中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

China Central Depository & Clearing Co., Ltd.

PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES DISCLOSURE & SELF-ASSESSMENT

December 2019

* The English version is for reference only.

CONTENTS

ABBREVIATIONS

CBIRC	China Banking and Insurance Regulatory Commission
CCDC	China Central Securities Depository & Clearing Co., Ltd.
CCP	Central Counterparty
CFETS	China Foreign Exchange Trade System
CFFEX	China Financial Futures Exchange Co. Ltd.
CIBM	China Interbank Bond Market
CIOP	ChinaBond Integrated Operation Platform
CIPS	Cross-Border Interbank Payment System
CMU	Central Moneymarkets Unit, Hong Kong Monetary Authority
CNCC	China National Clearing Center
CSD	Central Securities Depository
DVP	Delivery Versus Payment
FMI	Financial Market Infrastructure
HVPS	High Value Payment System
MOF	Ministry of Finance
NAFMII	National Association of Financial Market Institutional Investors
PBC	People's Bank of China
RTGS	Real-Time Gross Settlement
SHCH	Shanghai Clearing House
SPC	Supreme People's Court
STP	Straight Through Processing

EXECUTIVE SUMMARY

Scope of assessment

The target of assessment in this report is China Central Depository & Clearing Co., Ltd. (CCDC), the central securities depository (CSD) and securities settlement system (SSS) of the China interbank bond market. At present, CCDC does not undertake the functions of payment system, central counterparty, or trade repository. Against the applicable Principles and Key Considerations in the PFMI, this report assesses the business of CCDC related to its CSD and SSS functions in the China interbank bond market. The time of assessment is December 2019.

Assessment approach

This report is based on the *CPSS-IOSCO Principles for Financial Market Infrastructures*, and adopts approaches recommended in the corresponding *PFMI: Disclosure Framework and Assessment Methodology* to complete self-assessment and information disclosure.

Ratings summary

Assessment category	Principles
Observed	2, 3, 4, 5, 7, 8, 9, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23
Broadly observed	1
Partly observed	
Not observed	
Not applicable	6, 10, 14, 24

SUMMARY OF MAJOR CHANGES SINCE THE LAST UPDATE

Cross-border FMI link established

In July 2017, the Hong Kong "Bond Connect" was launched. CCDC and the Central Moneymarkets Unit of Hong Kong established linkage with each other, thereby offering a new access between China's bond market and overseas markets. To facilitate DVP settlement for the Bond Connect, CCDC set up a link with CIPS, and became a direct CIPS participant as an FMI.

Rapid disposition of collateral now available

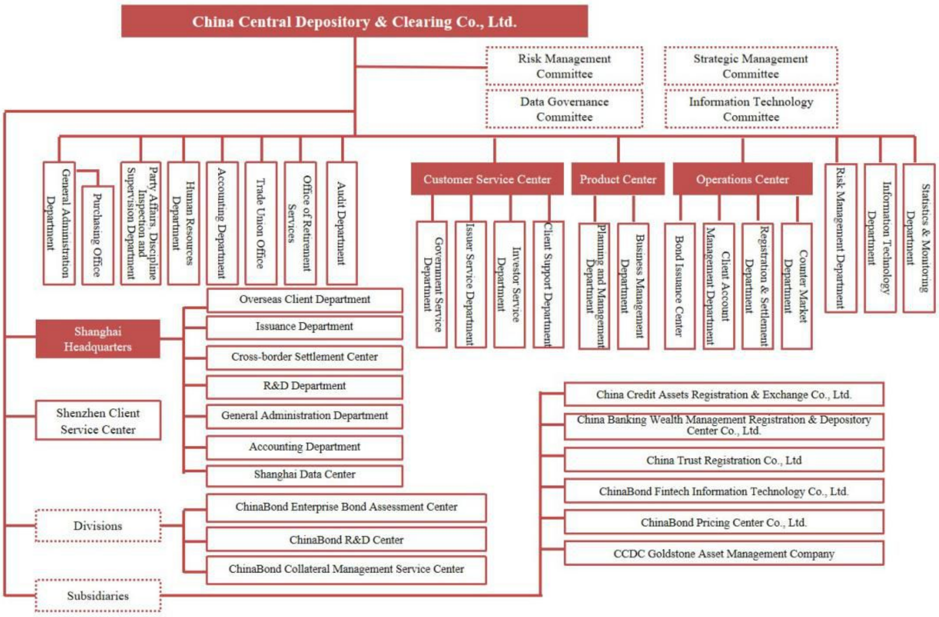
In June 2019, CCDC issued the *Operational Guidelines (Trial) on Disposition of Collateral after Default* which stipulates three approaches to the disposition of collateral in the event of default, including conversion into value by mutual agreement, private sale, and public auction. Market participants may choose any of the approaches based on their actual needs. The disposition of collateral by CCDC as an independent third party has such benefits as clear legal relationship, simple procedures, and high efficiency, thus ensuring that the disposition process is robust and efficient.

COMPANY PROFILE

Functions and organizational structure

China Central Depository & Clearing Co., Ltd. (CCDC or "the Company") is a wholly state-owned financial institution established with the approval and funding of the State Council. It is a core financial market infrastructure (FMI) in China's financial market, undertaking central securities depository (CSD) and securities settlement system (SSS) functions. Since its establishment, under the guidance and support of regulatory authorities, CCDC has developed gradually from a CSD for China government bonds only to servicing various types of financial assets. According to the relevant administrative measures issued by the Ministry of Finance (MOF), the Company is the sole general depository for China government bonds authorized by the MOF, in charge of building and operating the government bond depository system nationwide. In accordance with the relevant administrative measures for the bond market issued by the People's Bank of China (PBC), CCDC is the CSD for the China interbank bond market (CIBM) designated by the PBC, and the depository for commercial bank counter savings government bonds. Authorized by the National Development and Reform Commission (NDRC), CCDC is also the general depository for enterprise bonds, as well as the third-party technical assessment agency for the pre-issuance review of enterprise bonds. Also, the China Banking and Insurance Regulatory Commission (CBIRC) has authorized the Company to be responsible for developing and operating the wealth management product registration system, trust product registration system, and credit assets registration and exchange System. After more than 20 years of development, CCDC has become the core operation platform of the bond market, and also platforms for the implementation of national macroeconomic policies, direct financing, benchmark pricing, risk management, diversified financial market services, bond market innovations, and bond market opening-up.

To better implement the various mission and responsibilities vested by national policies, CCDC adopts the development strategy of conglomeration. It has established its Shanghai Headquarters and the Shenzhen Client Service Center, set up the UK Representative Office in joint efforts with the China Banking Association, established wholly owned subsidiaries including China Banking Wealth Management Registration & Depository Co., Ltd., ChinaBond Fintech Information Technology Co., Ltd., ChinaBond Pricing Center Co., Ltd., and CCDC Goldstone Asset Management Co., Ltd., incorporated China Credit Assets Registration & Exchange Co., Ltd. (CCRE) and China Trust Registration Co., Ltd. (CTR) as the controlling shareholder and the Shanghai Clearing House (SHCH) as a participating shareholder. It has also reorganized the ChinaBond Enterprise Bond Assessment Center, ChinaBond Collateral Management Service Center and ChinaBond R&D Center into business divisions. A conglomerate has taken shape over time with enhanced capabilities of serving the financial market.



CCDC organizational structure

Main bond business

CCDC is the core operation platform for the CIBM and the most important direct financing platform. It provides integrated full lifecycle services for the bond market including issuance, registration, depository, settlement, principal and interest payment distribution, pricing, collateral management, information disclosure, etc.

Bond issuance: To meet the demands of different issuers, CCDC has developed and maintained issuance systems applicable to various types of bonds, which support different issuance methods including tender and book building. It also provides bond issuance pricing services for the market. The Company provides secure and efficient information disclosure services that cover the entire lifecycle of bonds for issuers and other market participants. The scope of information disclosure mainly include bond issuance information, major corporate action events, rating reports and financial reports, among others. These help ensure that the market is open, transparent and sound.

