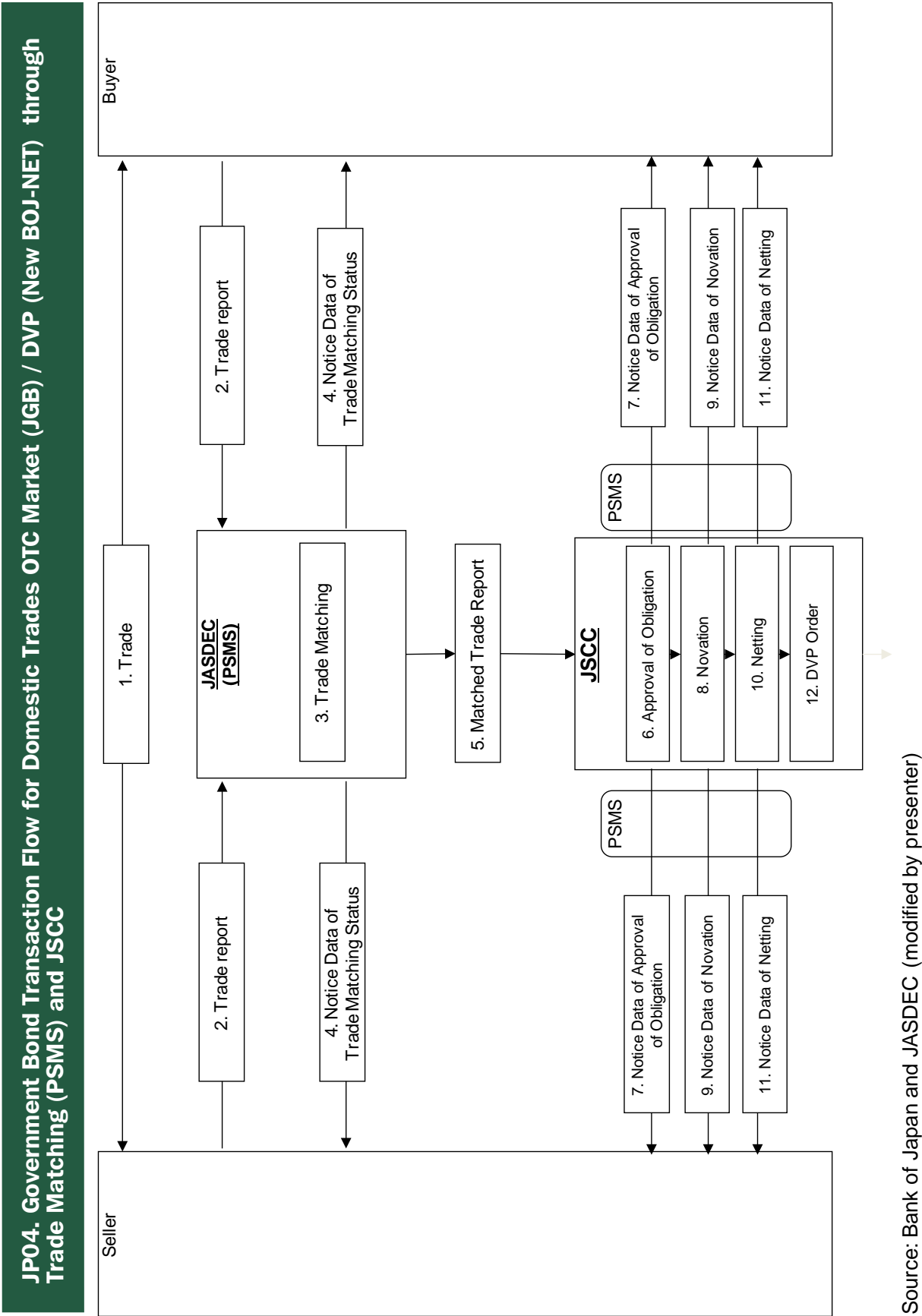
### JP03. Government Bond Transaction Flow for Domestic Trades OTC Market (JGB) / DVP through Trade Matching (PSMS)



### JP03. Government Transaction Flow for Domestic Trades OTC Market (JGB) / DVP through Trade Matching

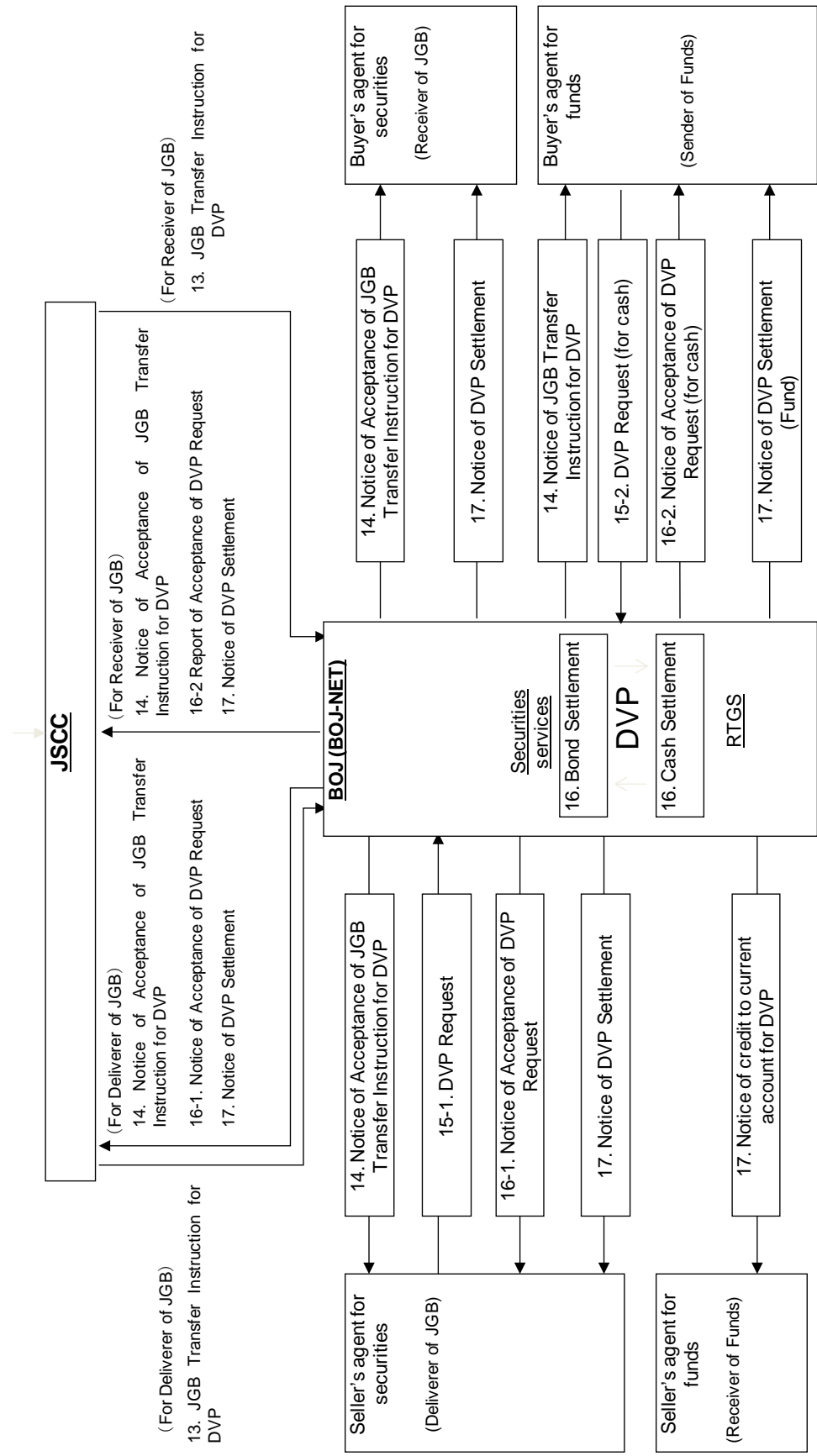
## OTC Market

1. Sell side and buy side trade government bond over-the-counter.
2. Both sell side and buy side send trade report to Japan Securities Depository Center, Inc.(JASDEC).
3. JASDEC performs trade matching.
4. JASDEC notifies both sell side and buy side of trade matching status.
5. JASDEC performs settlement matching with Standing Settlement Instruction(SSI) generated by Pre-Settlement Matching System(PSMS).
6. JASDEC sends JGB transfer instruction to Bank of Japan(BOJ).
7. BOJ notifies JASDEC, sell side and buy side of acceptance of instruction.
- 8-1. Sell side enters DVP request to BOJ.
- 8-2. BOJ notifies sell side and buy side of acceptance of instruction.
- 9-1. Buy side enters DVP request to BOJ.
- 9-2. BOJ notifies buy side of acceptance of instruction.
10. BOJ performs bond and cash settlement.
11. When DVP settlement completed, BOJ notifies sell side and buy side of bond and cash settlement.





JJP04. Government Bond Transaction Flow for Domestic Trades OTC Market (JGB) / DVP (New BOJ-NET) through Trade Matching (PSMS) and JSCC



Source: Bank of Japan (modified by presenter)

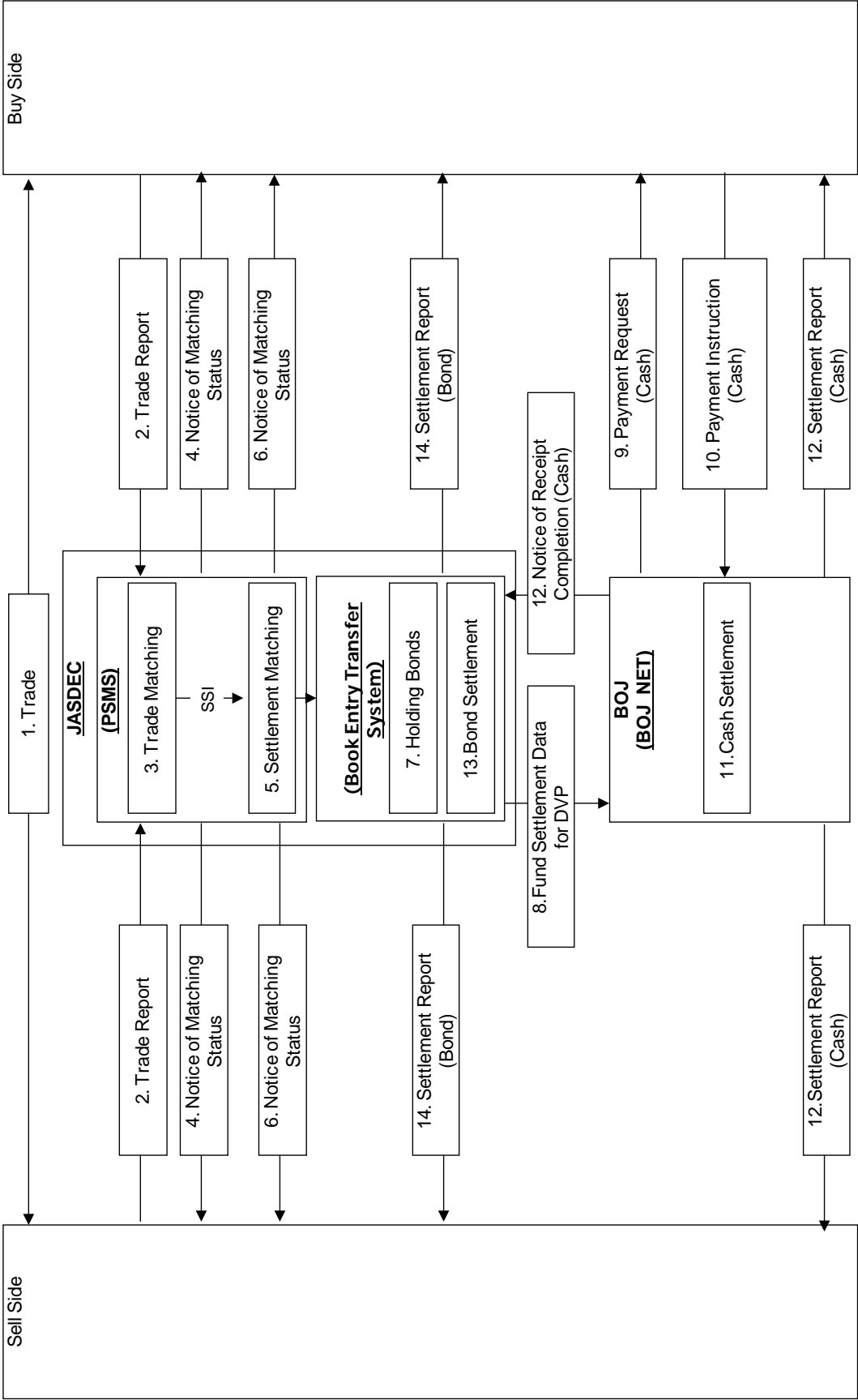
#### JP04. Government Transaction Flow for Domestic Trades OTC Market (JGB) / DVP (New BOJ-NET) through Trade Matching (PSMS) and JSCC

### OTC Market

1. The seller and buyer trade government bond over-the-counter.
2. Both seller and buyer send Trade Report data into PSMS (Pre-Settlement Matching System).
3. PSMS performs trade matching.
4. PSMS sends the Notice Data of Trade Matching Status to both sides of trade.
5. PSMS transmits the message of Matched Trade Report data to JSCC.
6. JSCC makes approval of obligation.
7. JSCC sends the Notice Data of Approval of Obligation to the seller and buyer via PSMS.
8. JSCC performs the novation.
9. JSCC sends the Notice Data of Novation to the seller and buyer via PSMS.
10. JSCC performs the netting.
11. JSCC sends the Notice Data of Netting to the seller and buyer via PSMS.
12. JSCC compiles DVP order.
13. JSCC sends the JGB Transfer Instruction for DVP to BOJ-NET.
14. BOJ-NET sends the Notice of Acceptance of JGB Transfer Instruction for DVP to the seller, the buyer and JSCC.
- 15-1. The seller enters DVP Request to BOJ-NET.
- 15-2. The buyer enters DVP Request to BOJ-NET. (for cash)
- 16-1. BOJ-NET sends the Notice of Acceptance of DVP Request to seller and completes settlement.
- 16-2. BOJ-NET sends the Notice of Acceptance of DVP Request to buyer and completes settlement. (for cash)
17. When DVP settlement completed, BOJ-NET sends the Notice of credit to current account for DVP to the seller, buyer and JSCC.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

JP05. Corporate Bond Transaction Flow for Domestic Trades



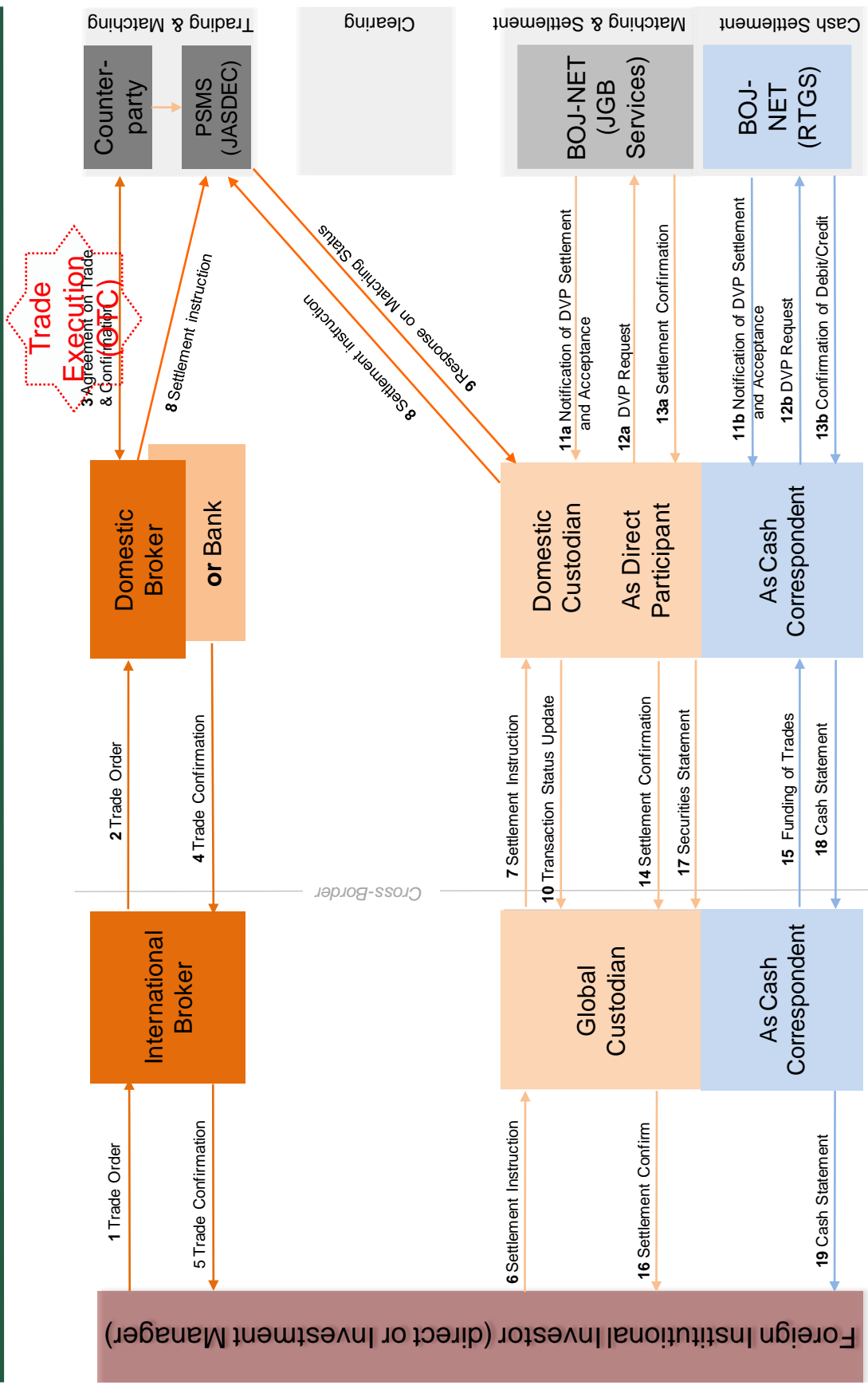
## JP05. Bond Transaction Flow for Domestic Trades

### OTC Market

1. Sell side and buy side trade corporate bonds over-the-counter.
2. Both sell side and buy side send trade report to Japan Securities Depository Center, Inc.(JASDEC).
3. JASDEC performs trade matching.
4. JASDEC notifies both sell side and buy side of trade matching status.
5. JASDEC performs settlement matching with Standing Settlement Instruction(SSI) generated by Pre-Settlement Matching System(PSMS).
6. JASDEC notifies sell side and buy side of settlement matching status.
7. JASDEC holds bonds with its book-entry transfer system.
8. JASDEC sends fund settlement data for DVP to Bank of Japan(BOJ).
9. BOJ sends payment request to buy side.
10. Buy side sends payment instruction to BOJ.
11. BOJ executes cash settlement.
12. BOJ notifies sell side, buy side and JASDEC of cash receipt completion.
13. JASDEC executes bond settlement.
14. JASDEC sends bond settlement report to sell side and buy side.

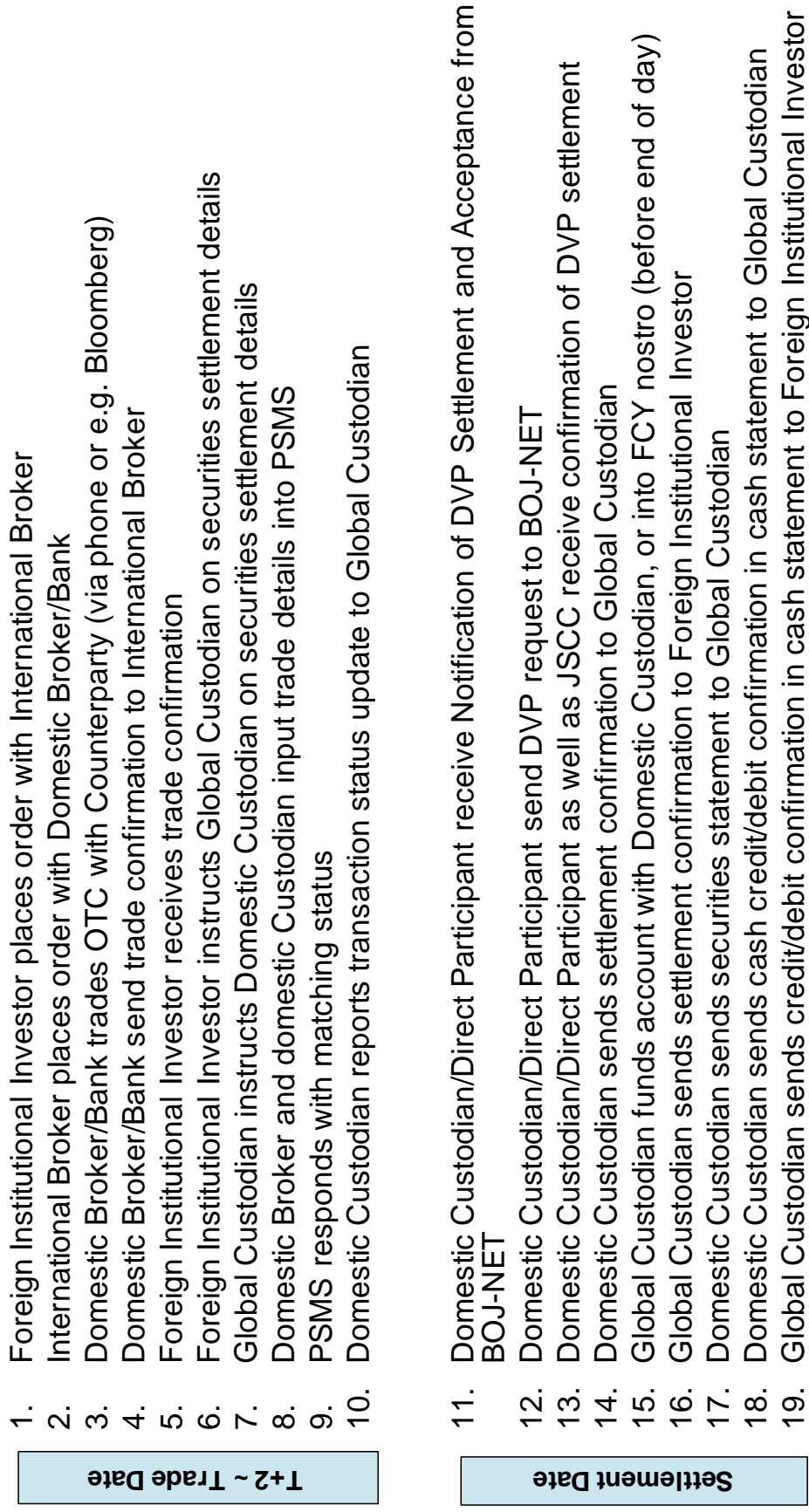
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

JP06. Bond Transaction Flow for Foreign Investors OTC Market (JGB) / DVP



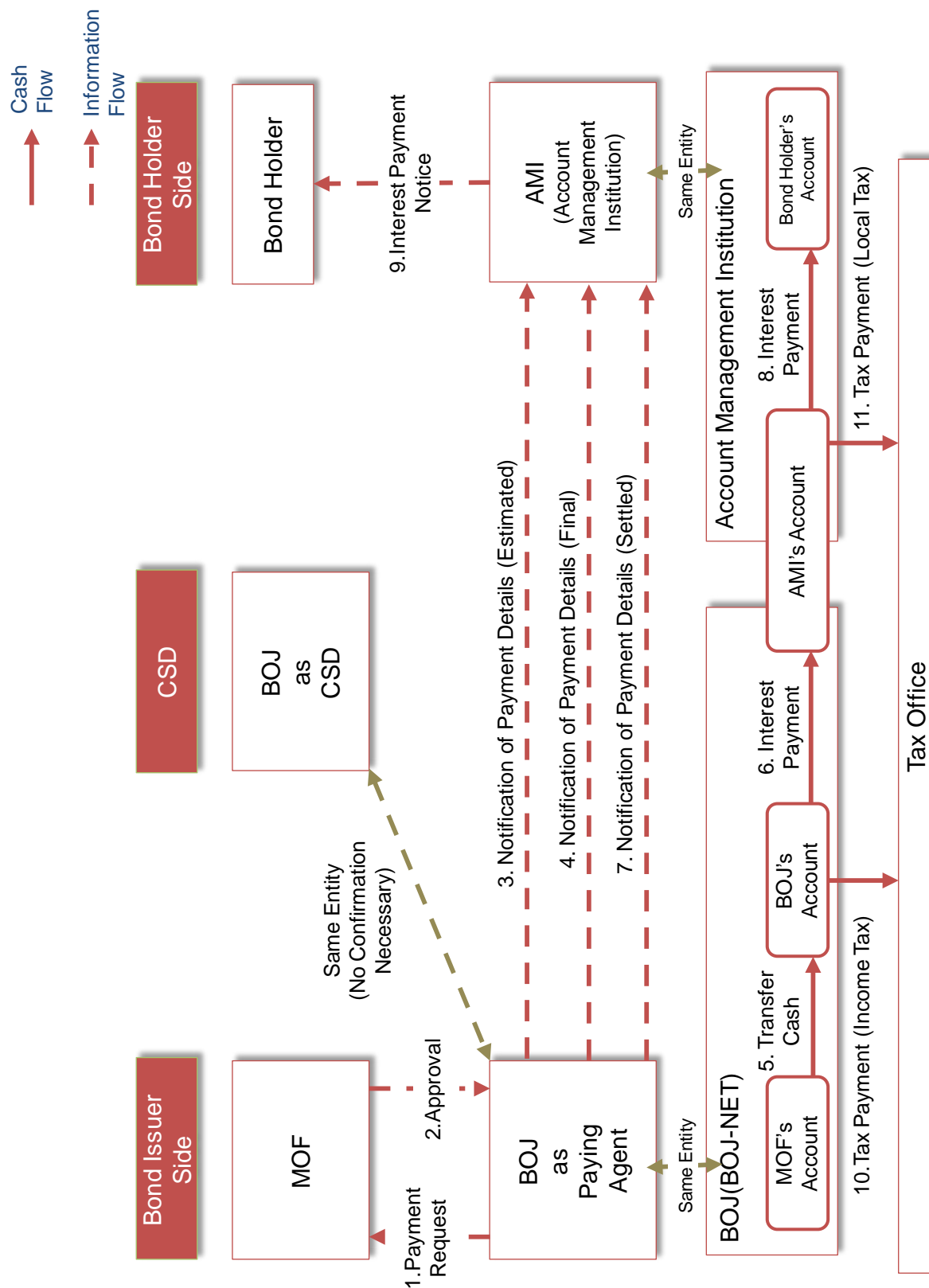


### JP06. Bond Transaction Flow for Foreign Investors OTC Market (JGB) / DVP



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

## JP07. Interest Payment Flow of Government Bond

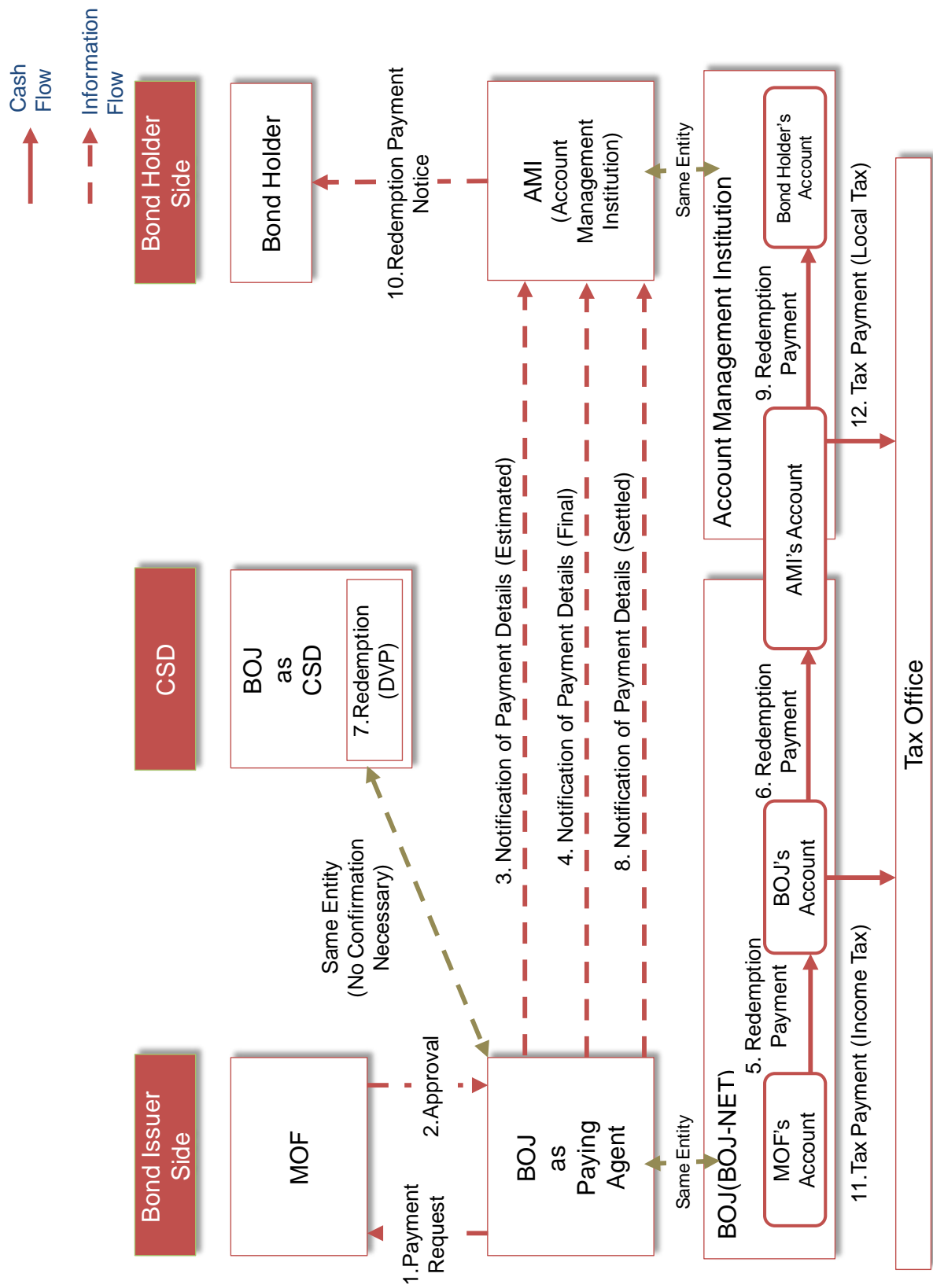


## JP07. Interest Payment Flow of Government Bond

### Process of Interest Payment

1. Bank of Japan (BOJ) as a paying agent sends request of interest payment to Ministry of Finance (MOF).
2. MOF approves request of interest payment from BOJ.
3. BOJ as a paying agent notifies estimated details of interest payment to account management institutions. Since BOJ also functions as CSD of government bond, no confirmation is necessary before this process.
4. BOJ as a paying agent notifies final details of interest payment to account management institutions.
5. BOJ as a paying agent transfers cash for interest payment from MOF's account to BOJ's account.
6. BOJ as a paying agent makes interest payments, deducting income tax if applicable, to account management institutions via BOJ-NET.
7. BOJ as a paying agent notifies details of a settled interest payment to account management institutions.
8. Account management institutions credit to bondholder's accounts with interest paid by BOJ, deducting local tax if applicable.
9. Account management institutions notifies bond holders of interest payment.
10. BOJ as a paying agent pays income tax to tax office via BOJ's account, if it's applicable.
11. Account management institutions pay local tax to tax office if applicable.

JP08. Redemption Payment Flow of Government Bond



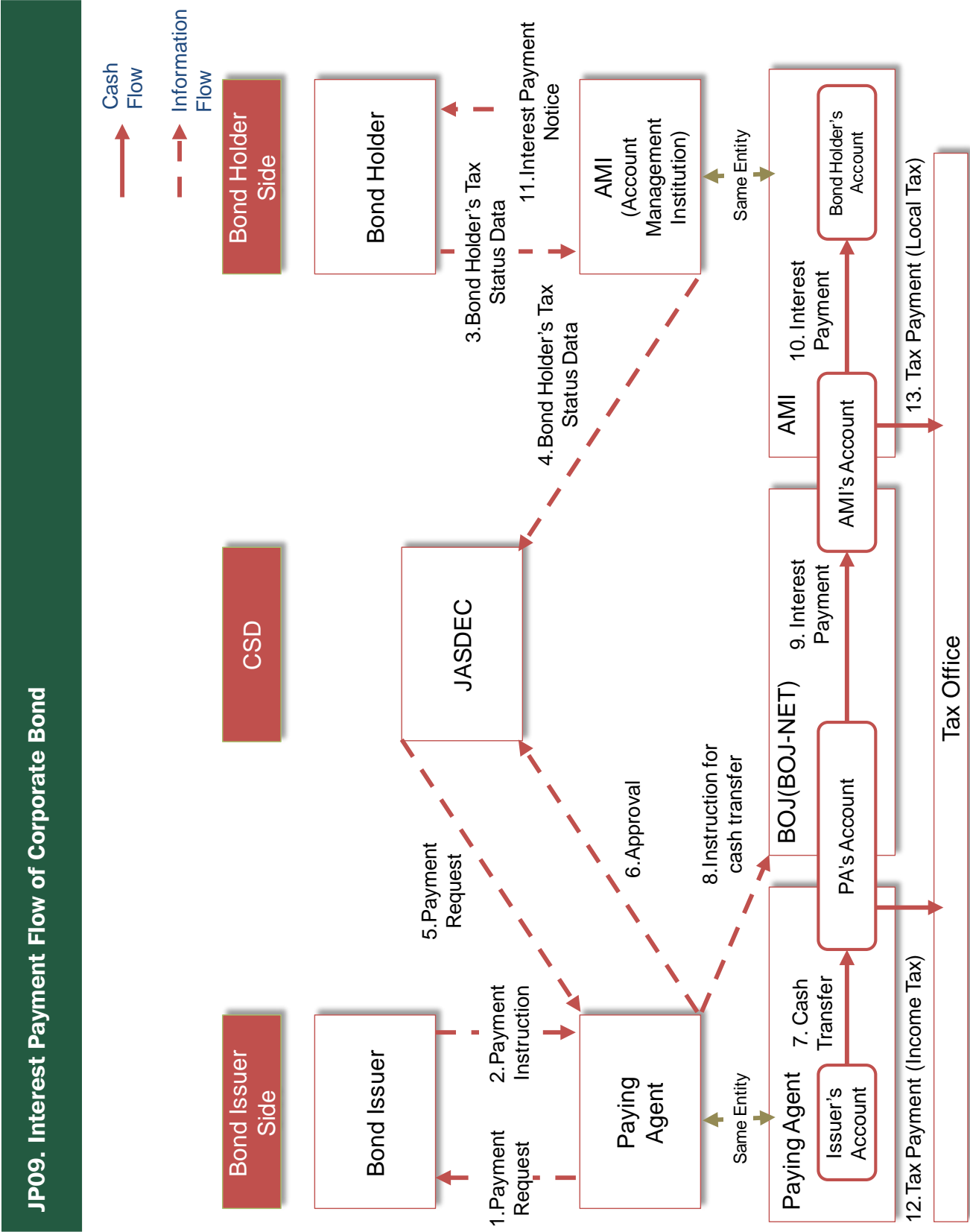
## JP08. Redemption Payment Flow of Government Bond

### Process of Redemption Payment

1. Bank of Japan (BOJ) as a paying agent sends request of redemption and last interest payment to Ministry of Finance (MOF).
2. MOF approves request of redemption and last interest payment from BOJ.
3. BOJ as a paying agent notifies estimated details of redemption and last interest payment to account management institutions. Since BOJ also functions as CSD of government bond, no confirmation is necessary before this process.
4. BOJ as a paying agent notifies final details of redemption and last interest payment to account management institutions.
5. BOJ as a paying agent transfers cash for redemption payment from MOF's account to BOJ's account.
6. BOJ as a paying agent makes redemption and last interest payments, deducting income tax if applicable, to account management institutions via BOJ-NET.
7. BOJ as CSD makes bond redemption.
8. BOJ as a paying agent notifies details of a settled redemption and last interest payment to account management institutions.
9. Account management institutions credit to bondholder's accounts with redemption and last interest paid by BOJ, deducting local tax if applicable.
10. Account management institutions notifies bond holders of redemption and last interest payment.
11. BOJ as a paying agent pays income tax to tax office via BOJ's account, if it's applicable.
12. Account management institutions pay local tax to tax office if applicable.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

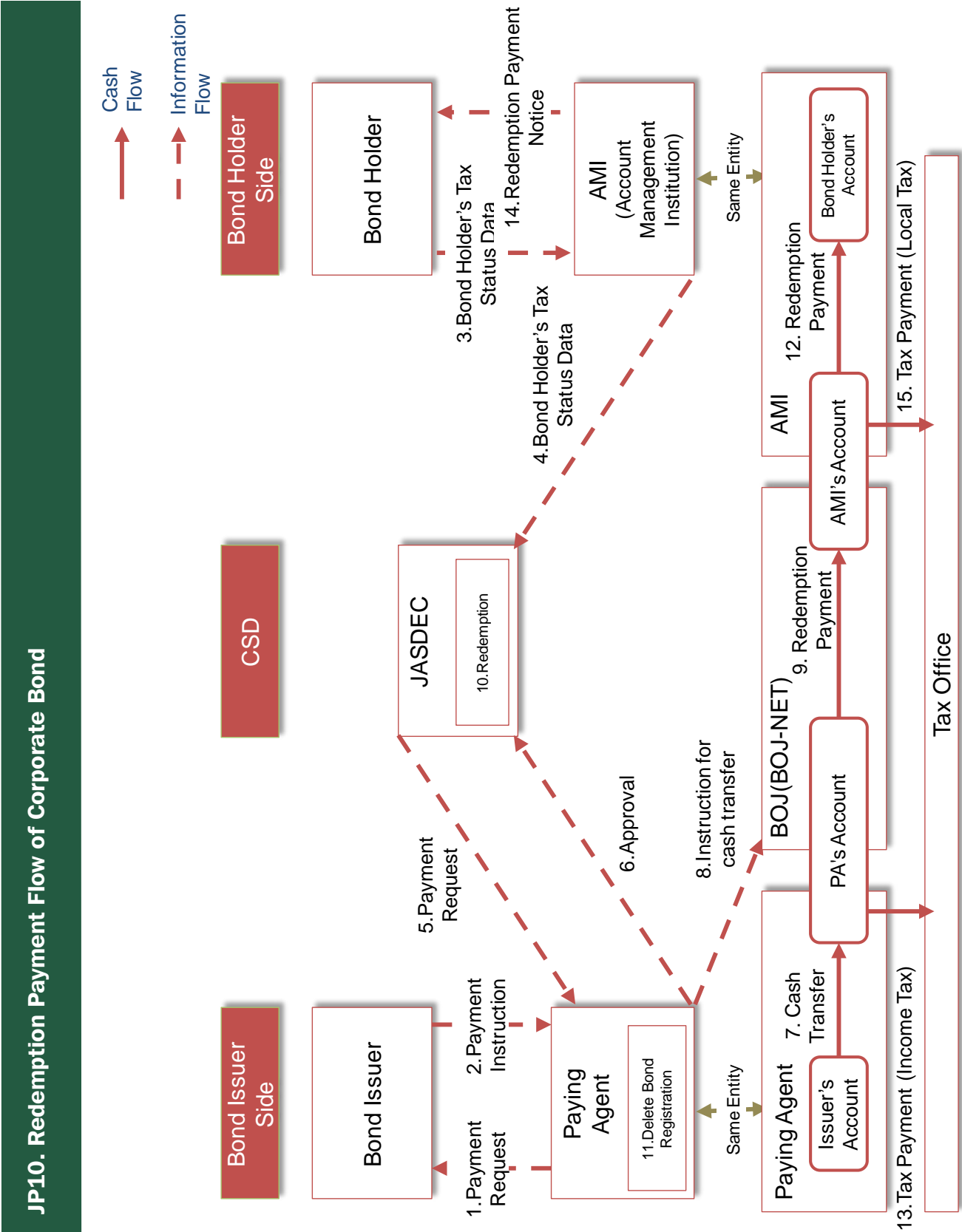




## JP09. Interest Payment Flow of Corporate Bond

## Process of Interest Payment

1. Paying agent sends payment request of interest to bond issuer.
2. Bond issuer instructs paying agent to pay interest.
3. Bond holders send their tax status data to account management institutions (AMIs).
4. AMIs of bond holders send the tax status data of bondholders to Japan Securities Depository Center, Inc. (JASDEC).
5. JASDEC sends payment request of interest to paying agent.
6. Paying agent approves request from JASDEC.
7. Paying agent transfers cash for interest payment from issuer's account to its own account.
8. Paying agent instructs BOJ to transfer cash to AMIs.
9. BOJ makes interest payments, deducting income tax if applicable, to account management institutions via BOJ-NET.
10. AMIs credit to bondholder's accounts with interest paid by paying agent, deducting local tax if applicable.
11. AMIs notifies bond holders of interest payment.
12. Paying agent pays income tax to tax office via its own account, if tax is applicable.
13. Account management institutions pay local tax to tax office if applicable.



## JP10. Redemption Payment Flow of Corporate Bond

### Process of Redemption Payment

1. Paying agent sends payment request of redemption to bond issuer.
2. Bond issuer instructs paying agent to pay redemption.
3. Bond holders send their tax status data to account management institutions (AMIs).
4. AMIs of bond holders send tax status data of bondholders to JASDEC.
5. JASDEC sends payment request of redemption to paying agent.
6. Paying agent approves request from JASDEC.
7. Paying agent transfer cash for redemption payment from issuer's account to its own account.
8. Paying agent instructs BOJ to transfer cash, deducting income tax if applicable, to AMIs' accounts.
9. BOJ makes redemption payments to AMIs via BOJ-NET.
10. JASDEC makes bond redemption.
11. Paying agent deletes bond registration.
12. AMIs credit to bondholder's accounts with redemption paid by paying agent, deducting local tax if applicable.
13. Paying agent pays income tax to the tax office via its own account, if tax is applicable.
14. AMIs notifies bond holders of redemption payment.
15. Account management institutions pay local tax to tax office if applicable.