Bond registration and depository: CCDC offers registration and depository services for various types of securities. Its services primarily include: issuing CIBM bond codes and abbreviations, and applying for International Securities

Identification Number (ISIN) for issuers, which is mainly to facilitate international investors' investment in the market; processing the initial registration of bond elements and initial quota allocation, which basically covers all elements of a bond throughout its lifecycle; processing primary market bond distribution for underwriters on a DVP basis, and assisting in issuance payment; establishing debtor-creditor relationships between issuers and investors, and supporting the recognition of bond beneficial ownership; supporting the listing and secondary market transaction of bonds; helping issuers to make inquiries about the register of bondholders in the event of bondholder meetings, exercising options or managing default risks pertaining to principal and interest payments; distributing issuer's principal and interest payments and other incomes as a paying agent; processing corporate actions such as option exercising, information services, and interest rate management for issuers and investors; and accounting management services including non-trade transfer, liquidation and distribution, and self-service account reconciliation.

Settlement: CCDC is connected to the China Foreign Exchange Trade System (CFETS) and China Financial Futures Exchange Co. Ltd. (CFFEX), enabling Straight Through Processing (STP) between the settlement system and various trading platforms. CCDC has also established links with major payment systems, including the link with the High Value Payment System (HVPS) which facilitates RTGS on a DVP basis in central bank money, and the link with the Cross-border Inter-bank Payment System (CIPS), which allows CCDC to automatically process "Bond Connect" DVP settlement.

Services for the commercial bank counter market: This business allows retail investors to purchase, trade, redeem and obtain income from bonds and other financial instruments by way of electronic book-entry through the physical branches or online channels of commercial banks or underwriters. This business, which comprises the savings government bond business and the counter-traded negotiable bond business, is an extension of the CIBM to retail investors, adopting a see-through two-tiered depository structure. It aims to construct a multi-tiered bond market system, providing extra asset allocation channels to residents and enterprises. CCDC provides full lifecycle services for commercial bank counter market-eligible bonds including registration, issuance, accounting management, transaction/early redemption, and principal and interest payment distribution, among others. And the types of commercial bank counter market-eligible bonds currently include China government bond, local government bond, and policy bank bond issued by the China Development Bank, the Agricultural Development Bank of China, and the Export-Import Bank of China.

Collateral management services: CCDC is committed to creating a "liquidity hub" and a "risk management hub" for the RMB financial system. Leveraging the professional, intelligent and parameter-based ChinaBond Collateral

Management Service System, CCDC offers its clients a full range of services including collateral selection, valuation, pledge, release of pledge, marking-to-market, and collateral adjustment to meet their various needs. A service system focused on supporting monetary and fiscal policies, market needs, and cross-border application of RMB collateral is taking shape.

(By par value, RMB 100 million)	2019	2018	2017
Issuance amount	153061.16	136678.28	135795.45
Bonds outstanding	649780.21	576183.50	509581.79
Settlement amount	14870713.56	12548949.60	10828864.40
Principal and interest payment amount	80671.17	69163.61	65316.30

Key bond business statistics of CCDC

PRINCIPLE 1: LEGAL BASIS

An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Key Considerations

1.1 The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.

CCDC's various forms of business are governed by the laws of China[1].

Pursuant to the *Notice on Distributing the Interim Measures on the Depository of the Government Bond of the People's Republic of China* (No.25 [1997] of China Government Bond of MOF) issued by the MOF of China, CCDC is the only CSD for China government bond authorized by the MOF, responsible for developing and operating the China government bond depository system. As per the *Measures on the Administration of Bond Transactions in the Interbank Bond Market* (PBC Decree No.2 [2000]), CCDC is the registration, depository and settlement institution in the CIBM as designated by the PBC.

Specifically, the laws, regulations, departmental rules, and administrative measures governing CCDC's business activities include the *Law of the People's Republic of China on the People's Bank of China*, the *Contract Law of the People's Republic of China*, the *Company Law of the People's Republic of China*, the *Property Law of the People's Republic of China*, the *Guarantee Law of the People's Republic of China*, the *Securities Law of the People's Republic of China*, the *Law of the People's Republic of China on Securities Investment Fund*, the *Law of the People's Republic of China on Electronic Signature*, the *Trust Law of the People's Republic of China*, the *Enterprise Bankruptcy Law of the People's Republic of China,* and the *Administrative Measures for the Registration, Depository and Settlement of Bonds in the Interbank Bond Market* (PBC Decree No.1 [2009]).

CCDC is the CSD and SSS in the CIBM. Aspects of its business that require high degree of legal certainty include: ownership of financial instruments, settlement finality, links with FMIs, immobilization and dematerialization of securities, DVP arrangement, collateral arrangement (margin arrangement), and default procedures.

1. Ownership of financial instruments

Ownership of financial instruments is of legal certainty in the legal framework of China. First, the MOF in 1997 explicitly stated for the first time that ownership of government bonds belongs to the holders. The *Notice on*

[1] The "laws of China" mentioned in this report only refer to the laws and regulations of the mainland of China, excluding the laws and regulations of Hong Kong Special Administrative Region, Macao Special Administrative Region and Taiwan

Distributing the Interim Measures on the Depository of the Government Bond of the People's Republic of China issued by the MOF (No.25 [1997] of China Government Bond of MOF) provides that "government bond holders possess the sole ownership, right of disposal and right of income to the government bonds under depository" in Article 10 and that "when faced with business suspension for rectification, dissolution, bankruptcy, or cancellation, the depository may not infringe clients' interest and should assist in the takeover by the new depository" in Article 12. Second, the ownership of fixed-income negotiable securities (bonds) in the CIBM belongs to the holders. The *Administrative Measures for Bond Registration, Depository and Settlement in the Interbank Bond Market* (PBC Decree No. 1 [2009]) sets out that "the amounts of bonds held should be determined by the securities balance recorded in the bond accounts " in Article 20 and that "in the event that the bond registration, depository and settlement institution falls under any of such conditions as bankruptcy, dissolution, division, merger and cancellation, bonds and other assets put under the depository of the institution by holders are exempt from liquidation" in Article 35.

2. Settlement finality

Settlement finality is acknowledged in the legal framework of China. The *Circular of the Supreme People's Court about Issues concerning the Freeze and Debit of Funds for the Settlement of Securities Transactions* (No.239 [2004] of SPC) confirms that "funds and securities of a judgment debtor, if already employed in the process of settling any agreed and confirmed transactions, or if delivered by the judgment debtor as collateral to guarantee the fulfillment of other payment obligations, shall not be frozen or debited by any people's court". The *Circular of the Supreme People's Court, the Supreme People's Procuratorate, the Ministry of Public Security, and China Securities Regulatory Commission on Issues Concerning the Inquiry, Freeze and Debit of Securities and Funds for the Settlement of Securities Transactions* (No.4 [2008] of SPC) in its Articles 5, 6 and 7 explicitly stipulates that the people's courts, people's procuratorates, and public security agencies may not freeze or debit settlement funds and settlement securities that settlement agencies receive and deposit in dedicated accounts according to pertinent laws and business rules, as well as collateral (including pledged bonds in repo, and assets used to cover price losses or as guarantee for the exercise of options or the performance of agreements) provided by settlement participants (like securities companies), investors or issuers. The *Administrative Measures for Bond Registration, Depository and Settlement in the Interbank Bond Market* (PBC Decree No.1 [2009]) sets out that "bond settlements should be irrevocable once completed" in Article 40 and "funds and securities that have entered the settlement process of a bond transaction yet remain to be paid, and the collateral involved in this transaction, can be used for this transaction only and shall not be subject to enforced execution" in Article 43. Based on the above provisions, the bond registration and settlement process carried out by CCDC is coherent and the settlement result is final. In the settlement process, even if one participant goes bankrupt, enforced freezing, debit or execution of settlement securities or funds by judicial agencies is not allowed. Moreover, CCDC has explicit provisions on settlement finality in its PBC-approved *Rules on the Settlement of Bond*

Transactions of China Central Depository & Clearing Co., Ltd. (No.76 [2005] of CCDC) and the *Client Services Agreement of China Central Depository & Clearing Co., Ltd. (Version 2015)*. The central bond bookkeeping system ("bookkeeping system") operated by CCDC, as the electronic accounting system for securities ownership transfer, processes bond registration, depository, settlement, redemption and other related businesses, support settlement finality.

As for the external settlement mechanism, CCDC initiates bond issuance payment, transfer of principal and coupon payment, and the cash clearing of bond transactions in the HVPS operated by the PBC as a special participant in the payment system against other participants. The *High Value Payment System Business Processing Measures* released by the PBC in 2016 stipulates that "payment will be final once related funds are cleared in the HVPS" in Article 8. Therefore, the external settlement mechanism of CCDC also supports settlement finality.