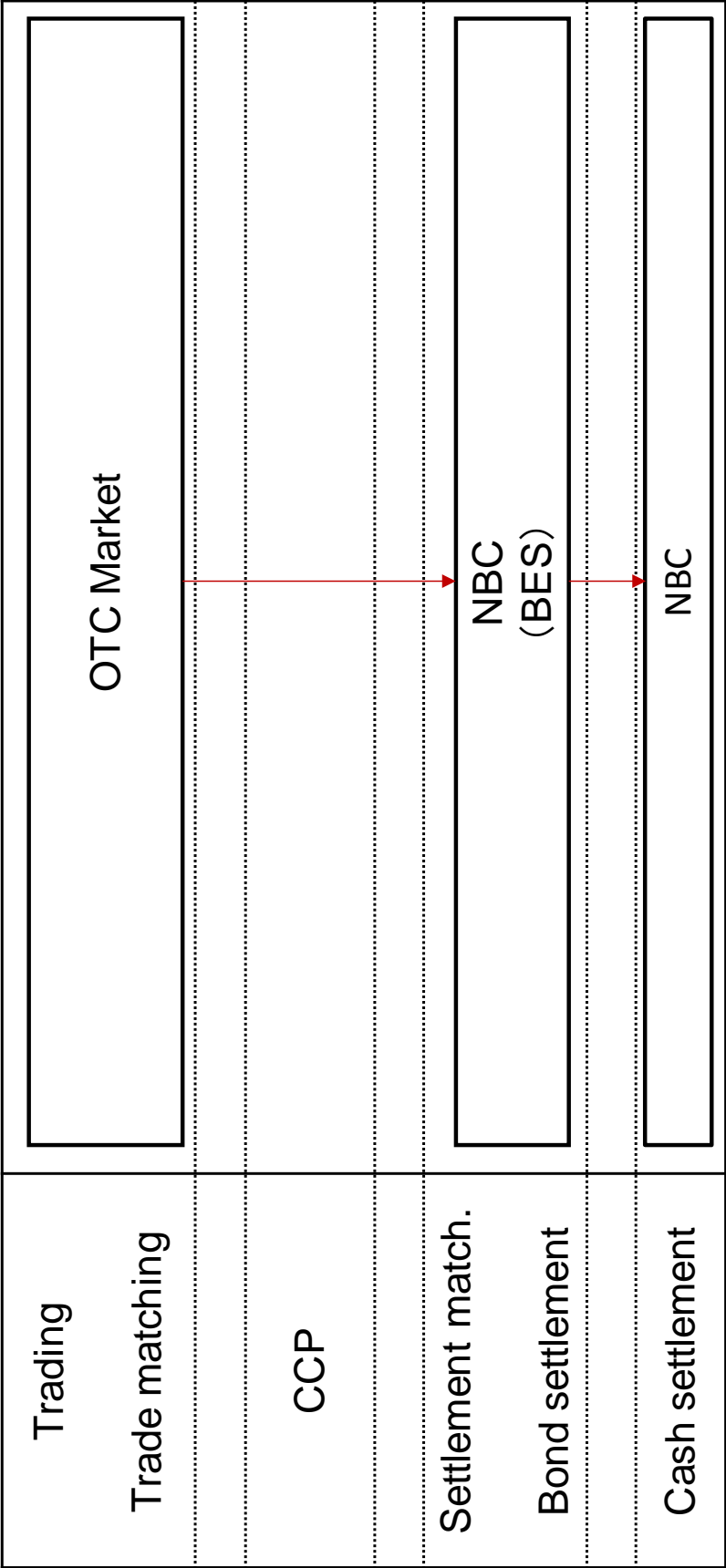
# Cambodia

## (KH)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Bond Transaction Flow for Domestic Trades  
(Corporate Bond)
4. Interest & Redemption Payment Flow  
(Government Bond)
5. Interest & Redemption Payment Flow  
(Corporate Bond)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Interest & Redemption Payment Flow (Government Bond)
5. Interest & Redemption Payment Flow (Corporate Bond)

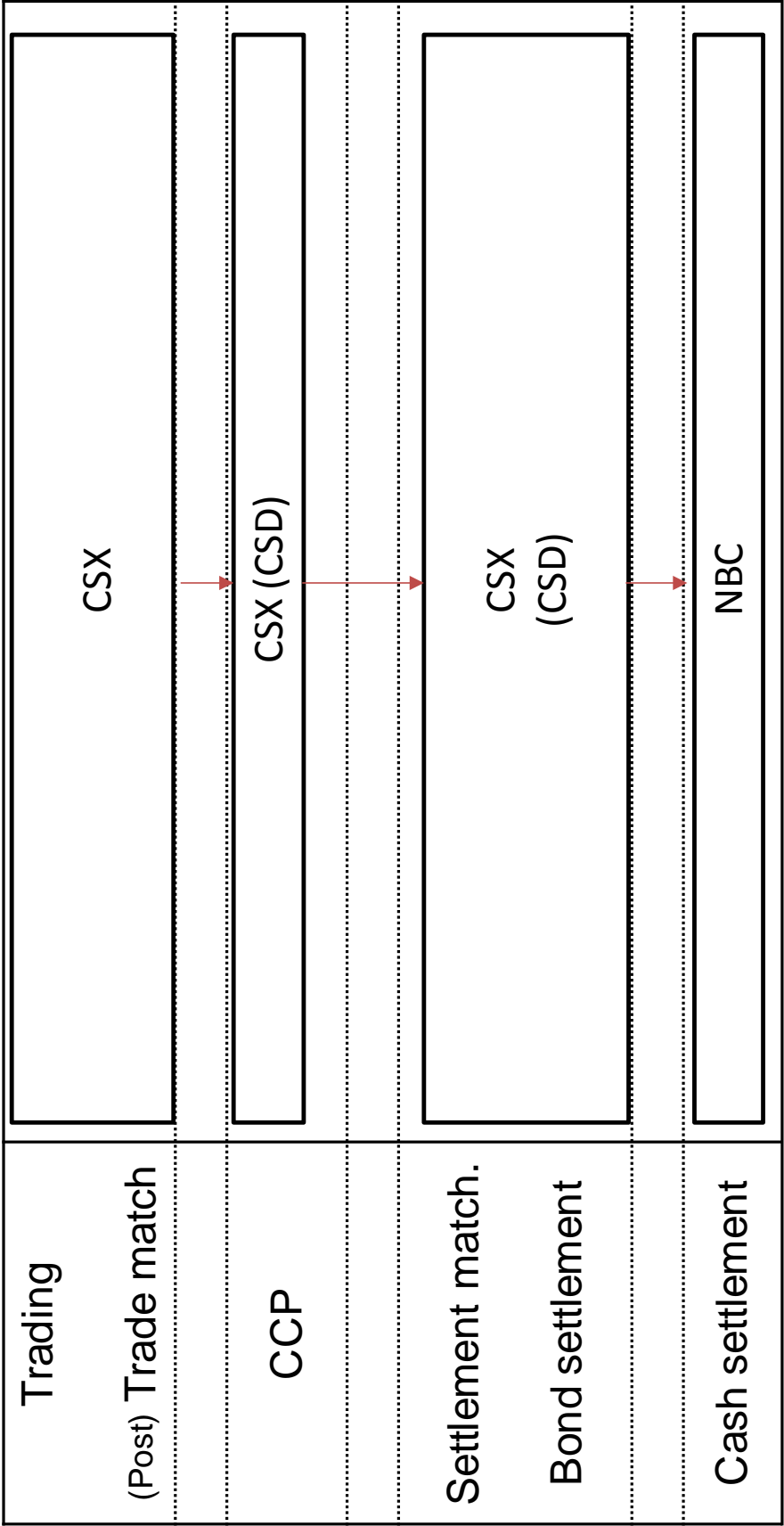
KH01. Government Bond Market Infrastructure Diagram



NBC: National Bank of Cambodia  
BES: Book Entry System

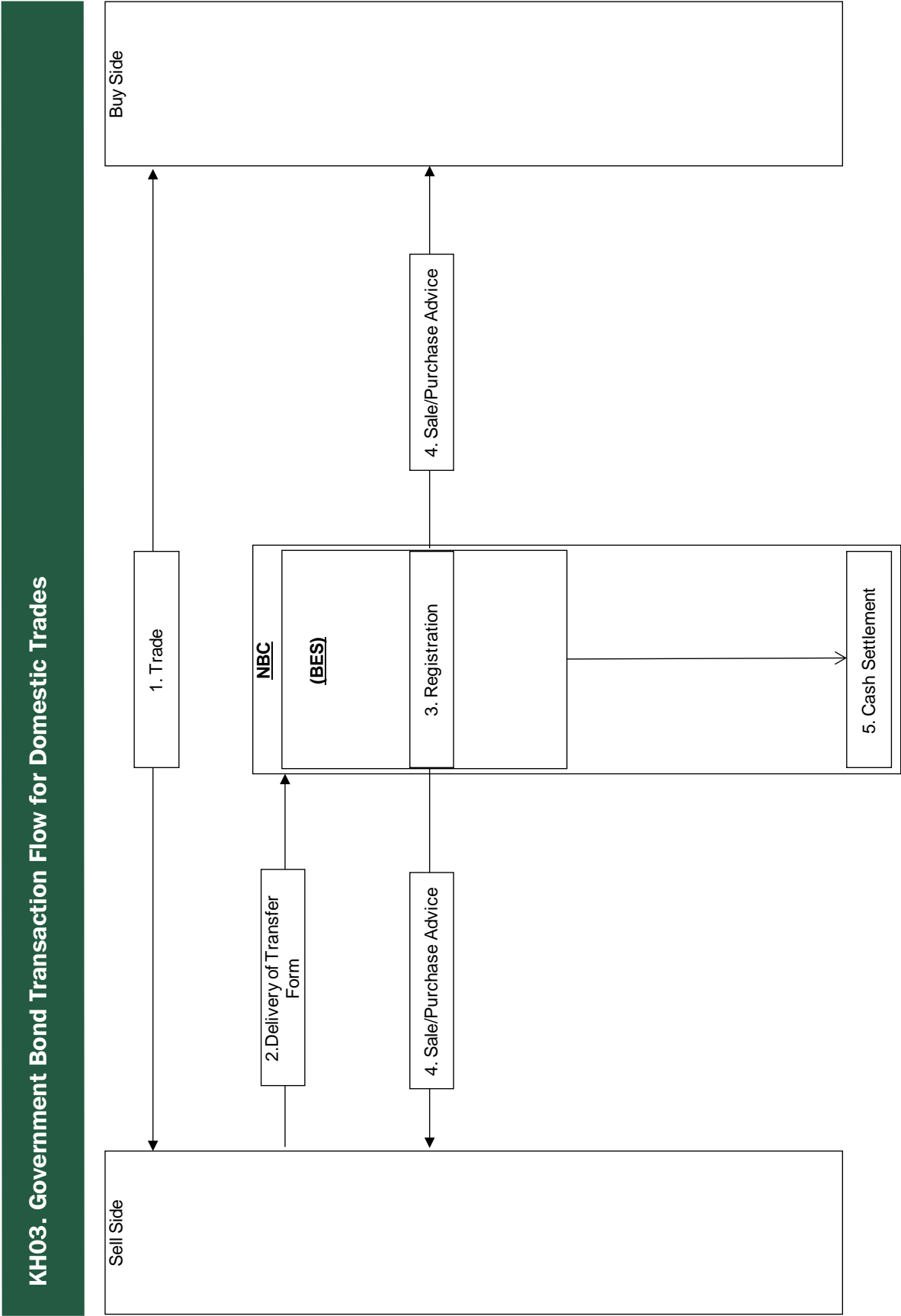


KH02. Corporate Bond Market Infrastructure Diagram



CSX: Cambodia Securities Exchange  
NBC: National Bank of Cambodia  
CSD: Cambodian Securities Depository

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Interest & Redemption Payment Flow (Government Bond)
5. Interest & Redemption Payment Flow (Corporate Bond)



### KH03. Government Bond Transaction Flow for Domestic Trades

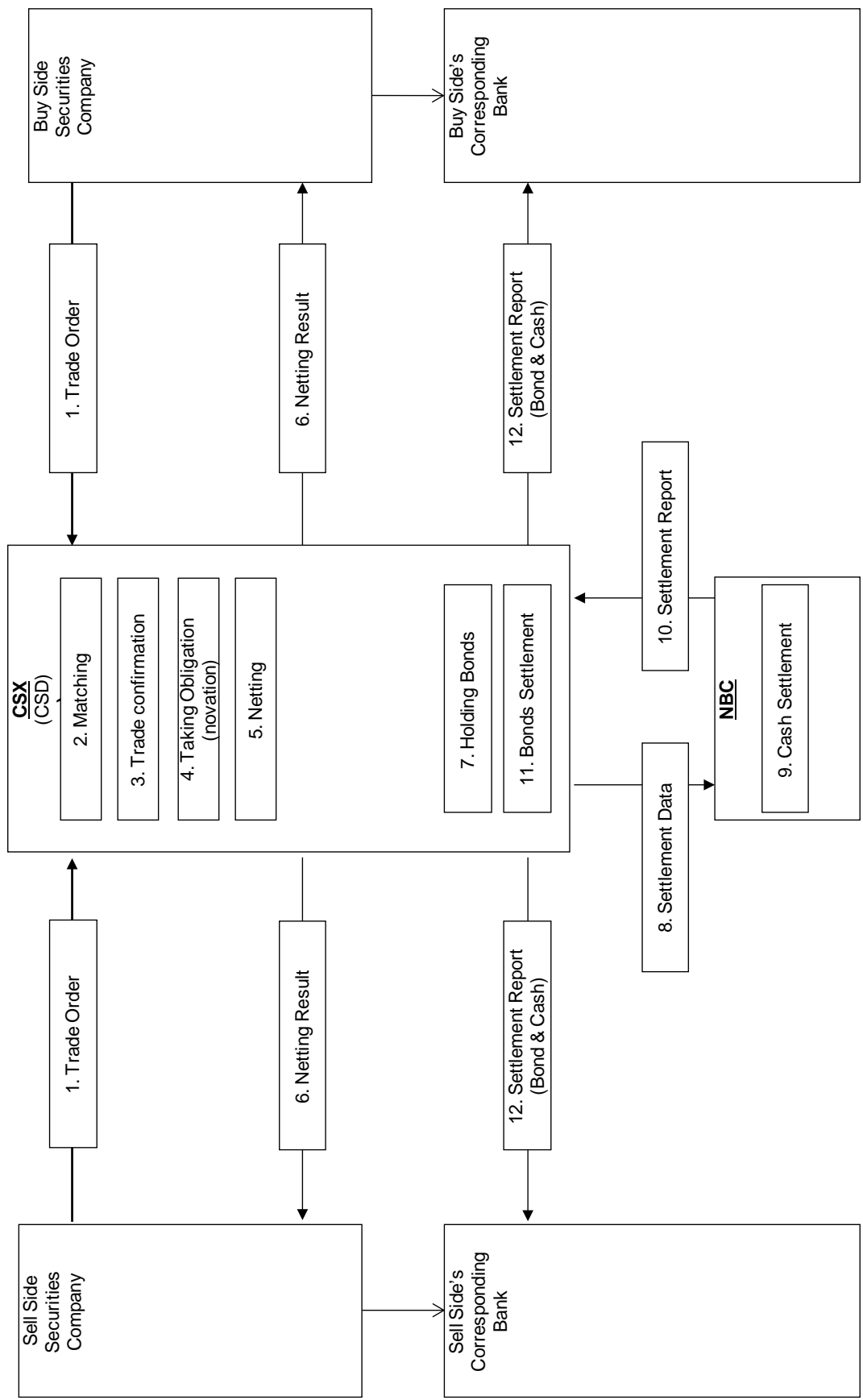
## OTC Market

---

1. Sell side and buy side trade via OTC market
2. NBC receives Transfer Form for Government Securities with signature of sell side and buy side.
3. NBC registers the trade information in Book Entry System (BES).
4. NBC sends Sale/Purchase advices to sell side and buy side.
5. NBC carries out cash settlement.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Interest & Redemption Payment Flow (Government Bond)
5. Interest & Redemption Payment Flow (Corporate Bond)

#### KH04. Corporate Bond Transaction Flow for Domestic Trades



## Exchange Market

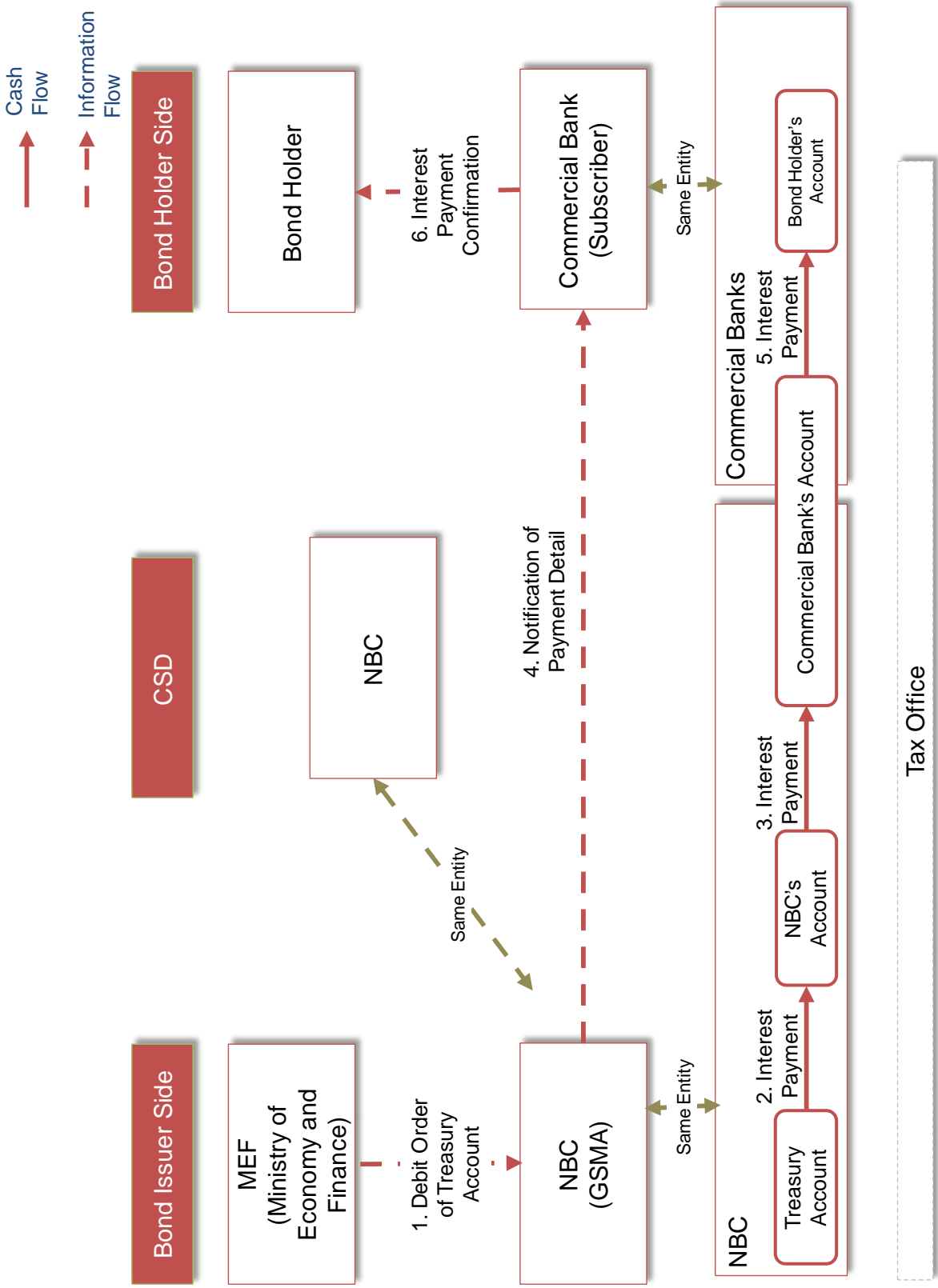
---

1. Sell side and buy side enter trading order into the CSX trading system.
2. CSX performs matching.
3. CSX makes trade confirmation.
4. CSX takes obligation (novation) for CSX members.
5. CSX performs netting.
6. CSX sends detail of netting result to sell side and buy side via system.
7. CSX checks availability and holds securities.
8. CSX sends settlement data to NBC automatically via FTP.
9. NBC executes cash settlement.
10. NBC notices cash settlement confirmation to CSX.
11. NBC releases held securities and executes securities delivery.
12. CSX sends settlement report to sell side and buy side.



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Interest & Redemption Payment Flow (Government Bond)
5. Interest & Redemption Payment Flow (Corporate Bond)

KH05. Interest Payment Flow of Government Bond



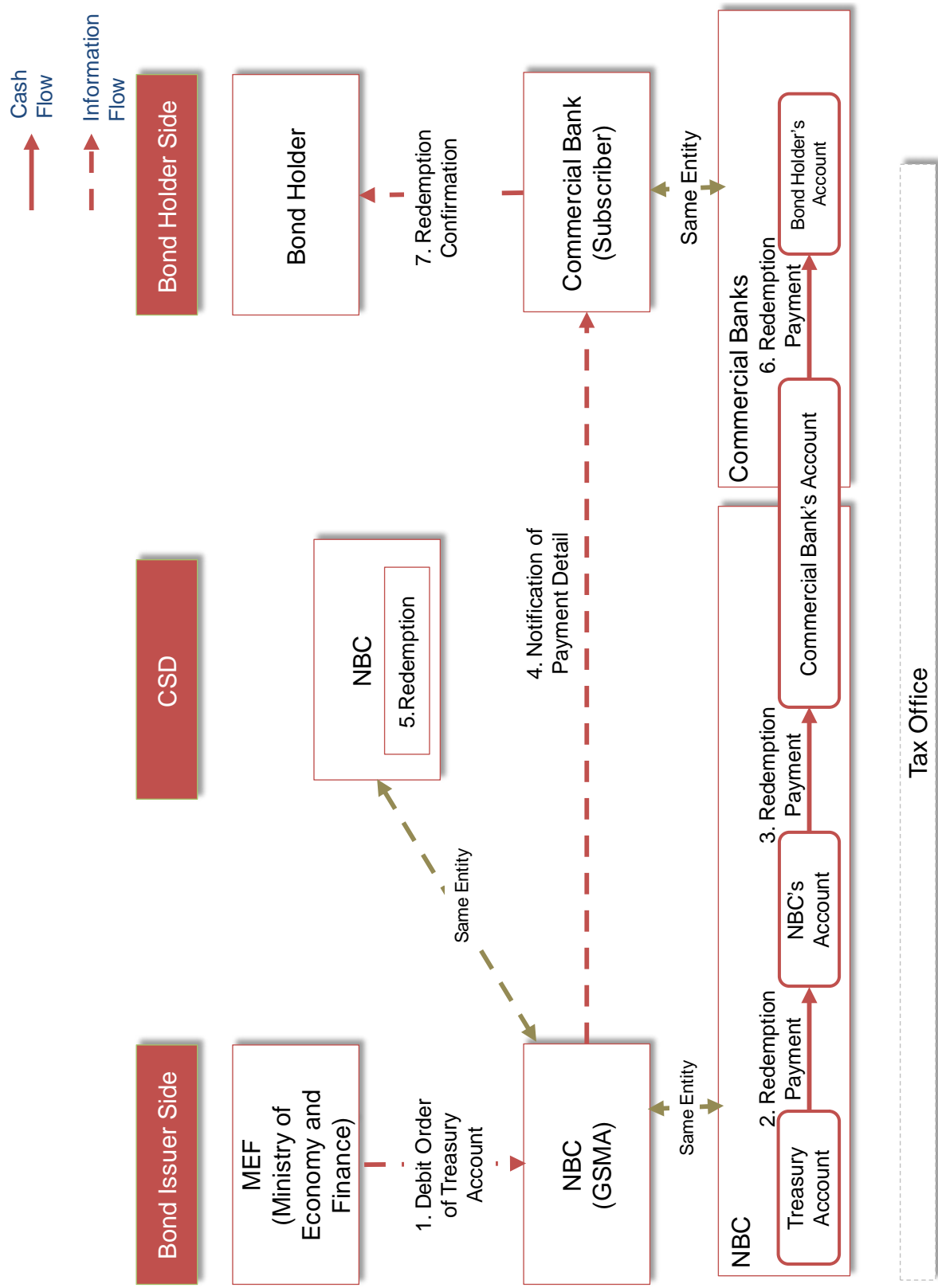
#### KH05. Interest Payment Flow of Government Bond

### Process of Interest Payment

---

1. MEF provides order of debit to NBC in advance of interest payment date.
2. On payment date, NBC debits interest payment amount from Treasury Account following order of debit by MEF and credit it to its own account.
3. NBC transfers cash for interest payment to commercial bank's account via NBC Clearing House.
4. NBC sends letter of notification for interest payment to subscriber.
5. Commercial bank credits interest amount to its client's account in the case that bond is held by the client.
6. Commercial bank notifies bond holders of interest payment.

KH06. Redemption Flow of Government Bond



#### KH06. Redemption Payment Flow of Government Bond

### Process of Redemption Payment

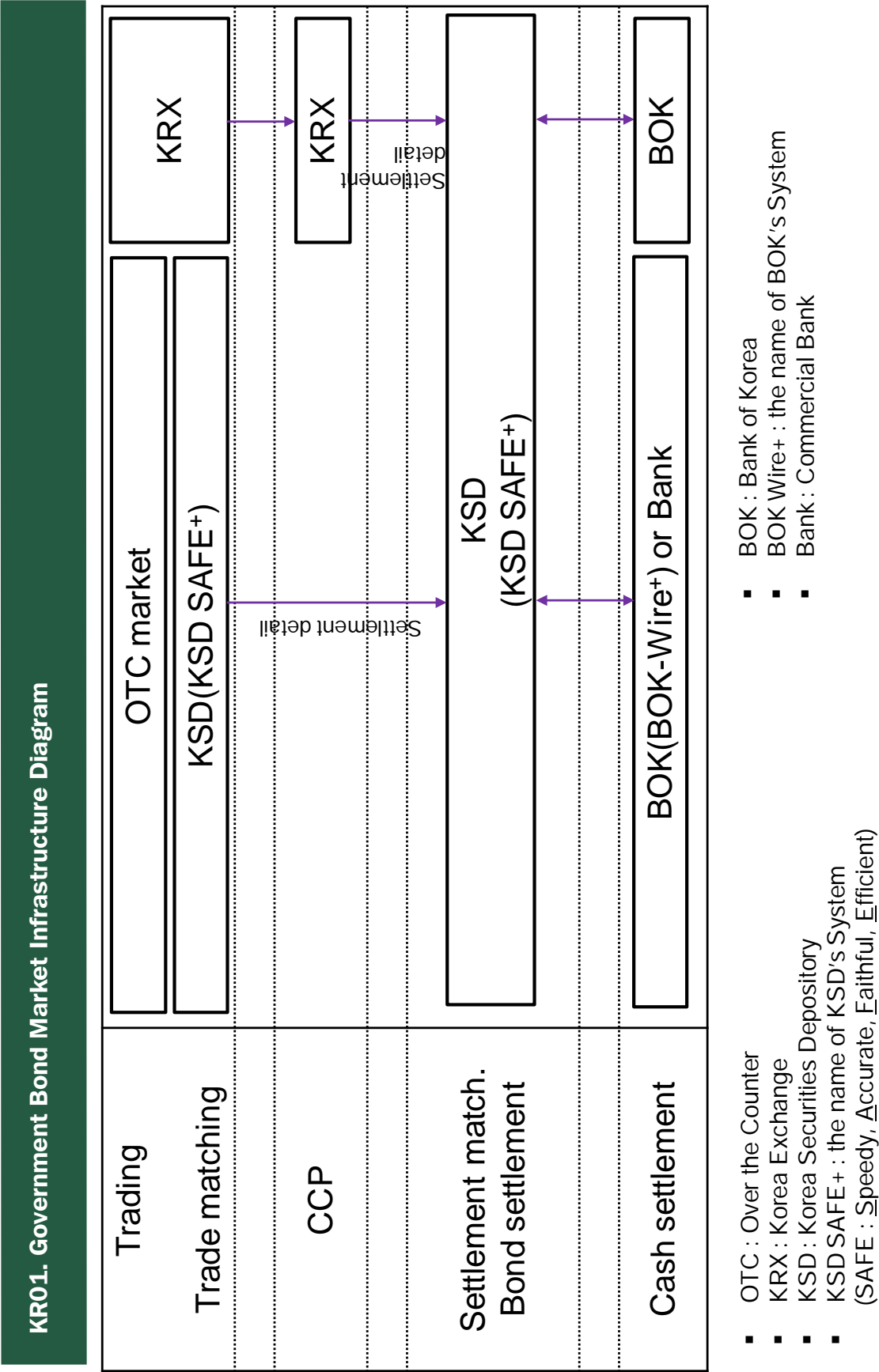
---

1. MEF provides order of debit to NBC in advance of redemption due date.
2. On due date, NBC debits redemption payment amount from Treasury Account following order of debit by MEF and credit it to its own account.
3. NBC transfers cash for redemption to commercial bank's account via NBC Clearing House.
4. NBC sends letter of notification for redemption to subscriber.
5. NBC makes bond redemption.
6. Commercial bank credits redemption payment to its client's account in the case that bond is held by the client.
7. Commercial bank notifies bond holders of redemption.

# Republic of Korea (KR)

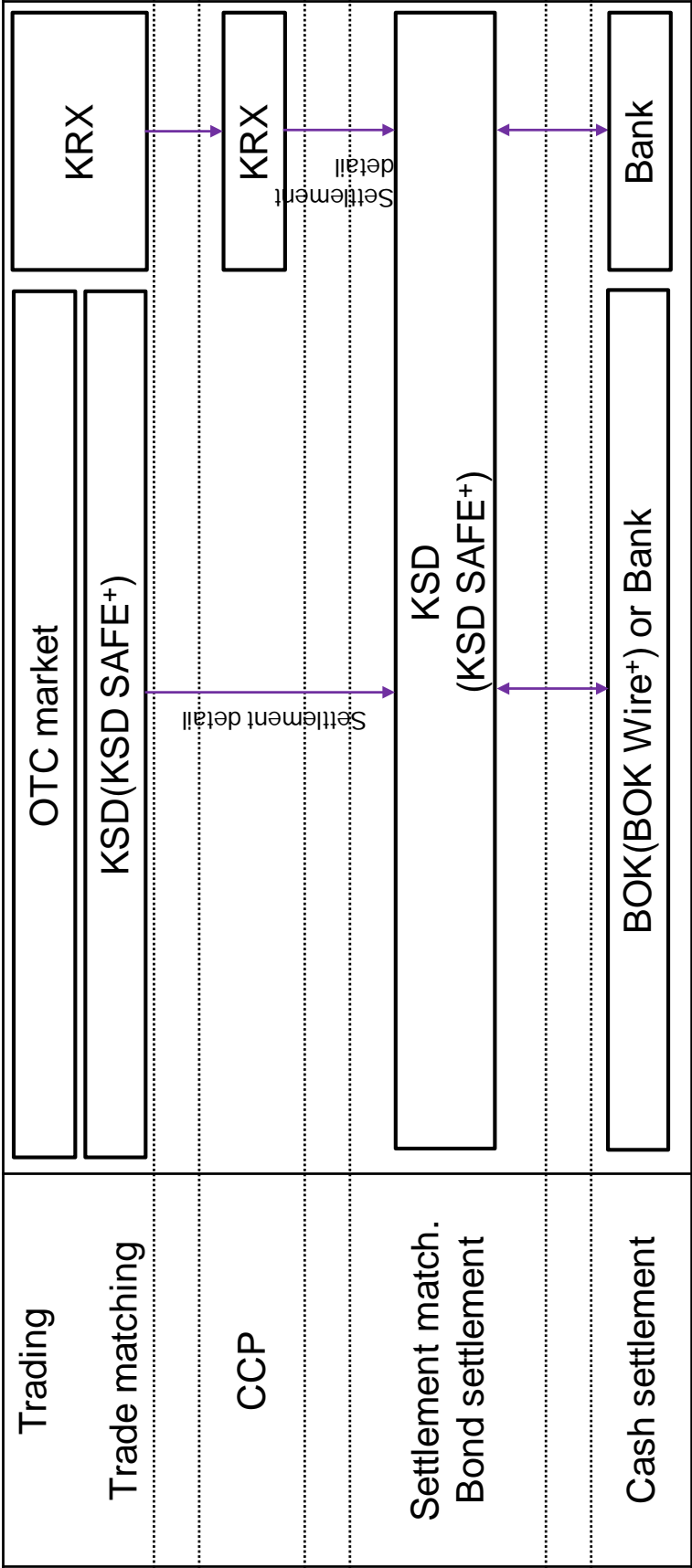
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Bond Transaction Flow for Domestic Trades  
(Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow  
(Government Bond)
6. Interest & Redemption Payment Flow  
(Corporate Bond)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)





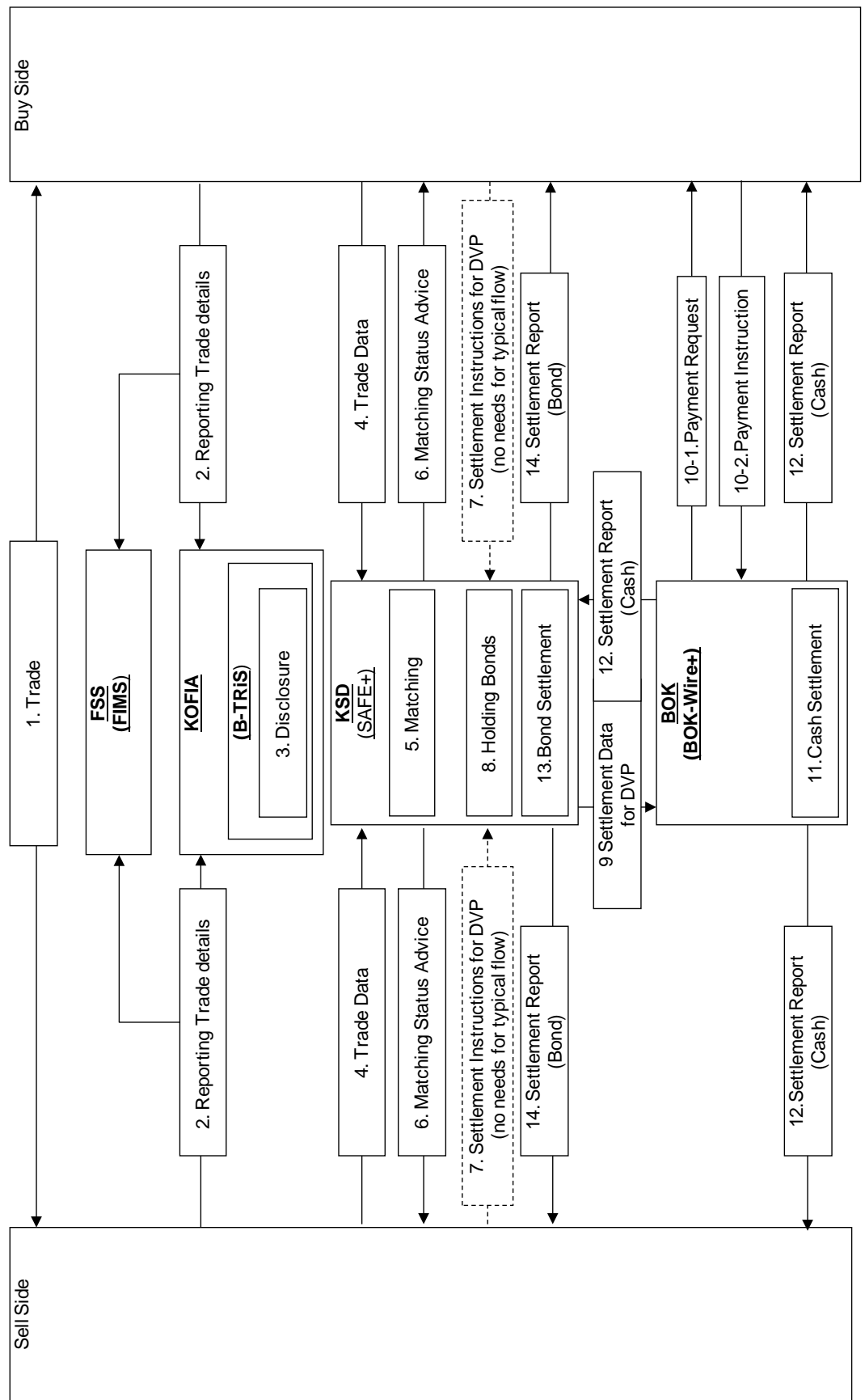
KR02. Corporate Bond Market Infrastructure Diagram



- OTC : Over the Counter
- KRX : Korea Exchange
- KSD : Korea Securities Depository
- KSD SAFE+ : the name of KSD's System (SAFE : Speedy, Accurate, Faithful, Efficient)
- BOK : Bank of Korea
- BOK Wire+ : the name of BOK's System
- Bank : Commercial Bank

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

KR03. Government Bond Transaction Flow for Domestic Trades (OTC)

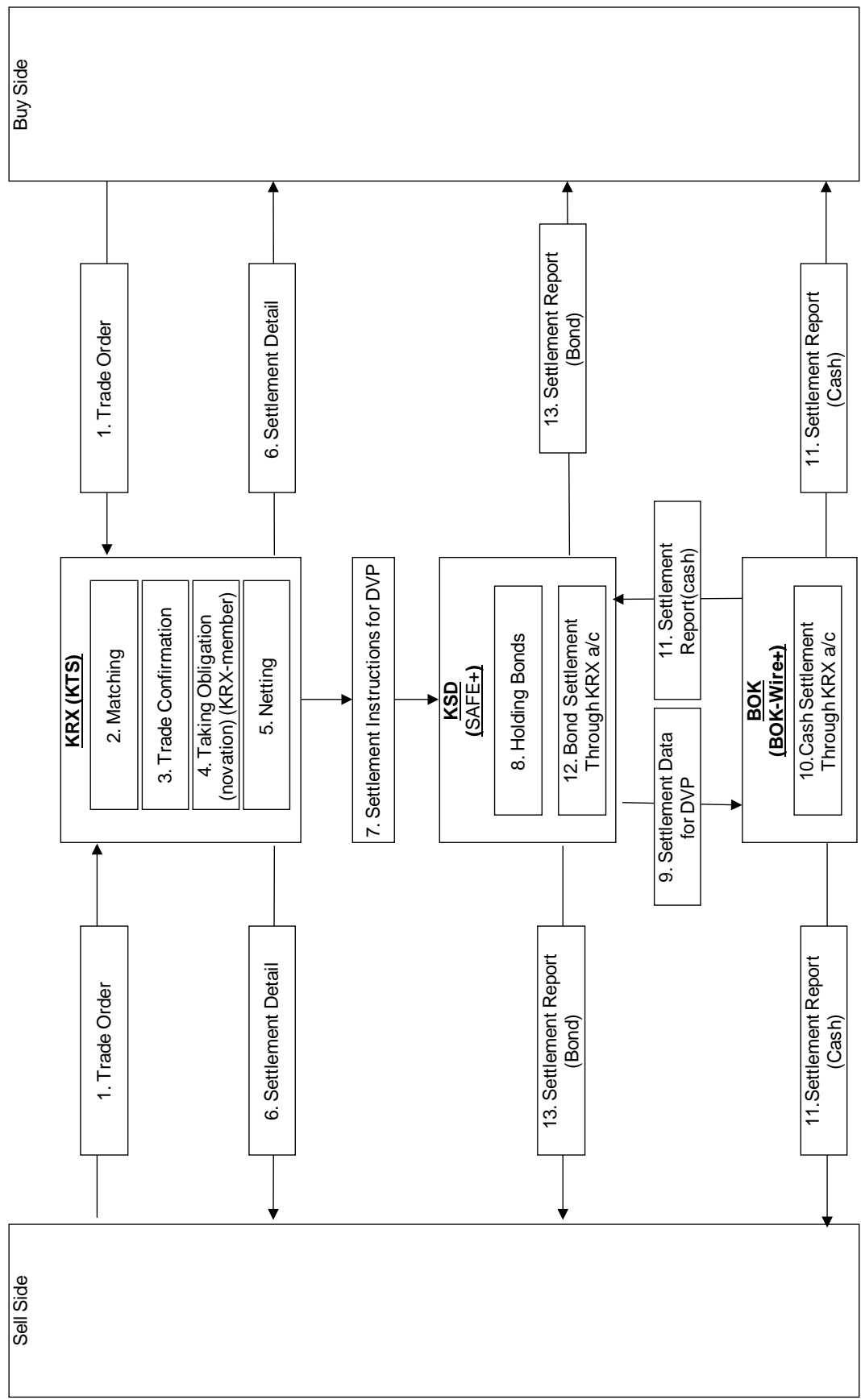


### KR03. Government Bond Transaction Flow for Domestic Trades (OTC)

## OTC Market

1. Sell side and buy side trade over the counter mostly with private messenger, and some transactions are done with FreeBond provided by KOFIA which is a supporting and confirmation system for bond trading.
2. Financial investment companies engaged in trading must report trading details to KOFIA within 15 minutes after trading execution. They also report trading details to FSS via Foreign Investment Management System(FIMS).
3. KOFIA discloses this information on its Bond-Trade Report & Information Service (B-Tris).
4. Sell side and buy side send trade data to Korea Securities Depository (KSD).
5. KSD collates trade data from the sell side and buy side.
6. KSD sends matching status advise to the sell side and buy side.
7. Sell side and buy side sends settlement instructions for DVP to KSD.
8. KSD holds bonds before cash settlement.
9. KSD sends settlement data to Bank of Korea (BOK).
- 10-1. The BOK sends payment request(cash) to the buy side.
- 10-2. The buy side sends the payment instruction for DVP to BOK.
11. BOK executes cash settlement.
12. BOK sends settlement report to sell side, the buy side and KSD.
13. KSD executes bond settlement.
14. KSD sends settlement report to sell side and buy side.

KR04. Government Bond Transaction Flow for Domestic Trades (Exchange)



**KR04. Government Bond Transaction Flow for Domestic Trades (Exchange)**

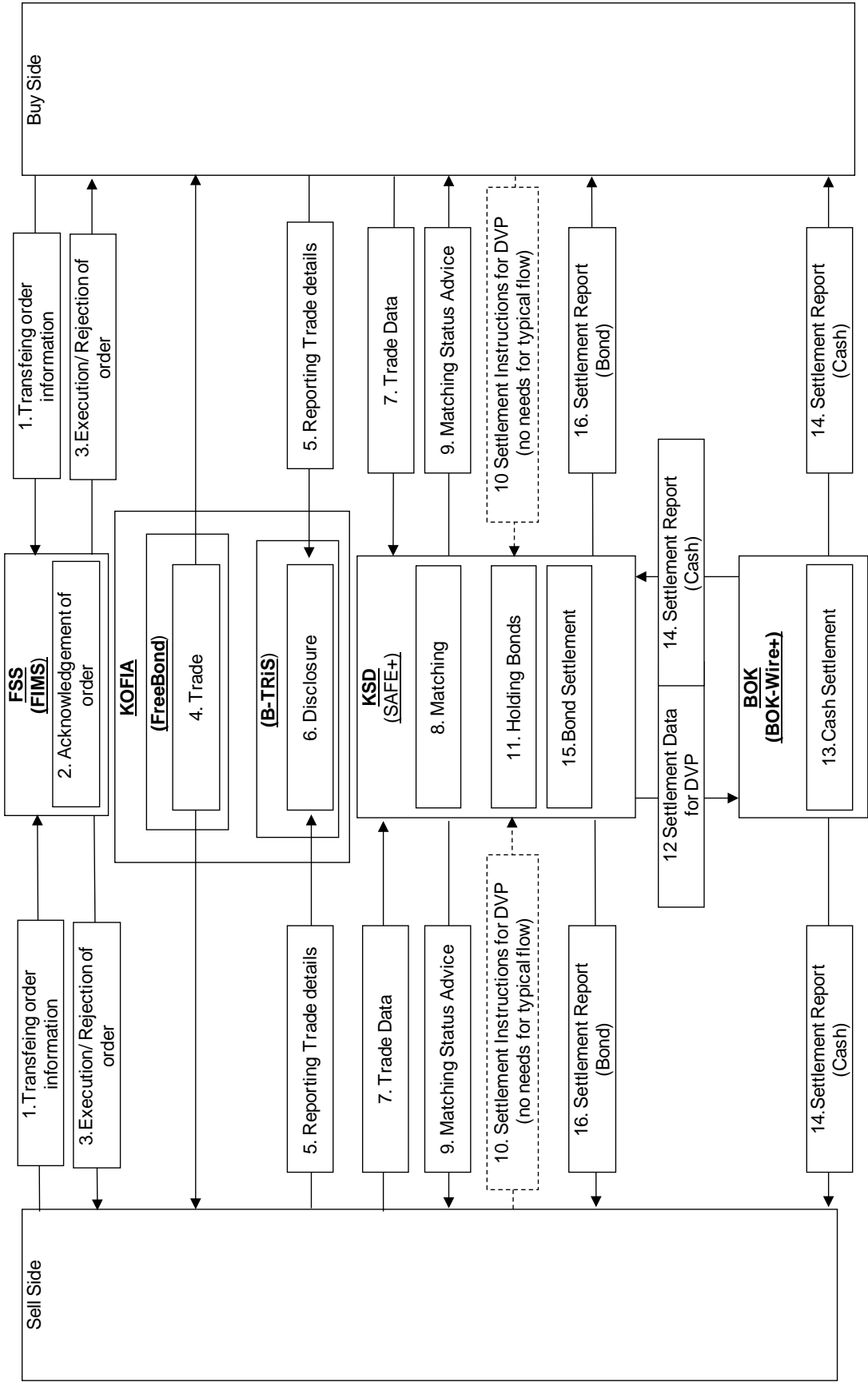
## Exchange Market

---

1. Sell side and buy side send trade order to Korea Exchange(KRX).
2. KRX performs matching.
3. KRX makes trade confirmation.
4. KRX takes obligation (novation) for KRX members.
5. KRX performs netting.
6. KRX sends settlement details to sell side and buy side.
7. KRX sends settlement instruction for DVP to Korea Security Depository(KSD).
8. KSD holds bonds before cash settlement.
9. KSD sends settlement data to Bank of Korea (BOK).
10. BOK executes cash settlement.
11. BOK sends settlement report (cash) to sell side, the buy side and KSD.
12. KSD executes bond settlement through KRX account.
13. KSD sends settlement report to sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

KR05. Corporate Bond Transaction Flow for Domestic Trades (OTC)



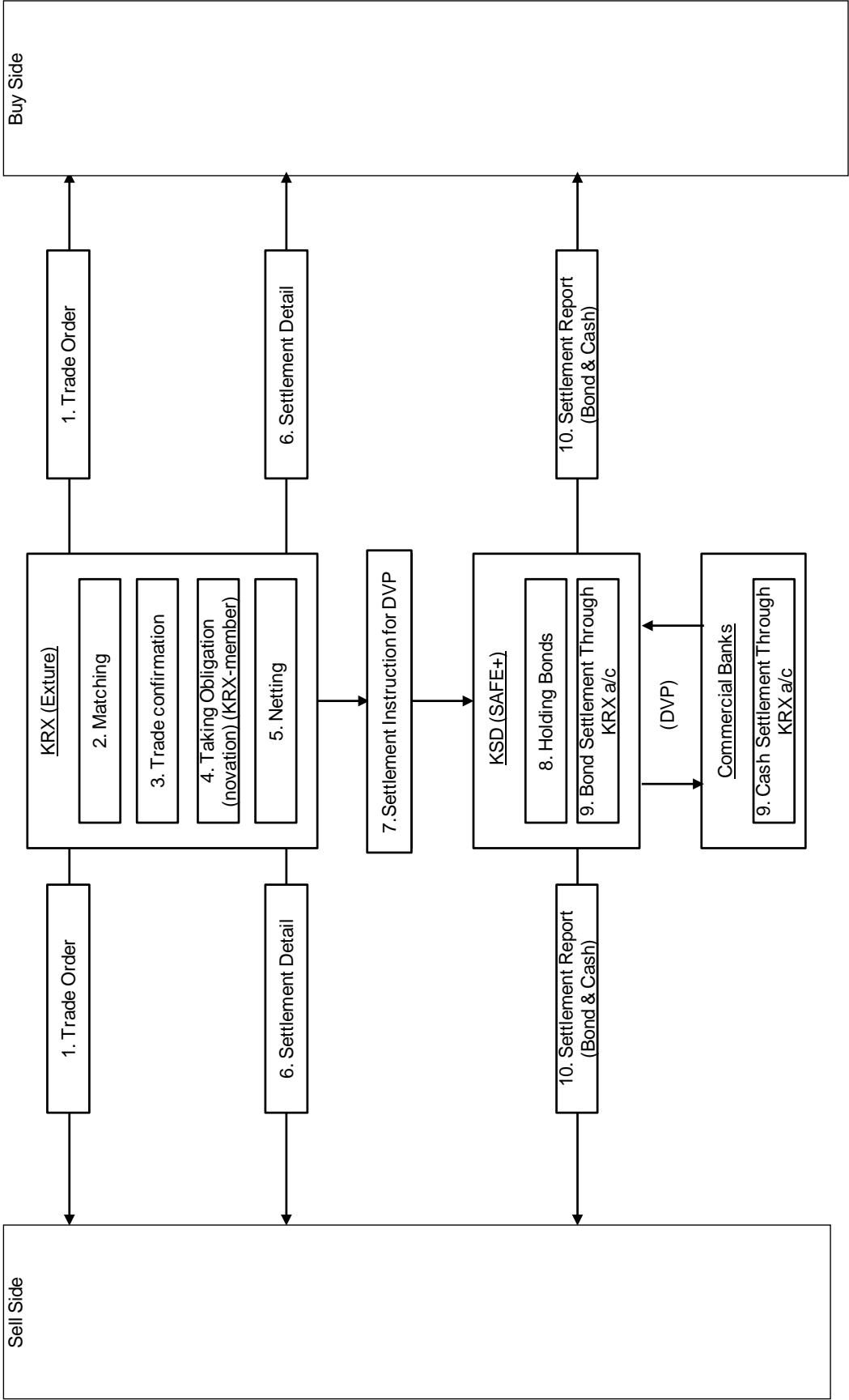


## KR05. Bond Transaction Flow for Domestic Trades

### OTC Market

1. If the client is a foreign investor, the sell side and/or the buy side of securities companies transfer order information to Financial Supervisory Service(FSS) via Foreign Investment Management System(FIMS).
2. FSS acknowledges or rejects order.
3. If holdings is enough, FSS transfers order information to the sell side and/or the buy side of securities companies and Korea Exchange.
4. The sell and buy trade over the counter with a formalized bond trading system, whose name is FreeBond.
5. Both the sell and buy must report trading details to the KOFIA within 15 minutes after trading execution.
6. KOFIA discloses this information on its Bond-Trade Report and Information Service(B-TrIS).
7. The sell side and Buy side send trade data to KSD.
8. KSD collates trade data from the seller and buyer.
9. KSD sends matching status advise to the sell side and buy side.
10. The sell side and buy side send settlement instructions for DVP to KSD.
11. KSD holds bonds before cash settlement.
12. KSD sends settlement data to BOK.
13. BOK executes cash settlement.
14. BOK sends settlement report to the sell side, buy side and KSD.
15. KSD executes bond settlement.
16. KSD sends settlement report to the sell side and buy side.

KR06. Corporate Bond Transaction Flow for Domestic Trades (Exchange)



## KR06. Corporate Bond Transaction Flow for Domestic Trades (Exchange)

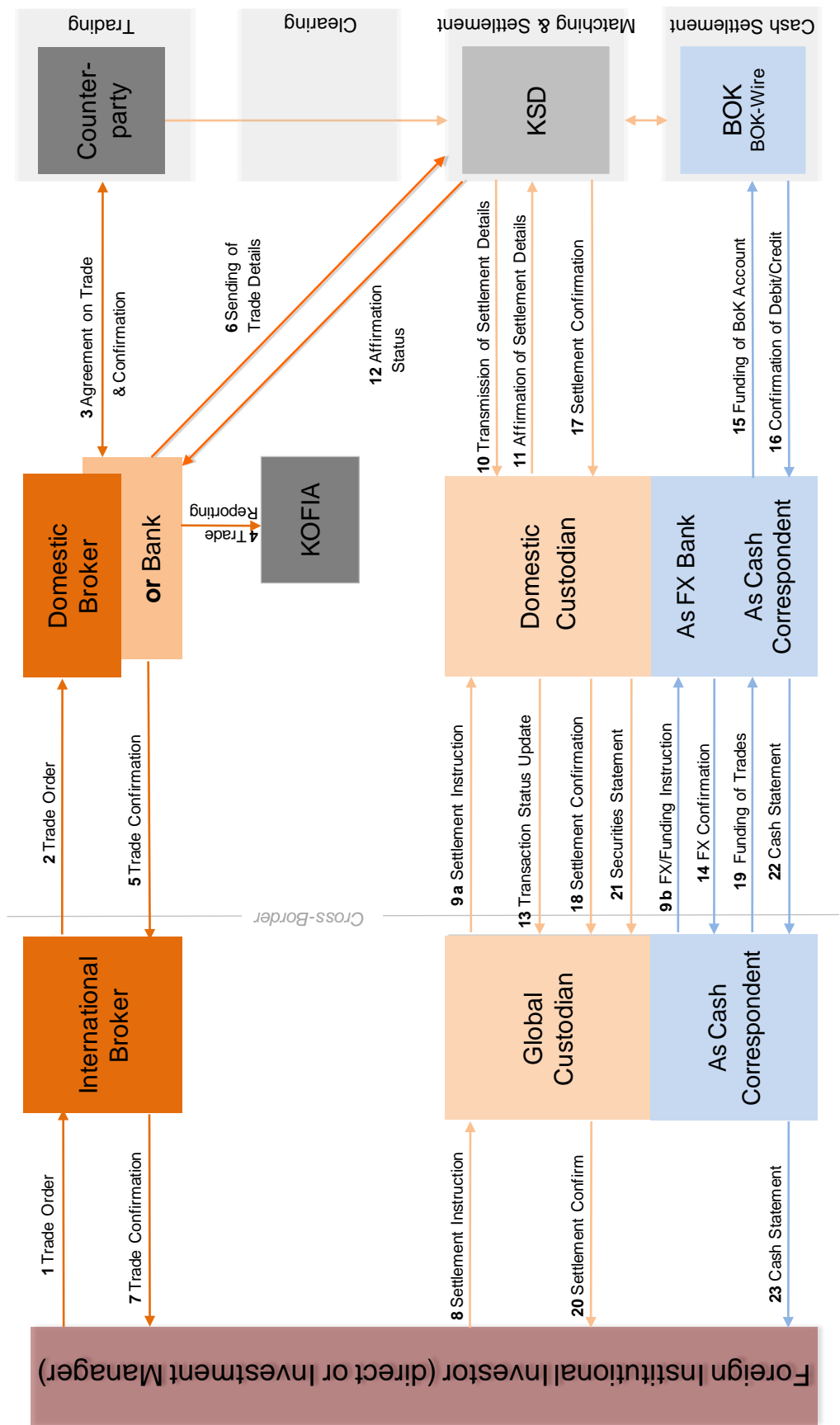
### Exchange Market

---

1. Sell side and buy side send trade order to Korea Exchange(KRX).
2. KRX performs matching.
3. KRX makes trade confirmation.
4. KRX takes obligation (novation) for KRX members.
5. KRX performs netting.
6. KRX sends settlement details to sell side and buy side
7. KRX sends settlement instruction for DVP to Korea Security Depository(KSD).
8. KSD holds bonds before cash settlement.
9. KSD executes bond & cash settlement for DVP through KRX account.
10. KSD sends settlement report to sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

KR07. Bond Transaction Flow for Foreign Investors OTC Market / DVP

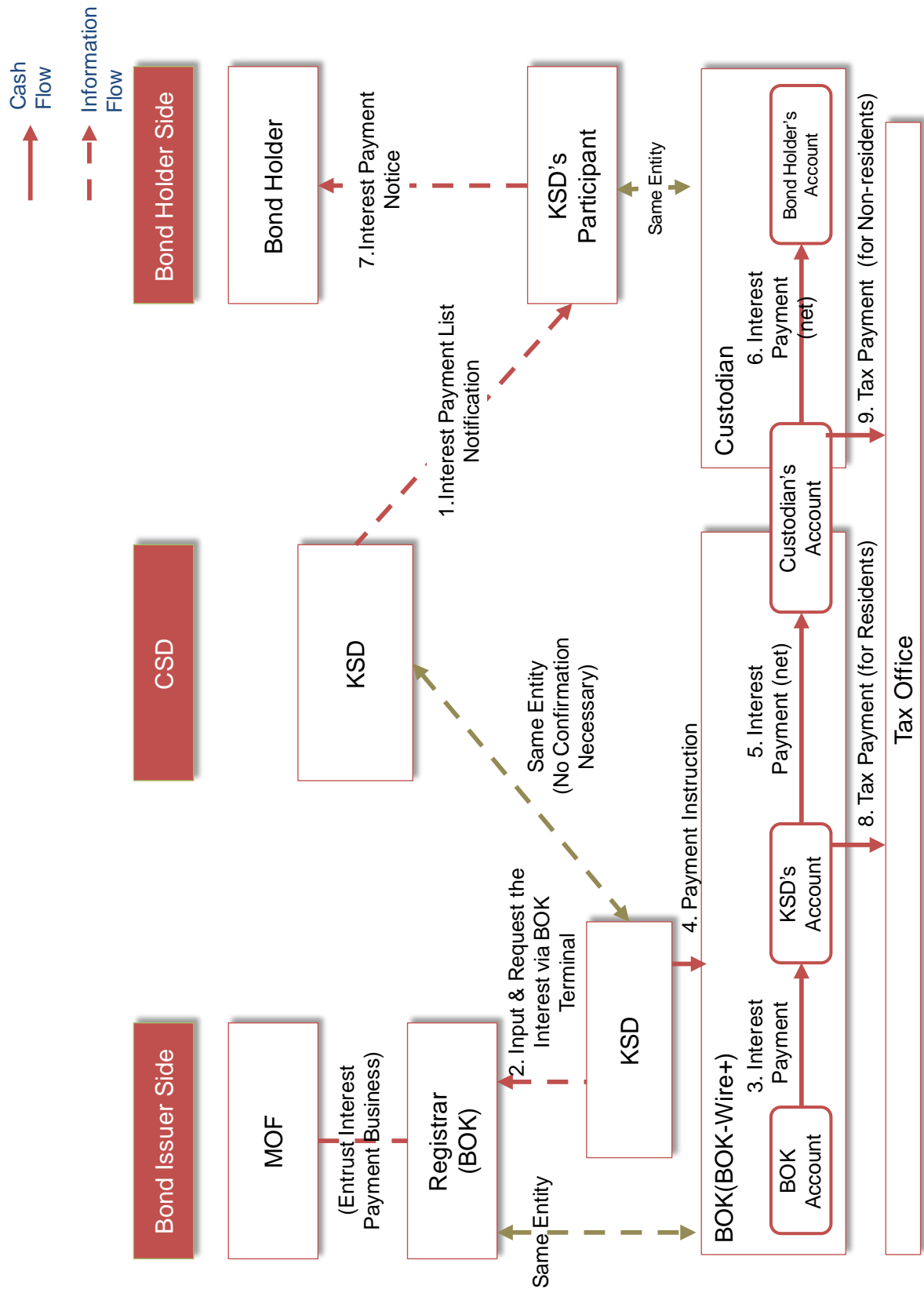


### KR07. Bond Transaction Flow for Foreign Investors OTC Market / DVP

Trade Date	T+1 (SD-1)	Settlement Date
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 send 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 affirmation status to Domestic Broker/Bank		
13. Domestic Custodian reports transaction status update to Global Custodian		
14. Domestic Custodian sends FX confirmation to Global Custodian		
15. Domestic Custodian funds BOK account		
16. Upon transfer of cash, BOK sends settlement confirmation to Domestic Custodian		
17. Upon transfer of securities, KSD sends settlement confirmation to Domestic Custodian		
18. Domestic Custodian sends settlement confirmation to Global Custodian		
19. Global Custodian funds account with Domestic Custodian, or into FCY nostro (before end of day)		
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		
23. Global Custodian sends credit/debit confirmation in cash statement to Foreign Institutional Investor		

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### KR08. Interest Payment Flow of Government Bond





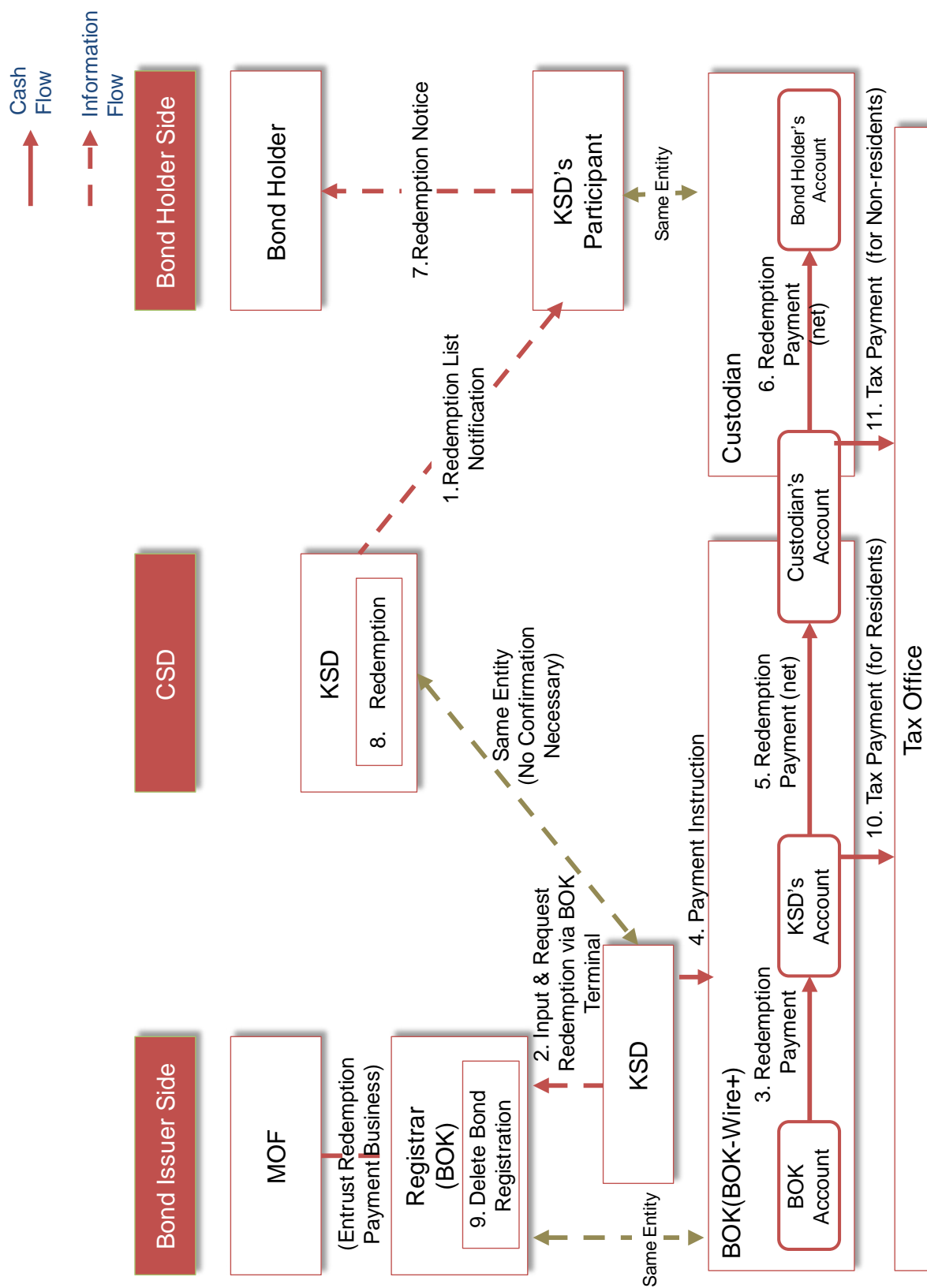
## KR08. Interest Payment Flow Government Bond

### Process of Interest Payment

---

1. Korea Securities Depository(KSD) notifies KSD participants of interest payment list.
2. KSD inputs and request the interest via Bok terminal.
3. BOK makes interest payment to BOK account of KSD.
4. KSD withholds income tax on receiving interest and sends payment instruction to BOK.
5. BOK transfers interest from BOK account of KSD to KSD participant.
6. KSD participants make interest payments to bondholders.
7. KSD's participants notify bond holders of interest payment.
8. KSD' pays tax for residents to tax office.
9. KSD's participants pay tax for non-residents to tax office.

### KR09. Redemption Flow of Government Bond

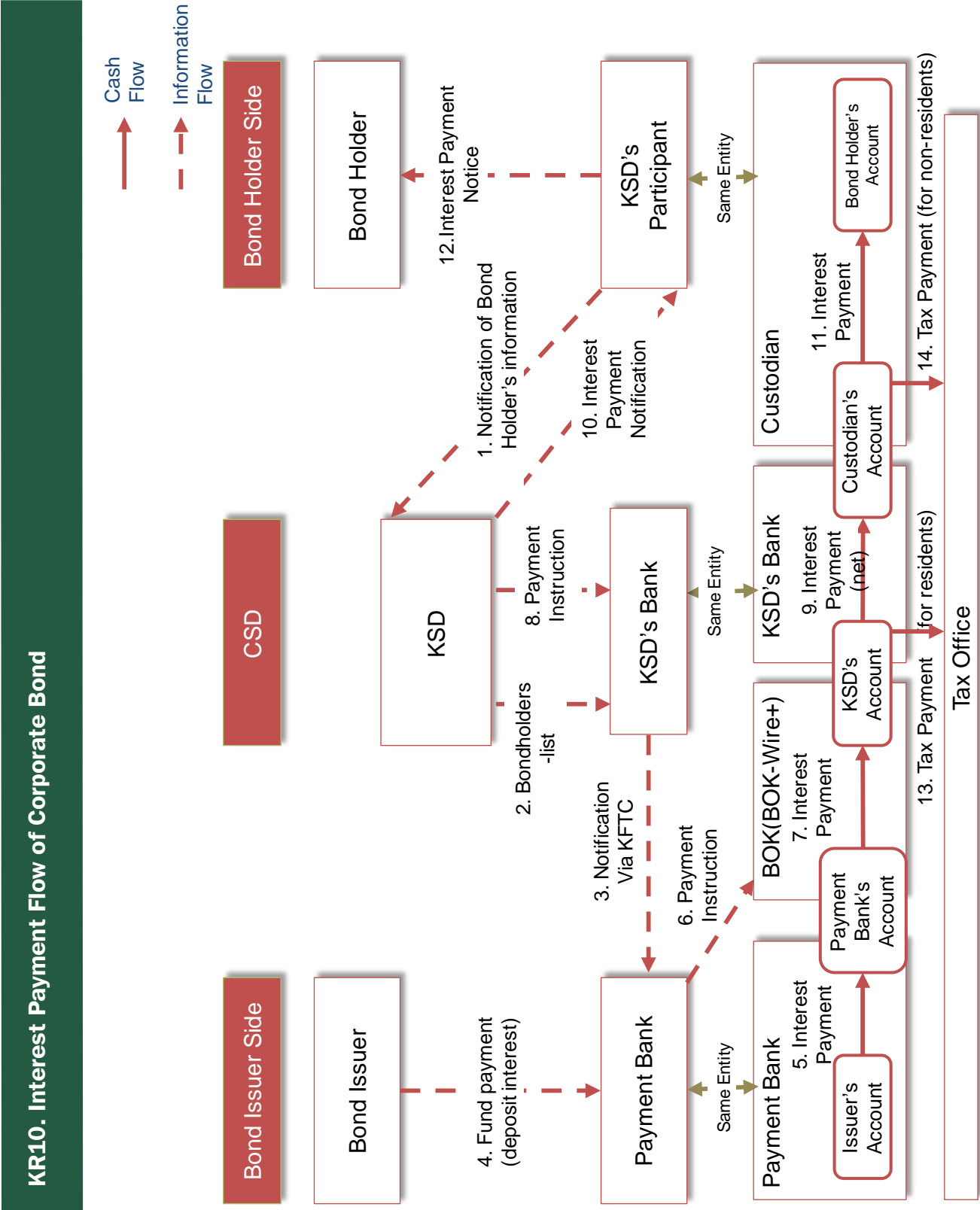


## KR09. Redemption Flow Government Bond

### Process of Redemption

1. Korea Securities Depository(KSD) notifies KSD participants of redemption payment list.
2. KSD inputs and request the redemption via Bok terminal.
3. BOK makes redemption payment to BOK account of KSD.
4. KSD withholds income tax on receiving principal and sends payment instruction to BOK.
5. BOK transfers redemption payment from BOK account of KSD to KSD participant.
6. KSD participants make redemption payments to bondholders.
7. KSD's participants notify bond holders of redemption payment.
8. KSD makes bond redemption.
9. BOK deletes the registration of redeemed bond.
10. KSD' pays tax for residents to tax office.
11. KSD's participants pay tax for non-residents to tax office.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

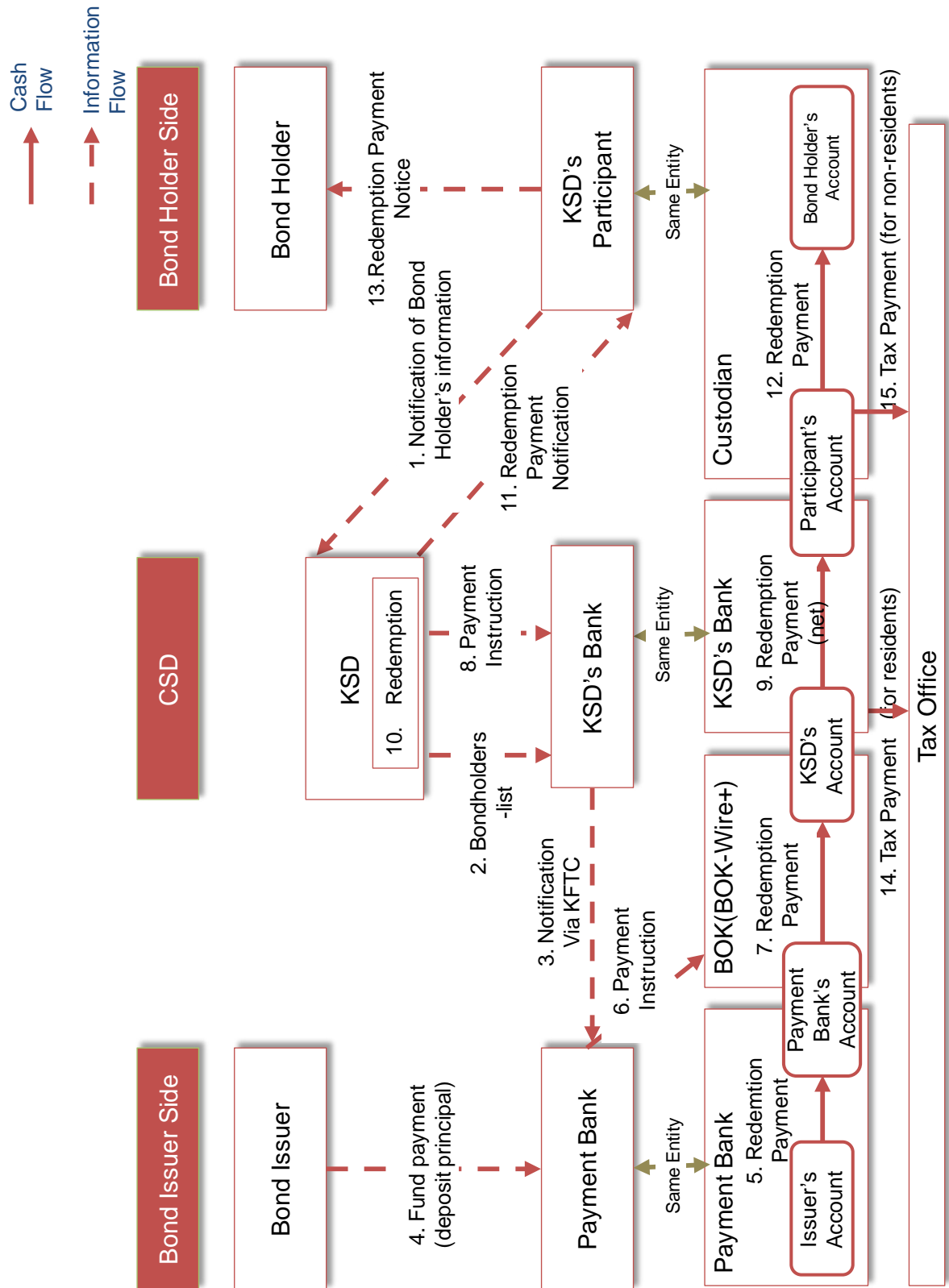


## KR10. Interest Payment Flow Corporate Bond

### Process of Interest Payment

1. Korea Securities Depository(KSD)'s participants notifies KSD of information of bond holders.
2. KSD sends KSD's bank of bondholders-list.
3. KSD's bank notifies issuer's payment bank of interest payment via KOREA FINANCIAL TELECOMMUNICATIONS & CLEARINGS INSTITUTE (KFTC).
4. A bond issuer makes fund payment for interest to a payment bank.
5. Payment Bank executes interest payment from issuer's account to it's account.
6. Payment bank instructs BOK to pay interest from payment bank's account to KSDs' Bank's account.
7. BOK executes interest payment from payment banks' account to KSD's account.
8. KSD instructs KSD's bank to pay interest to custodians(KSD participants)' account.
9. KSD's bank executes interest payment from KSD's account to custodians(KSD participants)' account, deducting income tax if applicable.
10. KSD notifies it's participants of interest payment.
11. Custodian (KSD's participants) credit bond holders' accounts with interest paid by issuer, deducting tax if applicable..
12. Custodian (KSD's participants) notify bond holders of interest payment.
13. KSD's bank pays tax for residents to tax office.
14. KSD's participants pay tax for non-residents to tax office.

## KR11. Redemption Payment Flow of Corporate Bond



## KR11. Redemption Payment Flow Corporate Bond

### Process of Redemption Payment

1. Korea Securities Depository(KSD)'s participants notifies KSD of information of bond holders.
2. KSD sends KSD's Bank of bondholders-list.
3. KSD's bank notifies issuer's payment bank of redemption payment via KOREA FINANCIAL TELECOMMUNICATIONS & CLEARINGS INSTITUTE (KFTC).
4. A bond issuer makes fund payment for redemption to a payment bank.
5. Payment Bank executes redemption payment from issuer's account to it's account.
6. Payment Bank instructs BOK to pay redemption from payment bank's account to KSD's account.
7. BOK executes redemption payment from payment banks' account to KSD's account.
8. KSD instructs KSD's Bank to pay redemption to custodians(KSD participants)' account.
9. KSD's bank executes redemption payment from KSD's account to custodians(KSD participants)' account, deducting tax if applicable..
10. KSD makes bond redemption.
11. KSD notifies it's participants of redemption payment.
12. Custodian (KSD's participants) credit bond holders' accounts with redemption paid by issuer, deducting tax if applicable.
13. Custodian (KSD's participants) notify bond holders of redemption payment.
14. KSD's Bank pays tax for residents to tax office.
15. KSD's participants pay tax for non-residents to tax office.



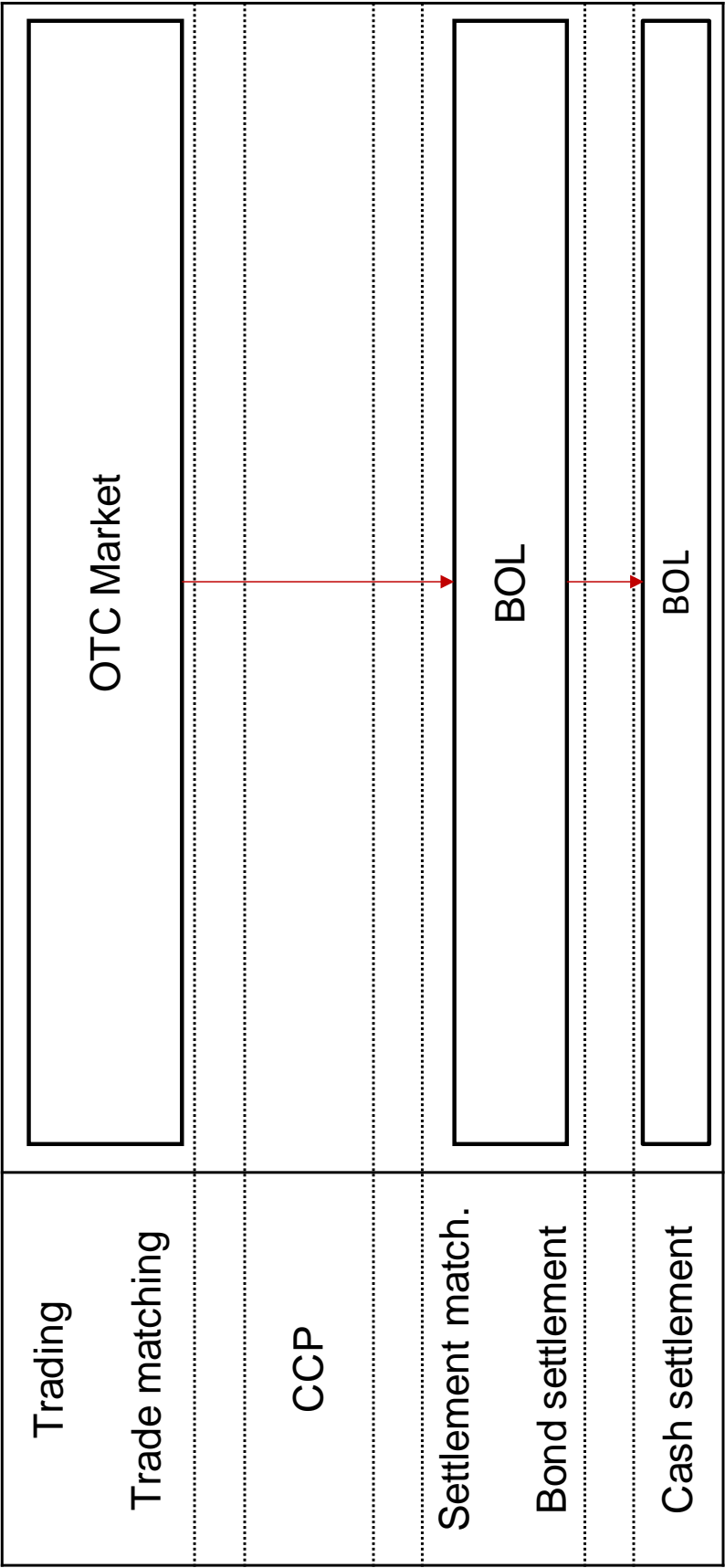
# Lao PDR (LA)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Bond Transaction Flow for Domestic Trades  
(Corporate Bond)
4. Interest & Redemption Payment Flow  
(Government Bond)
5. Interest & Redemption Payment Flow  
(Corporate Bond)

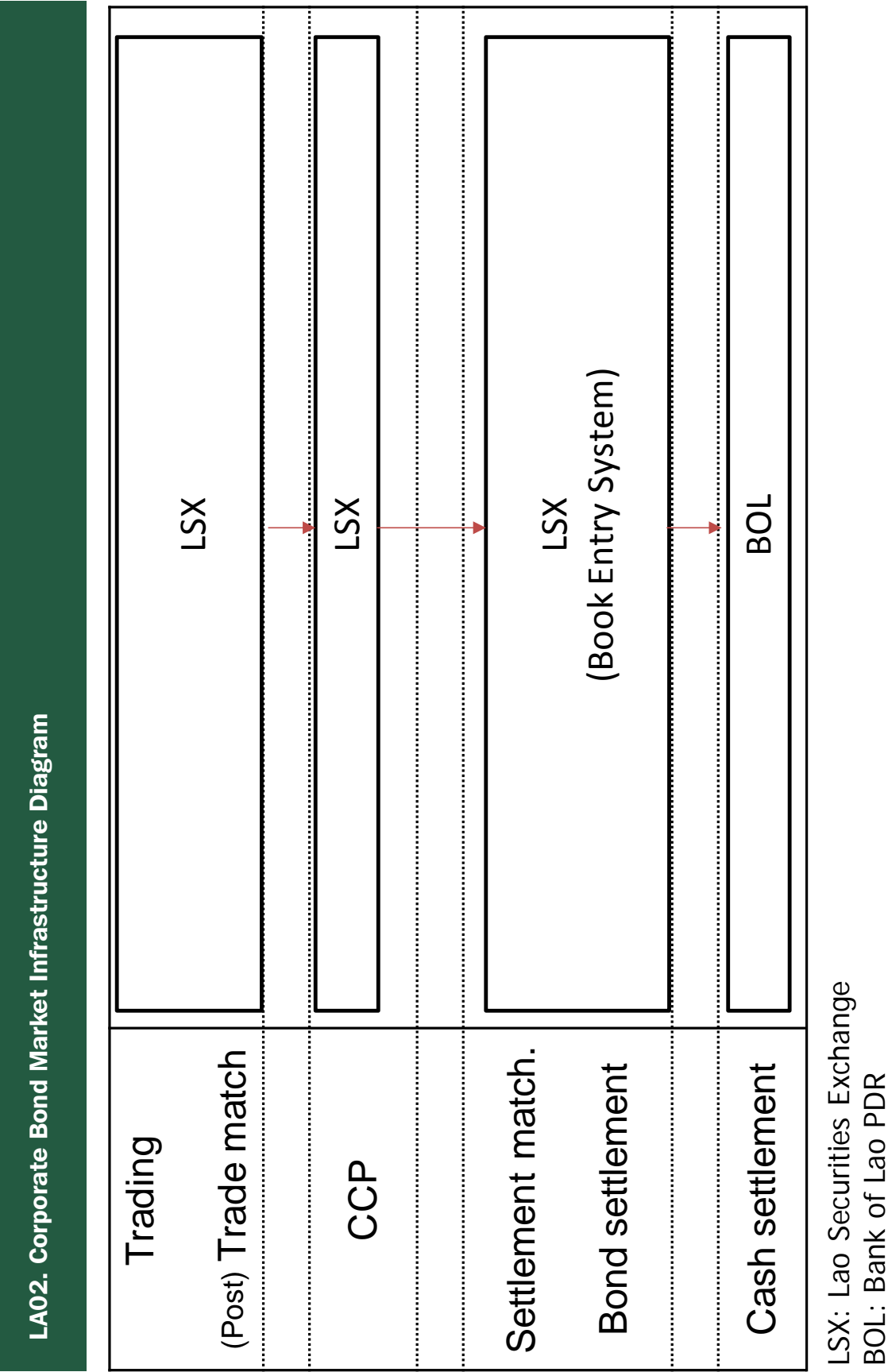
### 1. Bond Market Infrastructure Diagram

2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Interest & Redemption Payment Flow (Government Bond)
5. Interest & Redemption Payment Flow (Corporate Bond)

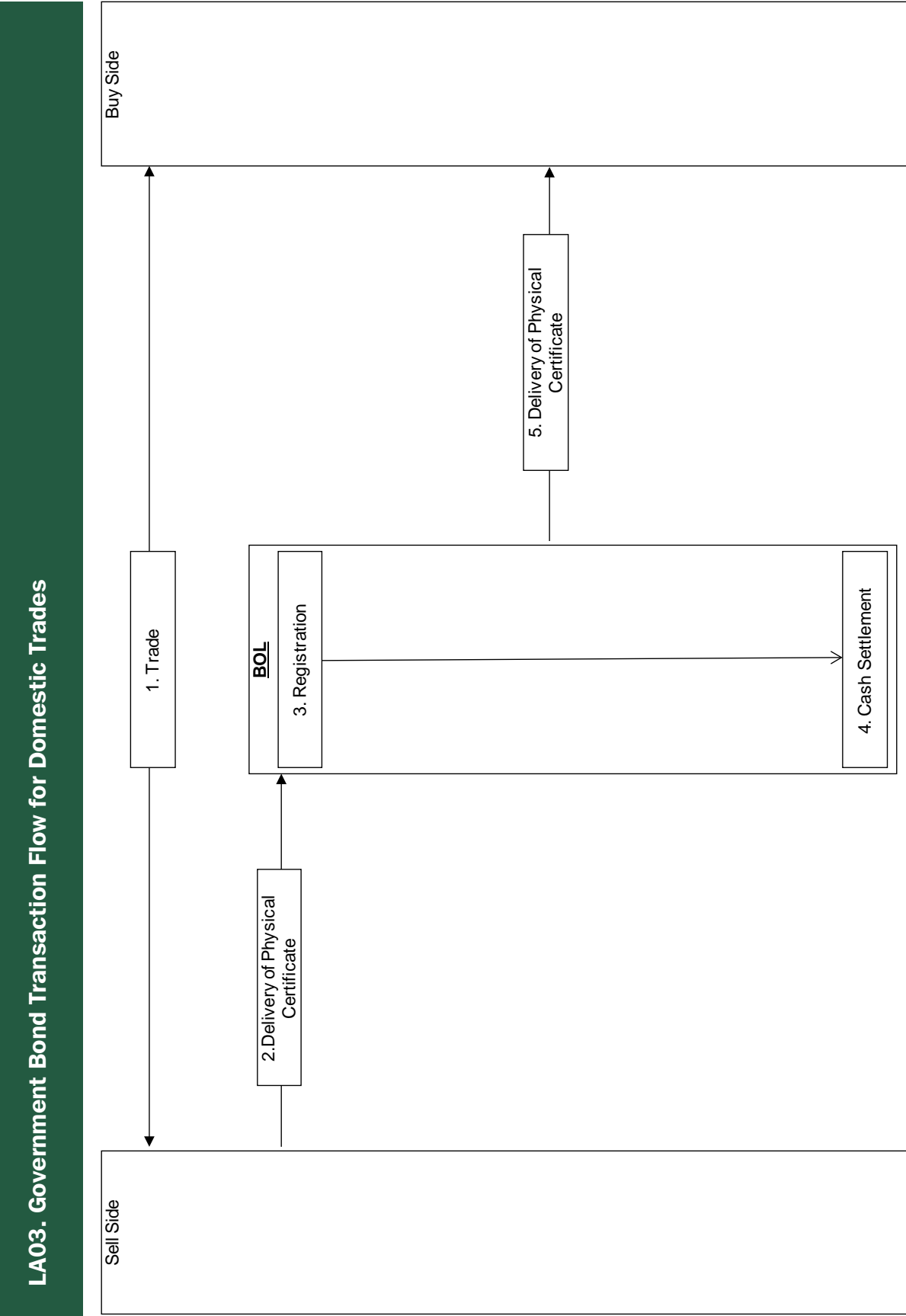
LA01. Government Bond Market Infrastructure Diagram



BOL: Bank of Lao PDR



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Interest & Redemption Payment Flow (Government Bond)
5. Interest & Redemption Payment Flow (Corporate Bond)



### LA03. Government Bond Transaction Flow for Domestic Trades

## OTC Market

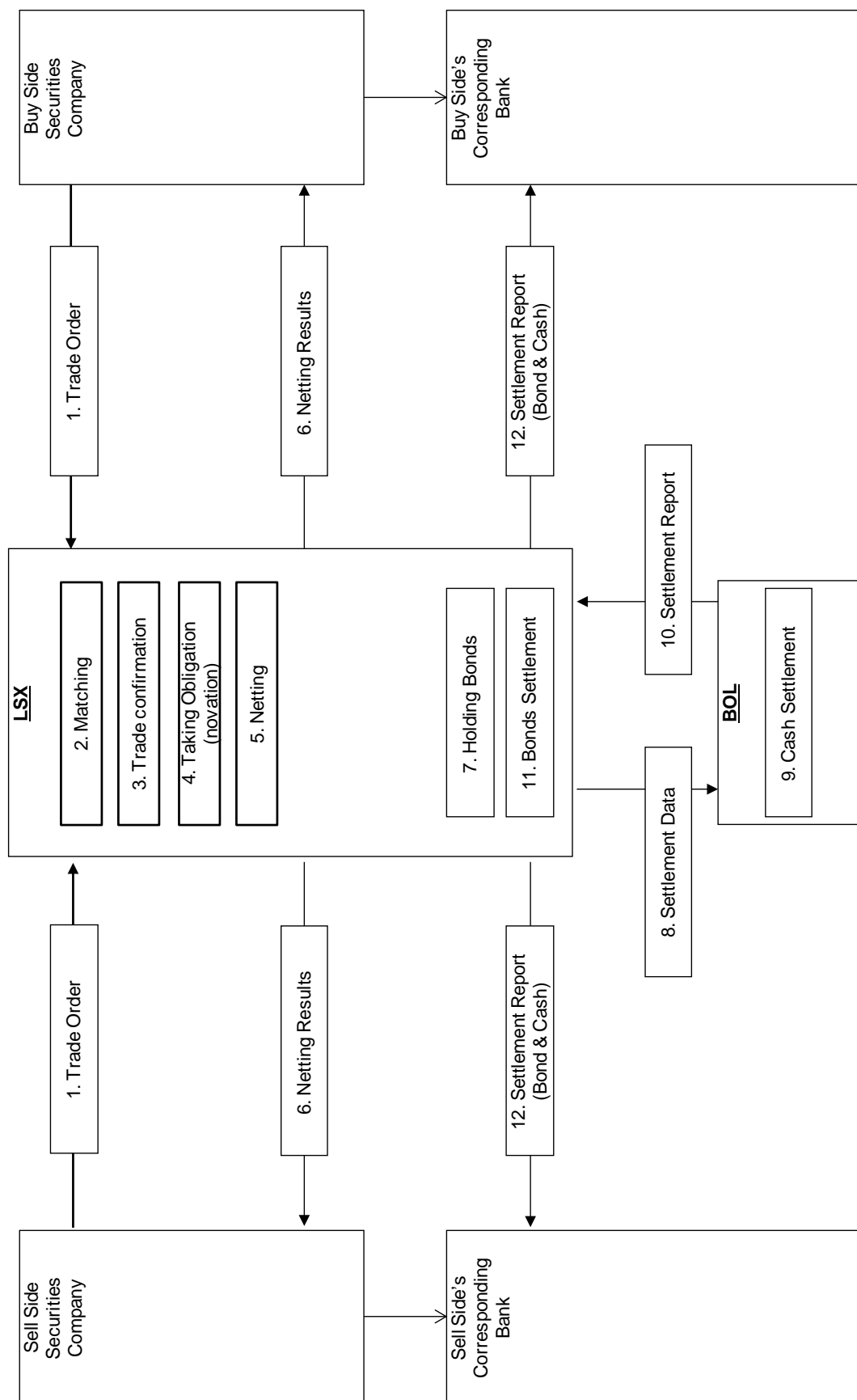
---

1. Sell side and buy side trade via OTC market by telephone or by FAX in the form of physical certificate.
2. Sell side deliver physical certificate with evidence of trade to BOL.
3. BOL registers trade on book.
4. BOL makes cash settlement from buy side to sell side.
5. Buy side brings back BOL physical certificate from BOL.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Interest & Redemption Payment Flow (Government Bond)
5. Interest & Redemption Payment Flow (Corporate Bond)



#### LA04. Corporate Bond Transaction Flow for Domestic Trades



#### LA04. Corporate Bond Transaction Flow for Domestic Trades

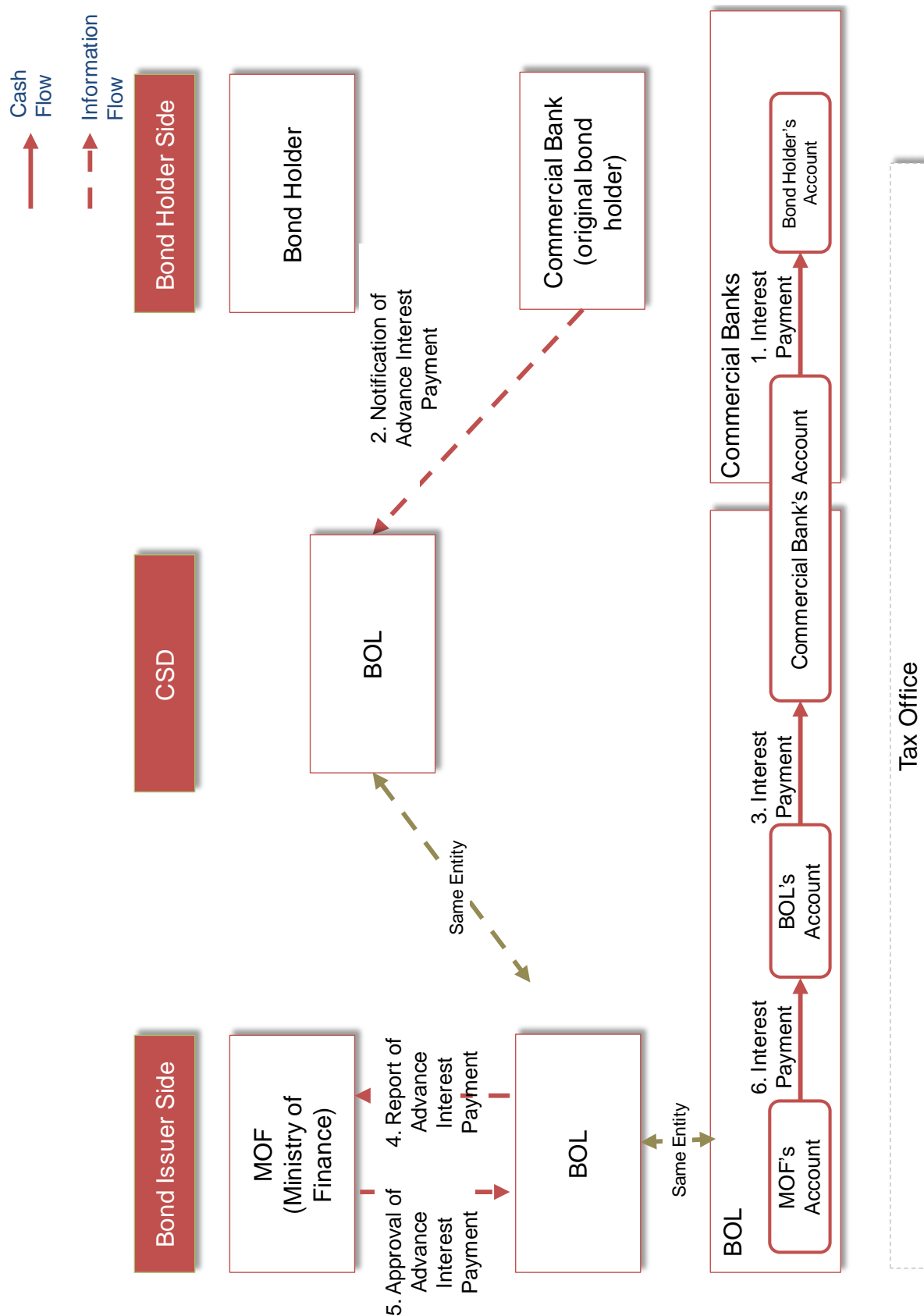
## Exchange Market

---

1. Sell side and buy side send trade order to LSX.
2. LSX performs matching.
3. LSX makes trade confirmation.
4. LSX takes obligation (novation) for LSX members.
5. LSX performs netting.
6. LSX send details of netting results to sell side and buy side via system.
7. LSX checks availability and holds securities.
8. LSX sends settlement data to BOL automatically via FTP.
9. BOL executes cash settlement.
10. BOL notices cash settlement confirmation to LSX.
11. LSX releases held securities and executes securities delivery.
12. LSX sends settlement report to sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Interest & Redemption Payment Flow (Government Bond)
5. Interest & Redemption Payment Flow (Corporate Bond)

## LA05. Interest Payment Flow of Government Bond

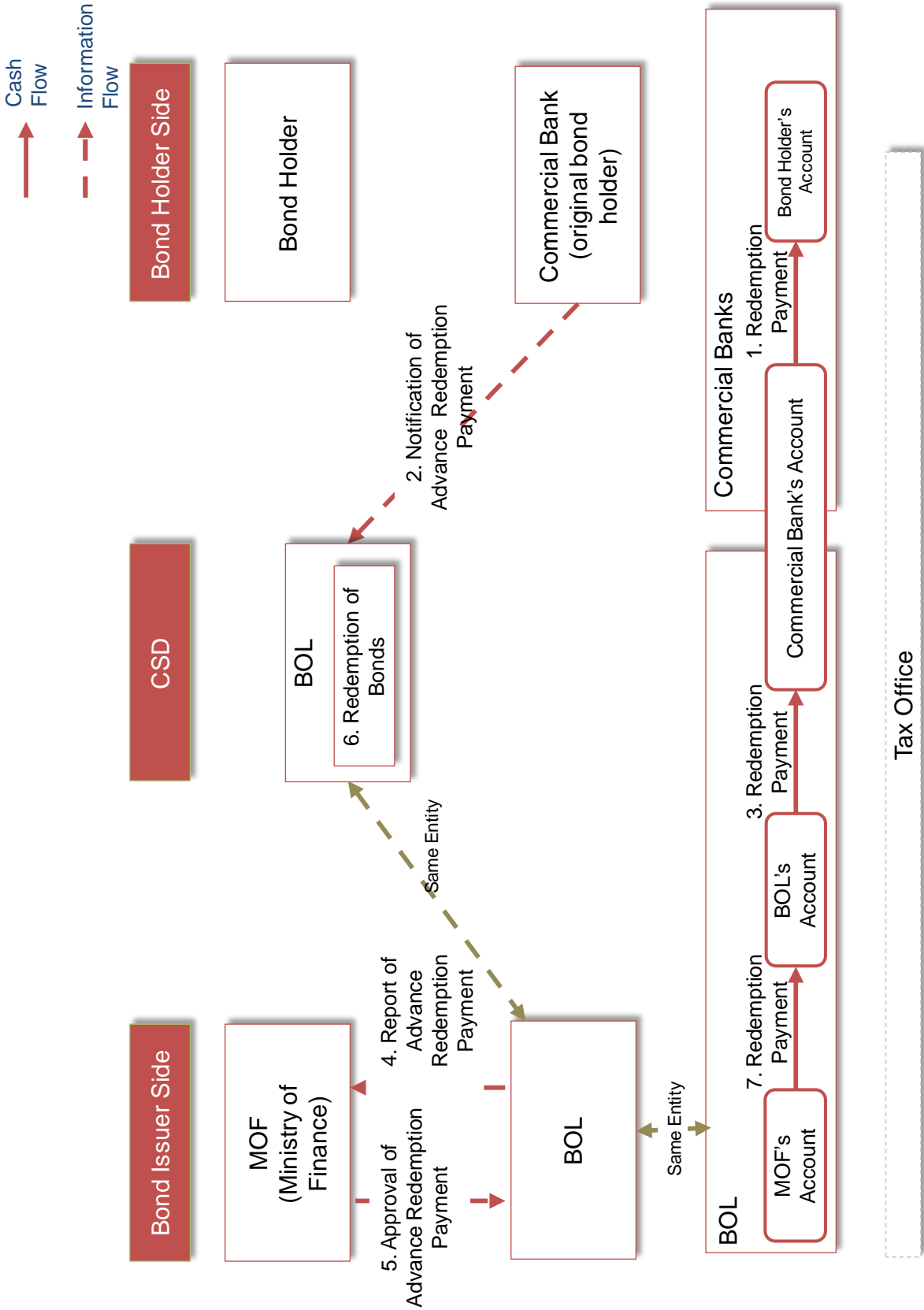


#### LA05. Interest Payment Flow of Government Bond

### Process of Interest Payment

1. Commercial banks, which are originally allocated T-bills, make interest payment in advance to bond holders deducting income tax if applicable on behalf of MOF on interest payment date.
2. The commercial banks report to BOL the advance interest payments they made on behalf of MOF.
3. BOL reimburses the advance payment to commercial banks on behalf of MOF.
4. BOL notifies MOF of the advance interest payment made by commercial banks on a quarterly basis through a report, and requests MOF to pay the amount.
5. MOF reconciles the payment details with BOL before making payments, and approve to pay the amount to BOL.
6. MOF pays the interest amount to BOL.
7. Commercial banks pays income tax to the tax office via it's own account, if tax is applicable.