3. Links with FMIs

In recent years, under the leadership and support of regulatory authorities, CCDC actively promotes CIBM opening up, seeking to effect linkage with other FMIs under the legal framework of China.

First, CCDC is linked to the HVPS operated by PBC, enabling transactions in the CIBM to settle on a DVP basis. In accordance with Article 3 in the PBC Public Announcement No.12 [2013], CCDC should offer DVP settlement to market participants through the link between its bond business system and the PBC's HVPS.

Second, CCDC is linked to CFETS, by which the trading platform and the settlement system of the CIBM are connected. The *Administrative Measures for Bond Registration, Depository and Settlement in the Interbank Bond Market* (PBC Decree No.1 [2009]) states in paragraph 2 Article 17 that the National Association of Financial Market Institutional Investors (NAFMII), bond registration, depository and settlement institutions, and CFETS should establish an information and data exchange mechanism in accordance with relevant provisions of the PBC. The rights and obligations of CCDC and CFETS in terms of data exchange and system linkage are further clarified in Article 4 of PBC Public Announcement No. 8 [2013], the *Notice of the Financial Market Department of the People's Bank of China on Matters concerning the Entry of Qualified Non-Financial Institutional Investors into the Interbank Bond Market* (No. 35 [2014] of the Financial Market Department of the PBC), and Article 3 of PBC Public Announcement No. 9 [2015].

Third, CCDC is linked with China Securities Depository and Clearing Corporation Limited (CSDC), which allows eligible bonds (including government bonds, local government bonds, and enterprise bonds) to transfer between the interbank bond market and the exchange bond market. CCDC is linked with counters of commercial banks, which effectively connects the wholesale market and the retail market. As per the *Notice of the Ministry of Finance on Issuing the Administrative Measures for Cross-market Transfer of Depository of Government Bonds* (No.1025 [2003] of MOF), CCDC should provide necessary support to facilitate the depository and depository transfer of government bonds. The *Administrative Measures for Bond Registration, Depository and Settlement in the Interbank Bond Market* (PBC Decree No.1 [2009]) sets out that "CCDC can offer transfer of depository to bonds eligible for cross-market trading" in Article 36. The *Notice of the Ministry of Finance on the Issuance of Local Government Bonds in 2017* (No.59 [2017] of MOF) provides that "CCDC should diligently perform its duty as CSD, offering the depository and transfer of depository services to local government bonds" in Paragraph 3 Article 7.

Fourth, CCDC is linked to the Central Moneymarkets Unit (CMU) of Hong Kong, offering a new access between China's bond market and overseas markets. To support DVP settlement under the Hong Kong Bond Connect scheme, CCDC linked with the CIPS, becoming a direct participant in the CIPS as a financial market infrastructure. The *Interim Measures for the Administration of Mutual Bond Market Access between Mainland China and Hong Kong SAR* (PBC Decree No.1 [2017]) explicitly specifies the interconnectivity of CCDC with CMU and CIPS in Article 2. The *Joint Announcement of the People's Bank of China and Hong Kong Monetary Authority* released in July 2017 clearly states that CCDC would collaborate with Hong Kong Exchanges and Clearing Limited (HKEx) and Hong Kong CMU to facilitate the link between bond markets of Mainland China and Hong Kong. The *Operating Rules and Procedures for the Settlement under Bond Connect (Northbound Trading)* (No.150 [2018] of the General Administration Department of PBC) also stipulates the interconnectivity of CCDC with CMU and CIPS in Article 1.

Beyond that, CCDC carried out linkage cooperation with CFFEX, connecting the bond market with the derivatives market via a direct link between the trading and post-trade systems. It is also cooperating with SHCH to enable the use of different types of fixed-income assets as collateral in the Mid-Term Lending Facilities.

4. Immobilization and dematerialization of securities

Under the legal framework of China, the CIBM has realized immobilization and dematerialization across the market. The MOF and the PBC recognize the immobilization, dematerialization, and securities transfer by book-entry. The *Notice on Distributing the Interim Measures on the Depository of the Government Bond of the People's Republic of China* (No.25 [1997] of China Government Bond of MOF) issued by the MOF provides in Article 19 that "once the China government bonds are registered in the depository system, the balance stated in the bond account set up and managed by the depository for the client is the only legal basis to certify the amount of the Client's holding of China government bonds". The *Administrative Measures for Bond Registration, Depository and Settlement in the Interbank Bond Market* (PBC Decree No.1 [2009]) sets out in Article 19 that bond accounts are accounts opened in an electronic bookkeeping system operated by a bond registration, depository and settlement institution to record the type, amount and changes of bonds held by investor; and in Article 20 it stipulates that "the amount of bonds held by an investor is subject to the balance recorded in its bond account."

5. DVP arrangements

The CIBM adopts DVP settlement. The PBC Announcement No. 12[2013] sets out that "CIBM participants, when trading bonds, should settle bonds and funds on a DVP basis" in Article 2 and that "CCDC should offer DVP settlement to market participants through the link between its bond business system and the HVPS operated by the PBC" in Article 3. The *Measures for the Administration of the Commercial Bank Counter Business in the National Interbank Bond Market* (PBC Announcement No. 2 [2016]) sets out in Article 14 that "once a transaction is reached with an investor, the commercial bank shall promptly conduct cash clearing and bond settlement for the investors on a DVP basis".

CCDC is linked with CIPS and can offer DVP settlement to transactions under the Bond Connect scheme. The *Operating Rules and Procedures for the Settlement under Bond Connect (Northbound Trading)* (No.150 [2018] of the General Administration Department of PBC) states in Article 1 that "automatic connection is established between CIPS and the bond bookkeeping system of domestic CSDs to settle the bonds and funds of transactions under the Northbound Trading on an RTGS-DVP basis".

6. Collateral arrangements (including margin arrangements)

According to Article 224 of the *Property Law of the People's Republic of China*, for a pledge without title certificate, the right of pledge shall be established based on the official registration of the pledge. The *Administrative Measures for Bond Registration, Depository and Settlement in the Interbank Bond Market* (PBC Decree No.1 [2009]) sets out in Article 31 that "when bonds are frozen, the bond registration, depository and settlement institution should explicitly mark them in related bond accounts, in a bid to indicate that rights to the bonds are restricted". CCDC segregates the collateral assets accordingly.

CCDC's procedures for the disposition of collateral after default have adequate legal basis. The pledgee's claims against collateral have priority over other claims,as prescribed by the *Property Law of the People's Republic of China* in Article 170, the *Guarantee Law of the People's Republic of China* in Article 63 and the *Enterprise Bankruptcy Law of the People's Republic of China* in Article 109. The *Property Law of the People's Republic of China* recognizes the quick disposition of collateral in Article 219, by prescribing that "where a borrower fails to pay off its due debts or any circumstance for realizing the pledge right as stipulated by the parties concerned happens, the pledgee may, by negotiating with the pledger, convert the pledge into money or seek preferred payments from the money generated from the auction or sell-off of the pledged properties". The *Guarantee Law of the People's Republic of China* provides in Article 94 that "the conversion into money or sell-off of the objects of pledge, the hypothecated property or liened property shall be referenced with the market prices".

7. Default procedures

Under the legal framework of China, CCDC will handle defaults arising out of bond trading, settlement and delivery as negotiated by and between trading parties. The PBC Announcement No.12 in 2013 sets out in Article 12 that “where a bond transaction fails to be settled, the two parties in the transaction should submit a written explanation affixed with their official seals to the bond registration, depository and settlement institution on the next day after the settlement day”.

Additionally, the pertinent laws also offer substantial support to CCDC’s procedures for the quick disposition of collateral after default. Please see “collateral arrangements (including margin arrangements)” above for details.

1.2 An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.

First, when CCDC drafts its business rules, procedures and contracts, the department in charge will have adequate communication with other relevant departments to analyze whether the business frameworks, flows and operations contained in the rules conform to the current legal and regulatory requirements and whether they are feasible. This is the preliminary step to make sure the proposed business rules, procedures or contracts are consistent with the existing laws and regulations.

Second, in the drafting of its business rules, procedures and contracts, CCDC will consult with legal professionals such as law firms, to study related affairs and evaluate if they constitute breach of existing laws and regulations or not Relevant CIBM participants will also be consulted. CCDC will also put the rules and procedures through compliance reviews.