LA06. Redemption Payment Flow of Government Bond



## LA06. Redemption Payment Flow of Government Bond

### Process of Redemption Payment

1. Commercial banks, who are originally allocated T-bills, pay the amount for redemption and interest payment in advance to bond holders deducting income tax if applicable on behalf of MOF on the redemption date.
2. Commercial banks ask BOL to pay the amount for redemption.
3. BOL makes the payment to commercial banks on behalf of MOF.
4. BOL notifies MOF of the advance redemption made by commercial banks, and requests MOF to pay the amount.
5. MOF reconciles the payment details with BOL before making payments, and approve to pay the amount to BOL.
6. BOL performs redemption.
7. MOF makes reimbursement for the payment to BOL following the presentation of the letter.
8. Commercial banks pays income tax to the tax office via it's own account, if tax is applicable.

# Myanmar (MM)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Interest & Redemption Payment Flow  
(Government Bond)

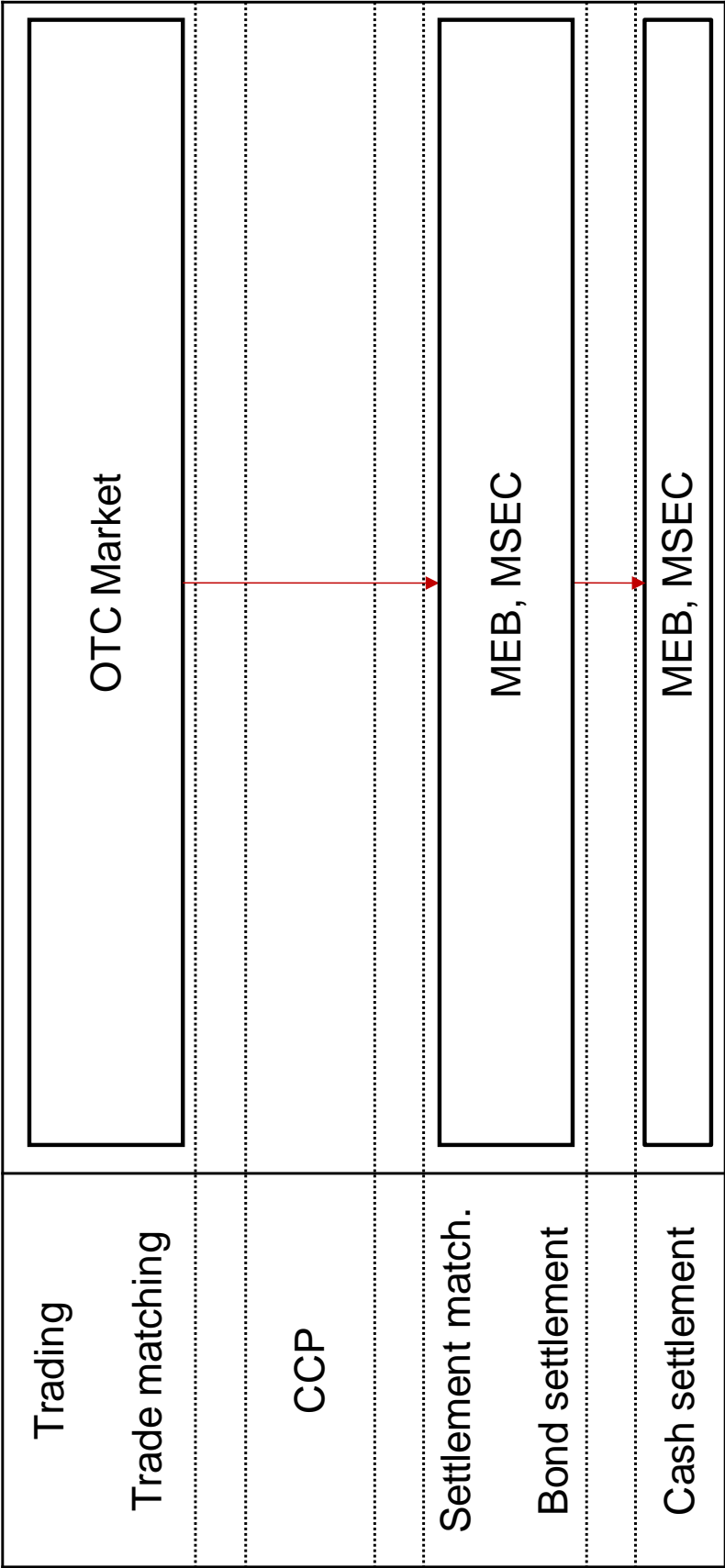


## 1. Bond Market Infrastructure Diagram

### 2. Bond Transaction Flow for Domestic Trades (Government Bond)

### 3. Interest & Redemption Payment Flow (Government Bond)

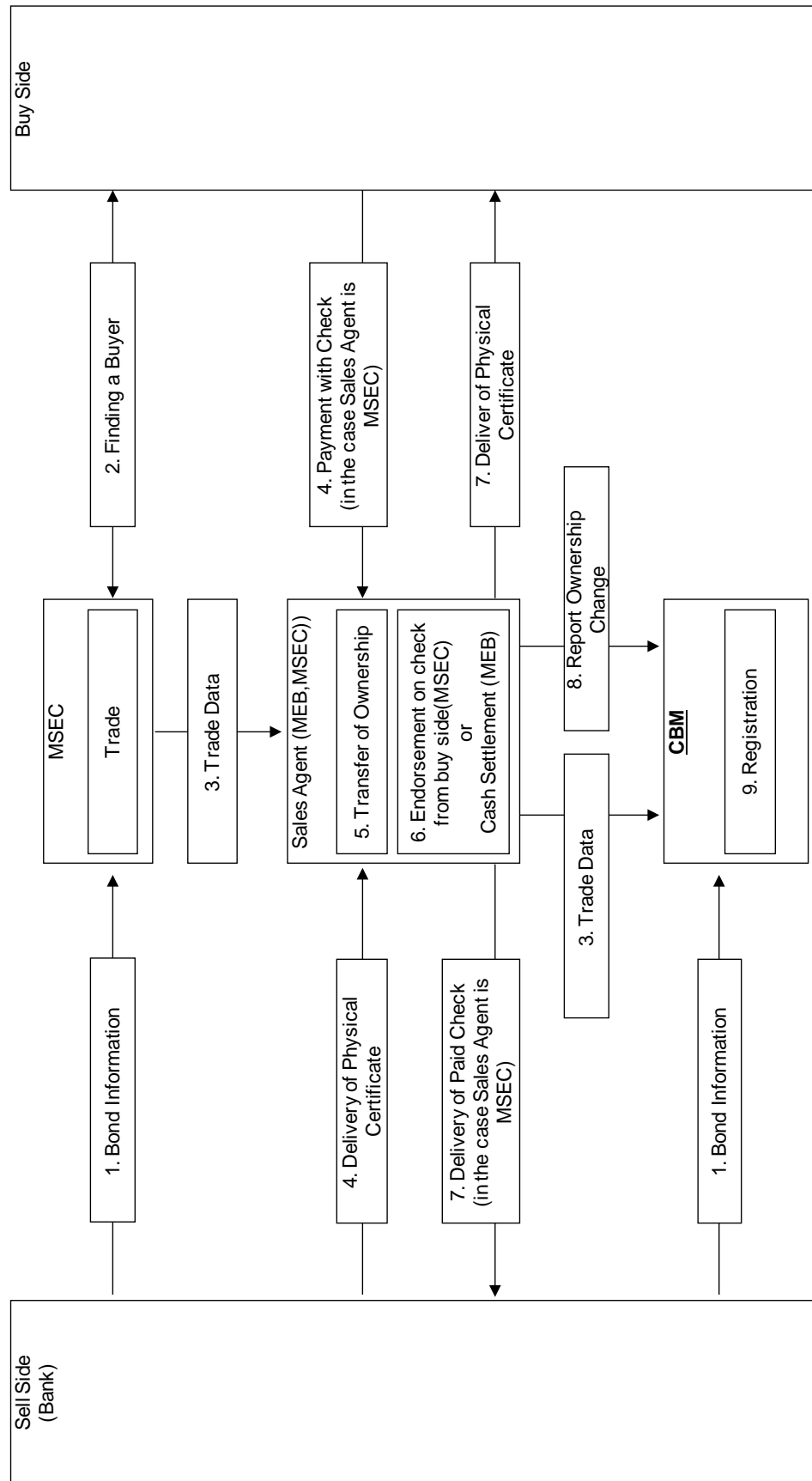
MM01. Government Bond Market Infrastructure Diagram



MEB: Myanma Economic Bank  
MSEC: Myanmar Securities Exchange Centre

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Interest & Redemption Payment Flow (Government Bond)

## MM02. Government Bond Transaction Flow for Domestic Trades



## MM02. Government Bond Transaction Flow for Domestic Trades

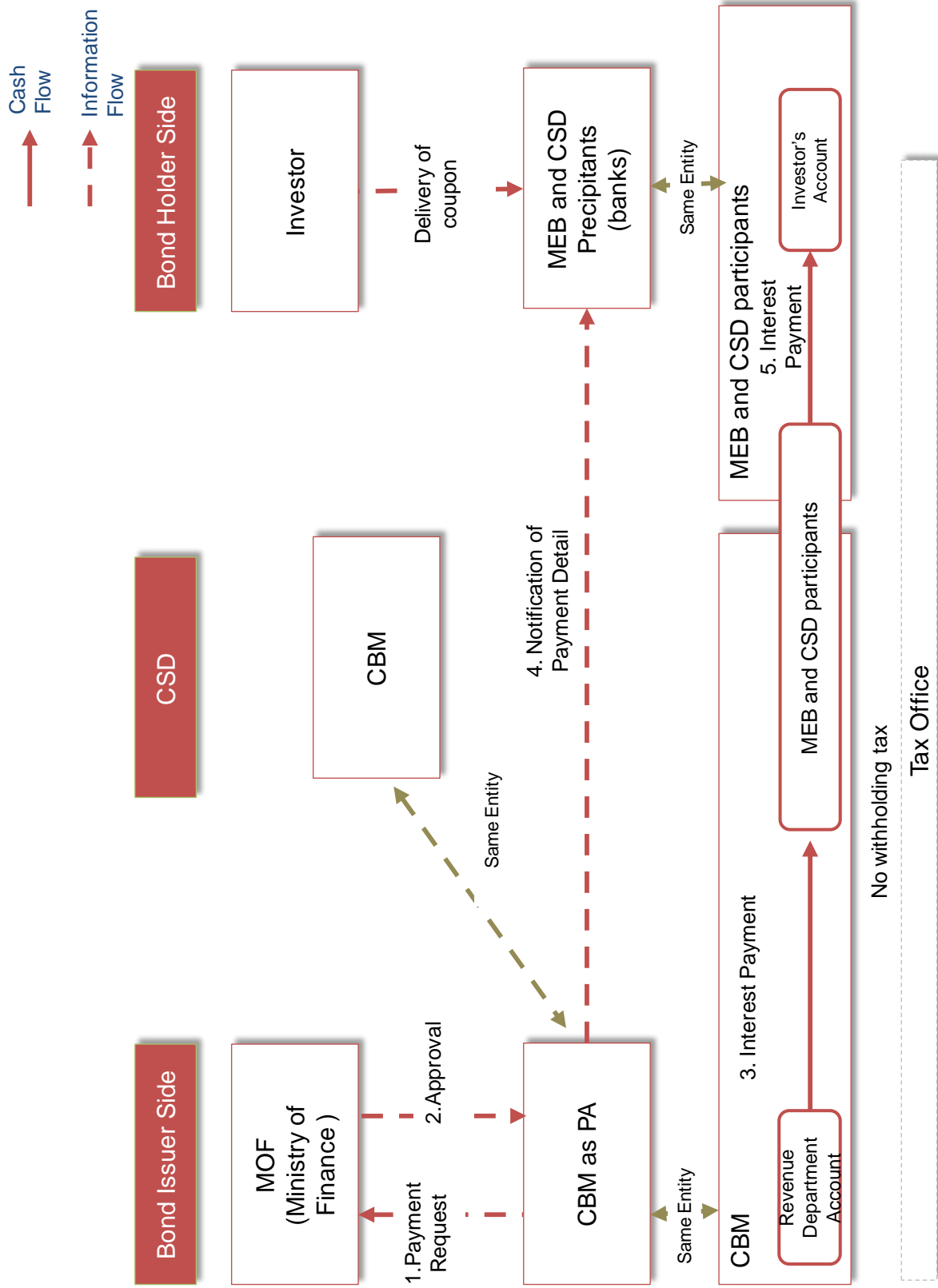
### OTC Market

1. Sell side informs CBM and MSEC of bond information such as the face value, maturity date and numbers of bonds which they want to sell.
2. MSEC finds a buy side who accepts the price (quote driven trade) for trade.
3. MSEC reports to CBM about the sales of bond directly or via .MEB.
4. If buyer and seller agree the price, the seller brings physical certificate to MSEC or MEB with the signature on the back of bond certificate by authorized person to transfer the ownership. The buyer makes check when sales agent is MSEC.
5. Transfer of ownership is done by sales agent (MEB or MESEC).
6. MEB conducts account transfer or MSEC makes endorsement on check.
7. Bond certificate is delivered to buyer. Paid check is delivered to seller (only when sale agent is MSEC).
8. After bond trading, MSEC reports to CBM about the changing of bond ownership.
9. CBM makes registration.

Note: The flow in the previous page shows from trade to settlement between banks in OTC market. MSEC quotes bonds of sell side (bank) and sell them to buy side (bank) as sole intermediary (securities company) in OTC market. Regarding retail investors, MEB and MSEC are the intermediary between seller and buyer of T-bond.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government) Bond
3. Interest & Redemption Payment Flow (Government Bond)

## MM03. Interest Payment Flow of Government Bond



### MM03. Interest Payment Flow of Government Bond

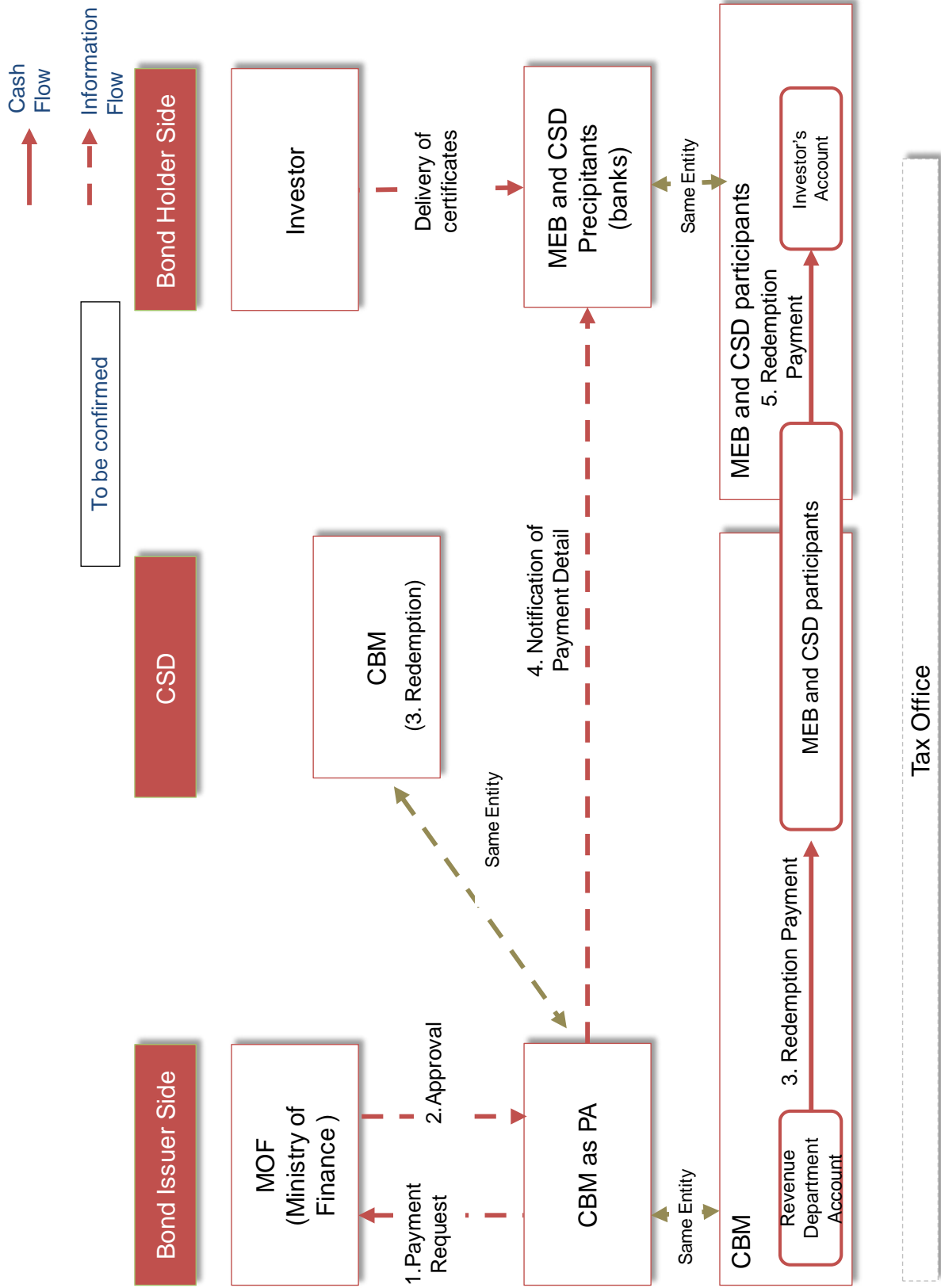
## Process of Interest Payment

1. CBM send payment request to MOF.
2. MOF approves it.
3. CBM pays interests to banks (CSD participants including MEB) by debiting Revenue Department Account and crediting it to the banks' account.
4. CBM sends letter of notification for interest payment to banks including MEB. (Banks bring coupons to CBM except for MEB.)
5. MEB transfers cash for interest payment to investor's accounts upon receipt of coupons.

Note: There is no withholding tax for government bonds.



### MM04. Redemption Payment Flow of Government Bond



#### MM04. Redemption Payment Flow of Government Bond

### Process of Interest Payment

---

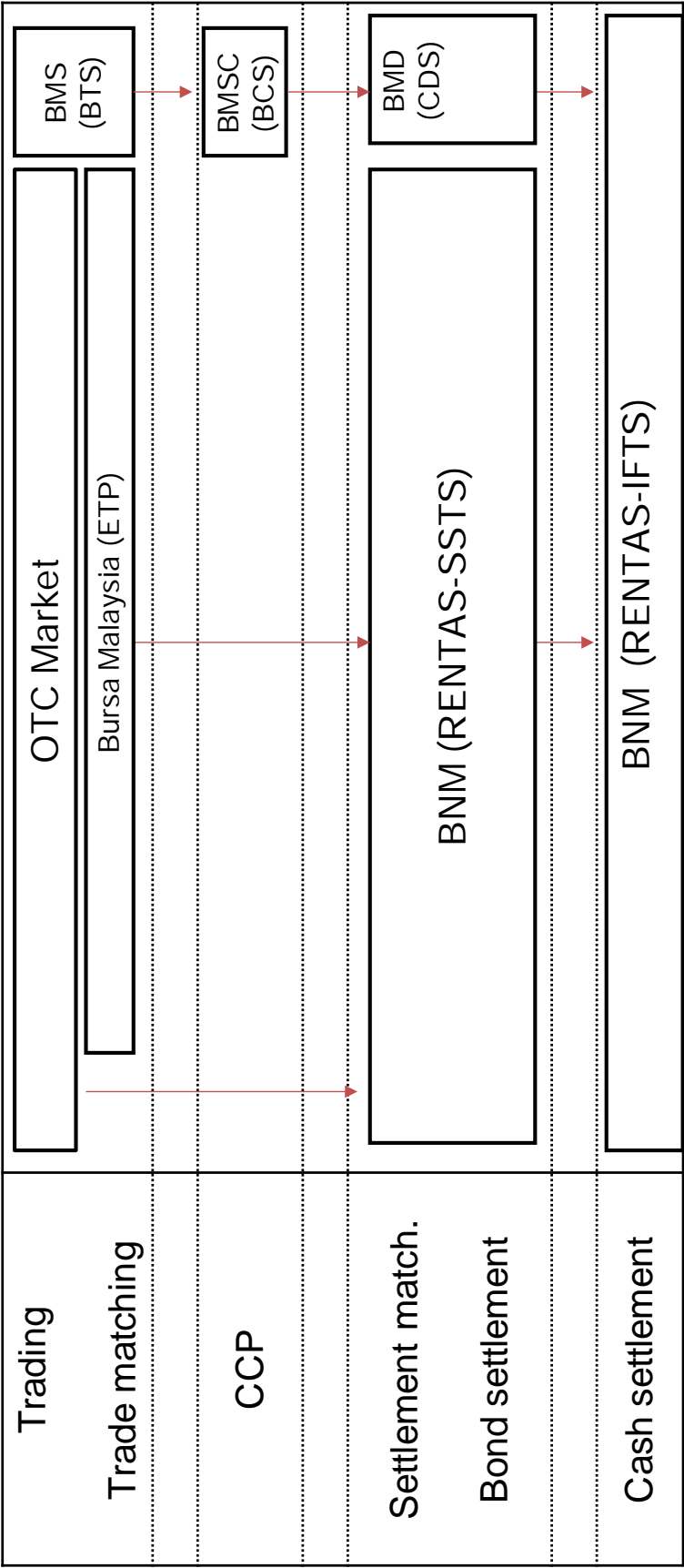
1. CBM send payment request to MOF.
2. MOF approves it.
3. CBM pays interests to banks (CSD participants including MEB) by debiting Revenue Department Account and crediting it to the banks' account. CBM makes redemption.
4. CBM sends letter of notification for redemption payment to banks including MEB. (Banks bring certificates to CBM except for MEB.)
5. MEB transfers cash for redemption payment to investor's accounts upon receipt of certificates.

# Malaysia (MY)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

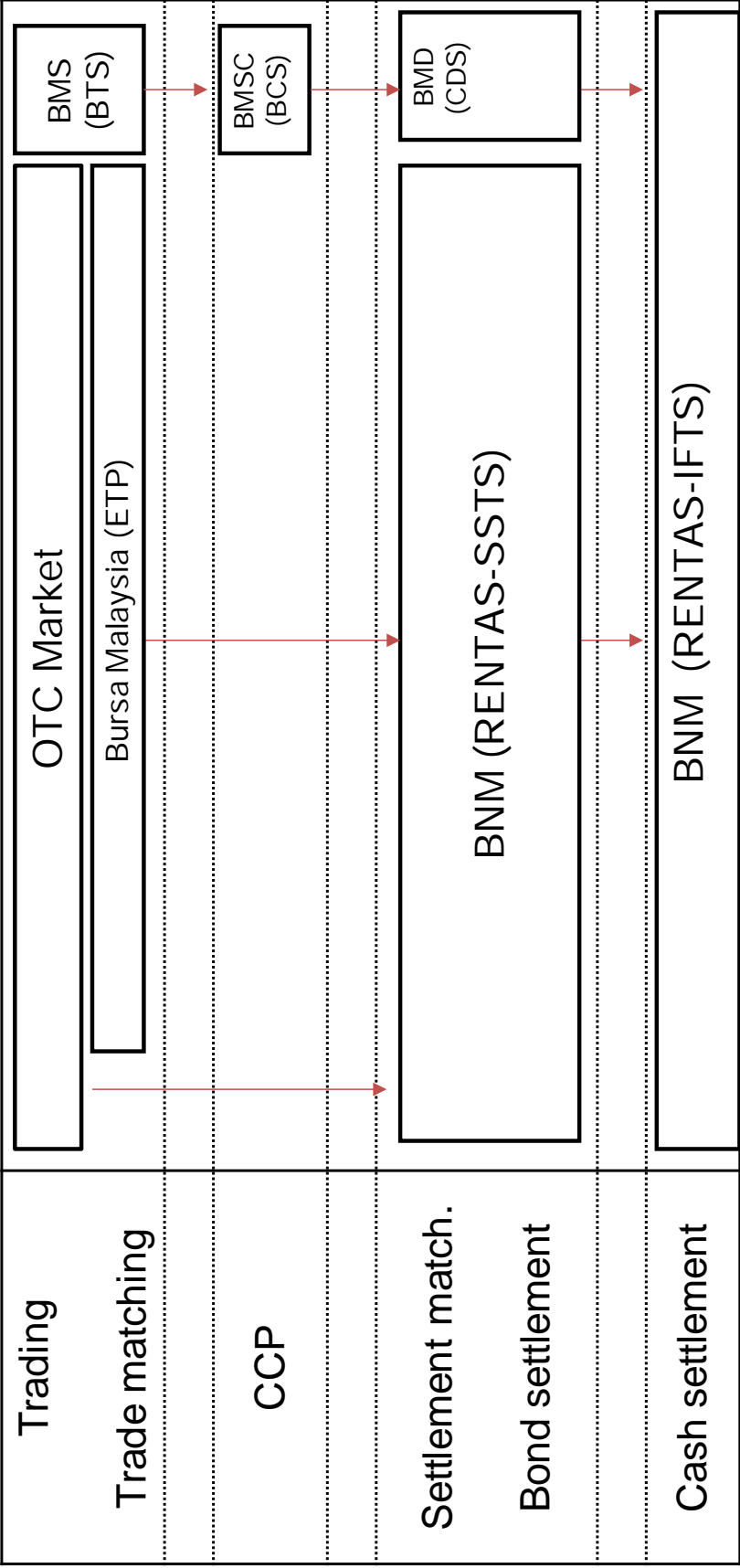
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

**MY01. Government Bond Market Infrastructure Diagram**



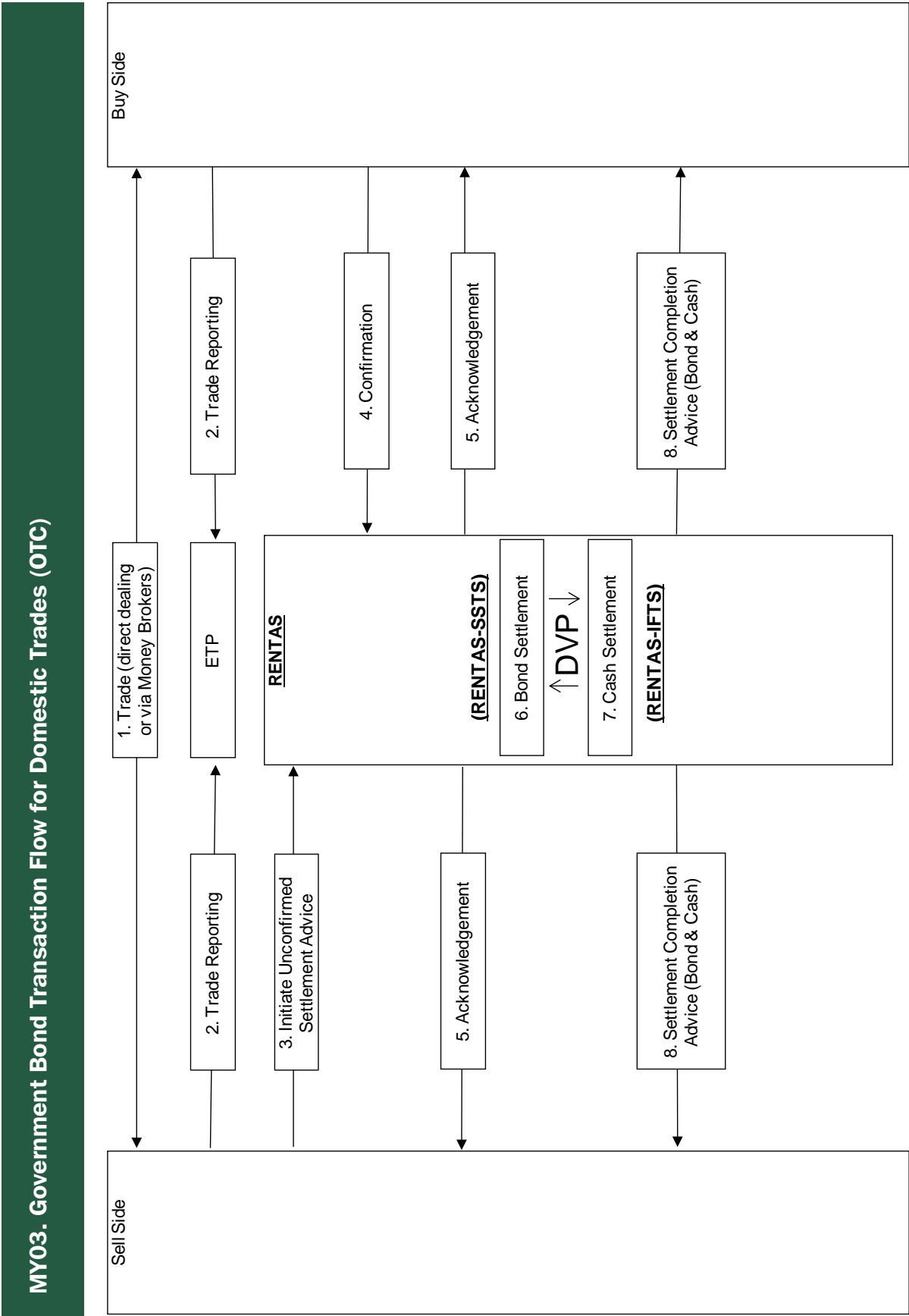
ETP – Electronic Trading Platform BNM – Bank Negara Malaysia  
 RENTAS – Real-time Electronic Transfer of Funds and Securities  
 BMS – Bursa Malaysia Securities BTS – Bursa Trade System  
 BMSC – Bursa Malaysia Securities Clearing BCS – Bursa Clearing & Settlement System  
 SSTS – Scripless Securities Trading System BMD – Bursa Malaysia Depository  
 CDS – Central Depository System IFTS – Interbank Funds Transfer System

MY02. Corporate Bond Market Infrastructure Diagram



ETP – Electronic Trading Platform BNM - Bank Negara Malaysia  
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  
SSTS – Scripless Securities Trading System BMD – Bursa Malaysia Depository  
CDS – Central Depository System IFTS – Interbank Funds Transfer System

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



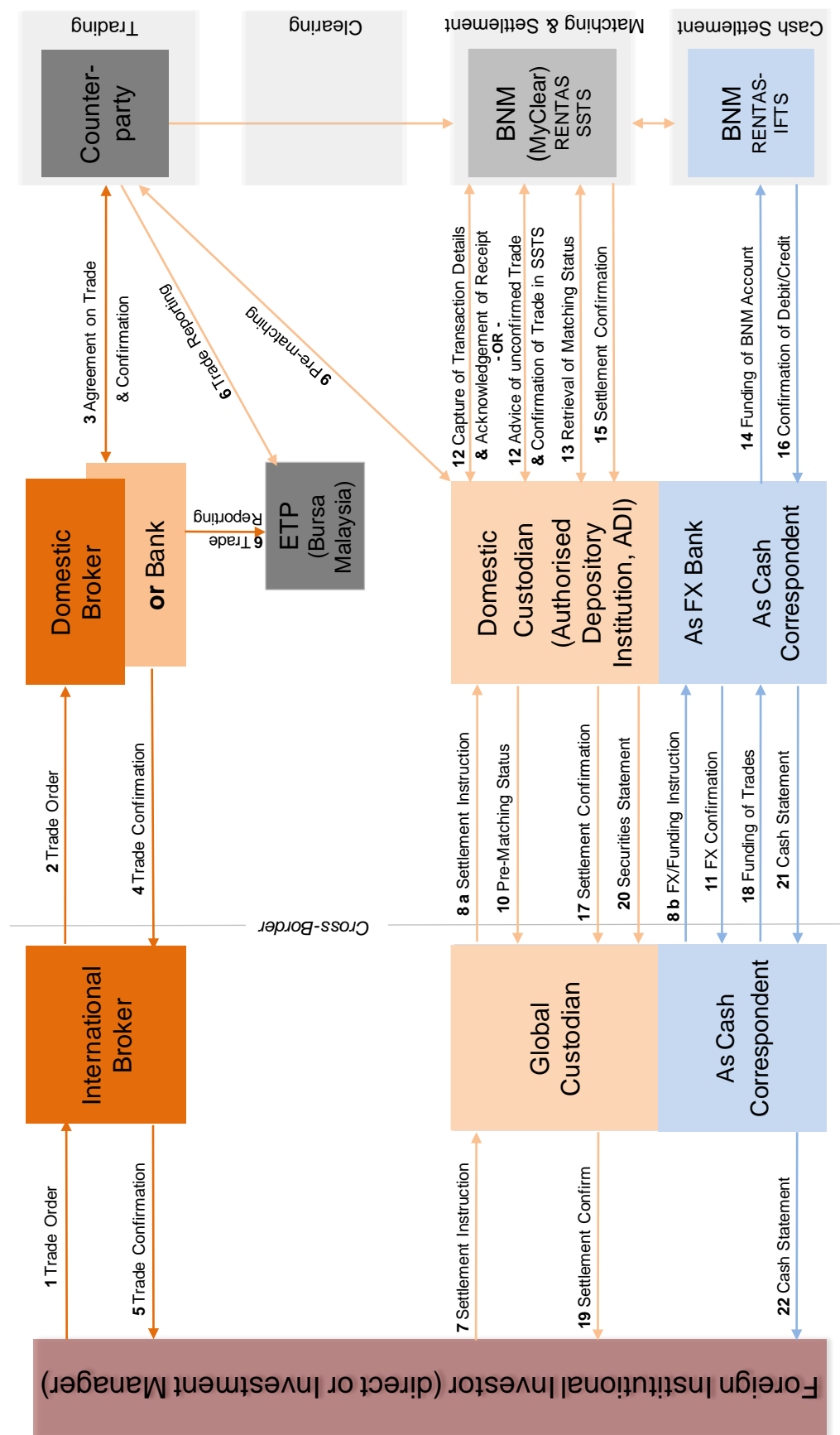


### MY03. Government Bond Transaction Flow for Domestic Trades (OTC)

## OTC Market

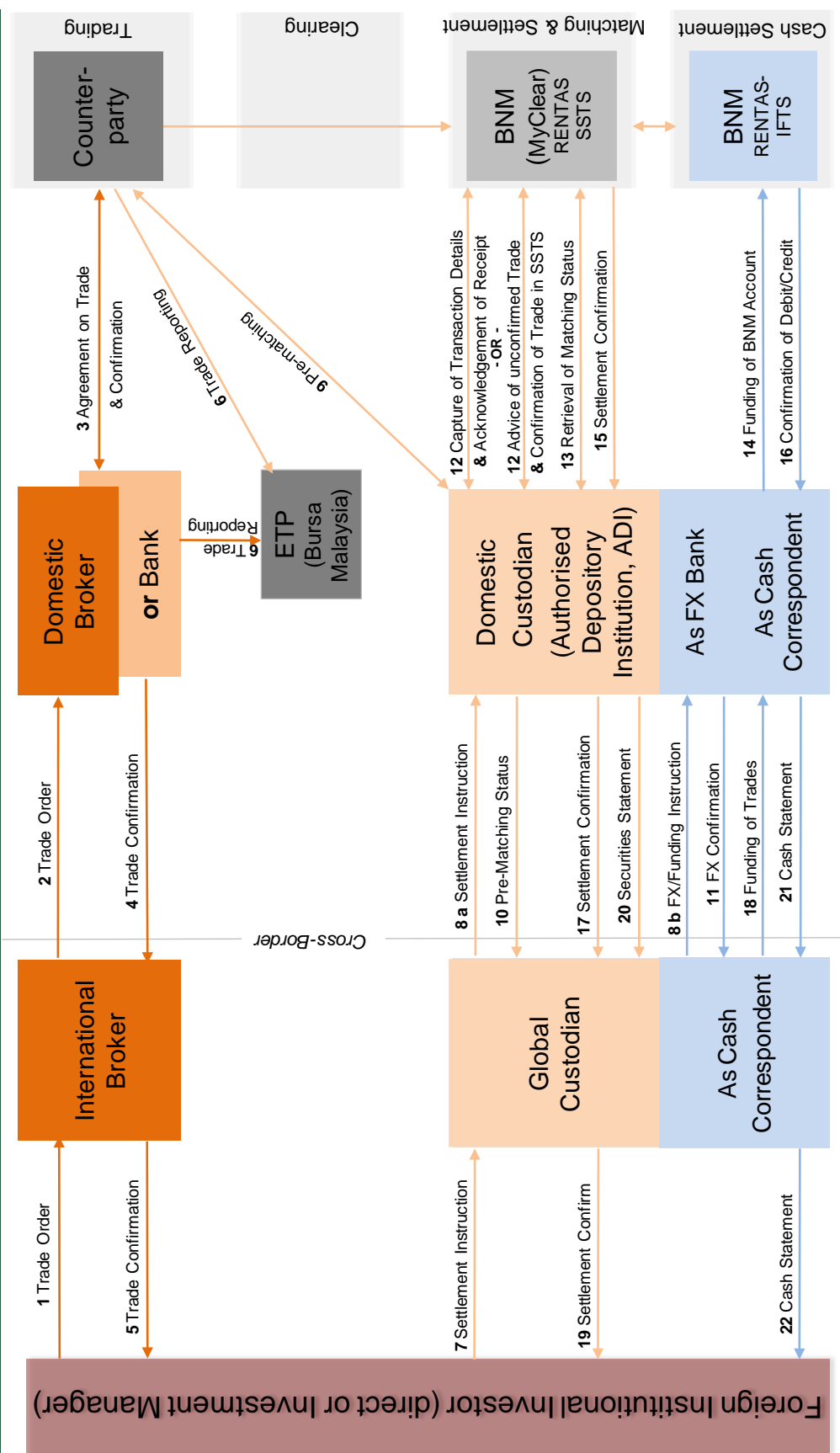
1. Sell side and buy side trade over the counter by telephone (direct dealing or through Money Broker). 95% of bond trades are dealt in OTC market. Commercial banks and Islamic banks can trade bonds.
2. All trades are recorded in Electronic Trading Platform (ETP).
3. Sell side (or buy side) inputs trade data into RENTAS as initiate unconfirmed settlement advice.
4. Buy side (or sell side) confirms an unconfirmed settlement advice using by confirmation menu of RENTAS.
5. Sell side and buy side access report menu of RENTAS and confirms that confirmation of local matching is performed.
- 6.7 On settlement date, bond and cash are settled on DVP basis.
8. Sell side and buy side access Report menu of RENTAS and confirms report of bond settlement and cash settlement.

### MY04. Bond Transaction Flow for Foreign Investors OTC Market / DVP



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### MY05. Bond Transaction Flow for Foreign Investors OTC Market / DVP

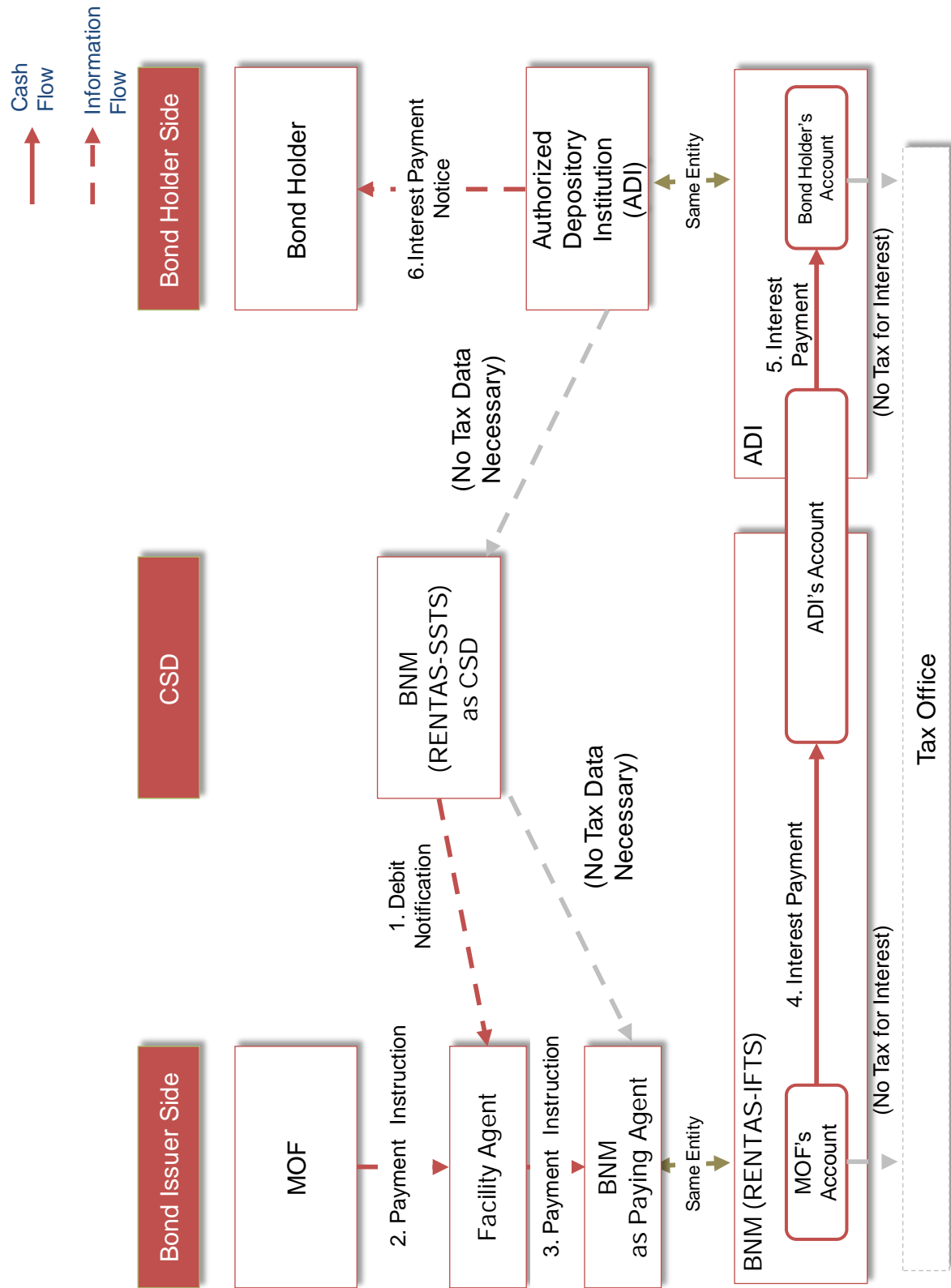


**MY05. Bond Transaction Flow for Foreign Investors OTC Market / DVP**

Trade Date	
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 (via e.g. 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
T+1	
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)
Settlement Date	
12.	Domestic Custodian/ADI captures settlement details into SSTS and receives SSTS acknowledgment of receipt of data (selling side), OR receives alleged trade notice (advice of unconfirmed trade) from SSTS and confirms settlement details in SSTS (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) if necessary
15.	Upon settling securities, SSTS 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)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### MY06. Bond Transaction Flow for Foreign Investors OTC Market / DVP



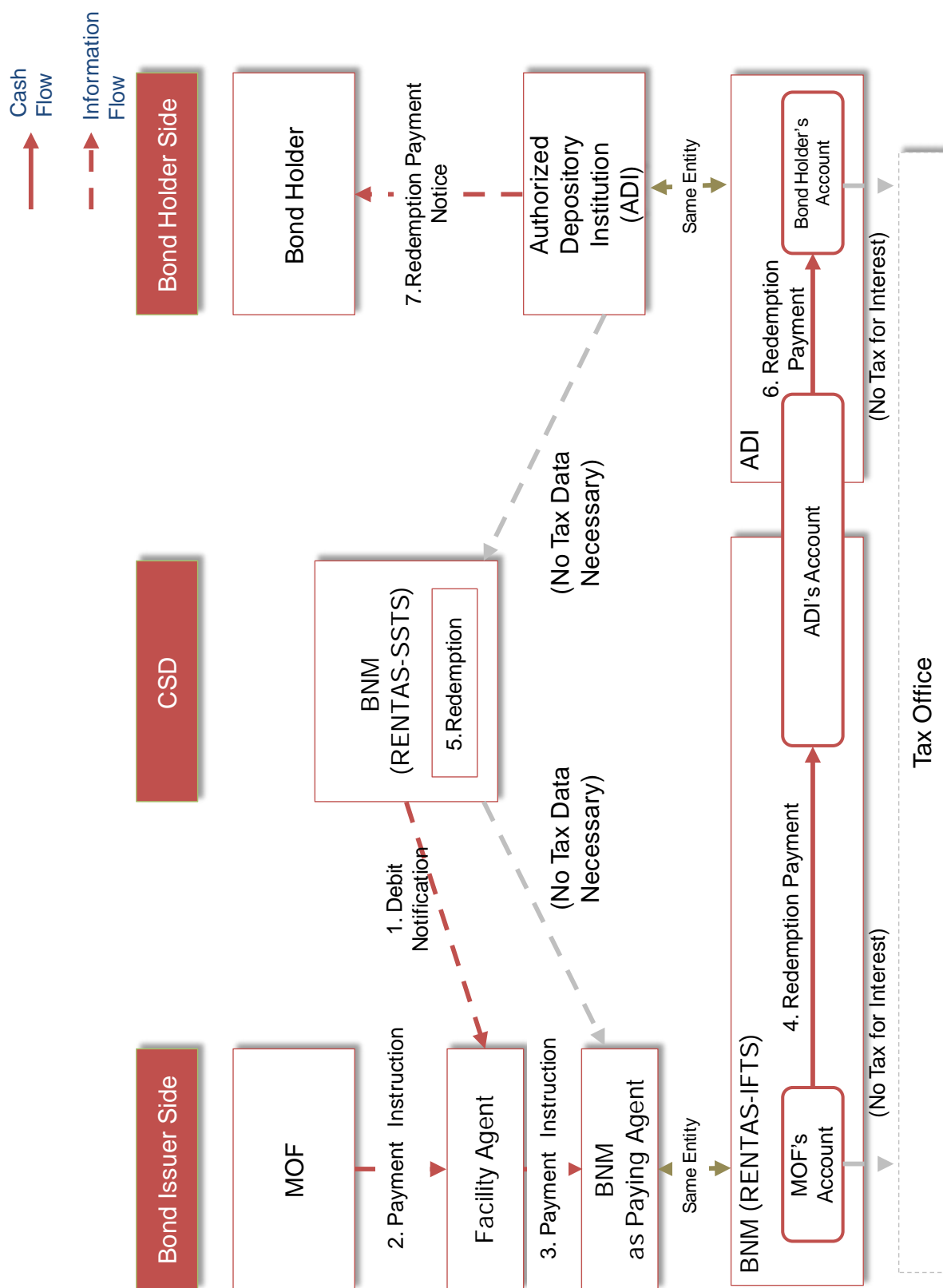
#### MY06. Interest Payment Flow of Government Bond

### Process of Interest Payment

1. On interest payment day, RENTAS sends Debit Notifications to Facility Agents (FAs) on the actual amount of interest proceeds to be paid to Paying Agent.
2. MOF instructs FAs to make redemption payment.
3. FAs send payment instruction to Paying Agent.
4. BNM executes interest payment from MOF's account to Authorized Depository Institutions (ADIs)' accounts.
5. ADIs credit to bond holder's accounts with interest paid by MOF.
6. ADIs notify bond holders of interest payment.