Third, according to Article 9 in the *Administrative Measures for Bond Registration, Depository and Clearing in the Interbank Bond Market* (PBC Decree No.1 [2009]), the business rules that CCDC drafts and revises should be reported to the PBC for approval, which guarantees the consistency between the business rules and the pertinent laws and regulations”.

To date, no discrepancy with the pertinent laws and regulations has been found in any of CCDC’s business rules, procedures or contracts.

To help market participants build adequate understanding, CCDC releases its business rules, procedures and contracts on its website (www.chinabond.com.cn, under columns such as “Laws and Regulations”, “Business Rules”, “Business Contracts”, etc.) and update them routinely. Market participants can obtain the information via search engines and the Client Terminal of the ChinaBond Integrated Operation Platform (CIOP). CCDC’s business rules, procedures and contracts are clear and complete, and are written in plain language. They mainly include the *Client Services Agreement*, the *Bond Issuance, Registration and Redemption Service Agreement*, and *the DVP Bond Settlement Agreement*, etc. Besides, CCDC has set up the Client Support Department (Training Department), which organizes various training sessions based on the actual needs of market participants, including introduction to the CIMB-related laws and regulations and to the business rules and procedures of CCDC. CCDC also has dedicated personnel to respond to issuers’ and investors’ questions and confusions by phone, email and other means.

1.3 An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.

The pertinent laws and regulations, business rules, agreements and other documents are publicized on CCDC's website (www.chinabond.com.cn). If it is specifically required by laws and regulations or regulatory authorities, CCDC will explain the legal basis on which business activities are conducted to relevant regulatory authorities and ask for their official approval before releasing the documents. See Key Consideration 1.2 for details.

1.4 An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.

The rules, procedures and contracts of CCDC are highly enforceable. When the Supreme People's Court (SPC) releases judicial interpretations related to the CIBM to guide judicial practices, it will seek opinions from the financial regulators and FMIs through official document circulation procedures. Besides, in the drafting of its business rules, procedures and contracts, CCDC will engage law firms to provide professional legal opinions, and will conduct compliance reviews in accordance with the current laws, regulations, rules, relevant judicial interpretations issued by the SPC, and the effective rulings made by People's Courts, with a view to ensure that the business rules, procedures and contracts can be highly enforceable in the Chinese jurisdiction. Therefore, CCDC's business rules, procedures and contracts are legally valid and enforceable, and will not be voided, revoked or terminated. Since CCDC's incorporation, none of its actions adopted in accordance with the business rules, procedures or contracts have been voided, revoked or terminated.

1.5 An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.

In terms of cross-border business involving two or more jurisdictions, CCDC will prudentially assess related risk against the framework of PFMI.

CCDC is providing foreign investors participating in the CIBM with multiple bond registration, depository, and settlement services. The *Announcement on Matters Related to Further Improving the Investment in the Interbank Bond Market by Foreign Institutional Investors* (PBC Announcement No.3 [2016]) provides in Article 12 that while investing in the CIBM, foreign institutions should abide by the related laws and regulations as well as requirements of the CIBM. Therefore, foreign investors should file with the PBC in order to invest in the CIBM; and the services provided by CCDC for them are governed by the Chinese laws. As for Bond Connect investors, their investment activities in the CIBM and ownership of bonds recorded in CCDC's books are also governed by the Chinese laws.

CCDC provides bond settlement services in the China (Shanghai) Pilot Free Trade Zone. Pursuant to the pertinent provisions of CCDC, these services are also governed by the Chinese laws. As to the foreign investors that participate in the FTZ bond market, CCDC issues specific business rules and requires them to sign the “Commitment Letter on Bond Settlements at the China (Shanghai) Pilot Free Trade Zone”, promising that they will abide by all applicable laws, provisions of CCDC and FTZ, binding agreements and other documents, and undertake any legal liability that may arise thereof.

Furthermore, for major cooperation projects with overseas FMIs, CCDC will agree with them on the choice of jurisdiction in related business agreements. For example, CCDC reached consensus with CMU in the business agreement related to the Hong Kong Bond Connect that the business is governed by the Chinese laws. Besides CMU, CCDC only signed MOUs with other FMIs, such as Clearstream and Euroclear, and has not yet launched any practical links. Therefore, there is no legally binding business agreement existing between them and hence no agreement on the choice of jurisdiction.

PRINCIPLE 2: GOVERNANCE

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Key Considerations

2.1 An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.

CCDC has formulated a five-year strategic plan. The strategic goal is to transform the Company into a major international FMI that is safe, efficient, open and transparent based on its role as a CSD offering central registration, depository and securities settlement. In order to achieve the strategic goal, CCDC stays committed to its mission of “providing safe, efficient and professional FMI services”, and upholds the core values of “integrity, responsibility and service”.

CCDC implements the strategic goal by integrating it into the annual work plan. It reviews its annual performance and formulates the next year's work plan, defines measurable and achievable objectives, summarizes and evaluates the actual performance of objectives and tasks every year, and delivers reports to the regulatory authorities.

As the core FMI in China’s financial market, CCDC regards safety and efficiency as the primary goal in its operation. In accordance with regulatory requirements, CCDC complies with the PFMI and draws on the practical experience of domestic and foreign peers to continuously improve its comprehensive risk management. CCDC continuously regulates and standardizes its system and business operations to ensure service efficiency. Internally, CCDC effectively identifies, evaluates and manages various risks; and externally, it safeguards the healthy development and stable operation of the financial market.

2.2 An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.

The senior managers of CCDC are appointed and assessed according to the

CBIRC's *Administrative Measures for the Qualifications of Directors and Senior Management Personnel of Financial Institutions in the Banking Sector*. CCDC clearly defines the corporate governance framework in its articles of association, and discloses such information through work reports, annual reports, its official website (www.chinabond.com.cn) and other channels. CCDC upholds the guidelines of collective, compliant, democratic and scientific decision-making, and emphasizes the compliance, consistency, feasibility and standardization of business development. As the core FMI in China's financial market, CCDC strives to promote the unity of interests between users and owners. CCDC actively implements regulatory requirements, gives full consideration to public interest, continuously improves cost efficiency in services, and accepts internal audit and external independent audit.

2.3 The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.

CCDC also appoints a chief supervisor. The board regularly reports to regulatory authorities, implements the authorities' decisions, and examines and approves the Company's operation and management plans. The Articles of Association clearly stipulates the role and responsibilities of the board, as well as its working mechanism. The performance of the Company's management team is reviewed on a regular basis. The regulatory authorities regularly review CCDC's management and operation reports and evaluate the performance of duties accordingly.

CCDC sets up the Risk Management Committee, the Strategic Management Committee, the Data Governance Committee, the Information Technology Committee and other specialized committees. All these committees report to the chairman of the board and are accountable to CCDC's decision-makers. The **Risk Management Committee** formulates the Company's risk management objectives, clarifies the Company's function in market risk management, sets the Company's risk tolerance levels, develops risk management strategies for the Company. It participates in the decision making on the major issues related to the risk management of the Company and risk prevention in the market, and manages the resources required for the purpose of risk management. Members of the Risk Management Committee include CCDC's company leadership, and heads of subsidiaries and branches. The **Strategic Management Committee** examines and discusses the Company's development strategies and other major issues affecting the Company's development. It coordinates the implementation of the Company's strategic management strategies to make sure the work is consistent with strategic objectives. Members of the Strategic Management Committee include the Company's leadership and heads of subsidiaries and branches. The **Data Governance Committee** formulates strategies for data management, data quality control and data commercialization in accordance with the Company's data governance objectives, and makes decisions on major issues related to data governance for the Company's head offices, subsidiaries and other branches. Members of the Data Governance Committee include the Company's leadership and heads of subsidiaries and branches. The **Information Technology Committee** is responsible for coordinating and steering the management of the Company's IT and IT risks (including information security) to ensure the consistency of IT development with the Company's business development goals.

The CBIRC reviews the performance of the board members and senior managers annually. The MOF evaluates the Company's performance.

2.4 The board should contain suitable members with the appropriate skills and incentives to fulfil its multiple roles. This typically requires the inclusion of non-executive board member(s).

The members of CCDC's management team come from different public sectors and market institutions, and are selected by regulatory authorities through strict procedures. They are sophisticated financial market practitioners possessing rich experience in financial supervision, financial infrastructure development, and financial market practice. CCDC is subject to the supervision and management of external agencies. It motivates the staff with the vision of building a first-class international depository and settlement institution, instead of an income-based incentive scheme. It pays great attention to creating an enabling environment for business development featuring loyalty, integrity and responsibility.