### MY07. Redemption Payment Flow of Government Bond



#### MY07. Redemption Payment Flow of Government Bond

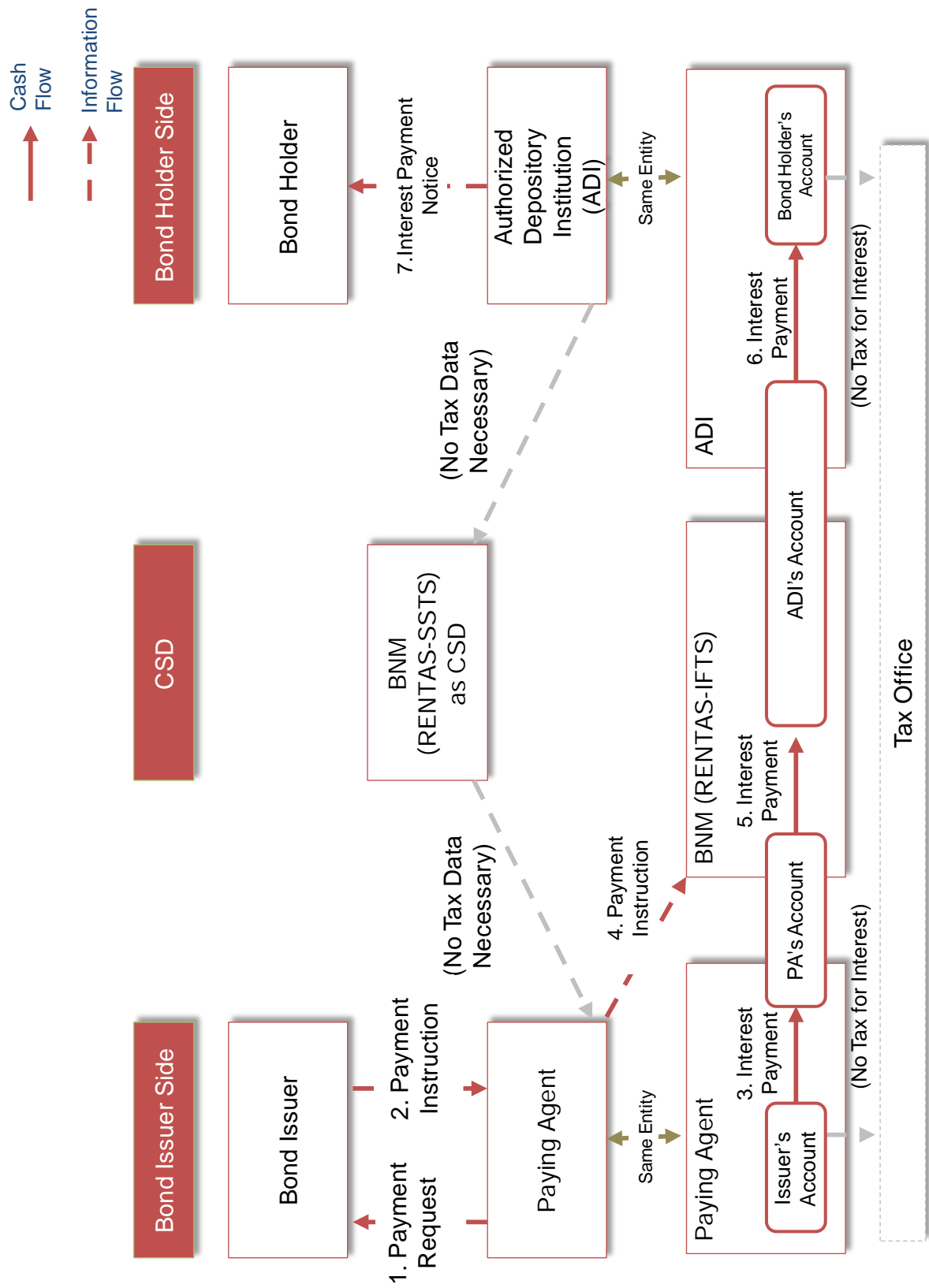
### Process of Redemption Payment

1. On redemption payment day, RENTAS sends Debit Notifications to Facility Agents (FAs) on the actual amount of proceeds to be paid to Paying Agent.
2. MOF instructs FAs to make redemption payment.
3. FAs send payment instruction to Paying Agent.
4. BNM executes redemption payment from MOF's account to Authorized Depository Institutions (ADIs)' accounts.
5. BNM as CSD makes bond redemption.
6. ADIs credit to bondholder's accounts with last interest and principal paid by MOF.
7. ADIs notify bond holders of redemption payment.

Note: It is supposed that redemption always involves last interest payment.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

## MY08. Interest Payment Flow of Corporate Bond

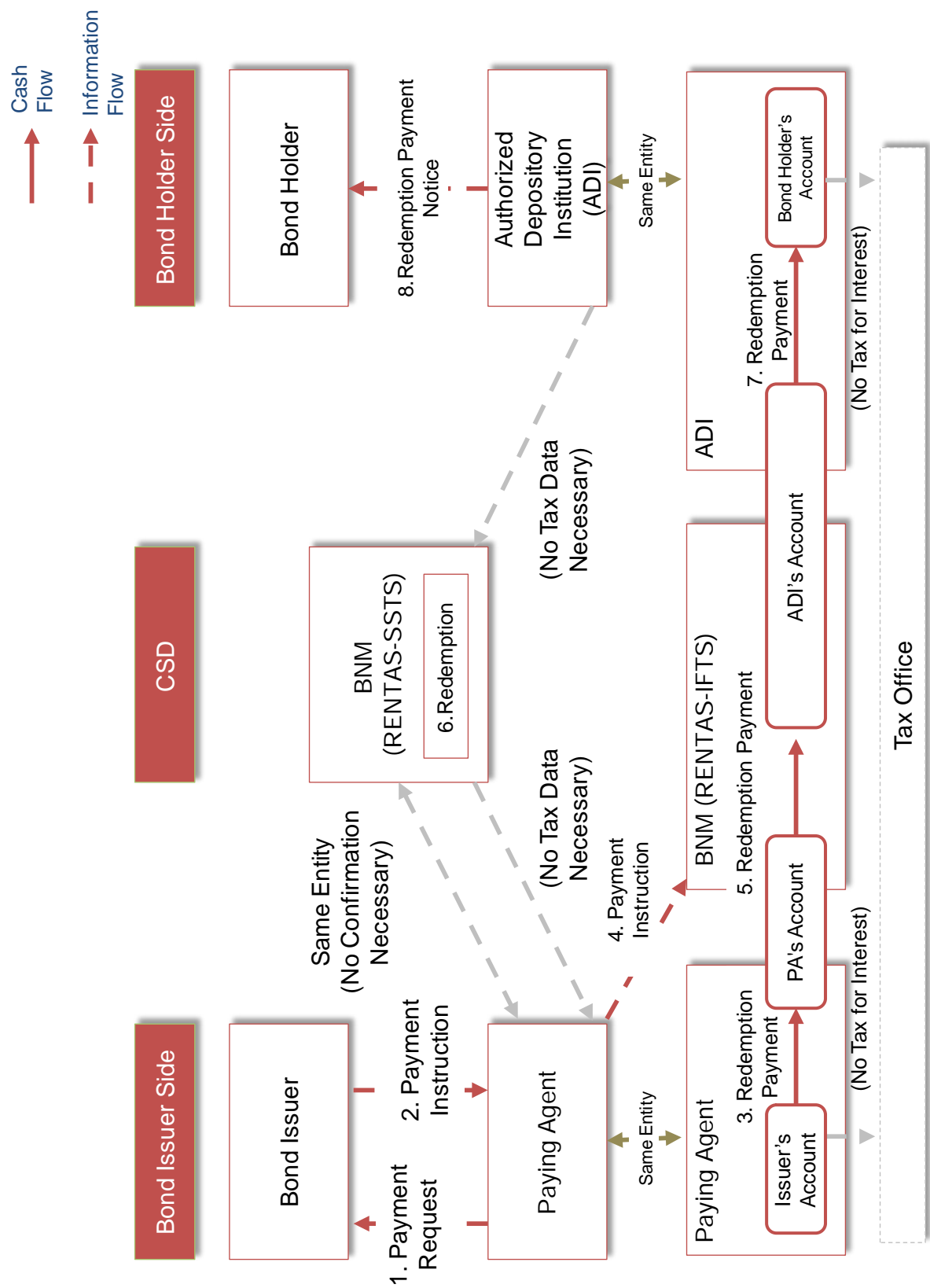


### MY08. Interest Payment Flow of Corporate Bond

## Process of Interest Payment

1. Paying agent requests interest payment to bond issuer.
2. Bond issuer instructs paying agent to make interest payment.
3. Paying agent transfers interest from issuer's account to its account.
4. Paying agent instructs Bank Negara Malaysia (BNM) to transfer cash from its account to Authorized Depository Institutions (ADIs)' accounts via RENTAS-IFTS.
5. BNM transfers cash from paying agent's account to Authorized Depository Institutions (ADIs)' accounts.
6. ADIs credit to bondholder's accounts with interest paid by bond issuer.
7. ADIs notify bond holders of interest payment.

## MY09. Redemption Payment Flow of Corporate Bond



#### MY09. Redemption Payment Flow of Corporate Bond

### Process of Redemption Payment

1. Paying agent requests redemption payment to bond issuer.
2. Bond issuer instructs paying agent to make redemption payment.
3. Paying agent transfers last interest and principal from issuer's account to its account.
4. Paying agent instructs Bank Negara Malaysia (BNM) to transfer cash from its account to Authorized Depository Institutions (ADIs) accounts via RENTAS-IFTS.
5. BNM transfers cash from paying agent's account to Authorized Depository Institutions (ADIs) accounts.
6. BNM as CSD makes bond redemption.
7. ADIs credit to bondholder's accounts with last interest and principal paid by bond issuer.
8. ADIs notify bond holders of redemption payment.

Note: It is supposed that redemption always involves last interest payment.

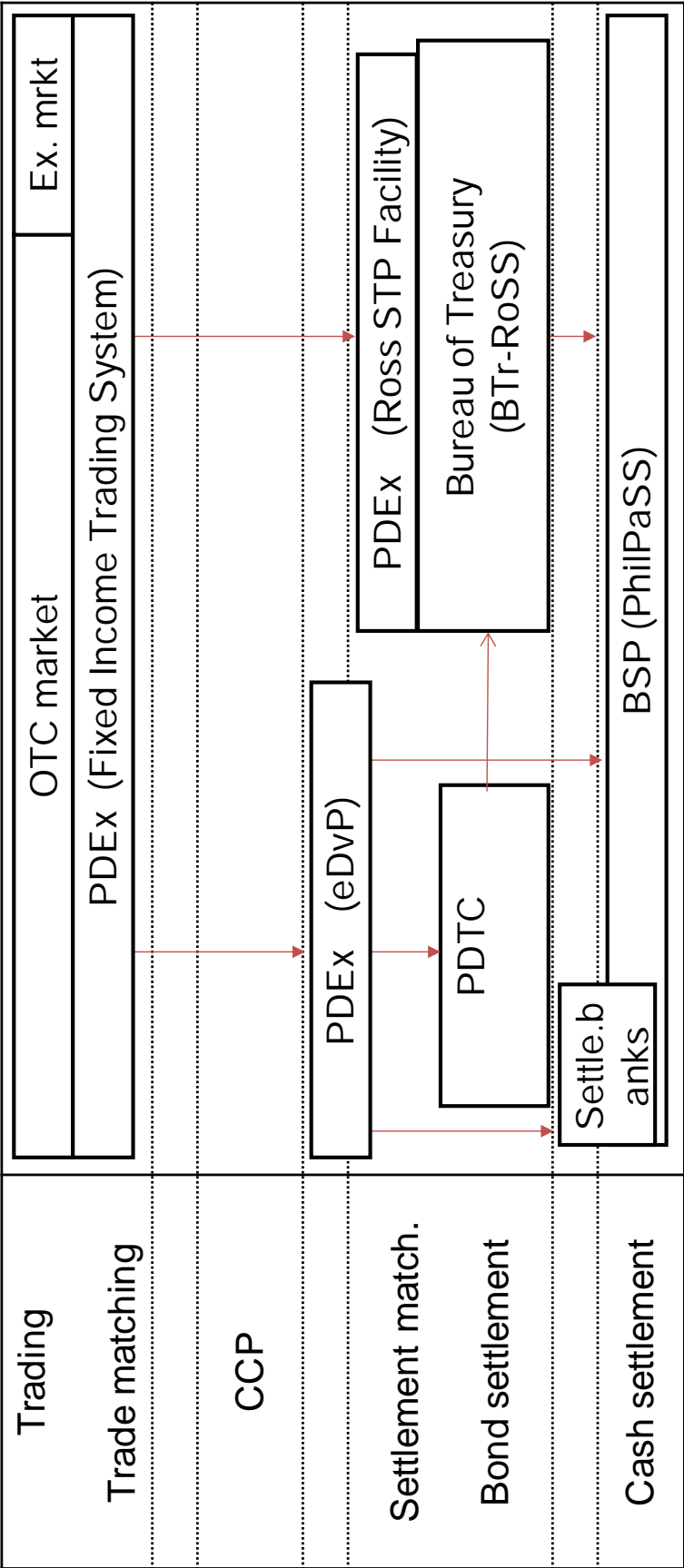
# Philippines (PH)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Bond Transaction Flow for Domestic Trades  
(Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow  
(Government Bond)
6. Interest & Redemption Payment Flow  
(Corporate Bond)



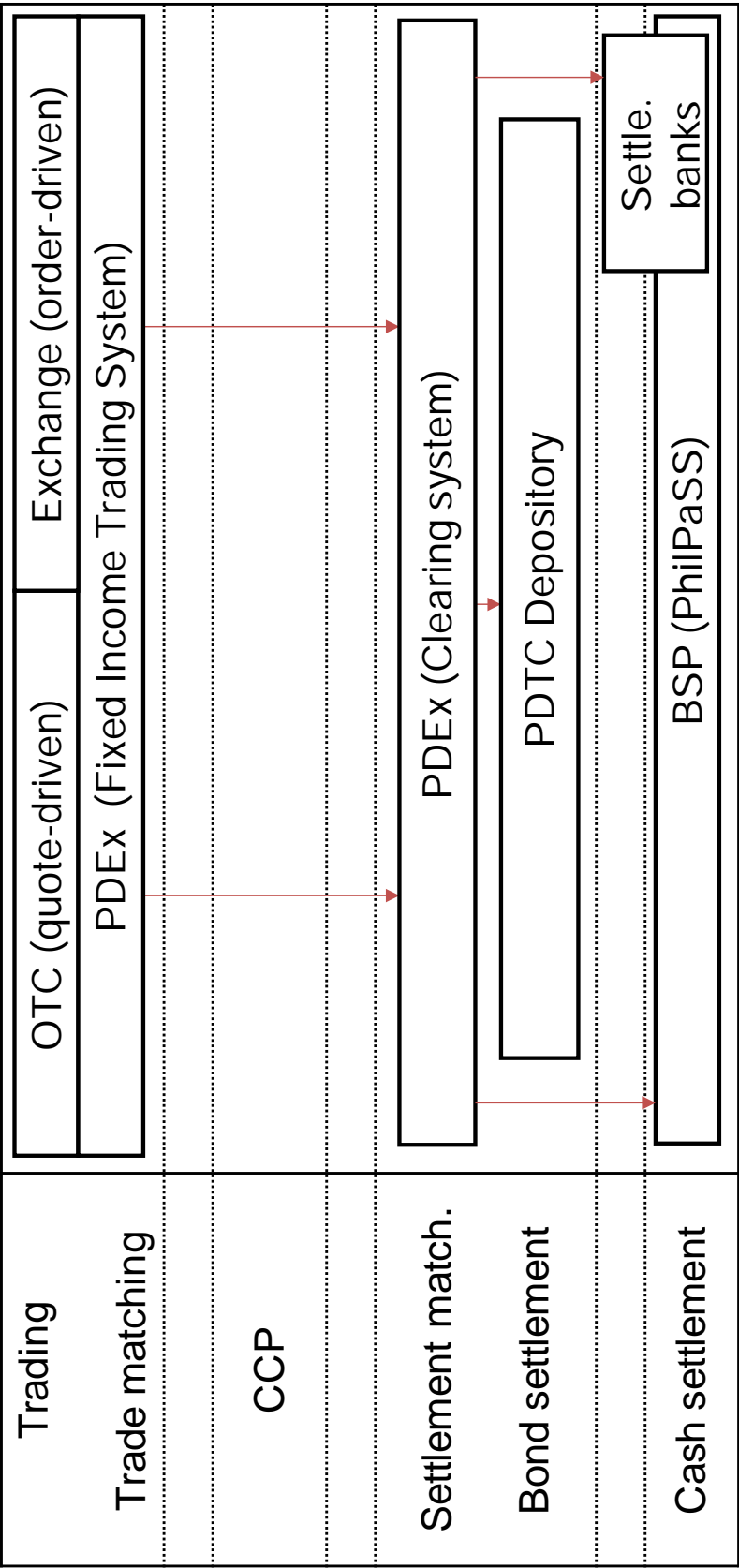
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

PH01. Government Bond Market Infrastructure Diagram



PDEX – Philippine Dealing & Exchange  
eDvP – Expanded Delivery vs. Payment System  
PDTC – Philippine Depository & Trust Corporation  
RoSS – Registry of Scripless Securities  
BSP -Bangko Sentral ng Pilipinas  
PhilPaSS – Philippine Payments and Settlement System  
Cash settlement by settlement banks is for government and corporate bonds.

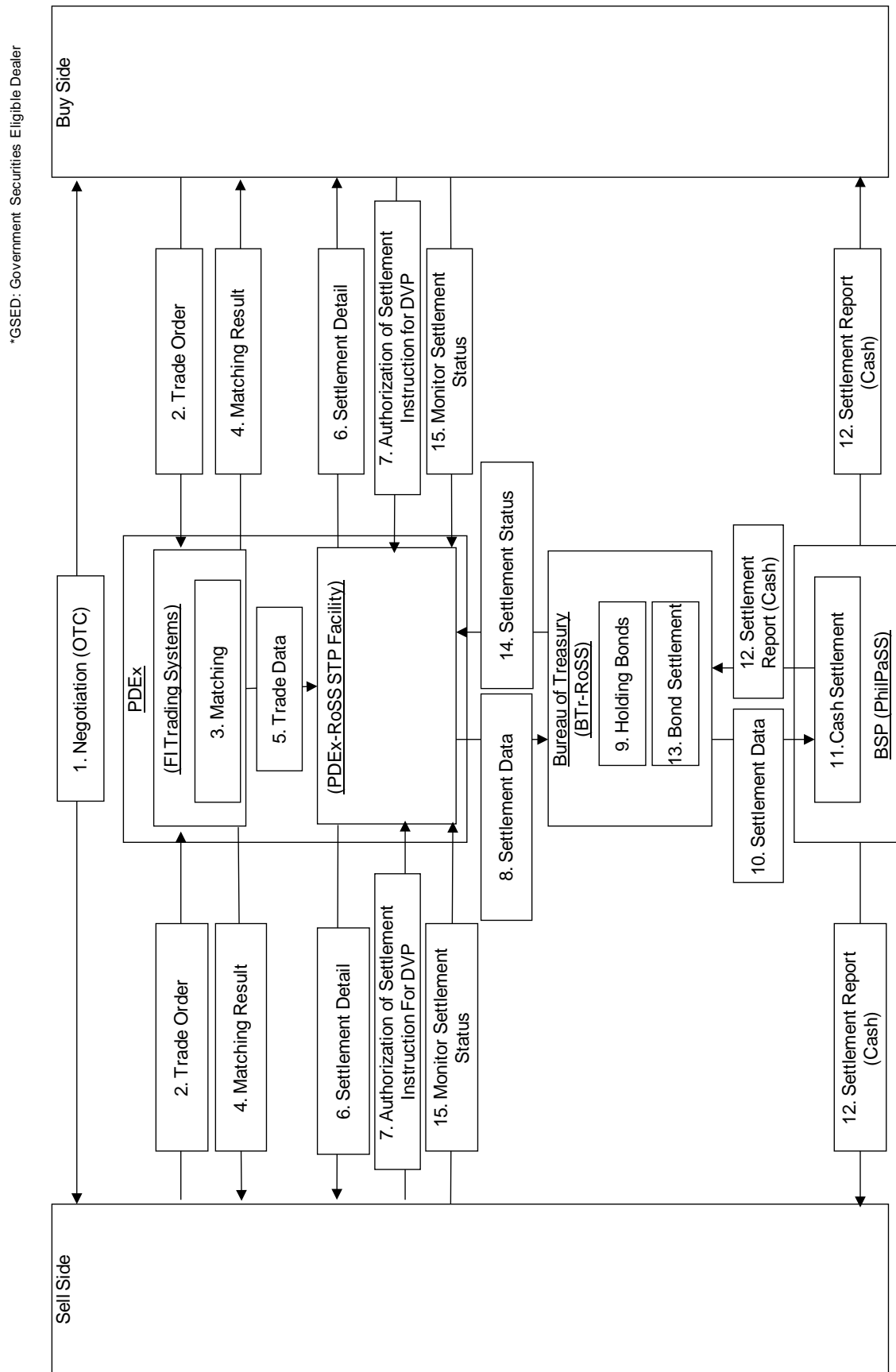
PH02. Corporate Bond Market Infrastructure Diagram



PDEX – Philippine Dealing & Exchange  
eDvP – Expanded Delivery vs. Payment System  
PDTC – Philippine Depository & Trust Corporation  
RoSS – Registry of Scripless Securities  
BSP -Bangko Sentral ng Pilipinas  
PhilPaSS – Philippine Payments and Settlement System  
Cash settlement by settlement banks is for government and corporate bonds.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
1. Interest & Redemption Payment Flow (Corporate Bond)

### PH03. Government Bond Transaction Flow for Domestic Trades GSEDs Market / DVP



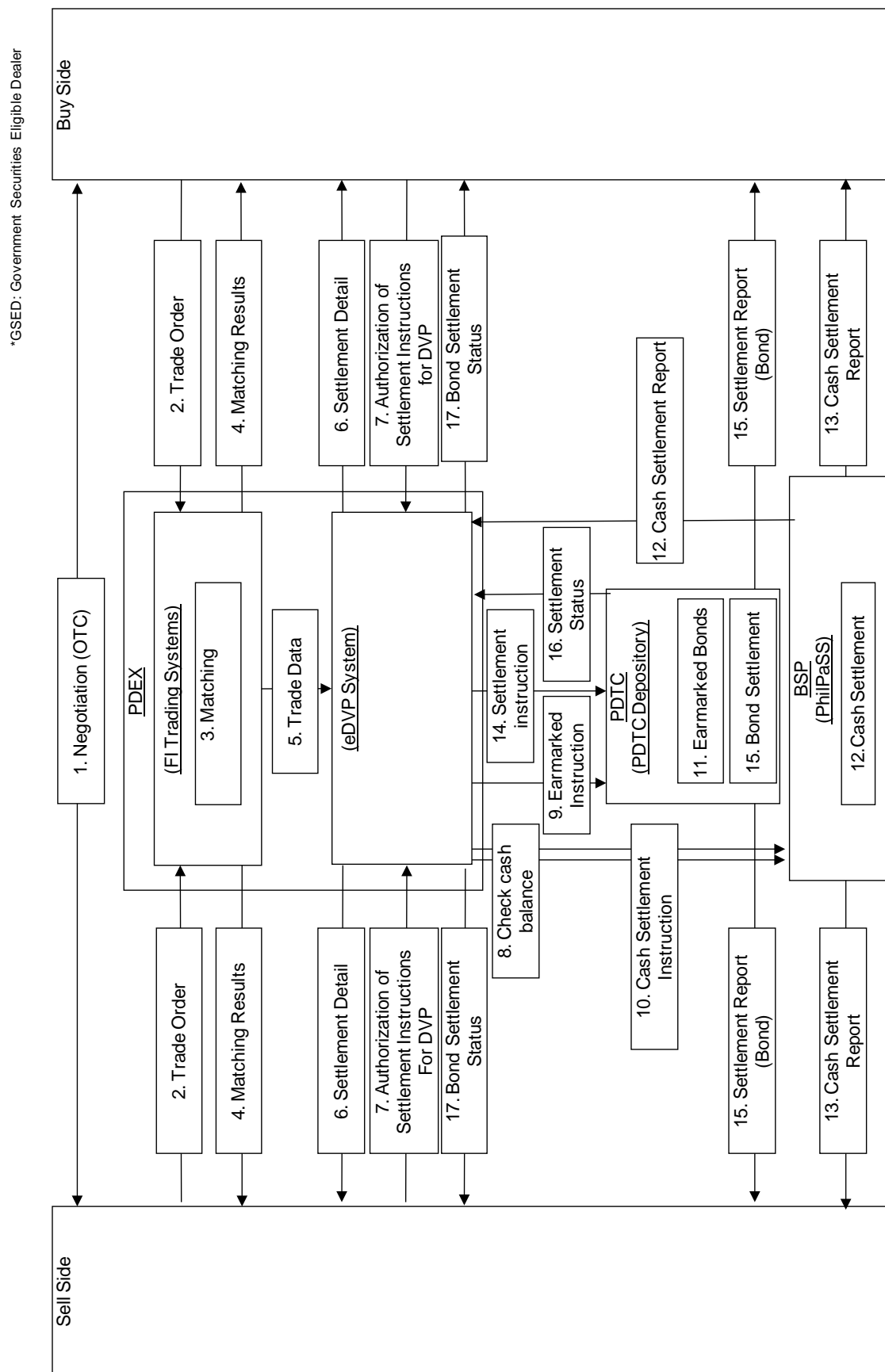
### PH03. Government Bond Transaction Flow for Domestic Trades GSEDs Market / DVP

\*GSED: Government Securities Eligible Dealer

## Exchange Market-GSEDs

1. In OTC market, the sell side and buy side negotiate before they input the trade data to PDEX. This process is omitted in the Exchange Market.
2. Sell side and buy side trade via PDEX(FI Trading System).
3. PDEX(FI Trading System) matches order or records negotiated deals between sell side and buy side.
4. PDEX(FI Trading System) sends matching result to the sell side and buy side.
5. PDEX(FI Trading System) sends trade data to PDEX(PDEX-RoSS STP Facility).
6. PDEX(PDEX-RoSS STP Facility) sends settlement detail to the sell side and buy side.
7. Sell side and buy side authorize the settlement instruction for DVP.
8. PDEX(PDEX-RoSS STP Facility) sends settlement data to Bureau of Treasury Registry of Scripless Securities(BTr-RoSS).
9. BTr-RoSS holds bonds before cash settlement.
10. BTr-RoSS sends settlement data to Bangko Sentral ng Pilipinas (BSP).
11. BSP executes cash settlement.
12. BSP sends cash settlement report to sell side, buy side and BTr-RoSS.
13. BTr-RoSS executes bond settlement.
14. BTr-RoSS sends bond settlement status to PDEX-RoSS STP Facility.
15. Sell side and buy side can monitor settlement status via PDEX-RoSS STP Facility.

# PH04. Government Bond Transaction Flow for Domestic Trades non-GSEDs Market / DVP



#### PH04. Government Bond Transaction Flow for Domestic Trades non-GSEDs Market / DVP

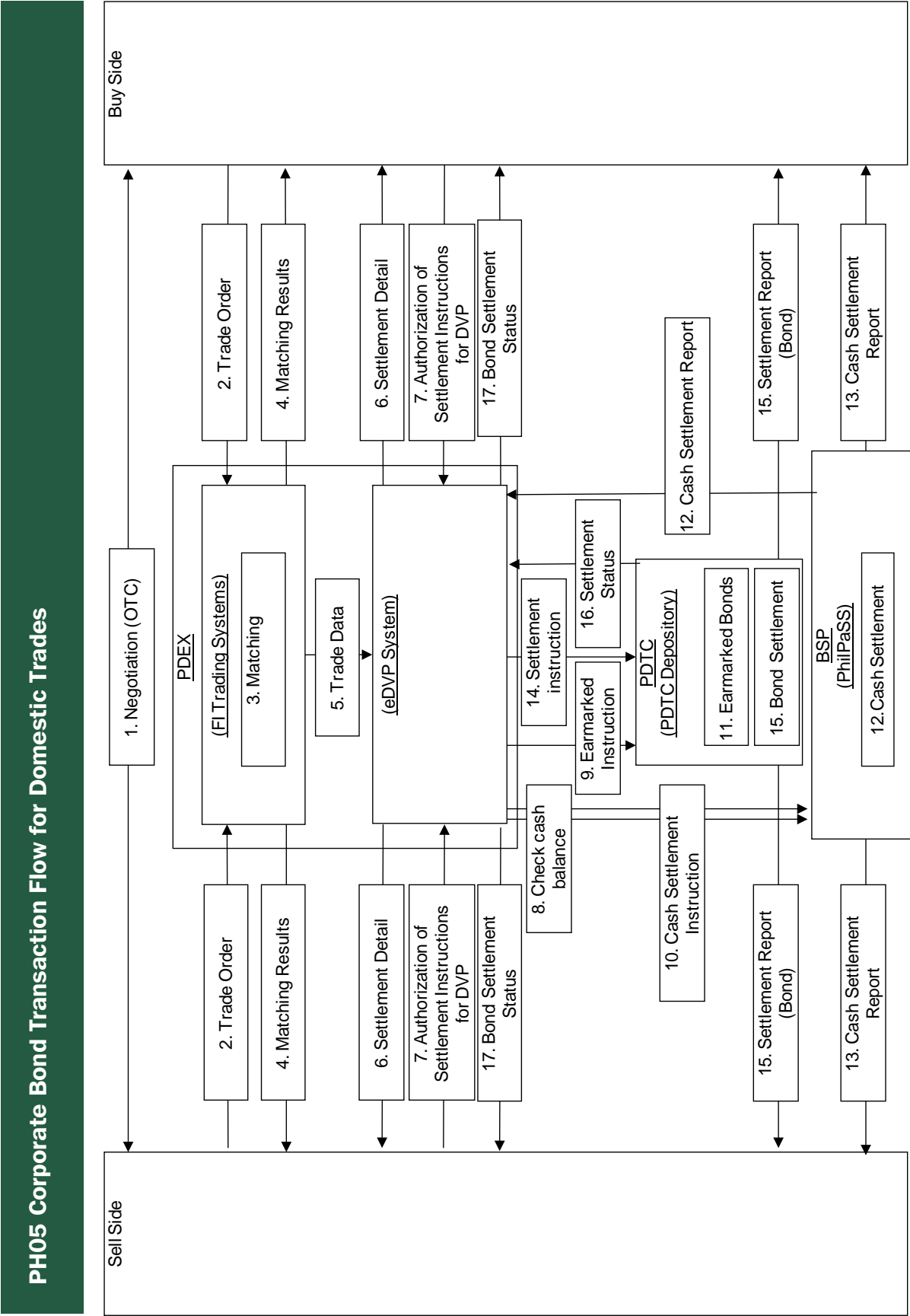
\*GSED: Government Securities Eligible Dealer

### Exchange Market-Non GSEDs

1. In OTC market, sell side and buy side negotiate before they input the trade data to PDEX. This process is omitted in the Exchange Market.
2. Sell side and buy side trade via PDEX (FI Trading System).
3. PDEX (FI Trading System) collates orders from sell side and buy side.
4. PDEX (FI Trading System) sends matching results to sell side and buy side.
5. PDEX (FI Trading System) sends trade data to PDEX (eDVP System).
6. PDEX (eDVP System) sends settlement details to sell side and buy side.
7. Sell side and buy side authorize settlement instruction for DVP.
8. Check cash balance of buy side in PhilPass
9. PDEX (eDVP System) sends earmarked instruction to Philippine Depository & Trust Corp (PDTC).
10. PDEX (eDVP System) sends cash settlement instruction to BSP.
11. PDTC holds bonds before cash settlement. PDTC acts as sub-registry.
12. BSP executes cash settlement.
13. BSP sends cash settlement report to sell side, buy side, and PDEX(eDVP System) .
14. PDEX (eDVP System) sends settlement instruction to PDTC.
15. PDTC executes bond settlement.
16. PDTC sends settlement status to PDEX (eDVP System).
17. PDEX (eDVP System) sends bond settlement status to sell side and buy side.



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



## PH05. Corporate Bond Transaction Flow for Domestic Trades

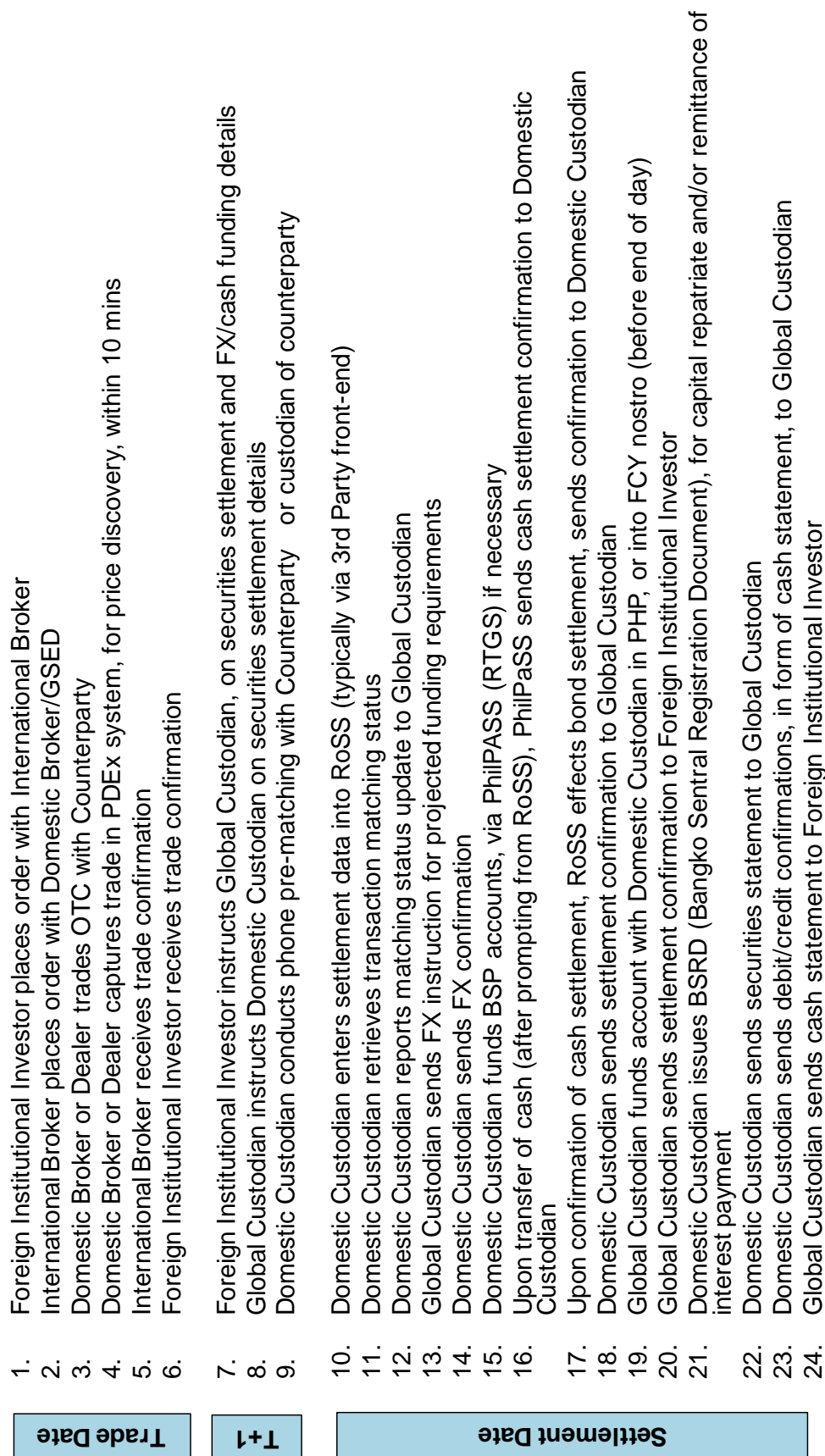
## Exchange Market

1. In OTC market, sell side and buy side negotiate before they input the trade data to PDEX. This process is omitted in the Exchange Market.
2. Sell side and buy side trade via PDEX(FI Trading System).
3. PDEX(FI Trading System) collates orders from sell side and buy side.
4. PDEX(FI Trading System) sends matching results to sell side and buy side.
5. PDEX(FI Trading System) sends trade data to PDEX(eDVP System).
6. PDEX(eDVP System) sends settlement details to sell side and buy side.
7. sell side and buy side authorize settlement instruction for DVP.
8. Check cash balance of buy side in PhilPass
9. PDEX(eDVP System) sends earmarked instruction to Philippine Depository & Trust Corp(PDTC).
10. PDEX(eDVP System) sends cash settlement instruction to BSP.
11. PDTC holds bonds before cash settlement. PDTC acts as sub-registry.
12. BSP executes cash settlement.
13. BSP sends cash settlement report to sell side, buy side, and PDEX(eDVP System) .
14. PDEX(eDVP System) sends settlement instruction to PDTC.
15. PDTC executes bond settlement.
16. PDTC sends settlement status to PDEX(eDVP System) .
17. PDEX(eDVP System) sends bond settlement status to sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

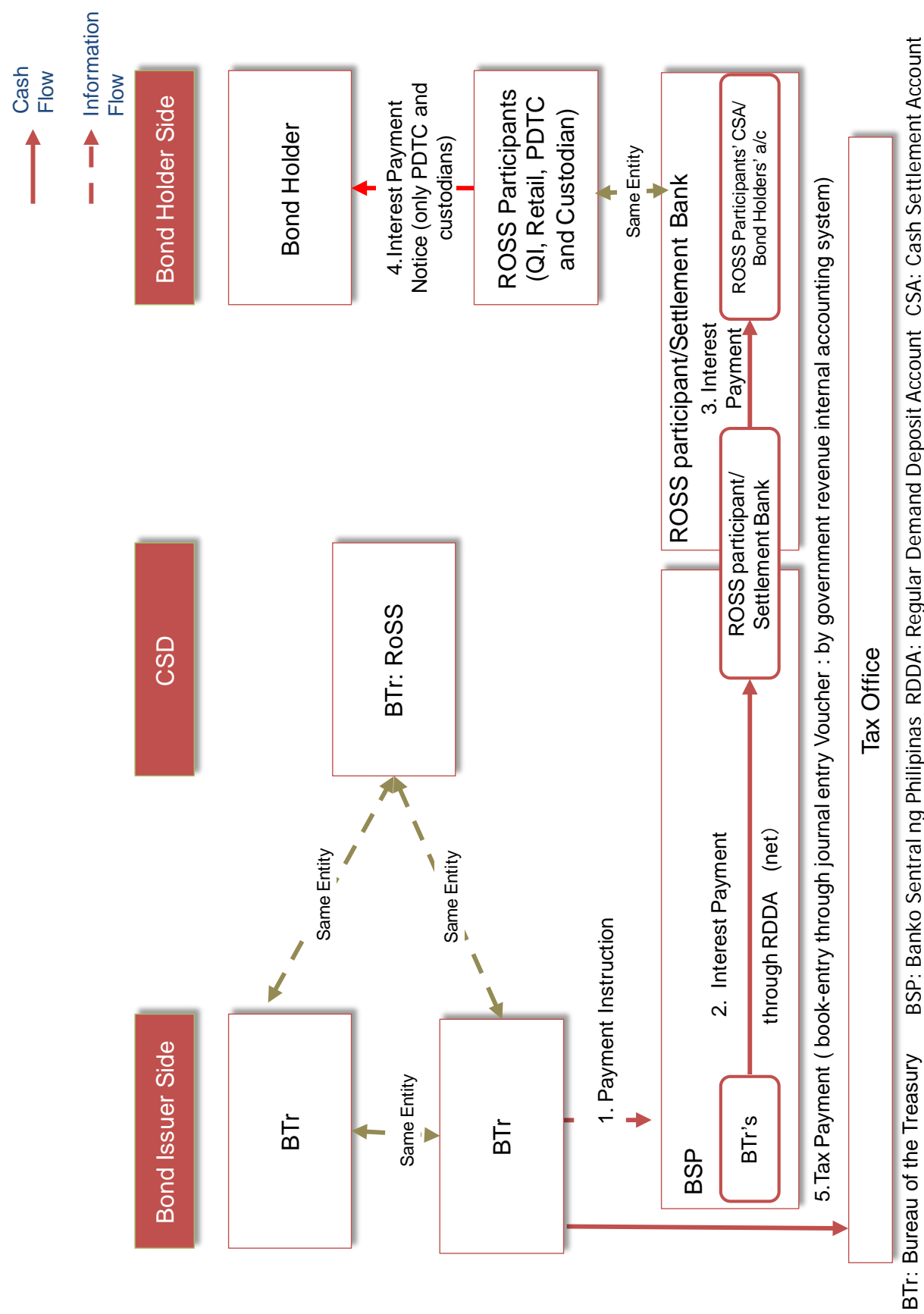


### PH06. OTC Bond Transaction Flow for Foreign Investors OTC Market / DVP



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

PH07 Interest Payment Flow of Government Bond





## PH07. Interest Payment Flow of Government Bond

### Process of Interest Payment

1. BTr instructs BSP to make interest payment
2. BSP executes interest payment from BTr's RDDA (Regular Demand Deposit Account) to ROSS Participants' or their settlement banks' RDDA, deducting tax if applicable.
3. Settlement Banks credit CSA (Cash Settlement Account) of ROSS participants which do not have RDDA in BSP. ROSS participants which hold RDDA in BSP credit interest payment to bond holders' accounts.
4. Custodians (which are ROSS participants with RDDA in BSP) notify bond holders of interest payment
5. BTs Pays WHT to the tax office. (Custodians have two types of account Taxable and Tax-exempt) 100% for Taxable and 0% for Tax-exempt.

Note: Followings are some note on tax in Philippines.

ROSS

0% or 20%

Except multi currency RTB (\$or Euro)

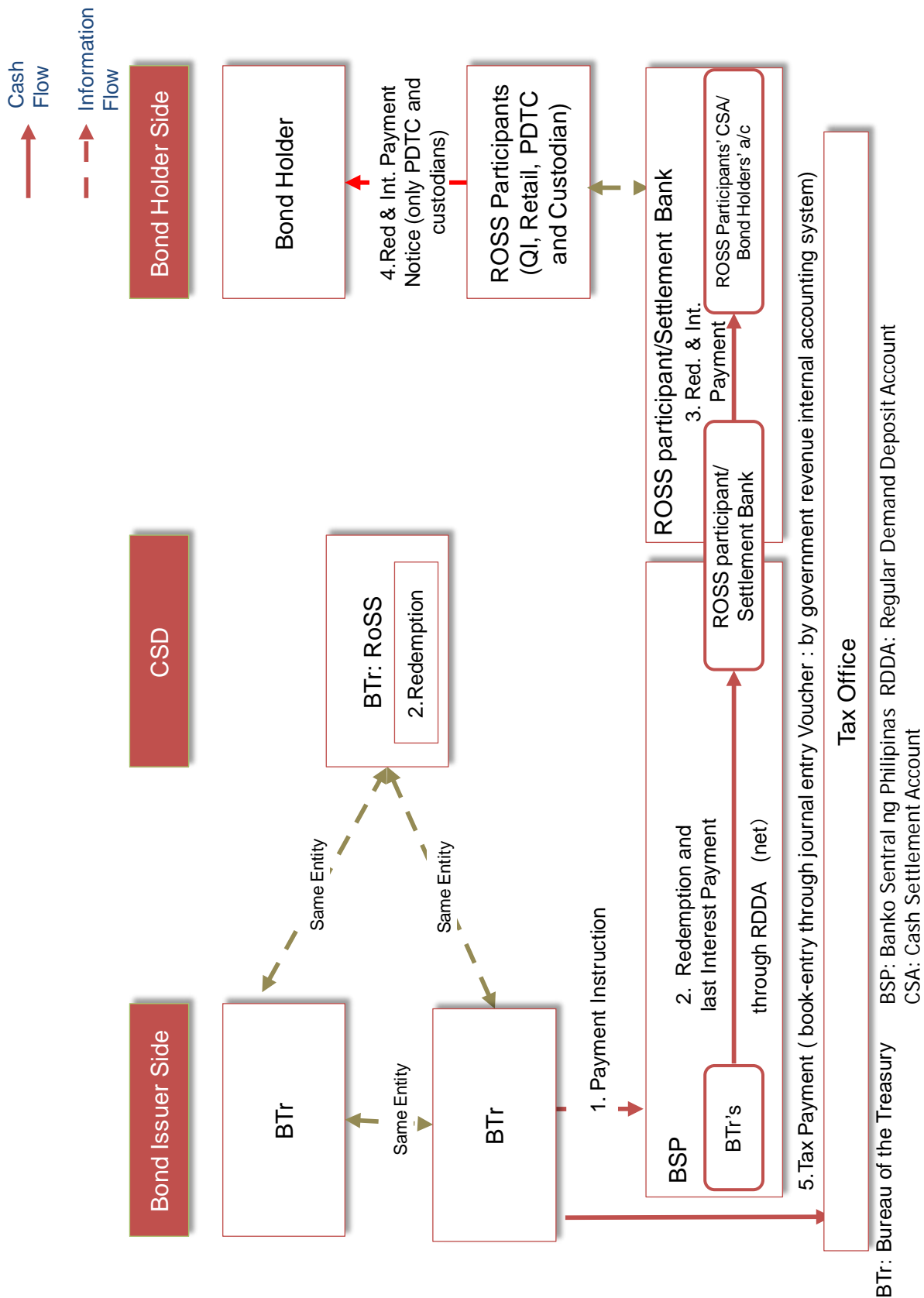
0%(TEI: Tax exempt entity), 10%(FCDU: foreign currency deductible unit), and 20%(QII).