2.5 The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.

The responsibilities of CCDC's management are determined by the articles of association. The Company president takes responsibility for the Company's daily business management. The management is subject to annual review according to the annual work plan, while the regulatory authorities regularly review the Company's reports and evaluate its performance of duties. The members of the management are selected by regulatory authorities through strict procedures. They should be sophisticated financial market practitioners coming from various public sectors and market institutions, and should possess rich experience in financial supervision, financial infrastructure development, and financial market practice. They should meet the requirements for knowledge, skills and ethics, as well as the standards of morality, diligence, professionalism and integrity. When a member of the management no longer fulfills the criteria and qualifications required for the position, the CBIRC will remove him/her from office.

2.6 The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.

The Risk Management Framework

CCDC sets up the Risk Management Committee, which is accountable to the Company's top decision makers. The committee is responsible for formulating rules for the committee members to perform their duties, and assisting the chairman in supervising the Company's risk management activities. It sets risk tolerance levels for the Company based on the Company's strategic objectives, functions in the market, and risk status, and adapts the Company's risk management strategies to its risk tolerance. The committee participates in the decision making on the major issues related to the risk management of the Company and risk prevention in the market, and mobilizes resources required for the purpose of risk management.

Under the guidance of the Risk Management Committee, CCDC's Risk Management Department takes the lead in identifying, measuring, evaluating, monitoring, controlling/ mitigating comprehensive risks and other key risks, and reports to the Risk Management Committee in a timely manner. The department also issues emergency operations guidelines and emergency response manuals to ensure that system emergencies can be resolved promptly, correctly and effectively without interrupting normal business operations.

The risk management framework is reviewed by CCDC's top decision makers. Risk management is always among key tasks in CCDC's annual work plan. Specifically, the annual work plan requires that the Risk Management Department coordinate with other departments to assess and manage the high-risk areas in CCDC's business procedures, maintain the consistency of risk management at all levels of the Company, and ensure that the risk management model is fully verified and properly managed.

Functions of the Risk Management Department and the Audit

Department

The Risk Management Department is responsible for identifying, measuring, evaluating, monitoring, controlling/ mitigating comprehensive risks and other key risks, and reporting to the Risk Management Committee in a timely manner. It also needs to keep monitoring the implementation of risk management strategies, alert the Company to potential risks, report the risks to higher levels, and provide suggestions on the management of those risks to continuously improve the effectiveness of risk management.

The Audit Department is responsible for formulating internal audit mechanisms and plans, conducting internal audits, and preparing audit reports. It is authorized to check, examine and archive audit documents, provide audit-related advice, and investigate and affix responsibilities for any noncompliance or breaches. It is also responsible for developing annual audit plans.

2.7 The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.

As a core FMI in China's financial market infrastructure, CCDC solicits stakeholders' opinions about product design, business rules and procedures, overall strategies and other major decisions, and reports to relevant regulatory authorities, in order to protect the interests of all stakeholders.

In addition, CCDC collects opinions and suggestions from its participants and other stakeholders, and updates them on the Company's key developments and business plans through various channels, such as user conferences, customer visits and surveys, the user investigator mechanism, its official website (www.chinabond.com.cn), the customer service platforms, training programs, magazines, etc. Before the launch of specific innovative business, CCDC will assemble relevant industry experts into advisory committees to listen to opinions from all sides. CCDC set up its Shanghai headquarters and the Shenzhen Service Center to stay close to the market.

CCDC discloses key issues through various channels, including its annual reports, its official websites (www.chinabond.com.cn & www.ccdc.com.cn), customer service platforms, training programs, conferences, magazines, etc.

PRINCIPLE 3: FRAMEWORK FOR THE COMPREHENSIVE MANAGEMENT OF RISKS

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Key Considerations

3.1 An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.

Identification of risks

As a core FMI in China's financial market, the risks that arise in or are borne by CCDC could include legal, general business, credit, liquidity, systematic, custody and investment, as well as operational risks, among others.

CCDC does not provide central counterparty clearing (CCP), settlement guarantee, or overdraft services, and adopts real-time, gross-amount DVP settlement in central bank money through its link with the HVPS operated by the PBC. Hence, it has no credit risk, and its exposure to liquidity risk is extremely low. CCDC has good financial operation, a complete financial system for the management of its own assets, and sound procurement procedures. It is subject to financial audits by competent authorities and external auditors. Therefore, risks on its general business as well as custody and investment risks are relatively low. CCDC operates in a relatively simple legal environment, and rigorously observes regulatory requirements; hence, legal risk is relatively low. Market participants or other FMIs are the primary sources of systematic risk for CCDC. By entering into agreements with the aforesaid, CCDC has established a real-time business monitoring system, operation maintenance and monitoring platform and other control measures which can effectively reduce and promptly resolves such risks.

Operational risk has always been the primary risk to which CCDC is exposed. Operational risk can originate both internally and externally. Internal sources of risk include internal procedures, and staff and information system, while external sources of risk include key service providers, public utilities and external events.

Risk management framework

CCDC has a robust risk management framework, comprising the strategic, control and execution layers, which is underpinned by a series of clear and specific rules and procedures as well as an organizational structure with distinct responsibilities. By establishing a risk management organizational structure that threads through all levels, CCDC has constructed three robust lines of defense for comprehensive risk management.

At the strategic layer, a Risk Management Committee, accountable to the Company's top decision makers, has been established. It is responsible for (a) formulating CCDC's risk management goals, roles played in mitigating market risks, risk tolerance level and risk management policies and procedures; (b) making decisions on major events pertaining to risk management and market risk prevention; and (c) coordinating the various resources required for risk management.

The control layer is responsible for the routine management of comprehensive risks borne under the guidance of the strategic layer. CCDC's Risk Management Department carries out its responsibilities, which specifically include: (a) organizing the establishment of a comprehensive risk management framework; (b) coordinating the identification, measurement, assessment, monitoring, control and mitigation of various major risks, and promptly reporting to the Risk Management Committee; (c) drafting risk management-related policies and procedures under the guidance of the Risk Management Committee; (d) continually monitoring the implementation status of risk management strategies, risk preferences, risk management policies and procedures, rendering prompt warnings and reports pertaining to situations that breach risk preferences and risk management policies and procedures, as well as offering management advice; and (e) organizing the implementation of risk assessment, promptly identifying latent risks and management loopholes, and continually raising risk management effectiveness.

The execution layer, which comprises CCDC's business and IT departments, bears the frontline responsibility for risk management. Based on the risk management policies and division of responsibilities, the execution layer is responsible for developing business and risk management rules and procedures and relevant systems in line with different business characteristics, in order to identify, monitor, assess, report and mitigate risks, so that risks may be contained within a reasonable scope.

Risk management system

CCDC has established a real-time business monitoring system to monitor the settlement price, leverage ratio, settlement failure and other indicators of its customers. It has developed software quality control tools, and by formulating rigorous processes such as those for project approval, progress management, as well as inspection and acceptance testing, control over software quality risks has been achieved. CCDC has also built an operation maintenance and monitoring platform to monitor, measure, assess and manage system maintenance events. In addition, CCDC offers collateral management services, providing the market with quality financial risk management tools. Its collateral management center is the liquidity and risk control hub for the financial market, and effectively helps market participants control their risk exposure. Meanwhile, CCDC has established a collaborative mechanism with commercial banks which will offer credit lines to CCDC when necessary to ensure that CCDC can continue to provide services under extreme circumstances. This further boosts CCDC's ability to respond to and manage risk incidents, and ensures business continuity.

CCDC continuously improves the effectiveness of risk management by regularly organizing businesses and IT departments to conduct overall risk assessment, so that latent risks and management loopholes may be discovered promptly. The Risk Management Committee convenes work meetings annually to deliberate on the Company's risk management report, as well as to examine the Company's risk management policies, procedures, and the development of relevant systems, ensuring their effectiveness. Meanwhile, in the event of a material business or organizational change, and based on actual needs, the relevant risk management policies, procedures and systems will also be promptly updated.

3.2 An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.

To contain risks posed by participants, CCDC publishes business procedures and operational guidelines on its website (www.chinabond.com.cn). By entering into client services agreements, CCDC and its clients agree on the rights and obligations of each other. In particular, in the service agreement that CCDC enters into with issuers and with investors, the rights and obligations are clearly defined: for such situations as settlement failure, payment failure or delay caused by insufficient funds of an investor or an issuer, CCDC will not provide credit or assume any liability. CCDC regularly organizes business training for market participants, and formulates detailed network access rules to restrict the access by participants. By providing the aforesaid information or measures, CCDC helps market participants and clients to effectively control and manage the risks they pose to CCDC.

In terms of incentives to participants, business fees are waived for settlement participants that do not have material risks and are eligible to enjoy CCDC's various business fee and settlement fee preferential policies. Implementation details of the relevant preferential policies are disclosed on CCDC's website (www.chinabond.com.cn). In addition, CCDC selects outstanding market participants every year based on their performance, and commends them publicly on its website (www.chinabond.com.cn) and other news media.

In terms of policy and system design, CCDC actively promotes STP, and adopts real-time gross settlement (RTGS) on a DVP basis, thus effectively reducing liquidity and credit risks that may arise in and from market participants. CCDC has a rigorous member access and participation mechanism, and uses CA certificate for user authentication. Market participants may respond to emergencies by using the electronic authentication device, so that the market participant can be protected from operational risks resulting from its own system failure or communication failure. The collateral management services of CCDC can effectively help market participants control their risk exposures.

3.3 An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.

Identification of risks

CCDC organizes its business and IT departments to conduct overall risk assessments, in an attempt to identify risks caused to market participants or other FMIs, such as the HVPS, CFETS, CIPS, SHCH, and CFFEX, due to system interruption or operational errors of the Company, and risks caused to the Company by external service providers, public utilities and other FMIs.

Risk management tools

CCDC monitors in real time the operating condition of the CIOP as well as its interface with other FMIs through its operation maintenance and monitoring platform, and abnormal business conditions through its business monitoring system. Besides the aforesaid risk assessments, CCDC also conducts ad-hoc risk assessments in the event of material business or organizational changes.

In terms of FMI dependencies, there is critical interdependency between CCDC's CIOP and PBC's payment system. The CIOP provides automatic secured financing services for the payment system, and the payment system supports the real-time DVP settlement business of the CIOP. CCDC and the payment system operator have entered into a joint operation agreement, and regularly hold liaison meetings to assess risks arising in and from changes in business rules and IT system upgrades, and to look for solutions. They conduct joint switchover drills as required. In addition, CCDC has established a FTP data resending mechanism with some FMIs. In the event of communication failure, business data may be transmitted via encrypted emails so that business may be completed manually.

To protect market participants from operational risks resulting from the failure of their own system or communication channels, CCDC has established emergency operating procedures. Fax with electronic authentication device may be used by market participants to conclude their business manually.

CCDC conducts emergency drills annually, and assesses the effectiveness of risk management tools or systems in various disruption scenarios. It actively participates in joint drills led by key external related entities and market participants. Emergency power generation drills, backup system switchover drills, payment system connection drills and other key drills are carried out at least once a year.

3.4 An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.

By conducting business impact analyses and risk assessments, CCDC's business and IT departments can effectively identify scenarios that may potentially prevent CCDC from providing its critical operations and services, and thus, from meeting business continuity requirements. Such scenarios may include unavailability of IT systems, staff being affected, unavailability of operation venues, critical equipment being affected, documents and office supplies being affected, external related entities being affected, etc.

CCDC has built a disaster recovery mechanism that features three centers situated in two locations, and has developed a business continuity plan and business recovery plan to ensure that its systems function normally. In the event of major disruptions, it is able to promptly take over, restore and resume the operations of key business functions of the CIOP. It has also set up backup business operation venues will be employed in the event of a major disruption so that key businesses can be taken over and restored, and resumed.

According to the independent risks and associated risks faced by FMIs identified in important scenarios affecting business continuity, CCDC has developed an effective emergency response system. The business continuity plan have defined the organizational response structure in an emergency, specified business recovery strategies, emergency and business recovery plans, backup sites, and back up operation venues, among others. Targeted emergency measures have been developed in relevant emergency plans. CCDC has also published *Interim Emergency Response Procedures*, and *CIOP Emergency Response Codes*. These documents specify the roles and responsibilities in the handling of emergencies, and establish emergency response and reporting procedures, effectively standardizing and refining the emergency management process, and ensuring that critical operation and services are provided on an on-going basis. CCDC conducts emergency drills regularly every year, including planned switchovers and table simulations to ensure that critical recovery and orderly wind-down plans are effective.

Meanwhile, the business and IT departments of CCDC regularly review and update the business continuity plans they are in charge of. CCDC also reviews the business continuity plan of the entire company every three years.

PRINCIPLE 4: CREDIT RISK

An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.

Key Considerations

4.1 An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.

CCDC's participants bears credit risks, which mainly relate to settlement participants' failure to settle transactions at the end of the day, or the issuers' failure to make interest and principal payments in full. However, as CCDC adopts RTGS on a DVP basis, provides no settlement guarantee or daylight credit, and only undertakes the function of fund transfer in terms of interest and principal payment, CCDC has no direct exposure to the credit risks of its participants.

As a core FMI in China’s financial market, CCDC actively cooperates with regulatory authorities in monitoring risks. The main indicators monitored for credit risks include unconfirmed instructions at day-end, failure of settlement at day-end, uncovered risk exposure in pledged repo, uncovered risk exposure in outright repo, collateral coverage ratio, etc. The risk monitoring report is submitted to the regulatory authorities by email on a daily basis.

4.2 An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.

As mentioned in Key Consideration 4.1, the credit risks related to CCDC mainly come from participants' failure to settle transactions at the end of the day, or the issuers' failure to make interest and principal payments in full. However, CCDC has no direct exposure to such credit risks since it adopts DVP settlement on a real-time and gross basis, and provides no settlement guarantee or daylight credit.

Based on the bookkeeping and settlement information in its system, CCDC monitors the credit risk of participants every working day. The indicators monitored include unconfirmed instructions at day-end, settlement failure at day-end, uncovered risk exposure in pledge repo, uncovered risk exposure in outright repo, collateral coverage ratio, etc. As for collateral management, CCDC will calculate and update the collateral value at the beginning of each day based on the latest ChinaBond valuation, and at the same time, adjust collateral against the exposure to ensure full risk coverage.

4.3 A payment system or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.

Not applicable.

4.4 An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI's process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.

Not applicable.

PRINCIPLE 5: COLLATERAL

An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Key Considerations

5.1 An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.

CCDC adopts RTGS, and currently is not offering net settlement service as a CCP. It does not guarantee settlement or offer daylight liquidity support. Therefore, it will not require its participants to submit collateral for the need to control its own risks.

In services available currently, CCDC only provides collateral management services for participants as an independent third party. The specific collateral selection criteria and requirements are determined by trading parties themselves according to their own risk assessment and negotiation with each other.

As a third-party collateral management service provider, CCDC has built a professional, safe and efficient collateral management service platform, rigorously implementing the collateral selection standards agreed by trading parties. Its collateral management services are based on key parameters such as collateral scope and pledge ratio, and support marking-to-market, and the replenishment, return and automatic substitution of collateral. Assets used as collateral are monitored in real time and can be adjusted automatically to ensure that the collateral meets the parameters preset by trading parties.

5.2 An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.

The valuation data used by CCDC are calculated by the ChinaBond Pricing Center Co., Ltd, which represent the realizable reference price at a specific point of time based on market information such as yield curves. The data, consisting of fundamental, price, yield, risk and liquidity indicators and covering various bond types in the market, have become widely accepted bond pricing reference by the market.

CCDC's collateral management system marks the collateral to market on a daily basis according to the fair value of the bonds calculated on the prior day (i.e. the ChinaBond Valuation). Marking to market can be conducted multiple times a day as requested by customers.

The pledge ratio is negotiated by the trading parties, and can be set for each of the elements including the issuer, bond type, remaining maturity and credit rating. The final pledge ratio of a specific bond is the product of the pledge ratios of all these elements. CCDC is responsible for parameter maintenance and monitoring in the system.

5.3 In order to reduce the need for procyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.

The trading parties can adjust the pledge ratio throughout the duration of the pledge. CCDC is responsible for parameter maintenance and monitoring in the system.

5.4 An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.

CCDC is a third-party collateral management service provider. The concentration limit of collateral is determined by trading parties through negotiation. CCDC is responsible for parameter maintenance and collateral monitoring in the system.

CCDC itself is not exposed to counterparty credit risk or liquidity risk. There is no need for it to take collateral from settlement participants. Hence it does not face the problem of collateral concentration.