Tax tracking system PDEx system attached to ROSS

BTr is now enhancing Tax Tracking System to cover all coupon bearing domestic government bond (planning to start operation by 2013 January)

QI; qualified investors) : Banks, insurance companies, trust companies, investment companies, social securities institutions (pension funds), international banks, foreign and local government,

PH08 Redemption Payment Flow of Government Bond



## PH08. Redemption Payment Flow of Government Bond

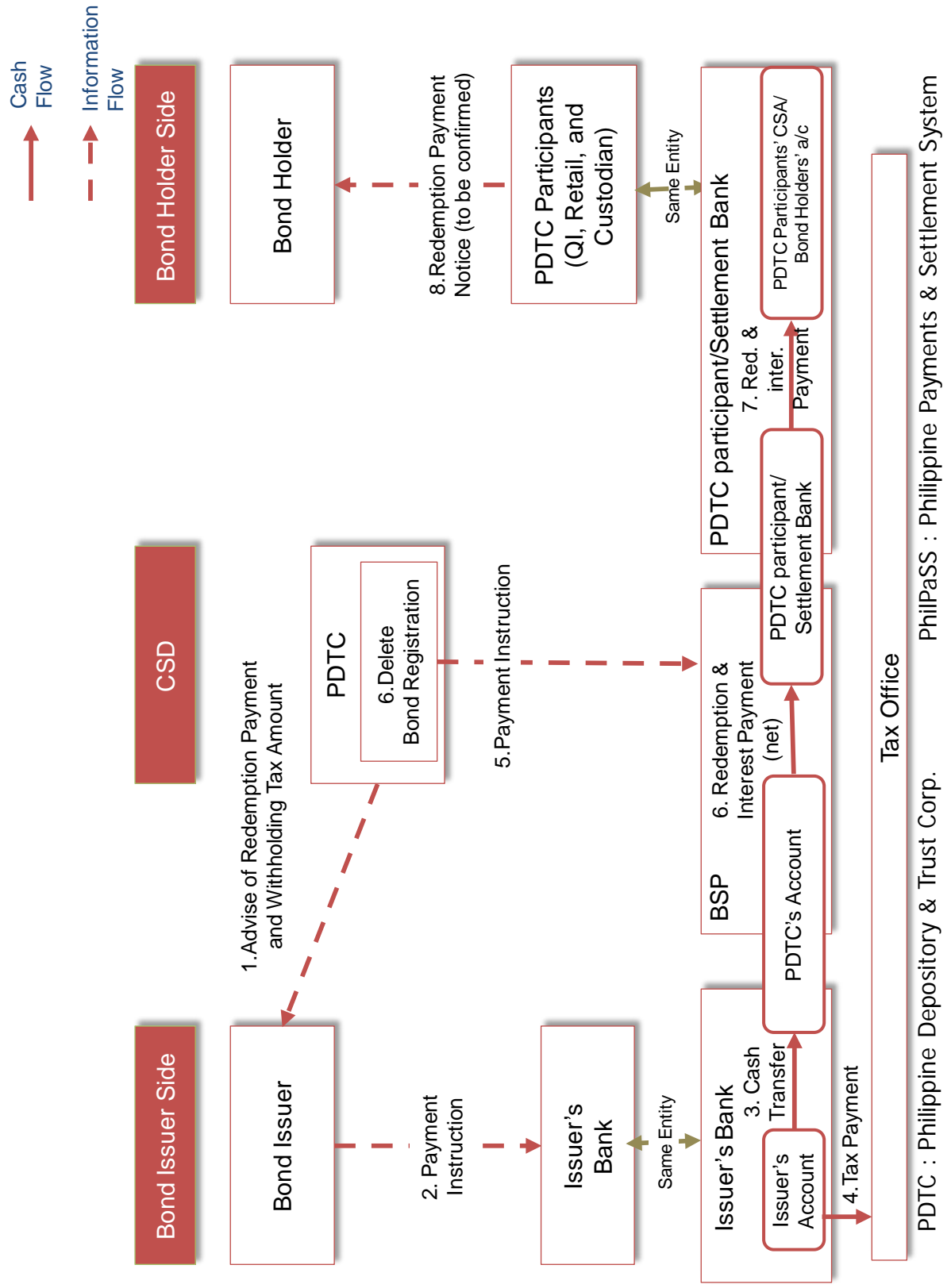
### Process of Redemption Payment

1. BTr instructs BSP to make redemption payment.
2. BSP executes redemption payment with last Interest payment to ROSS participants' RDDA (Regular Demand Deposit Account) or Settlement Banks' RDDA if ROSS participants do not have RDDA. Regarding last interest payment, tax is deducted, if applicable. Bond is deleted from BTr ROSS system (Redemption)
3. Settlement Banks credit CSA (Cash Settlement Account) of ROSS participants which do not have RDDA in BSP. ROSS participants which hold RDDA in BSP credit principal and interest (net) payment to bond holders' accounts.
4. Custodians (which are ROSS participants with RDDA in BSP) notify bond holders of redemption with interest payment
5. BTs Pays WHT of last interest to the tax office. (Custodians have two types of account Taxable and Tax-exempt) 100% for Taxable and 0% for Tax-exempt.

Note: Last interest is paid with redemption.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

# PH09 Redemption Payment Flow of Corporate Bond

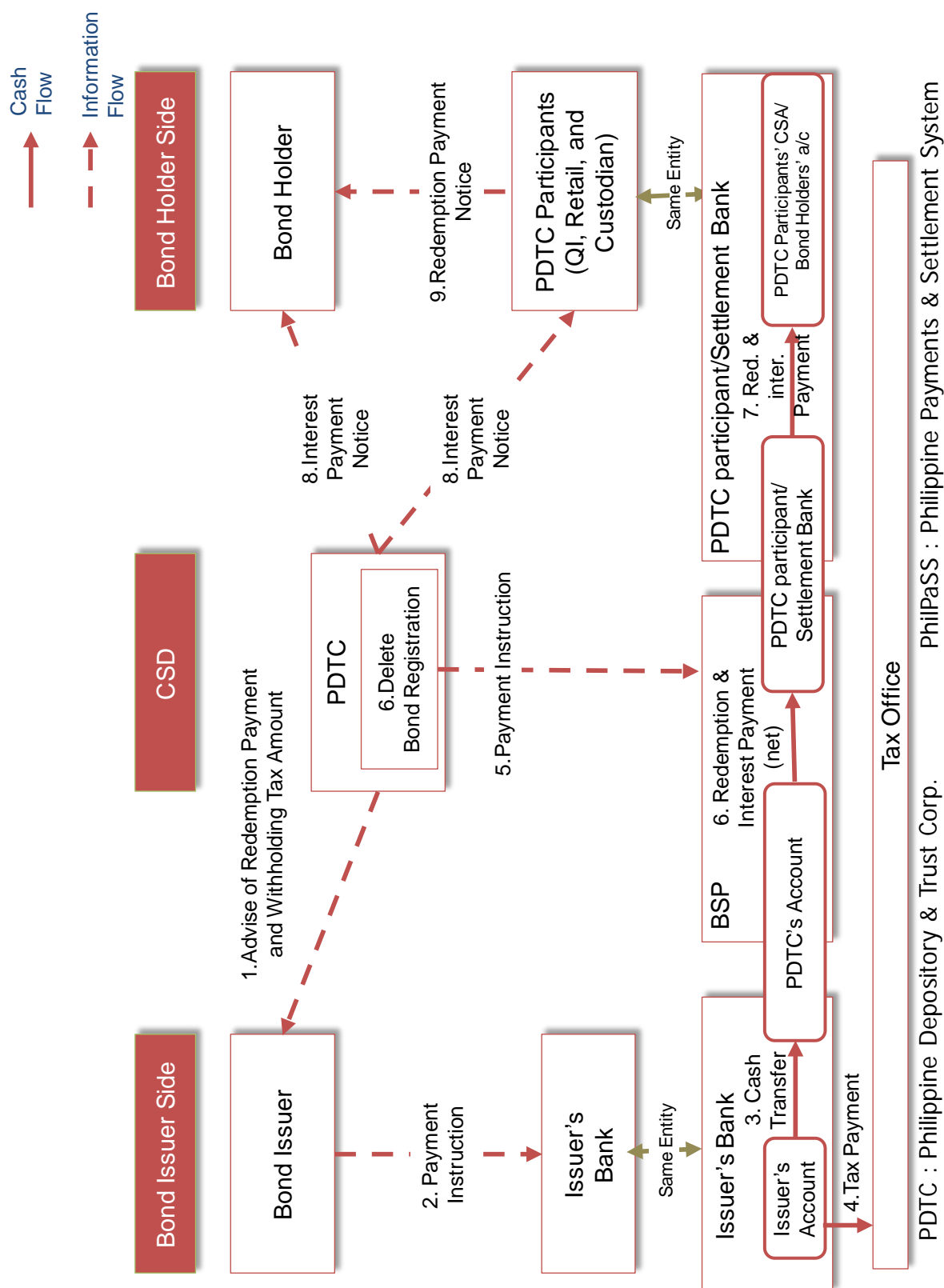


## PH09. Redemption Payment Flow of Corporate Bond

### Process of Redemption Payment

1. Philippine Depository & Trust Corp (PDTC) advises issuer of redemption payment and last interest payment. Regarding last interest payment, information on withholding tax amount based on list of bond holders is notified.
2. Bond issuer instructs its Paying Agency (Issuer's Bank) to make redemption and last interest payment.
3. Issuer's bank transfers cash for redemption payment and net amount of last interest payment to PDTC's account. Regarding last interest payment, WHT is deducted before payment if applicable.
4. Issuer pays tax to tax office if applicable.
5. PDTC instructs BSP to transfer cash from its RDDA to PDTC participants RDDA or Settlement Bank's RDDA if PDTC participant does not have RDDA in BSP via Philippine Payments & Settlement System (PhilPaSS). At the same time, PDTC makes bond redemption.
6. Custodians (PDTC participants which hold RDDA in BSP) credit bond holder's accounts with last interest and principal.
7. Custodians notify bond holders of redemption payment.

# PH10 Redemption Payment Flow of Corporate Bond



## PH10. Redemption Payment Flow of Corporate Bond

### Process of Redemption Payment

1. Philippine Depository & Trust Corp (PDTCC), in its capacity as a registry, advises issuer of redemption payment and last interest payment. Regarding last interest payment, information on withholding tax amount based on list of bond holders is notified.
2. Bond issuer instructs its Paying Agent (Issuer's Bank) to make redemption and last interest payment.
3. Issuer's bank transfers cash for redemption payment and net amount of last interest payment to PDTCC's account. Regarding last interest payment, WHT is deducted before payment if applicable.
4. Issuer pays tax to tax office if applicable.
5. PDTCC (or the Issuer's paying bank) instructs BSP to pay redemption and last interest from PDTCC's (or Issuer paying bank's) account to bondholder's RDDA or the RDDA of the Settlement Banks designated by bondholders.
6. BSP executes redemption/interest payment and, where applicable, the designated Settlement Bank credits the accounts of the bondholders upon checking that its BSP RDDA has been credited.
7. Custodians holding RDDA in BSP receives redemption/interest payment into their RDDA accounts and make corresponding credits to accounts of their client-bond holders.
8. PDTCC, as registry, notifies all registered bondholders of the redemption/interest payment, including custodians.
9. Custodians also notify its client-bond holders of redemption/interest payment.
10. PDTCC system marks the bond as matured.

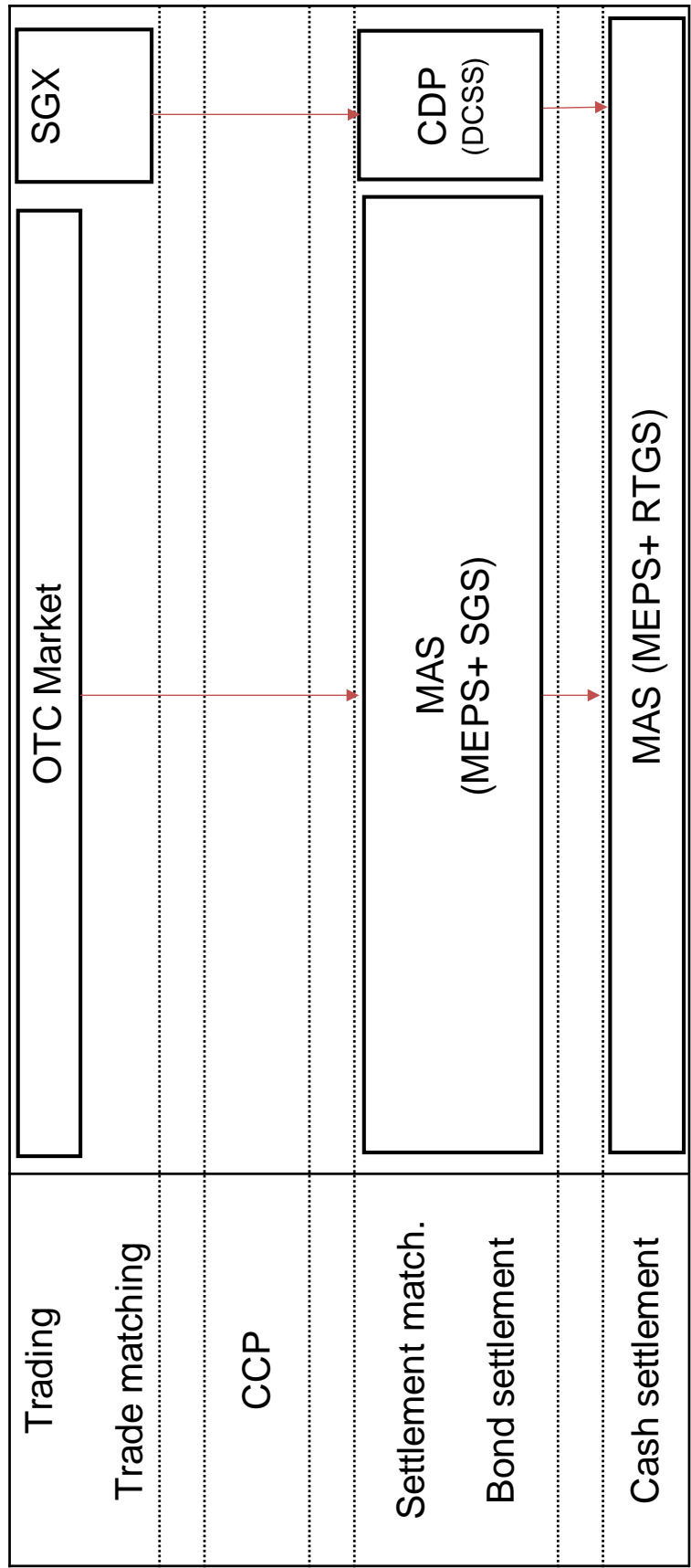


# Singapore (SG)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades  
(Government Bond)
3. Bond Transaction Flow for Domestic Trades  
(Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow  
(Government Bond)
6. Interest & Redemption Payment Flow  
(Corporate Bond)

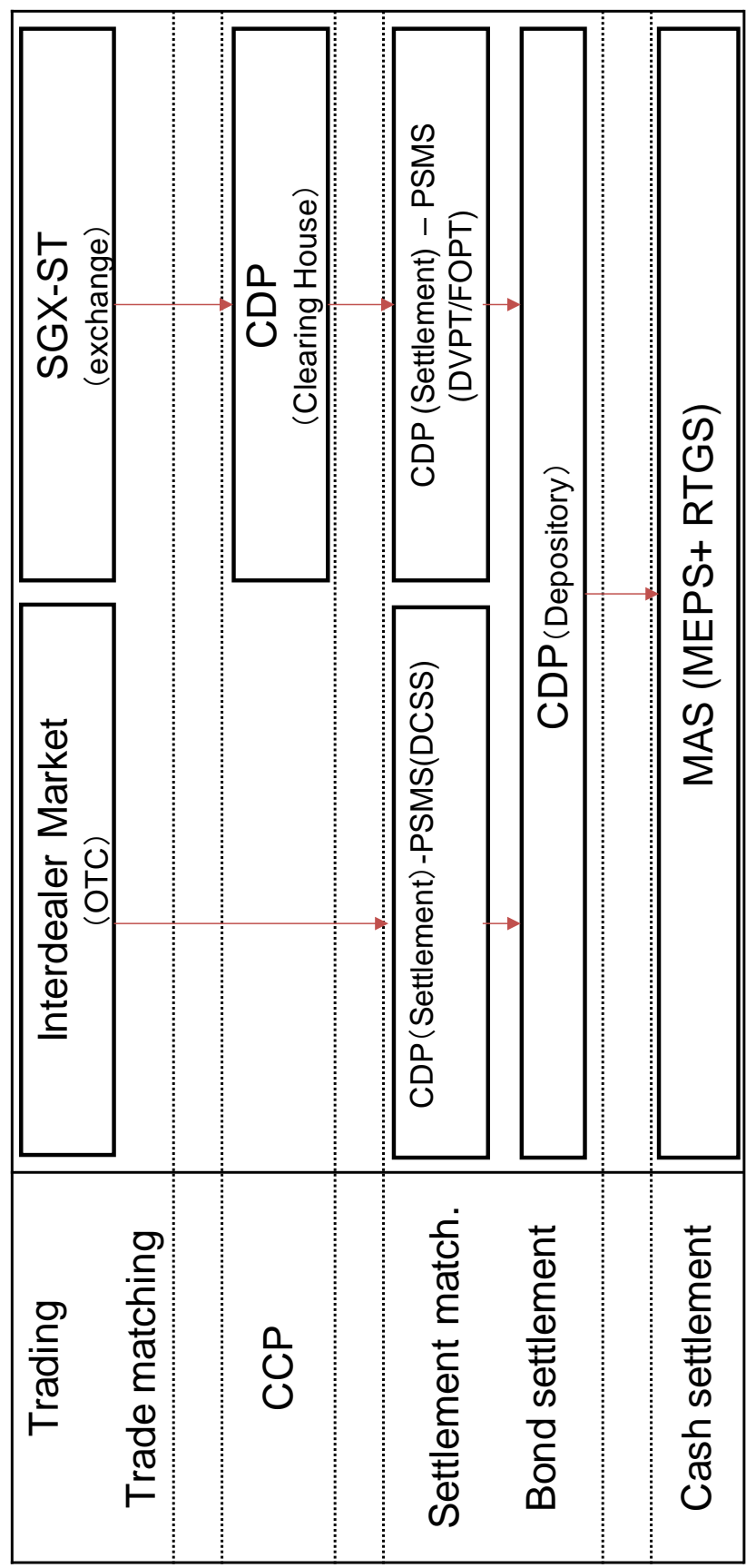
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

**SG01. Government Bond Market Infrastructure Diagram**



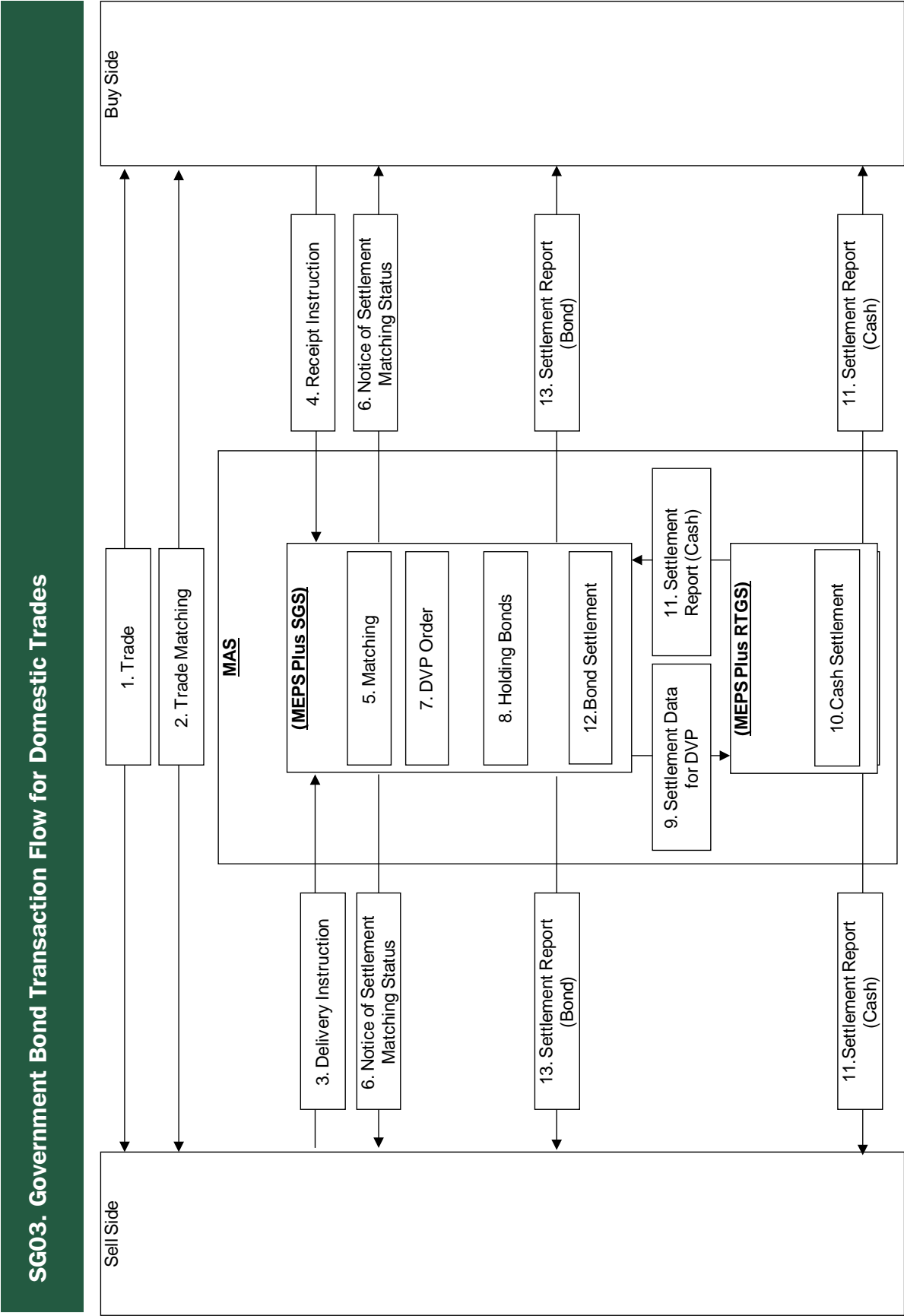
SGX – Singapore Exchange Ltd.,  
CDP – Central Depository (Pte.) Ltd.,  
MAS - Monetary Authority of Singapore  
DCSS – Debt Securities Clearing and Settlement System  
MEPS+ – MAS Electronic Payment System

SG02. Corporate Bond Market Infrastructure Diagram



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

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



### SG03. Government Bond Transaction Flow for Domestic Trades

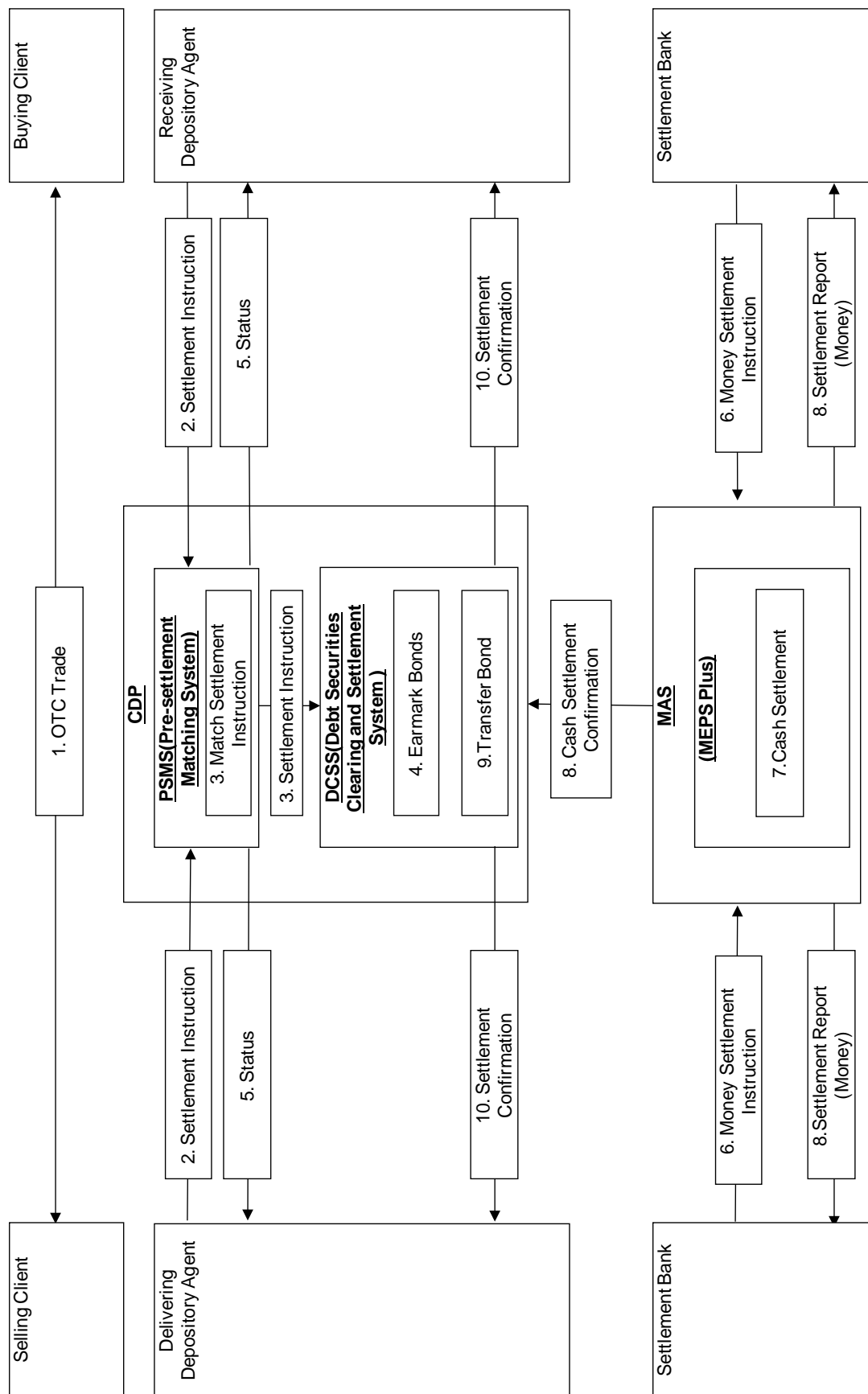
## OTC Market

1. Singapore government securities (SGS) is traded on over-the-counter basis.
2. Trades are matched among sell side and buy side.
3. Sell side sends the agreed trade instruction to MEPS+ SGS.
4. Buy side sends the agreed trade instruction to MEPS+ SGS.
5. MEPS+ SGS performs bond matching.
6. MEPS+ SGS sends the notice of bond matching status to sell side and buy side.
7. MEPS + SGS creates the DVP order.
8. When sell side's SGS account has sufficient SGS, the SGS are earmarked for transfer to buy side.
9. Settlement data for DVP is sent to MEPS+ RTGS.
10. When funds are available, amount is debited from buy side's RTGS account and credited to sell side's RTGS account.
11. MEPS+ RTGS simultaneously MEPS+ SGS to transfer securities and reports cash settlement status to both sides of trade.
12. MEPS +SGS transfer bonds to buy side's account.
13. MEPS +SGS reports settlement status to both sell side and buy side.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



#### SG04. Corporate Bond Transaction Flow for Domestic Trades



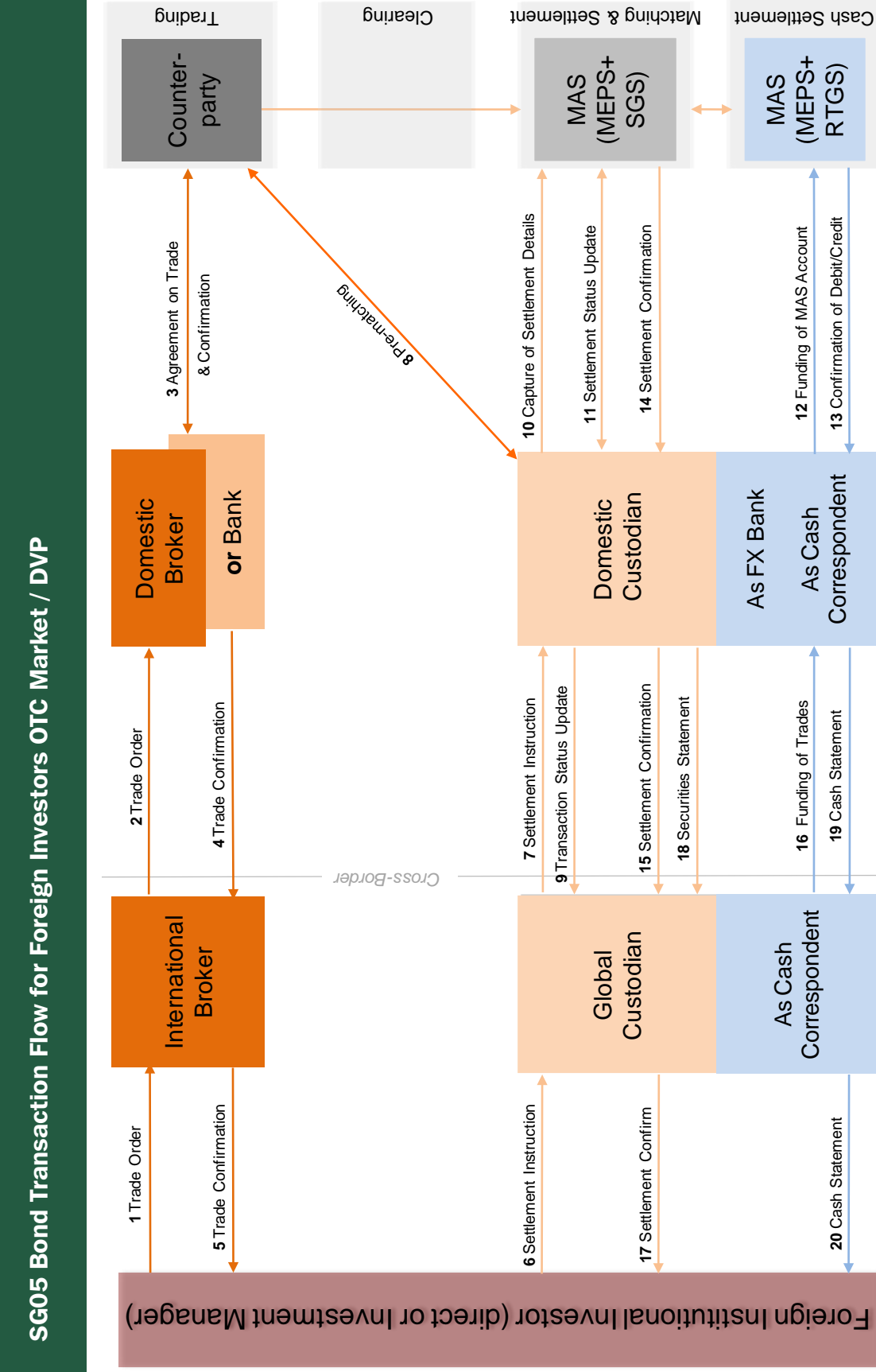
#### SG04. Corporate Bond Transaction Flow for Domestic Trades

### OTC Market

1. Sell side and buy side trade corporate bond over-the counter.
2. Both sell side and buy side send settlement instructions into PSMS (Pre-Settlement Matching System).
3. PSMS matches settlement instructions and sends settlement instruction to Debt Securities Clearing and Settlement System(DCSS).
4. CDP (DCSS) holds bonds on book entry system. CDP (Depository) earmarks the bonds in sell side's account for delivery.
5. PSMS sends settlement instructions status back to depository agents of both sides of trade.
6. Both sides of settlement banks send money settlement instruction to RTGS system in Central Bank (MAS Electronic Payment System – MEPS).
7. Cash settlement takes place in RTGS system in MEPS.
8. MAS send confirmation of cash settlement to CDP (DCSS) and both sides of settlement banks.
9. Bond transfer effected in DCSS.
10. DCSS sends bond settlement confirmation to depository agents of both sides of trade.

Assumption: This applies to SGD-denominated bonds which are safe-keep in CDP (Depository). Payment takes place in central bank SGD accounts (known as MEPS) on RTGS mode.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



### SG05. OTC Bond Transaction Flow for Foreign Investors OTC Market / DVP

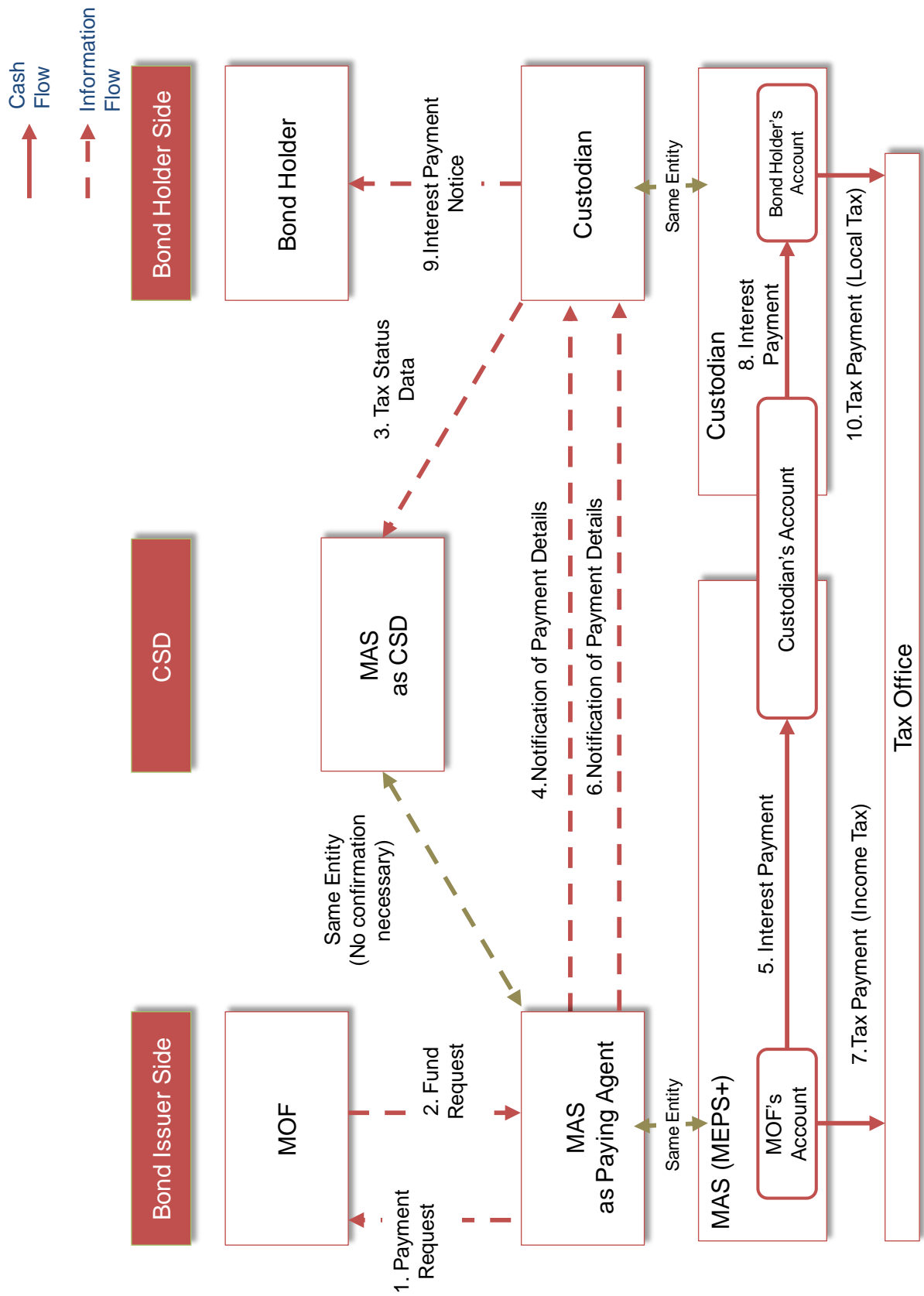
1. Foreign Institutional Investor places order with International Broker
2. International Broker places order with Domestic Broker or Bank
3. Domestic Broker/Bank trades OTC with Counterparty (via phone, Bloomberg)
4. Domestic Broker/Bank sends trade confirmation to International Broker
5. Foreign Institutional Investor receives trade confirmation
6. Foreign Institutional Investor instructs Global Custodian on securities settlement details and funding details
7. Global Custodian instructs Domestic Custodian on securities settlement details
8. Domestic Custodian and Counterparty pre-match settlement details, via phone
9. Domestic Custodian provides result of pre-matching to Global Custodian
10. Domestic Custodian transmits settlement details to MEPS+ SGS.
11. Domestic Custodian monitors settlement status updates (online)
12. Domestic Custodian funds MAS account via MEPS+ RTGS.
13. Upon transfer of cash, debit/credit confirmation from MEPS+ RTGS.
14. Upon transfer of securities, settlement confirmation from MAS, via MEPS+
15. Upon transfer of securities, settlement confirmation from MEPS+ SGS.
16. Global Custodian funds SGD account with Domestic Custodian, or FCY nostro (before end of day)
17. Global Custodian sends settlement confirmation to Foreign Institutional Investor
18. Domestic Custodian sends securities statement to Global Investor
19. Domestic Custodian sends debit/credit confirmations as cash statement to Global Custodian
20. Global Custodian sends cash statement to Foreign Institutional Investor

Trade Date

Settlement Date / T+1

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### SG06. Interest Payment Flow of Government Bond



## SG06. Interest Payment Flow of Government Bond

### Process of Interest Payment

1. Monetary Authority of Singapore(MAS) as payment agent requests Ministry of Finance (MOF) for interest payment.
2. MOF approves request of interest payment from MAS.
3. Custodians send tax status data to MAS.
4. MAS notifies custodians of payment details.
5. MAS as payment agent executes interest payment from MOF's account to custodians' account via MEPS+, deducting tax if applicable.
6. MAS notifies custodians of payment details again.
7. MAS as paying agent pays income tax to tax office if applicable.
8. Custodians credit bond holders' accounts with interest paid by MOF.
9. Custodians notify bond holders of interest payment.
10. Custodians pay local tax to tax office if applicable.

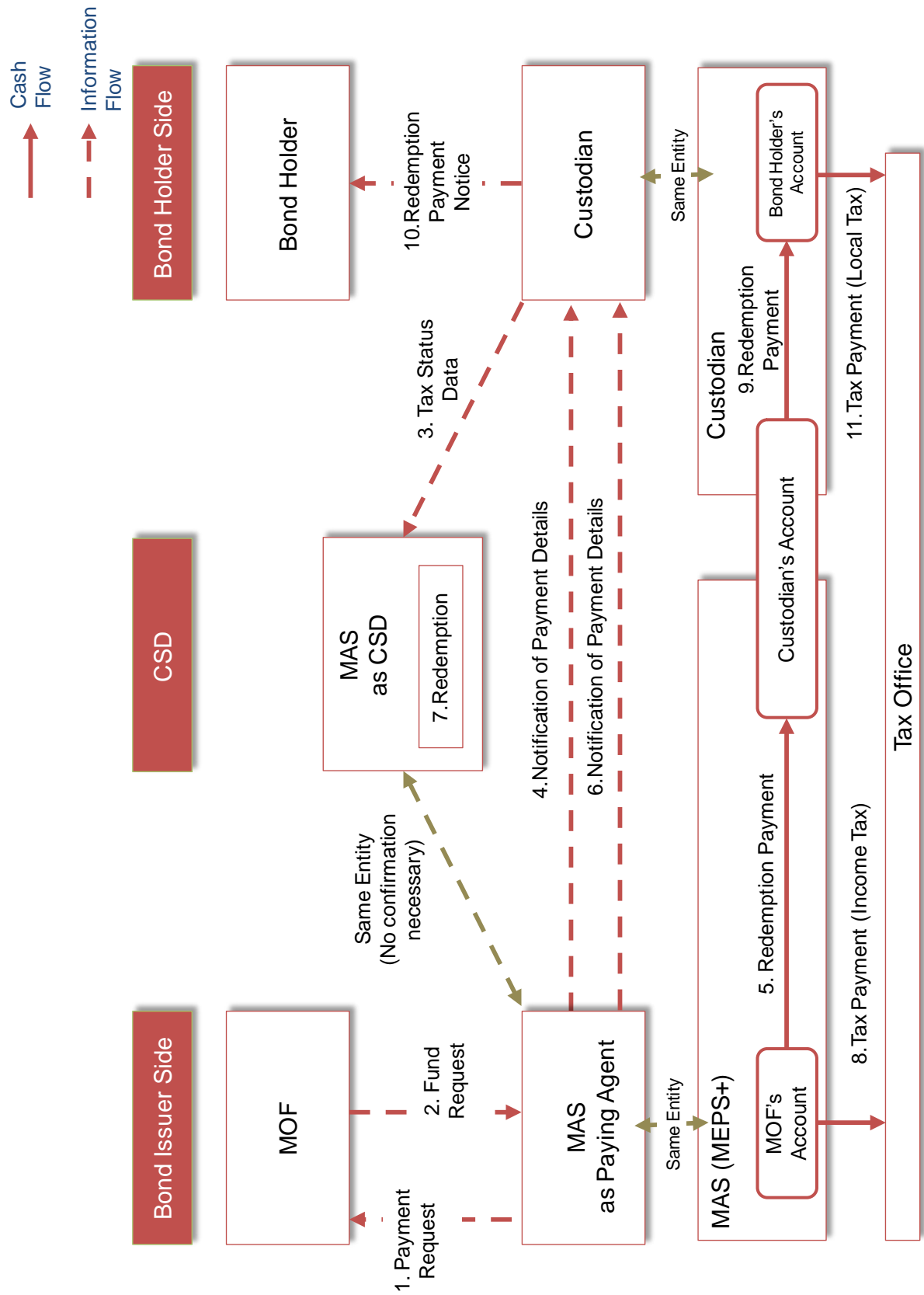
**Note:** No difference between non-residents and domestic investors except account is tagged as “non-resident” for withholding tax purposes.

For SGS coupon payments within MEPS+ SGS, MEPS+ SGS automatically calculates the coupon payment at the beginning of the ex-date according to the coupon rate and coupon frequency of the securities and the members' holdings. The ex-date period, coupon payment date, coupon payment rate and coupon payment frequency are specified for each SGS issue in MEPS+ SGS at the start and MEPS+ SGS will derive the rest of the coupon payment schedule accordingly.

On the coupon payment date, MEPS+ SGS automatically pays the calculated coupon amounts to the holder (as at ex-date) of the SGS by debiting the MAS' MEPS+ RTGS account and crediting the custodian's MEPS+ RTGS account. For all outstanding (as at ex-date) interbank repo transactions in MEPS+ SGS, the reverse interest amounts will also be automatically debited from the original receiving member's account (ie the receiving member for the opening leg of the transaction) and credited to the original delivering member's account.



## SG07. Redemption Payment Flow of Government Bond



### SG07. Redemption Payment Flow of Government Bond

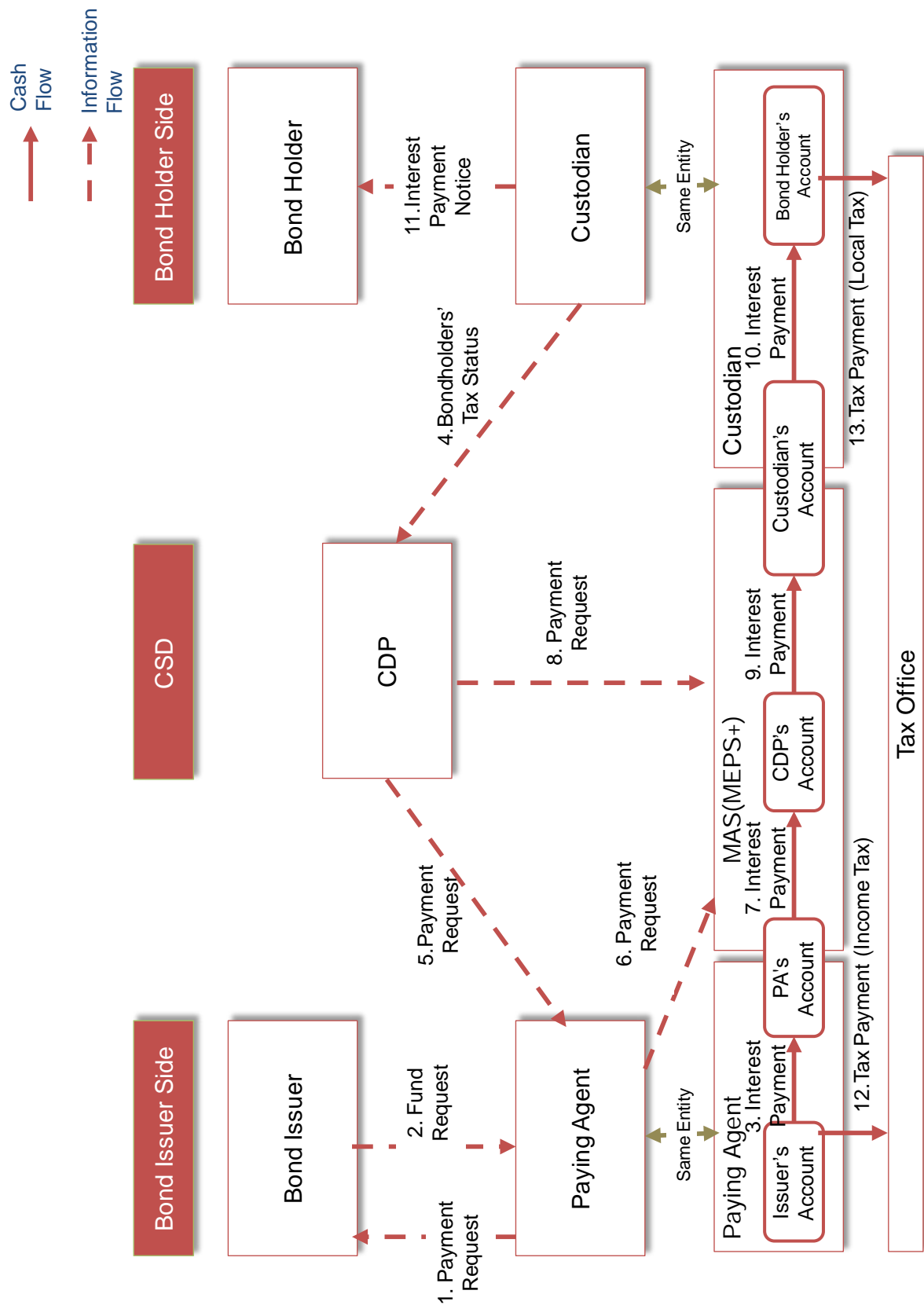
## Process of Redemption Payment

1. MAS (Monetary Authority of Singapore) as payment agent requests Ministry of Finance (MOF) for redemption payment.
2. MOF approves request of redemption payment from MAS.
3. Custodians send tax status data to MAS.
4. MAS notifies custodians of payment details.
5. MAS as payment agent executes redemption payment from MOF's account to custodians' account via MEPS+, deducting tax if applicable.
6. MAS notifies custodians of payment details again.
7. MAS as CSD makes bond redemption.
8. MAS as a paying agent pays income tax to tax office if applicable.
9. Custodians credit bond-holders' bank accounts with last interest and principal paid by MAS, deducting local tax if applicable.
10. Custodians notify bond holders of redemption payment.
11. Custodians pay local tax to tax office if applicable.