5.5 An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.

At present, CCDC will not require participants to submit any collateral for the need to control its own risks. CCDC only acts as an independent third-party service provider to help market participants manage RMB bond collaterals.

5.6 An FMI should use a collateral management system that is well-designed and operationally flexible.

CCDC's collateral management service system is characterized by parameter-based, automatic and intelligent management of collateral. Flexible parameter-based management is implemented for key elements such as collateral scope and pledge rate. Various parameters can be set, maintained and modified in the system according to the individual requirements of different businesses to achieve customized services. Based on parameter-based management, the system can process collateral selection, calculation, pledge, release of pledge, marking to market, adjustment and substitution automatically. As for intelligent management, the system can achieve comprehensive risk control throughout the duration of the pledge. Through functions such as marking to market, replenishment and return, and automatic substitution of collateral at maturity and in the event of rating adjustment, the system can monitor the collateral in real time and protect the interests of both parties for the transaction.

According to the preset business parameters, CCDC’s collateral management system monitors and adjusts collateral in real time during the period of the transaction. When the pledged bonds no longer qualify as collateral or are not enough to cover the risk exposure, the system will automatically initiate instructions such as collateral replenishment, return and automatic substitution to achieve overall risk control. At present, CCDC does not support reuse of collateral.

PRINCIPLE 7: LIQUIDITY RISK

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same- day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Key Considerations

7.1 An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.

CCDC does not offer daylight credit to clients, and thus it neither faces liquidity risks nor poses liquidity risks to its participants.

7.2 An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.

CCDC monitors the settlement of bonds three times a day - at the beginning, during, and at the end of the day. Abnormal situations will recorded and reported in a timely manner. The monitoring indicators mainly include the receipt of instructions by the bookkeeping system, contracts not yet settled during the day due to insufficient funds or bonds, instructions to be confirmed, and the end-of-day processing performance of the bookkeeping system. As for the settlement of funds, CCDC monitors the processing of settlements and cash positions regularly throughout the day. Indicators to be monitored mainly include whether the transactions in the cash system of CCDC matches with the payment system, the number of settlements of transactions in progress, as well as the number of transactions not yet settled due to insufficient bonds or funds. CCDC will summarize the settlement performance of each day, including the number of transactions settled, amount of funds returned, and unsettled settlement contracts, will and form internal daily settlement business monitoring reports. CCDC does not provide credit lines for settlement participants, and thus is not exposed to intraday liquidity risks. Daily monitoring it conducts is only to ensure the safe and stable operation of its system and the bond market, rather than planning for the allocation of liquidity.

7.3 A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.

Not applicable.

7.5 For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in depository and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.

Not applicable.

7.6 An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.

Not applicable.

7.7 An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient *information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.*

Not applicable.

7.8 An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.

CCDC is a direct participant in the HVPS and CIPS of the PBC. It has opened cash clearing accounts in the payment systems through which it can help the indirect participants in the payment systems to complete the fund settlement. If one or both parties of a transaction are direct participants of the payment system (i.e. they have cash clearing accounts in the payment system), CCDC's cash system will send the DVP fund settlement instructions to the payment system via instant transfer messages to complete the settlement of funds.

CCDC does not provide daylight credit to settlement participants and hence not exposed to liquidity risks.

7.9 An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk- management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.

Not applicable.

7.10 An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

Not applicable.

PRINCIPLE 8: SETTLEMENT FINALITY

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Key Considerations

8.1 An FMI's rules and procedures should clearly define the point at which settlement is final.

For detailed legal provisions on "settlement finality" please refer to "Key consideration 1.1" under "Principle 1: Legal basis". The *Administrative Measures for the Registration, Depository and Settlement of Bonds in the Interbank Bond Market* promulgated by the PBC provides in Article 40, Chapter VI that bond settlement cannot be revoked once completed. The *Procedures on Implementing Delivery Versus Payment* drafted and released by CCDC states that "it provides settlement participant in the CIBM with DVP settlement service" and clarifies the process and fund transfer arrangements of the DVP settlement business. The above legal provisions and business procedures are publicly disclosed information.

CCDC adopts RTGS on a DVP basis. in central bank money. The specific business process is as follows: The bookkeeping system of CCDC blocks the bonds that would then be labeled as "to-be-paid" status, and then generates an instant fund transfer message which will be sent to the payment system. The payment system will process the transfer of the associated funds accordingly and then feed back the results to CCDC's bookkeeping system, so that the latter system can immediately have the bonds delivered. settlement participants can check the settlement status via the CIOP client terminal in real time. CCDC's system is directly linked to the HVPS of the PBC; and the DVP settlement mechanism makes sure that a bonds transfer and a funds transfer are linked together and can be completed simultaneously. In other words, once the settlement is completed, the bonds and the funds will reach settlement finality.

CCDC is only involved in Chinese mainland jurisdiction. So far, CCDC has established only one cross-border link arrangement, which is the Bond Connect with Hong Kong CMU. The *Interim Measures for the Administration of Mutual Bond Market Access between Mainland China and Hong Kong SAR* provides in Article 3 that "Unless otherwise provided in these Interim Measures, the Northbound Trading shall abide by the trading and settlement laws and regulations currently in force in the markets in Mainland China and

Hong Kong SAR, and related trading and settlement activities shall comply with the regulations and business rules of the place where the trading and settlement activities take place." In the Northbound Trading, investments are made into the onshore bond market with one party being a mainland-based market maker. The aforementioned settlement finality arrangement still applies.

8.2 An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.

CCDC settles transactions on a RTGS-DVP basis on the settlement day. Once a settlement contract becomes effective, CCDC will start checking the associated bonds and funds. If both of them are sufficient, the settlement can be completed immediately and is of real-time finality. Where either the bond or the fund is insufficient, the system will keep waiting for additional bond or fund until the end of the settlement day. If the bond or fund is still insufficient then, the settlement contract will be deemed as failed. Under this arrangement, no settlement obligation can be rolled over to the next day. Upon completion of the settlement, the settlement results will be made known to the settlement participant concerned through the system automatically. The settlement participant may also check settlement status via the CIOP client terminal. At present, batch settlement is not yet available at CCDC.

8.3 An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.

CCDC adopts RTGS on a DVP basis. At any point in the operating hours of the system, the settlement of bond transactions, once completed, will be final and irrevocable. The settlement instructions confirmed yet not settled by the end of the settlement day cannot be revoked. No exception or extension can be made to the revocation deadline. Relevant requirements are publicly disclosed in the forms of PBC provisions or CCDC rules.

PRINCIPLE 9: MONEY SETTLEMENTS

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Key Considerations

9.1 An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.

Pursuant to the PBC Public Announcement No.12 [2013], CCDC shall provide DVP settlement service for CIBM participants through its link with the HVPS operated by the PBC.

Market participants with accounts in the HVPS can complete the cash leg of the DVP settlement through their HVPS accounts. Market participant without accounts in the HVPS should entrust CCDC to complete the cash leg of DVP settlement on their behalf. In the case of CCDC performing cash leg of the settlement via its special settlement account in the HVPS, dedicated cash settlement accounts are opened for market participants under CCDC's special account in the HVPS.

In either case, CCDC completes DVP settlement in central bank money.

9.2 If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.

CCDC settles transactions in central bank money. Key Consideration 9.2 is not applicable.

9.3 If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.

CCDC settles transactions in central bank money. Key Consideration 9.3 is

not applicable.

9.4 If an FMI conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks.

If neither of the two trading parties are direct participants in the HVPS, CCDC will open, under its special settlement account in the HVPS, dedicated cash settlement accounts for both trading parties between which cash is settled. This type of settlement is also conducted in the form of DVP. CCDC does not provide daylight credit or settlement guarantee, thus incurring no credit risk or liquidity risk on itself.

9.5 An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.

The agreement signed by and between CCDC and the PBC explicitly stipulates that fund transfer, once completed, is final and that the received funds are transferable. If the settlement of funds is made in the HVPS, once the DVP settlement is completed, the associated funds will be transferred to the receiver's HVPS settlement account in real time and can be used for other settlement activities. If the settlement of funds is made through the dedicated cash account opened with CCDC, once the DVP settlement finishes, the associated funds will be transferred to the dedicated cash settlement account of the receiver and can be used for other settlement activities. Additionally, The day-end balance of the dedicated cash accounts should be kept at zero, meaning that any remaining funds in the accounts will be transferred back to the investors' designated bank accounts automatically at specific time points (16:30, 16:50 and 17:05) at the end of each business day. At present, CCDC conducts DVP settlement in central bank money and thus does not have fund transfer arrangements with commercial banks yet.