Note: Redemption always involves last interest payment.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

## SG08. Interest Payment Flow of Corporate Bond



## SG08. Interest Payment Flow of Corporate Bond

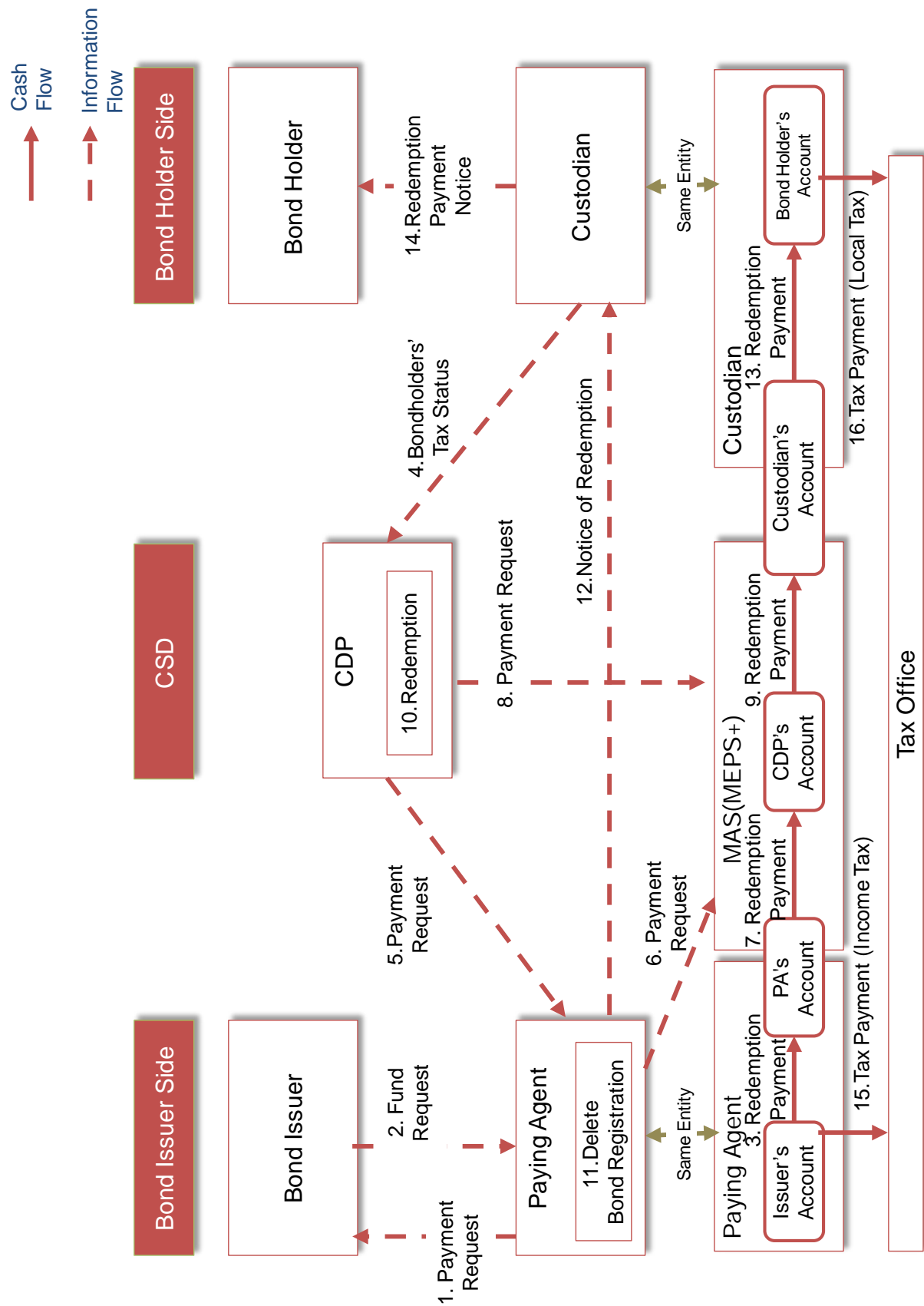
### Process of Interest Payment

1. Paying agent sends payment request of interest to bond issuer.
2. Bond issuer sends fund request to the paying agent.
3. Paying agent transfers cash from issuer's account to own account.
4. Custodians of bond holders send tax status to CDP.
5. CDP sends payment request to paying agent.
6. Paying agent instructs MAS to money transfer requested from CDP.
7. MAS executes interest payment from paying agent's account to CDP's account via MEPS+, deducting income tax if applicable.
8. CDP instructs MAS to payment request.
9. MAS executes interest payment from CDP's account to custodians account via MEPS+.
10. Custodians credit bond holders' accounts with interest payments, deducting local tax if applicable.
11. Custodians notify bond holders of interest payment.
12. Paying agent pays income tax to tax office.
13. Custodians pay local tax to tax office.

Note: No difference between non-residents and domestic investors except that account is tagged as "non-resident" for withholding tax purposes.

Assumption: CDP is the central depository for the corporate bond (Issuer CSD). Bond holders manage their bonds through custodians.

## SG09. Redemption Payment Flow of Corporate Bond



## Process of Redemption Payment

1. Paying agent sends payment request of redemption to the bond issuer.
2. Bond issuer sends fund request to the paying agent.
3. Paying agent transfers cash from issuer's account to own account.
4. Custodians of bond holders send tax status to CDP.
5. CDP sends payment request to paying agent.
6. Paying agent instructs MAS to money transfer requested from CDP.
7. MAS executes redemption payment from paying agent's account to CDP's account via MEPS+, deducting income tax if applicable.
8. CDP instructs MAS to payment request.
9. MAS executes redemption payment from CDP's account to custodians account via MEPS+.
10. CDP makes bond redemption.
11. Paying agent deletes bond registration.
12. Paying agent notifies custodians of redemption.
13. Custodians credit bond holders' accounts with last interest and principal, deducting local tax if applicable.
14. Custodians notify bond holders of redemption payment.
15. Paying agent pays income tax to tax office.
16. Custodians pay local tax to tax office.

Note: No difference between non-residents and domestic investors except that account is tagged as "non-resident" for withholding tax purposes.

Assumption: CDP is the central depository for the corporate bond (Issuer CSD). Bond holders manage their bonds through custodians.

# Thailand

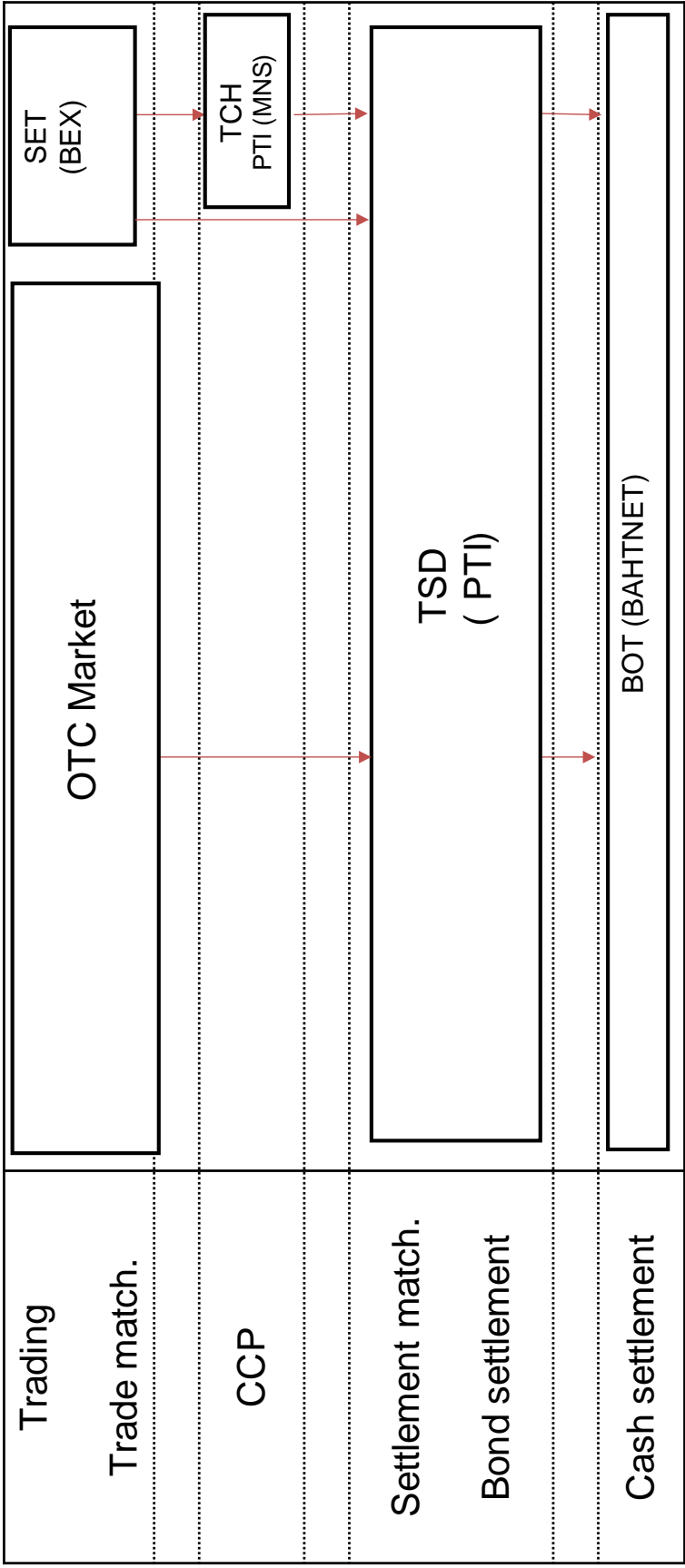
## (TH)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



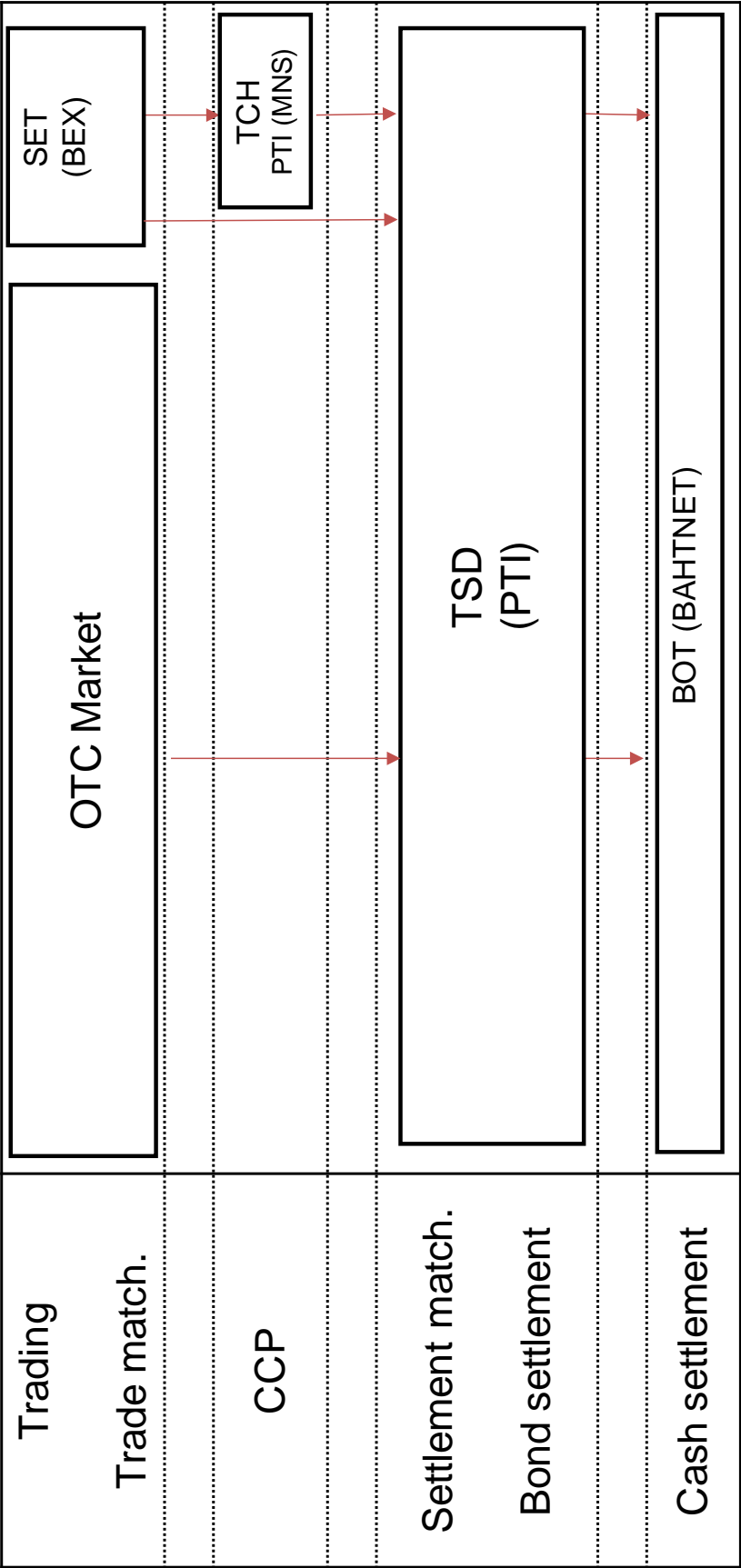
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

TH01. Government Bond Market Infrastructure Diagram



BEX – The Bond Electronic Exchange (The Stock Exchange of Thailand)  
SET – Stock Exchange of Thailand  
BOT – Bank 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

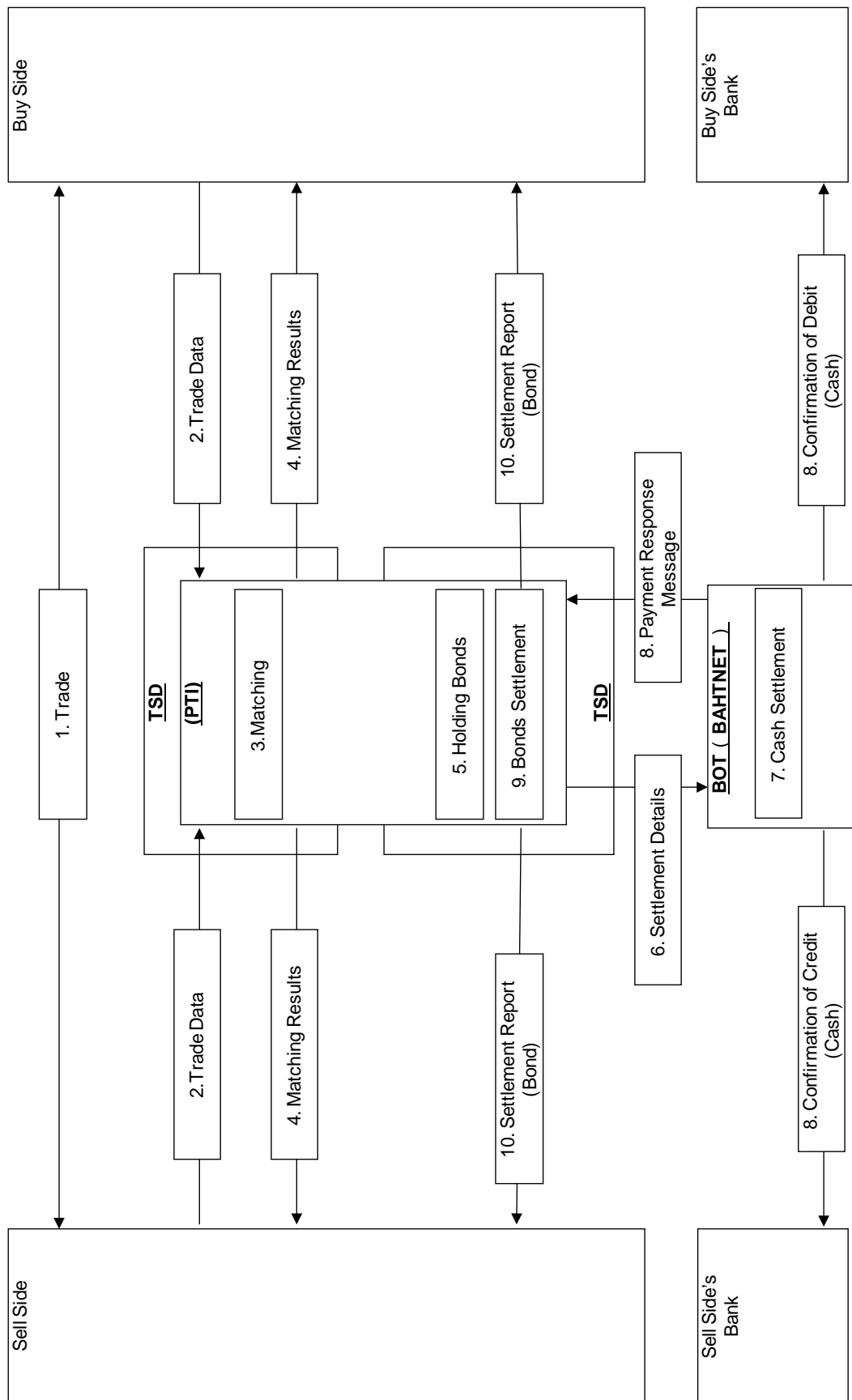
TH02. Corporate Bond Market Infrastructure Diagram



BEX – The Bond Electronic Exchange (The Stock Exchange of Thailand)  
SET – Stock Exchange of Thailand  
BOT – Bank 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

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

### TH03. Government Bond Transaction Flow for Domestic Trades



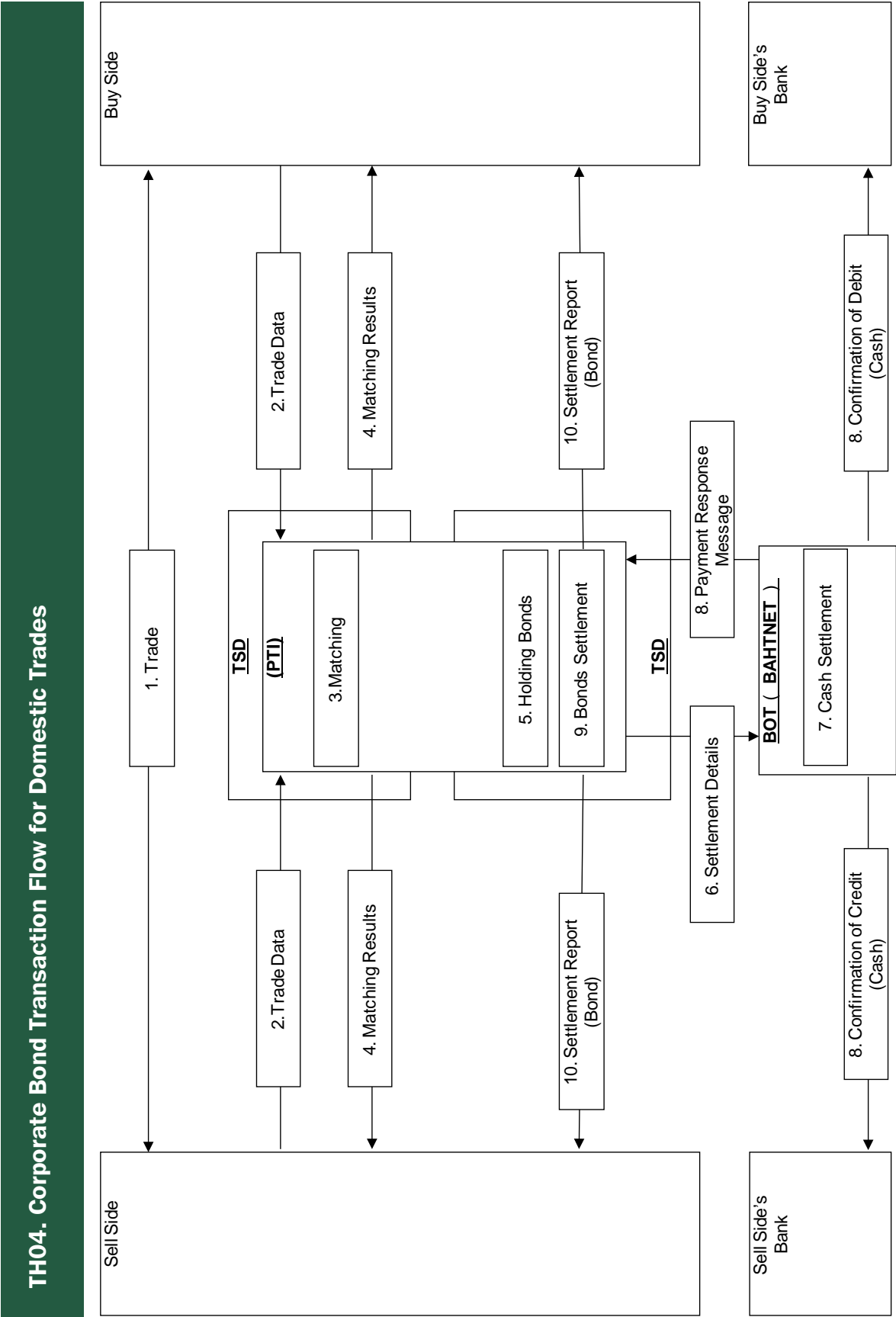
### TH03. Government Bond Transaction Flow for Domestic Trades

## OTC Market

---

1. Sell side and buy side trade via OTC market.
2. Sell side and buy side send transaction details to TSD via PTI System.
3. TSD matches trade data from sell side and buy side.
4. TSD sends matching results to sell side and buy side via PTI System.
5. TSD checks availability and blocks securities in members' account.
6. TSD sends cash settlement details to BOT.
7. BOT executes cash settlement.
8. BOT sends cash settlement confirmation to sell side, buy side and TSD.
9. TSD releases blocked securities and executes securities delivery.
10. TSD sends settlement reports to sell side, buy side via PTI System.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)





#### TH04. Corporate Bond Transaction Flow for Domestic Trades

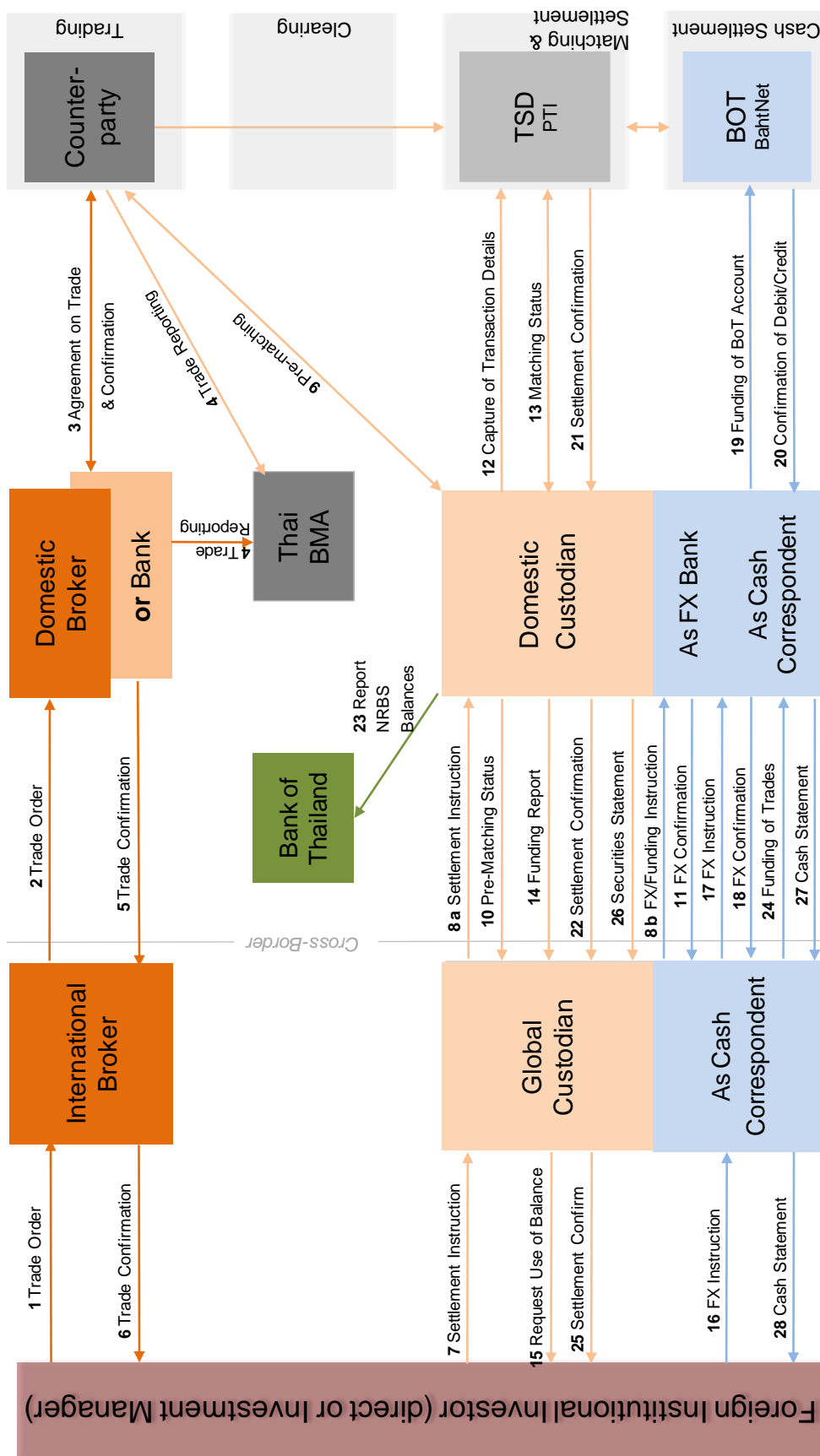
### OTC Market

---

1. Sell side and buy side trade via OTC market.
2. Sell side and buy side send transaction details to TSD via PTI System.
3. TSD matches trade data from sell side and buy side.
4. TSD sends matching results to sell side and buy side via PTI System.
5. TSD checks availability and blocks securities in members' account.
6. TSD sends cash settlement details to BOT.
7. BOT executes cash settlement.
8. BOT sends cash settlement confirmation to sell side, buy side and TSD.
9. TSD releases blocked securities and executes securities delivery.
10. TSD sends settlement reports to sell side, buy side via PTI System.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

# TH05. Bond Transaction Flow for Foreign Investors OTC Market / DVP

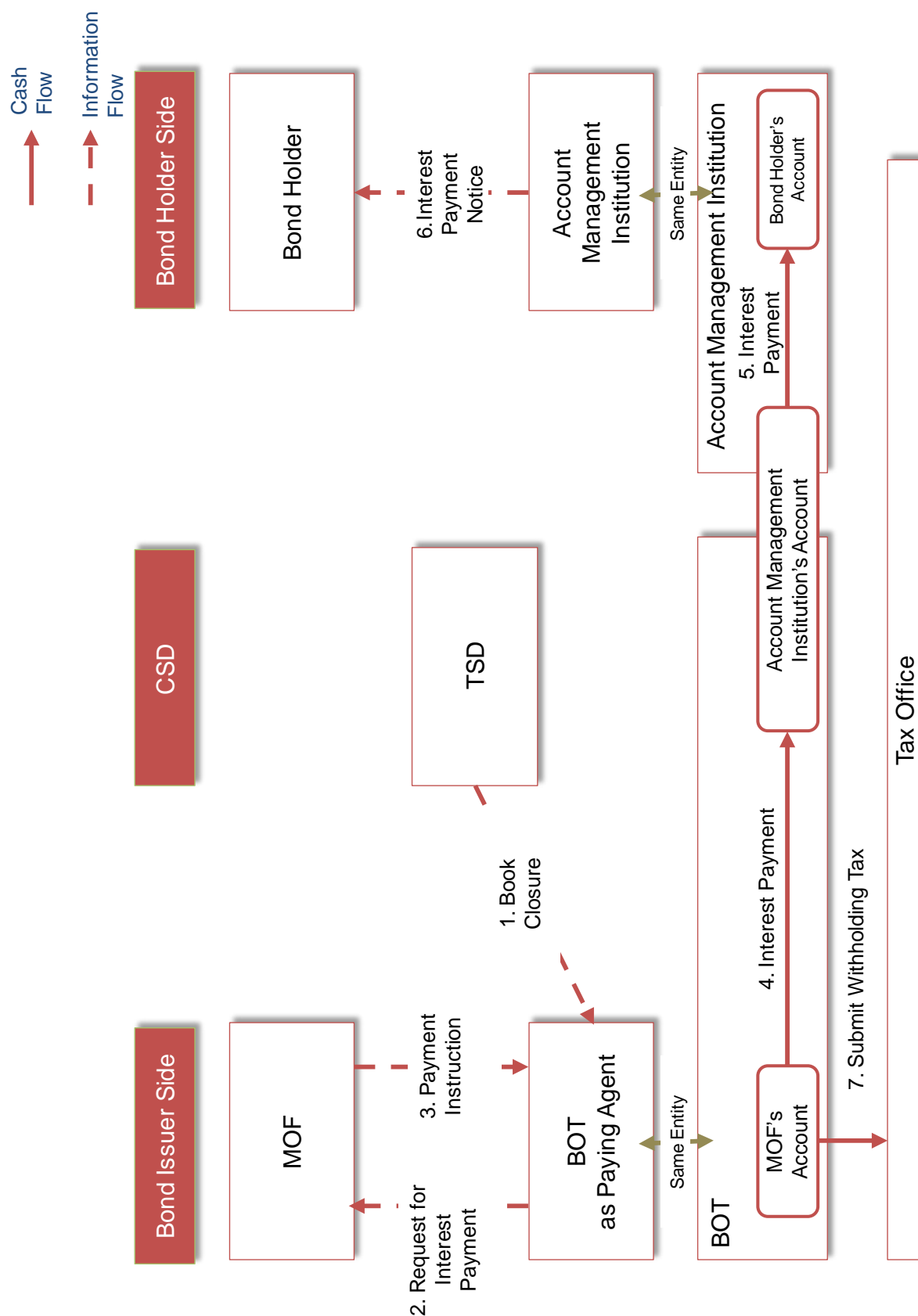


### TH05. OTC Bond Transaction Flow for Foreign Investors OTC Market / DVP

Trade Date	
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 send 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 details 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, BAHNET II sends credit/debit confirmation to Domestic Custodian (as BAHNET II participant)
21.	Upon cash settlement confirmation, 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 funds account with Domestic Custodian directly, or into FCY nostro account (by end of day)
25.	Global Custodian sends settlement confirmation 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 FII in cash statement (end of day)
Settlement Date	
T+1	

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

## TH06. Interest Payment Flow of Government Bond



## TH06. Interest Payment Flow of Government Bond

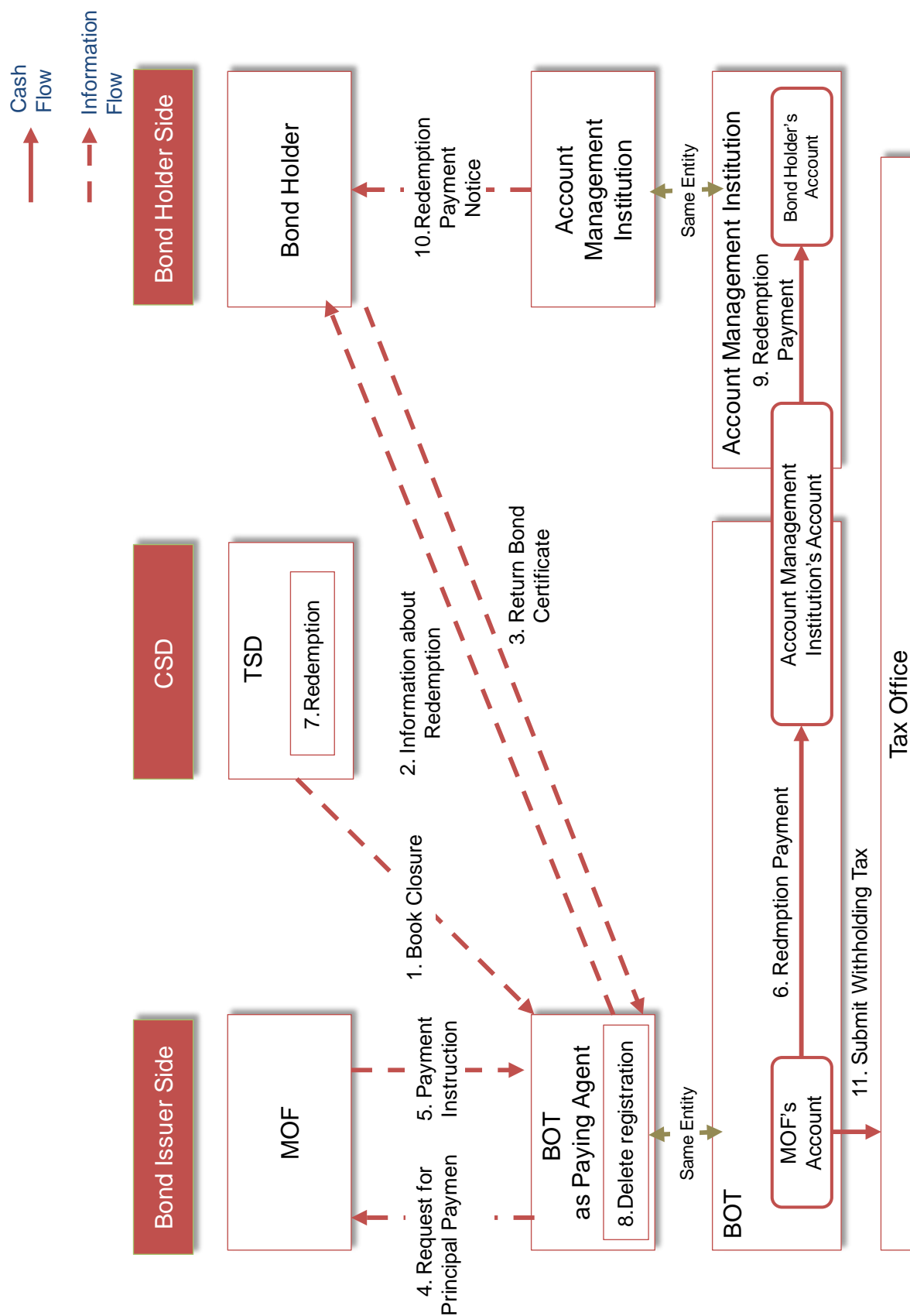
## Process of Interest Payment

1. Bank of Thailand (BOT) as a registrar and paying agent closes the record book for interest payment by gathering bond holders' names from the TSD in case of scrippless securities. The book closure period varies between 10-30 days.  
(In case of scrip securities, no need to gather information from TSD, because BOT owns bond holder's names.)
2. BOT submits letter requesting for interest payment to MOF 45-60 days prior to payment date.
3. On the payment date, MOF instructs BOT to make interest payment within 10.00 a.m.
4. BOT executes interest payment from MOF's account to account management institutions' account via BAHNET on the payment date, deducting tax if applicable.
5. Account management institutions credit bondholders' accounts with interest paid by MOF.
6. Account management institutions notify bond holders of interest payment.
7. BOT submits withholding tax to the Revenue Department (on a monthly basis).

### <In Case of Retail Bond Holder>

- Prior to interest payment from BOT (No.4), BOT sends data and report of bond holders' names, bank account numbers to which interest will be sent, and interest amount to banks where retail bond holders have accounts with. This is done in 3 working days prior to the payment date to prepare for payment through in-house direct credit system of each bank.
- Instead of process No.4, BOT transfers fund to banks for crediting to retail bond holders' accounts on the payment date.

## TH07. Redemption Payment Flow of Government Bond





## TH07. Redemption Payment Flow of Government Bond

### Process of Redemption Payment 1/2

1. Bank of Thailand (BOT) as a registrar and paying agent closes the record book for principal payment by gathering bond holders' names from the TSD. The book closure period is 1 working day for short-term securities, and 10-30 days for long-term securities. (In case of scrip securities, no need to gather information from TSD, because BOT owns bond holder's names.)
2. BOT sends principal redemption forms to inform the bond holders about redemption and return bond certificates.
3. Bond holders return bond certificates to BOT.
4. BOT submits letter requesting for principal payment to MOF 45-60 days prior to payment date.
5. On the payment date, MOF instructs BOT to make redemption payment. within 10.00 a.m.
6. BOT executes redemption payment from MOF's account to account management institutions' account via BAHTNET on the payment date, deducting tax if applicable.
7. TSD makes bond redemption.
8. BOT deletes bond registration.
9. Account management institutions credit bondholders' accounts with last interest and principal.
10. Account management institutions notify bond holders of redemption payment.
11. BOT submits withholding tax to the Revenue Department (on a monthly basis).

## TH07. Redemption Payment Flow of Government Bond

### Process of Redemption Payment 2/2

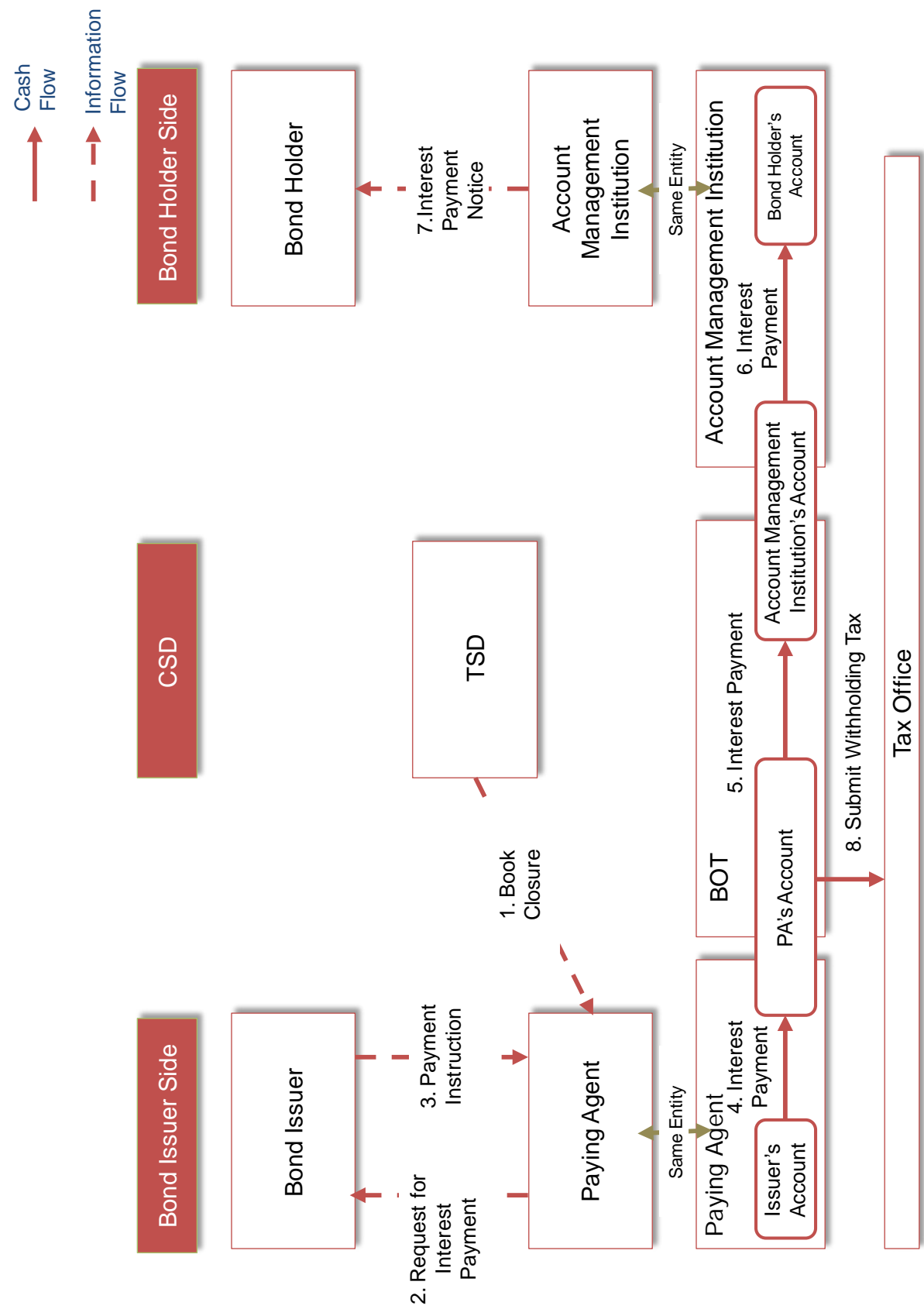
---

#### <In Case of Retail Bond Holder>

- Prior to redemption payment from BOT(No.6), BOT sends data and report of bond holders' names, bank account numbers to which interest will be sent, and interest amount to banks where retail bond holders have accounts with. This is done in 3 working days prior to the payment date to prepare for payment through in-house direct credit system of each bank.
- Instead of process No.4, BOT transfers fund to banks for crediting to retail bond holders' accounts on the payment date.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

TH08. Interest Payment Flow of Corporate Bond



## TH08. Interest Payment Flow of Corporate Bond

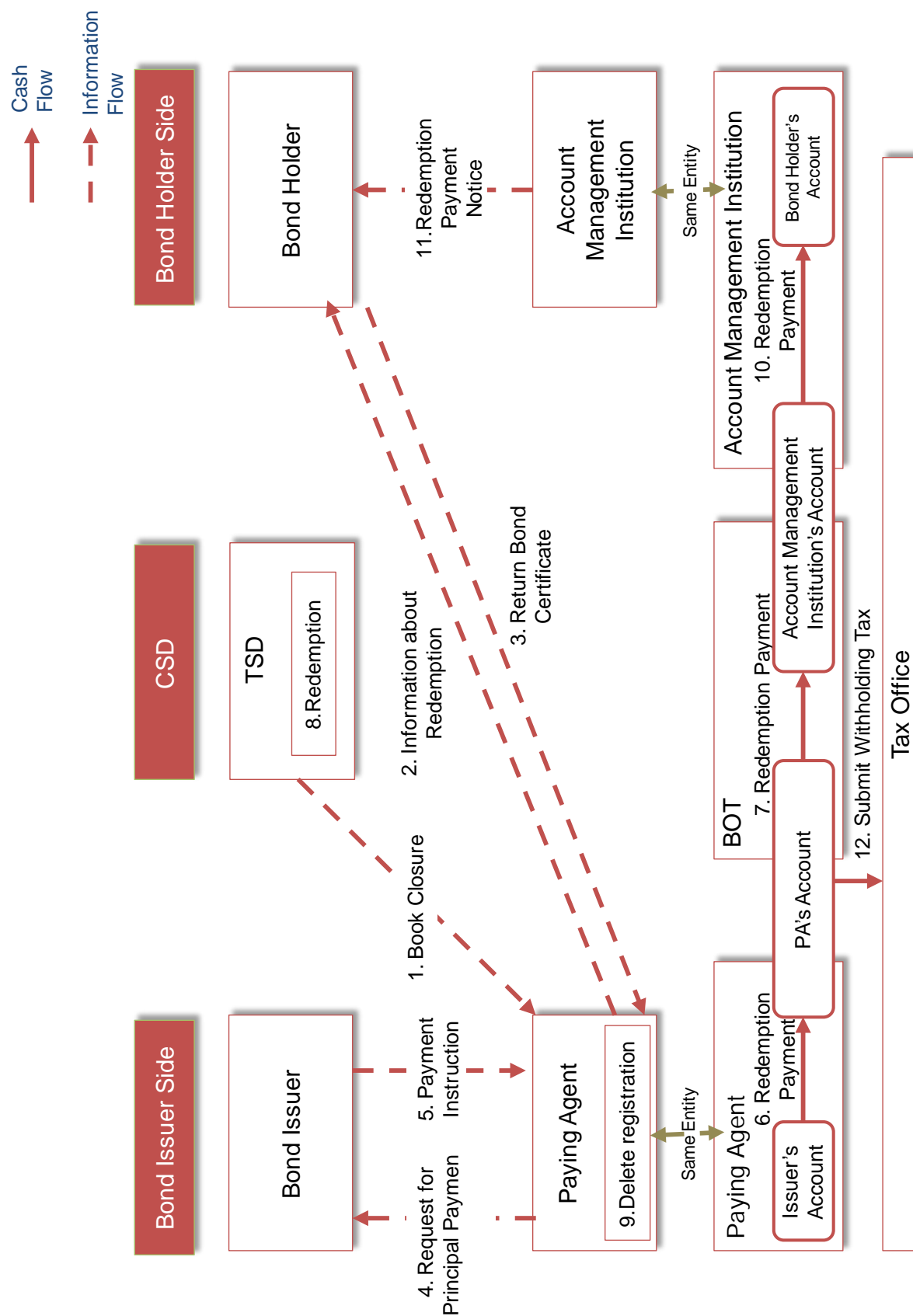
### Process of Interest Payment

1. Bank of Thailand (BOT) as a registrar and paying agent closes the record book for interest payment by gathering bond holders' names from the TSD in case of scrippless securities. The book closure period varies between 10-30 days.  
(In case of scrip securities, no need to gather information from TSD, because BOT owns bond holder's names.)
2. Paying agent submits letter requesting for interest payment to issuer 45-60 days prior to payment date.
3. On the payment date, bond issuer instructs BOT to make interest payment within 10.00 a.m.
4. Paying agent transfers cash from issuer's account to own account.
5. BOT executes interest payment from issuer's account to account management institutions' account via BAHNET on the payment date, deducting tax if applicable.
6. Account management institutions credit bondholders' accounts with interest paid by issuer.
7. Account management institutions notify bond holders of interest payment.
8. BOT submits withholding tax to the Revenue Department (on a monthly basis).

#### <In Case of Retail Bond Holder>

- Prior to interest payment from BOT (No.4), BOT sends data and report of bond holders' names, bank account numbers to which interest will be sent, and interest amount to banks where retail bond holders have accounts with. This is done in 3 working days prior to the payment date to prepare for payment through in-house direct credit system of each bank.
- Instead of process No.4, BOT transfers fund to banks for crediting to retail bond holders' accounts on the payment date.

## TH09. Redemption Payment Flow of Corporate Bond



## TH09. Redemption Payment Flow of Government Bond

### Process of Redemption Payment 1/2

1. Bank of Thailand (BOT) as a registrar and paying agent closes the record book for principal payment by gathering bond holders' names from the TSD. The book closure period is 1 working day for short-term securities, and 10-30 days for long-term securities. (In case of scrip securities, no need to gather information from TSD, because BOT owns bond holder's names.)
2. Paying agent sends principal redemption forms to inform bond holders about redemption and return bond certificates.
3. Bond holders return bond certificates to BOT.
4. BOT submits letter requesting for principal payment to bond issuer 45-60 days prior to payment date.
5. On the payment date, bond issuer instructs BOT to make redemption payment. within 10.00 a.m.
6. Paying agent transfers cash from issuer's account to own account.
7. BOT executes redemption payment from issuer's account to account management institutions' account via BAHTNET on the payment date, deducting tax if applicable.
8. TSD makes bond redemption. (to be confirmed)
9. BOT deletes bond registration. (to be confirmed)
10. Account management institutions credit bondholders' accounts with last interest and principal.
11. Account management institutions notify bond holders of redemption payment.
12. BOT submits withholding tax to the Revenue Department (on a monthly basis). (to be confirmed)

#### TH09. Redemption Payment Flow of Government Bond

### Process of Redemption Payment 2/2

---

#### <In Case of Retail Bond Holder>

- Prior to redemption payment from BOT(No.6), BOT sends data and report of bond holders' names, bank account numbers to which interest will be sent, and interest amount to banks where retail bond holders have accounts with. This is done in 3 working days prior to the payment date to prepare for payment through in-house direct credit system of each bank.
- Instead of process No.4, BOT transfers fund to banks for crediting to retail bond holders' accounts on the payment date.



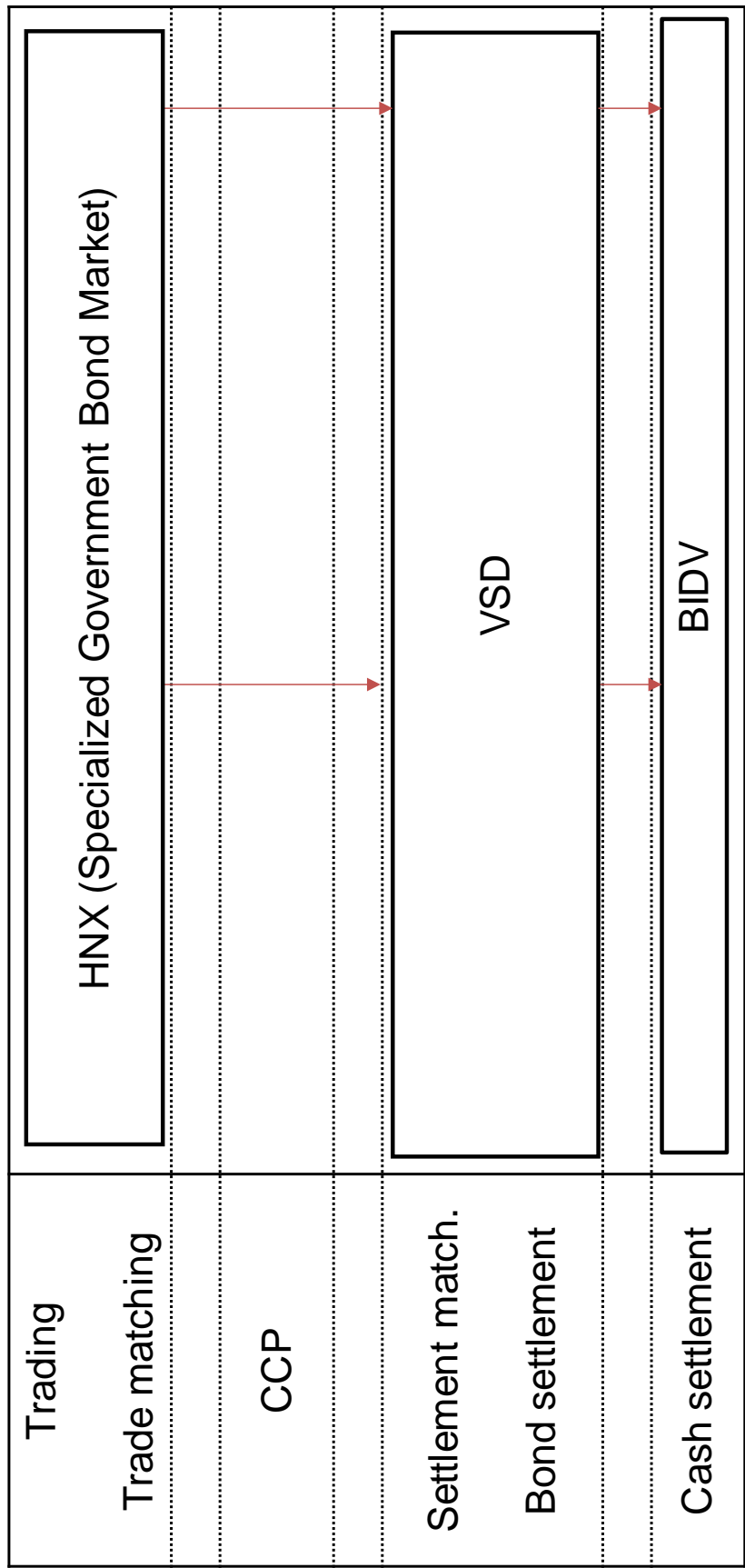
# Viet Nam

## (VN)

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

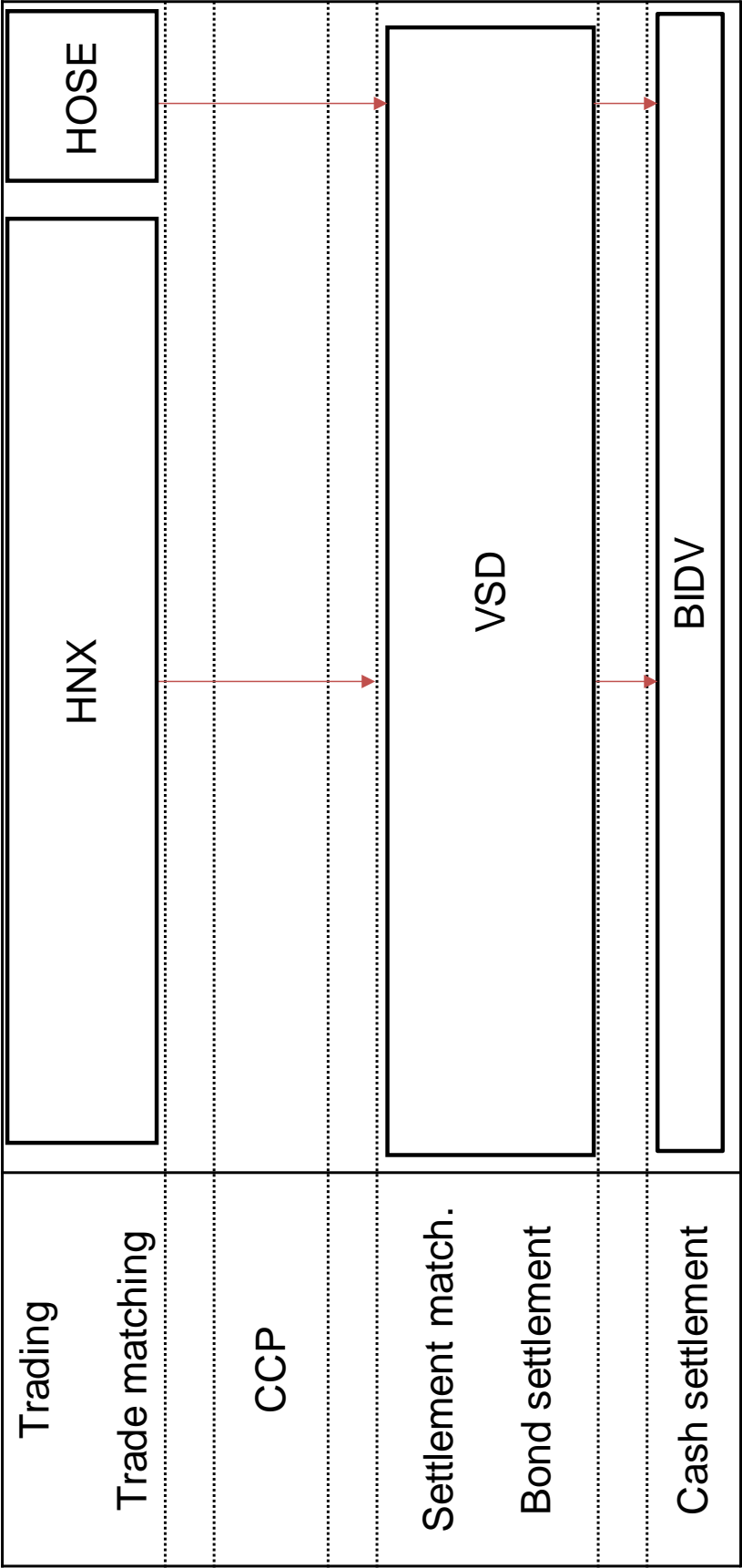
1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

VN01. Government Bond Market Infrastructure Diagram



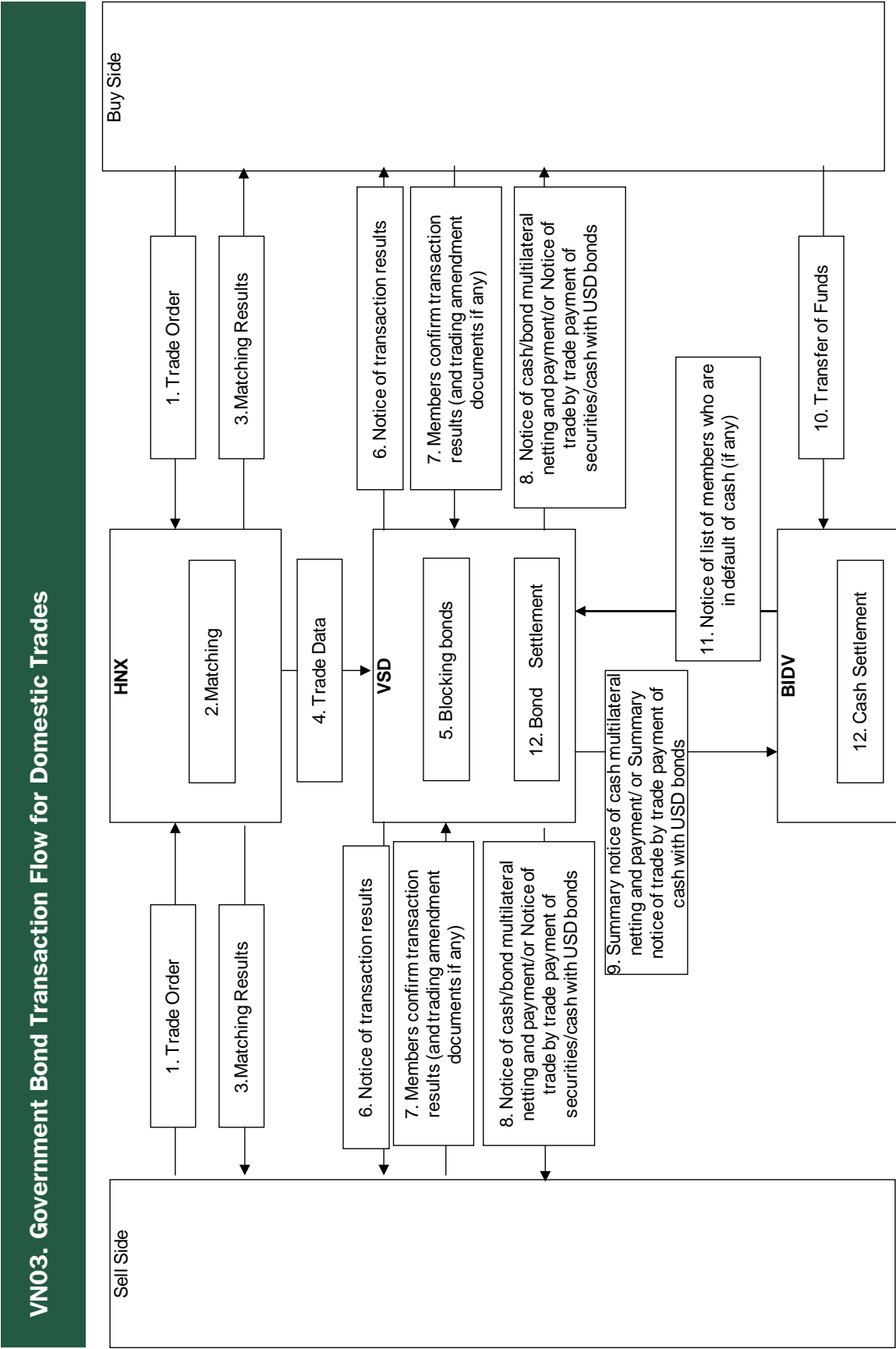
HNX – The Hanoi Stock Exchange  
VSD – Vietnam Securities Depository  
BIDV – Bank for Investment and Development of Vietnam

VN02. Corporate Bond Market Infrastructure Diagram



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

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



### VN03. Government Bond Transaction Flow for Domestic Trades

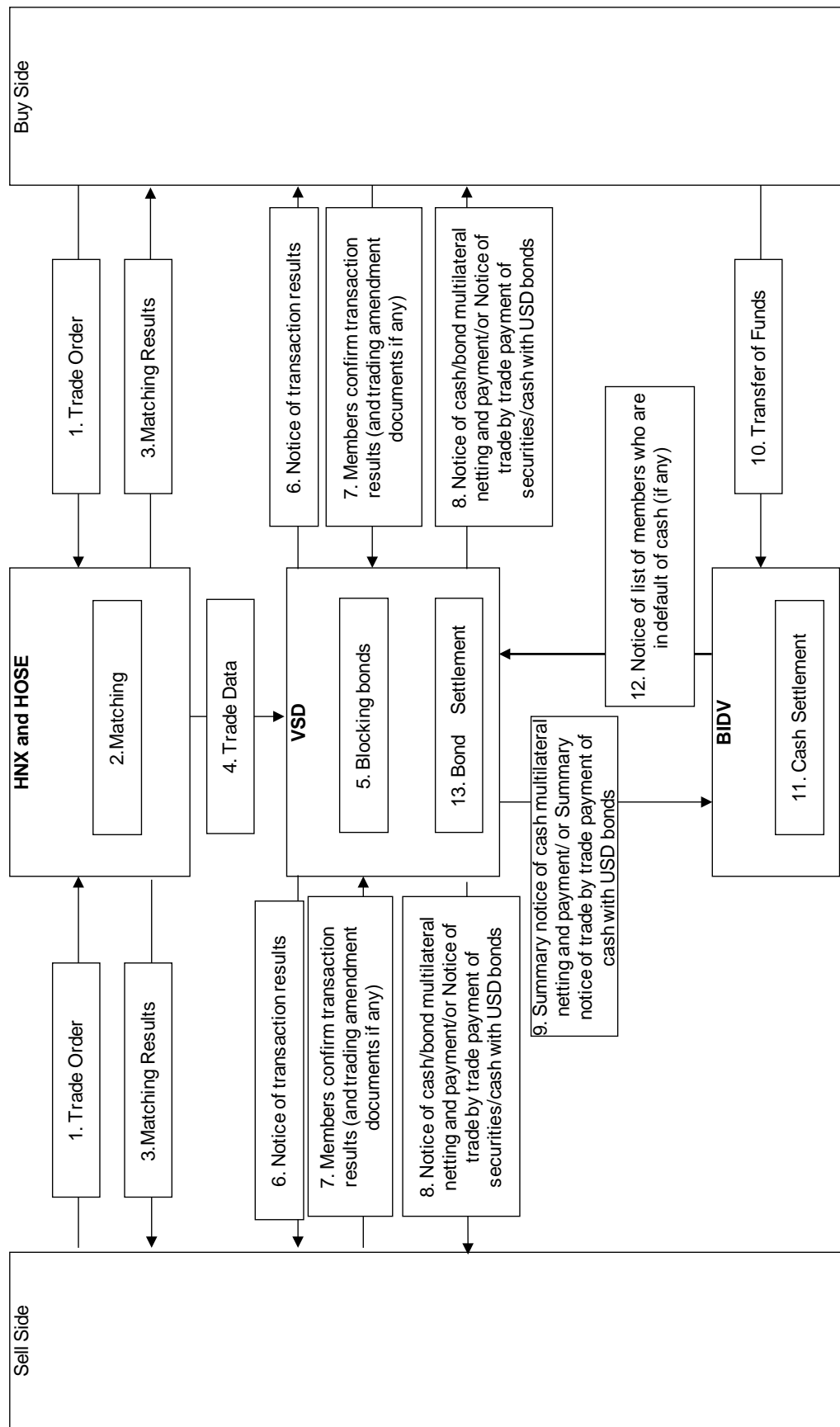
## Exchange Market (for listed bonds)

1. Sell side and buy side trade at The Hanoi Stock Exchange (HNX) or Ho Chi Minh Stock Exchange (HOSE).
2. HNX/HOSE matches trade.
3. HNX/HOSE sends matching result to sell side and buy side.
4. HNX/HOSE sends trade data to VSD.
5. VSD holds bonds from sell side's account.
6. VSD notifies transaction result to sell side and buy side.
7. Sell side and buy side confirm transaction results (and trading amendment documents if any).
8. VSD notifies sell side and buy side of cash/bond multilateral netting and payment or trade by trade payment of securities/cash with USD bonds.
9. Buy side transfers cash to BIDV.
10. VSD notifies the summary of cash multilateral netting and payment or trade by trade payment of cash with USD bonds
11. BIDV executes cash settlement.
12. BIDV notifies of the list of members who are in default of cash if any.
13. VSD executes bond settlement.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)



# VN04. Corporate Bond Transaction Flow for Domestic Trades



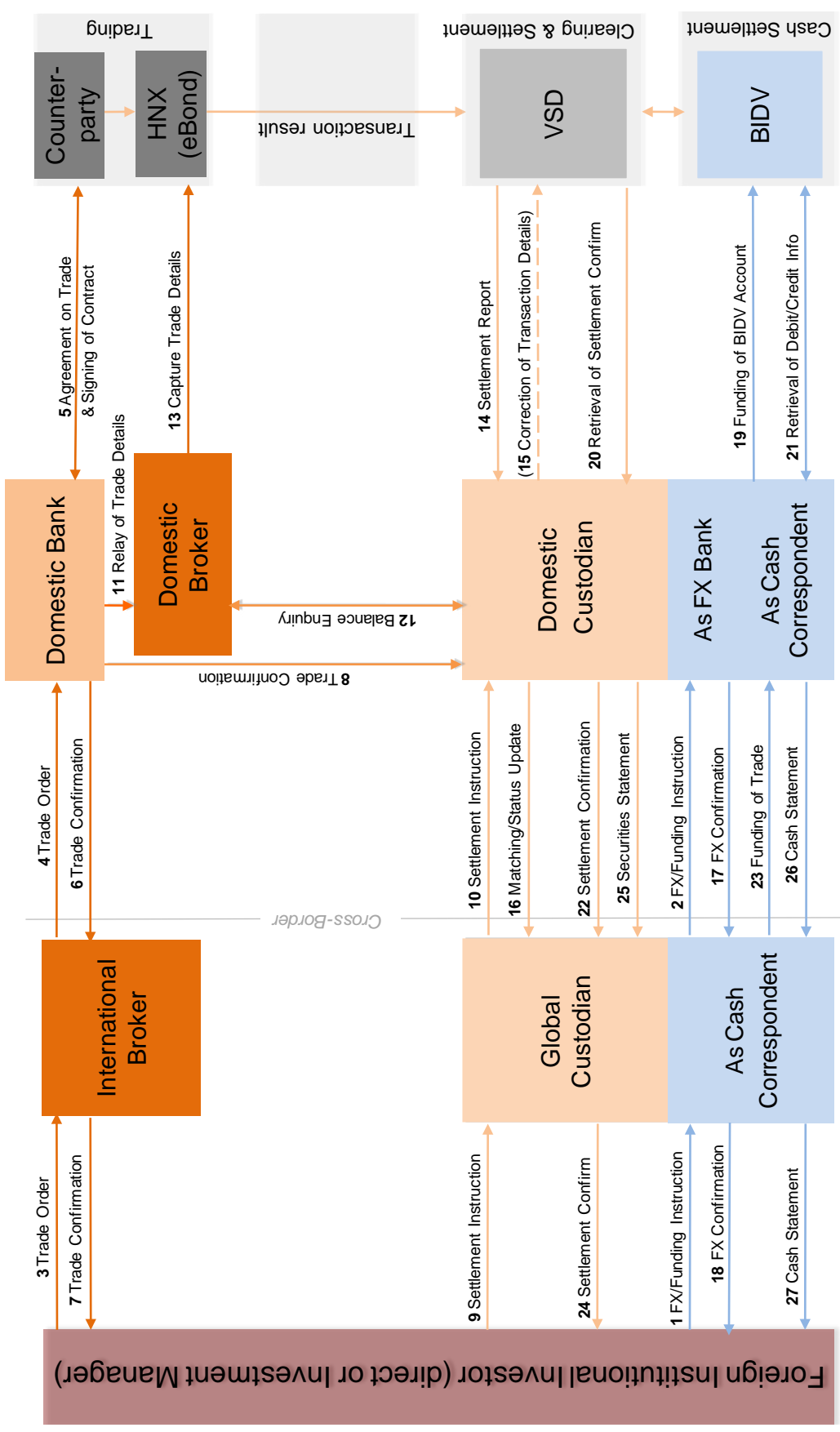
#### VN04. Corporate Bond Transaction Flow for Domestic Trades

### Exchange Market (for listed bonds)

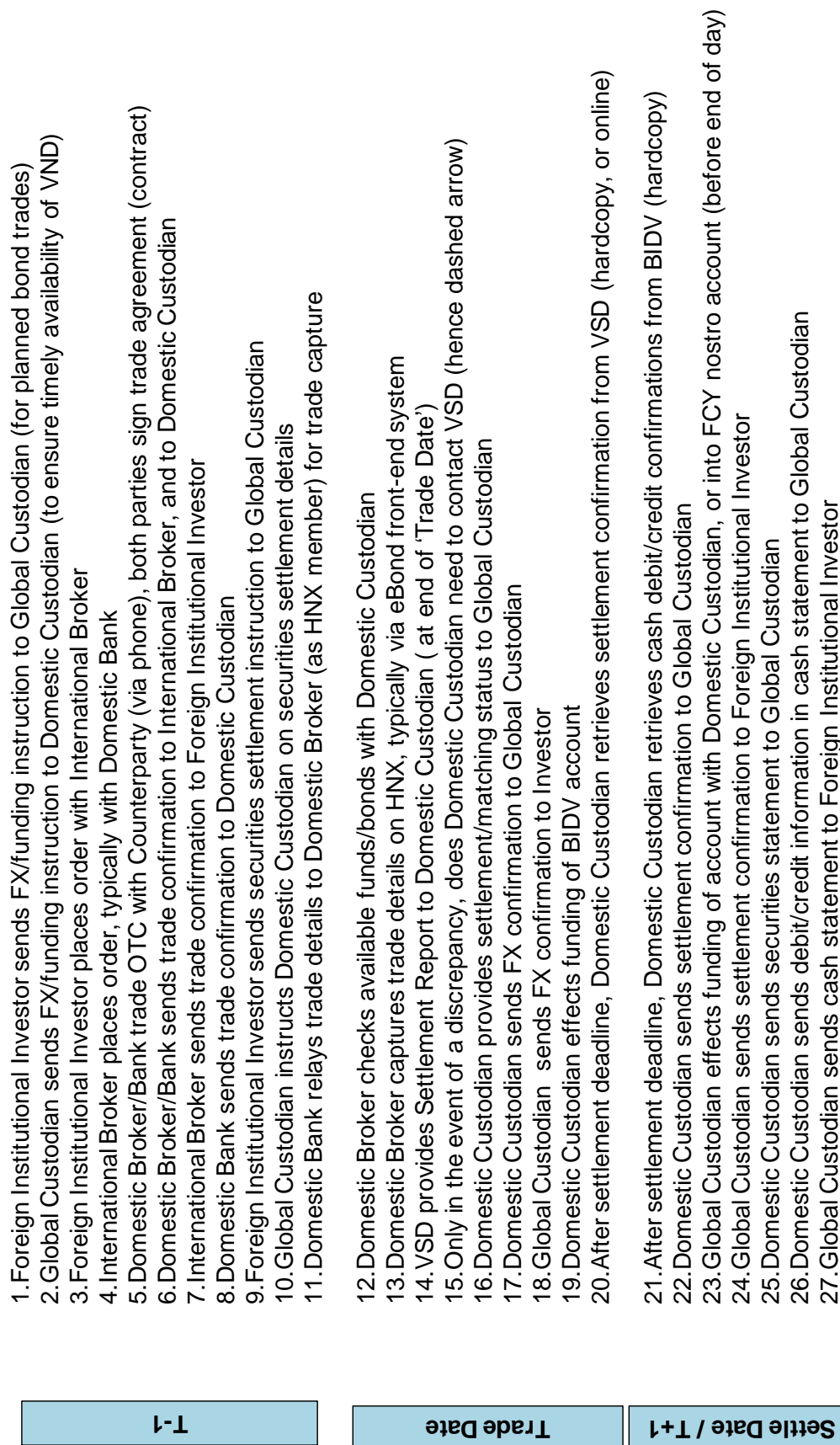
1. Sell side and buy side trade at The Hanoi Stock Exchange (HNX) or Ho Chi Minh Stock Exchange (HOSE).
2. HNX/HOSE matches trade.
3. HNX/HOSE sends matching result to sell side and buy side.
4. HNX/HOSE sends trade data to VSD.
5. VSD holds bonds from sell side's account.
6. VSD notifies transaction result to sell side and buy side.
7. Sell side and buy side confirm transaction results (and trading amendment documents if any).
8. VSD notifies sell side and buy side of cash/bond multilateral netting and payment or trade by trade payment of securities/cash with USD bonds.
9. VSD notifies the summary of cash multilateral netting and payment or trade by trade payment of cash with USD bonds
10. Buy side transfers cash to BIDV.
11. BIDV executes cash settlement.
12. BIDV notifies of the list of members who are in default of cash if any.
13. VSD executes bond settlement.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

VN05. Bond Transaction Flow for Foreign Investors OTC Market

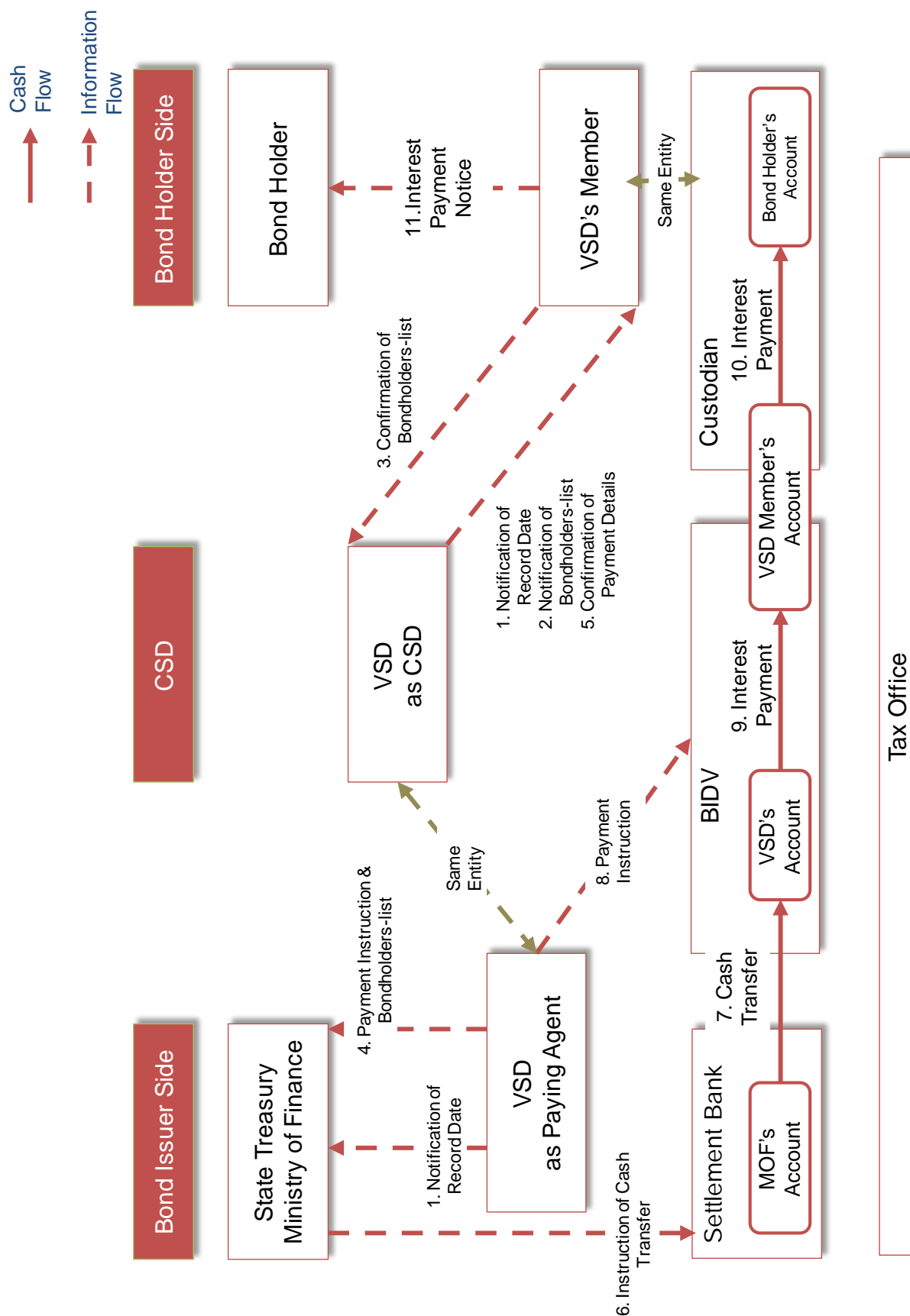


## VN05. OTC Bond Transaction Flow for Foreign Investors



1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

# VN06. Interest Payment Flow of Government Bond



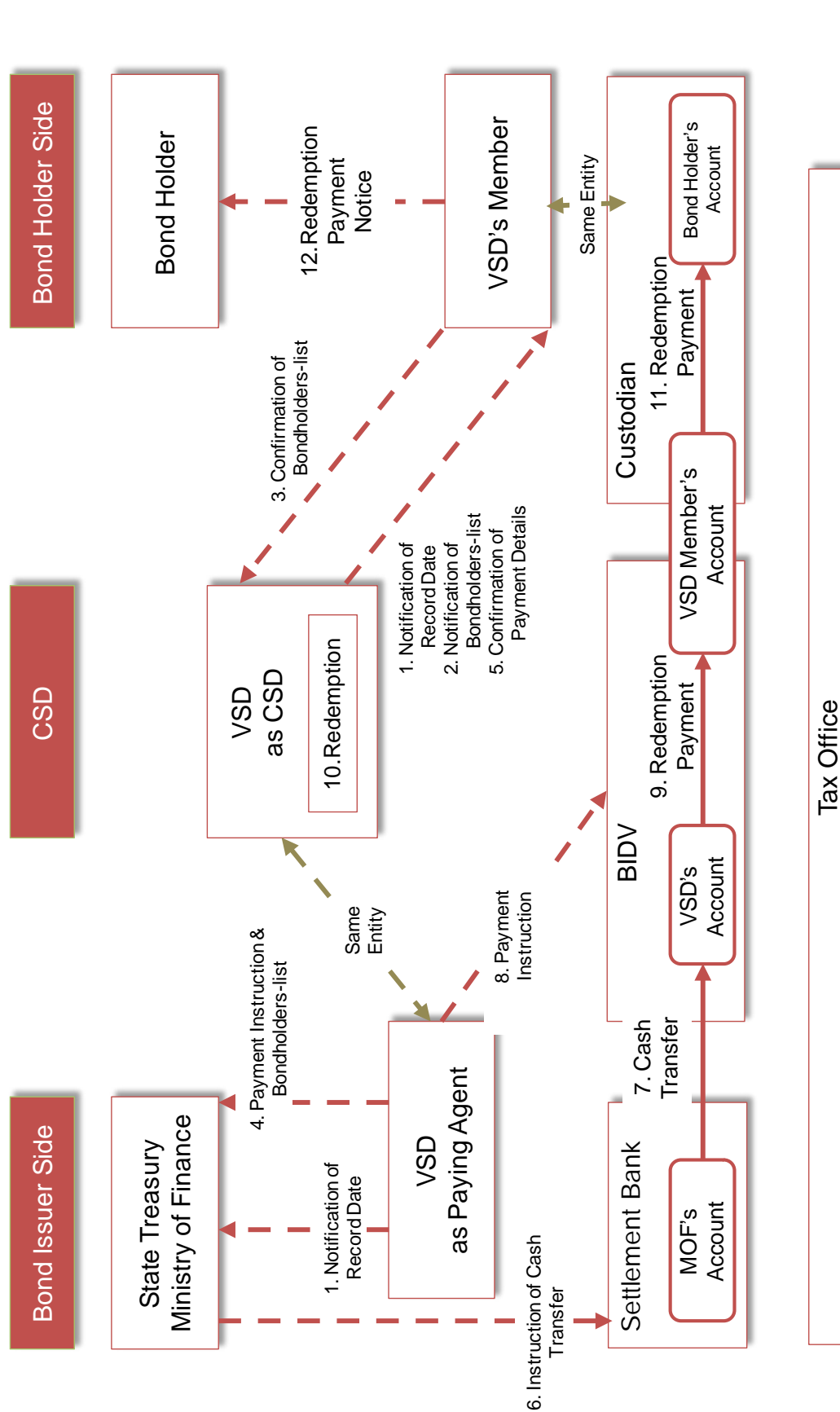
## VN06. Interest Payment Flow of Government Bond OTC Market

### Process of Interest Payment

1. Vietnam Securities Depository (VSD) as a paying agent notifies the record date to State Treasury -Ministry of Finance (issuers), VSD's members and other related organizations.
2. VSD makes and sends it's members bondholders-list receiving bond interest payment.
3. Members send VSD the confirmation of the bondholders list.
4. VSD sends issuers payment request and comprehensive bondholders list.
5. VSD sends it's members confirmation of interest distribution to investors named in the bondholders list.
6. Issuers instruct settlement bank to transfer cash for interest from issuers' account to VSD's account.
7. Settlement bank transfers cash as requested.
8. VSD instructs BIDV to transfer cash for interest from VSD's account to related VSD members' account.
9. BIDV transfers cash as requested.
10. VSD members credit bondholders' account with interest.
11. VSD members notify bond holders of interest payment.



The diagram consists of two vertical green bars. Between them, there are two red arrows pointing upwards. The left arrow is solid and labeled 'Cash Flow' in blue text. The right arrow is dashed and labeled 'Information Flow' in blue text.



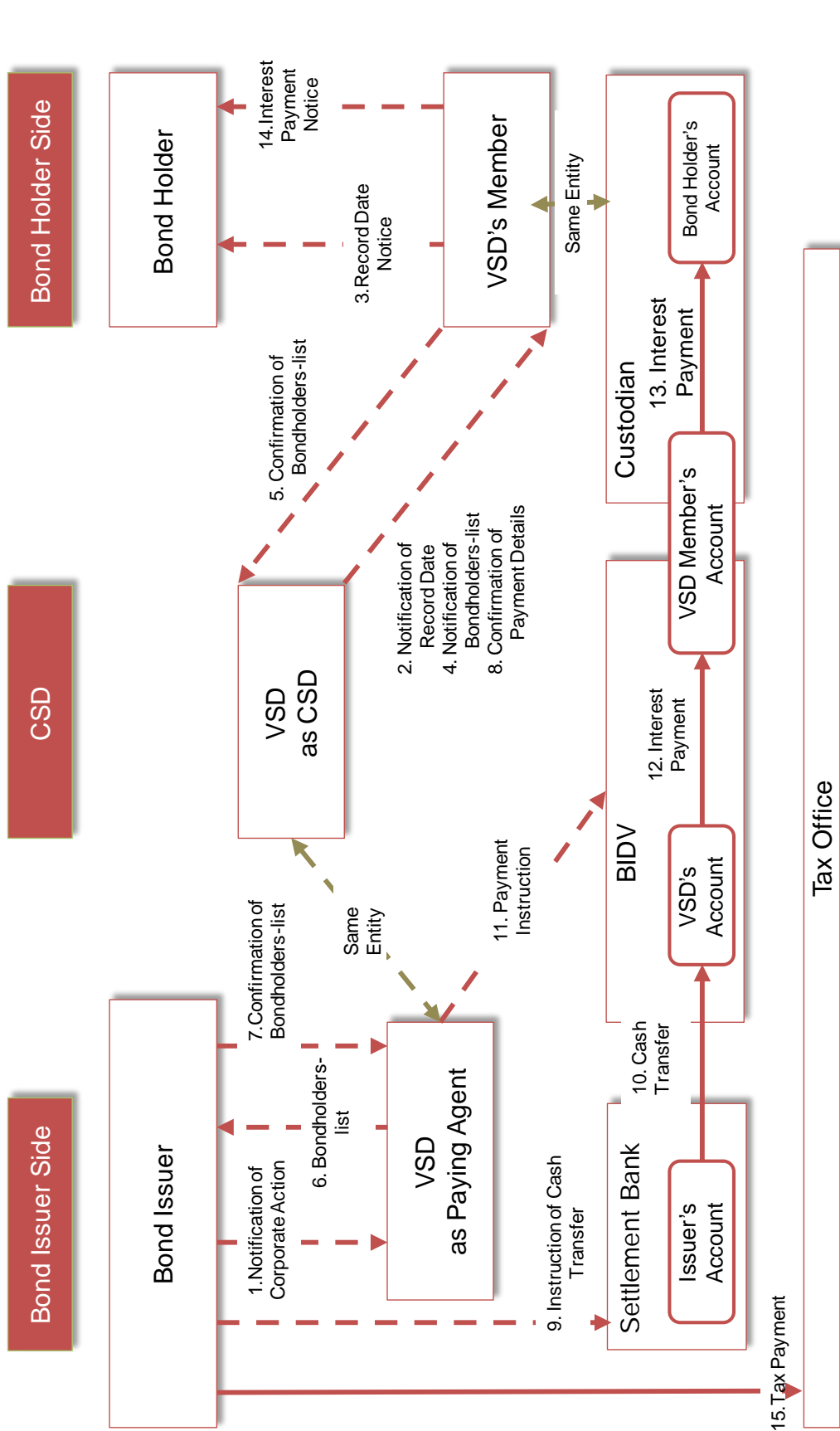
## VN07. Redemption Payment Flow of Government Bond OTC Market

### Process of Redemption Payment

1. Vietnam Securities Depository (VSD) as a paying agent notifies the record date to State Treasury -Ministry of Finance (issuers), VSD's members and other related organizations.
2. VSD makes and sends it's members bondholders-list receiving bond redemption payment.
3. Members send VSD confirmation of bondholders list.
4. VSD sends issuers payment request and comprehensive bondholders list.
5. VSD sends it's members confirmation of interest and principal distribution to investors named in bondholders list.
6. Issuers instruct settlement bank to transfer cash for redemption from issuers' account to VSD's account.
7. Settlement bank transfers cash as requested.
8. VSD instructs BIDV to transfer cash for redemption from VSD's account to related VSD members' account.
9. BIDV transfers cash as requested.
10. VSD makes bond redemption.
11. VSD members credit bond holders' accounts with last interest and principal, deducting income tax if applicable.
12. VSD members notify bond holders of redemption payment.

1. Bond Market Infrastructure Diagram
2. Bond Transaction Flow for Domestic Trades (Government Bond)
3. Bond Transaction Flow for Domestic Trades (Corporate Bond)
4. Bond Transaction Flow for Foreign Investors
5. Interest & Redemption Payment Flow (Government Bond)
6. Interest & Redemption Payment Flow (Corporate Bond)

The diagram consists of two vertical arrows pointing upwards. The left arrow is solid red and labeled 'Cash Flow' in blue text. The right arrow is dashed red and labeled 'Information Flow' in blue text.

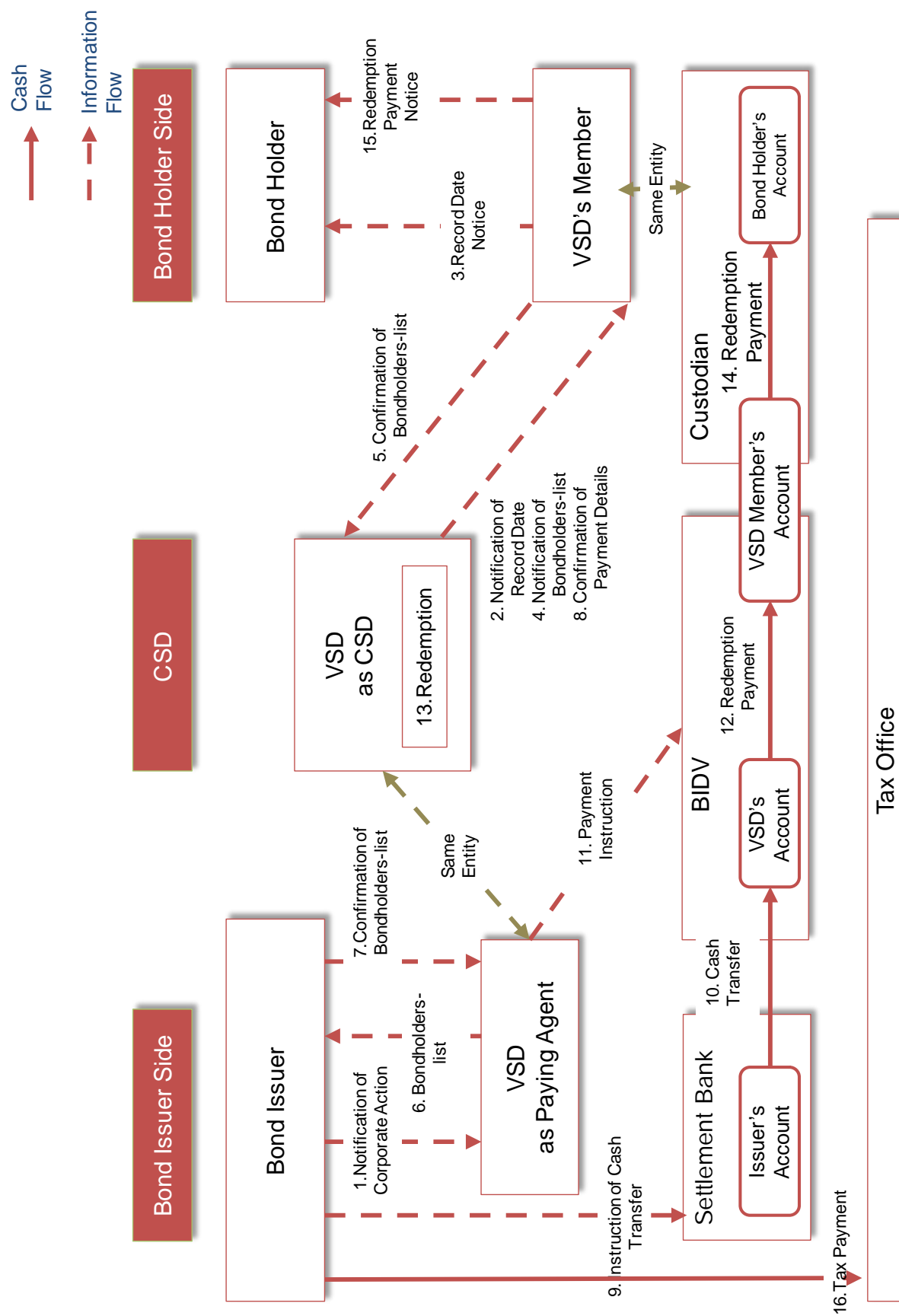


## VN08. Interest Payment Flow of Corporate Bond OTC Market

### Process of Interest Payment

1. Issuers sends the adequate and legal dossier notifying corporate action to Vietnam Securities Depository (VSD) .
2. VSD as a paying agent notifies record date to VSD's members and other related organizations.
3. VSD's members notify record date to bond holders.
4. VSD makes and sends it's members bondholders-list receiving bond interest payment.
5. Members send VSD confirmation of bondholders-list.
6. VSD sends issuers comprehensive bondholders list.
7. Bond issuer sends confirmation of bondholders-list.
8. VSD sends it's members confirmation of interest distribution to investors named in bondholders list.
9. Issuers instruct settlement bank to transfer cash for interest from issuers' account to VSD's account in BIDV.
10. Settlement bank transfers cash as requested.
11. VSD instructs BIDV to transfer cash for interest from VSD's account to related members' account.
12. BIDV transfers cash as requested.
13. Members credit bondholders' account with interest.
14. Members notify bond holders of interest payment.
15. Bond issuers pay income tax to tax office if applicable.

## VN09. Redemption Payment Flow of Corporate Bond



## VN09. Redemption Payment Flow of Corporate Bond OTC Market

### Process of Redemption Payment

1. Issuers sends the adequate and legal dossier notifying corporate action to Vietnam Securities Depository (VSD) .
2. VSD as a paying agent notifies record date to VSD's members and other related organizations.
3. VSD's members notifies record date to bond holders.
4. VSD makes and sends it's members bondholders-list.
5. Members send VSD confirmation of bondholders-list.
6. VSD sends issuers comprehensive bondholders list.
7. Bond issuer sends confirmation of bondholders-list.
8. VSD sends it's members confirmation of redemption payment to investors named in bondholders list.
9. Issuers instruct settlement bank to transfer cash for redemption payment from issuers' account to VSD's account in BIDV.
10. Settlement bank transfers cash as requested.
11. VSD instructs BIDV to transfer cash for redemption payment from VSD's account to related members' account.
12. BIDV transfers cash as requested.
13. VSD as CSD makes bond redemption.
14. Members credit bondholders' account with redemption.
15. Members notify bond holders of redemption payment.
16. Issuers pay income tax to tax office if applicable.





## **SF2 Report: ASEAN+3 Information on Transaction Flows and Settlement Infrastructures**

This report, entitled ASEAN+3 Information on Transaction Flows and Settlement Infrastructure and consisting of three parts, is the result of Phase2 studies of ABMF SF2 and enhances the findings of Phase 1. Part 1 provides an overview of ASEAN+3 bond markets and their infrastructure. Part 2 reports on the bond marketrelated issues of economies in the region. Part 3 contains diagrams of ASEAN+3 bond market infrastructures, domestic bond transaction flows, and cross-border bond transaction flows.

The report is the product of the collaborative efforts of the National Members and Experts and International Experts of the ABMF in cooperation with the Asian Development Bank's Office of Regional Economic Integration.