PRINCIPLE 10: PHYSICAL DELIVERIES

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

Key Considerations

10.1 An FMI's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.

All securities under the depository of CCDC are dematerialized. Key Consideration 10.1 is not applicable.

10.2 An FMI should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.

All securities under the depository of CCDC are dematerialized. Key Consideration 10.2 is not applicable.

PRINCIPLE 11: CENTRAL SECURITIES DEPOSITORIES

A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimise and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry.

Key Considerations

11.1 A CSD should have appropriate rules, procedures, and controls, including robust accounting practices, to safeguard the rights of securities issuers and holders, prevent the unauthorised creation or deletion of securities, and conduct periodic and at least daily reconciliation of securities issues it maintains.

Protecting interests of issuers

In terms of institutional arrangements, pursuant to the *Administrative Measures for the Registration, Depository and Settlement of Bonds in the Interbank Bond Market*, the *Administrative Measures for the Issuance of Financial Bonds in the Interbank Bond Market*, the *Interim Measures on the Depository of the Government Bond of the People's Republic of China*, the *Guidelines for the Issuance of Enterprise Bonds by Book Building/Public Auction*, and other measures and provisions, CCDC is the official CSD and SSS in the CIBM, authorized to provide bond issuers with bond registration, interest and principal payment distribution and transfer, and information disclosure services. CCDC and bond issuers enter into services agreements which set out the rights and obligations of both sides. CCDC solicited market opinions extensively when drafting the service agreement and had submitted it to the PBC for filing. At the same time, within its purview, CCDC draws up rules and procedures for bond issuance based on market practices.

In terms of issuance support, to fully protect issuers' rights, market-based issuance methods including issuance by public auction and by book building have been made available by CCDC in several locations in the country. Meanwhile, CCDC implements strict issuance site management policies to maintain proper order.

Besides, CCDC assigns bond code to bonds under its depository and help with ISIN code application through stringent check and review procedures. It maintains the register of direct bondholders for issuers as authorized by the regulators, and retains registration materials of bondholders.

Protecting interests of investors

(1) CCDC and bondholders enter into service agreements which set out the rights and obligations of both sides. CCDC solicited market opinions extensively when drafting the service agreement and had submitted it to the PBC for filing. The CIBM adopts a direct-holding account system, under which the legal relations between end investors and issuers are direct and clear. This arrangement can protect investors' assets, rights and interests to the greatest extent.

(2) CCDC, as an official CSD and SSS in the CIBM, registers the bondholders by book entry (i.e. bond registration) according to pertinent laws. Furthermore, in case of any change to the balance of a bond account or to the bond issuer, CCDC will have such change registered in a timely manner.

(3) CCDC has developed a self-service bond information disclosure system, requiring issuers to disclose a variety of information such as financial statements, rating reports, announcements on interest payment and principal redemption, before bond issuance and throughout the duration of the bond. This can keep investors updated as to the bonds they hold.

(4) CCDC adopts the DVP settlement on a real-time and gross basis. Settlement results are reflected in bond accounts in real time to accurately show changes in the account balance. Investors may check settlement statements any time via the CIOP client terminal, to learn about any change to bond balance accurately.

(5) CCDC is obliged to keep the information of bondholders confidential. It will not disclose the register of bondholder to external parties if not necessary.

(6) As for the rights and interests of investors in the commercial bank counter market, CCDC requires commercial banks and savings government bond underwriters to submit data to CCDC, including details of accounts they open for investors, account balances, and business changes on a daily basis. Only verified data can be used as the basis for CCDC to conduct final settlement. Moreover, CCDC has set up an account balance review and inquiry mechanism. Commercial bank counter investors may check whether the bond holding information provided by commercial banks is authentic and accurate by phone calls.

Management and maintenance of securities books

All bonds under CCDC's depository are dematerialized. Bondholders can open bond accounts directly with CCDC and hold bonds in their accounts. Investors may check the balance of their bond account in real time or request for written account reconciliation reports. In the event of the bankruptcy, dissolution, division, merger or termination of the CSD, investors' bonds and other assets under depository of CSD are exempt from liquidation. With clear bond account structures, robust accounting practices, and accurate accounting information, CCDC has been operating stably for more than two decades. Besides, CCDC is subject to stringent supervision by regulators and undergoes external audits at least once a year.

With respect to securities registration, CCDC puts in place the following internal control procedures: First, the initial registration of bonds is predicated on the confirmation of the receipt of the raised funds and against the relevant bond registration materials provided by the issuers or lead underwriters. Second, the cancellation of registration is triggered by redemption at maturity, early redemption, exercise of options, and other actions which lead to the termination of claims and obligations. Third, all bond registration operations will be double-checked by the authorized personnel in CCDC's system. Fourth, commercial banks undertaking counter business will submit to CCDC the details of the bond account they open for investors, account balances, and changes thereof on a daily basis. CCDC will update the balance of the mirror accounts of the investors in its books accordingly.

In terms of reconciliation, CCDC processes bond issuance, depository and settlement in the same book. It registers bonds based on bond issuance results, and updates promptly the registration information in response to changes in bond account balances. In this way, CCDC can make sure that the amount of bonds issued and the amount of bonds being held by investors match with each other.

11.2 A CSD should prohibit overdrafts and debit balances in securities accounts.

CCDC adopts the DVP settlement method. Payment instructions will not be sent to the payment system until the selling party has enough bonds in its account. Settlement will fail if there are still insufficient bonds by the end of settlement date. Therefore, neither account overdraft nor debit balance will happen in CCDC's system.

11.3 A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry. Where appropriate, a CSD should provide incentives to immobilise or dematerialise securities.

CCDC issues and safekeeps bonds in an electronic system. All bonds under CCDC's depository are dematerialized. CCDC provides a full package of services covering bond issuance, depository and settlement, and makes full use of electronic technology to achieve scale efficiency and reduce market operating costs significantly.

11.4 A CSD should protect assets against custody risk through appropriate rules and procedures consistent with its legal framework.

Bond investors place their bonds under CCDC’s depository. CCDC safekeeps the bonds and manages the rights and interests thereof. CCDC takes secure and effective measures to administrate the bonds under its depository, so as to make sure that the bond records are authentic, accurate, complete and secure and thus eliminating depository risk. Specifically, as for the internal control measures, CCDC strictly segregates clients’ assets from its own assets. It puts in place stringent internal processes, which require that each operation should be reviewed by a second person before taking effect. CCDC adopts prudent financial policies, sets out the obligations for security maintenance via business rules and agreement terms, and promotes dematerialization and takes system security measures.

CCDC is subject to stringent supervision of the CBIRC, PBC, MOF, and other regulatory authorities of China. CCDC conducts business in strict accordance with the pertinent laws and regulations. Its business rules and internal operational procedures have sufficient legal and regulatory basis, reflect opinions from various parties, and are submitted to regulators for approval or filing. The business rules, procedures and agreements of CCDC are legally binding. So far, no court ruling goes against its business rules or agreement terms.Clients’ assets are effectively protected, exempt from claims of CCDC’s creditors, if any.

To protect participants’ securities from being embezzled or stolen, CCDC adopts the following measures: First, bond accounts are opened in real names. Second, CCDC’s system is accessible only after identity authentication. Third, CCDC’s bookkeeping system records account changes in real time, allowing investors to check account balance at any time they wish and request for account reconciliation in writing. Fourth, CCDC strives to ensure the system’s safe and stable operation and have developed system failure response mechanisms, and disaster recovery and backup mechanisms.

11.5 A CSD should employ a robust system that ensures segregation between the CSD’s own assets and the securities of its participants and segregation among the securities of participants. Where supported by the legal framework, the CSD should also support operationally the segregation of securities belonging to a participant's customers on the participant's books and facilitate the transfer of customer holdings.

At present, the CIBM mainly adopts a direct-holding depository arrangement. CCDC opens accounts for all end investors (including legal entities and unincorporated financial products) in their own names. Bond accounts are opened in real names, and cannot be leased, lent or transferred to others.

One investor can only open one proprietary bond account.

As for the commercial bank counter market and savings government bond business, the commercial banks and savings government bond underwriters each open a general agency account with CCDC as the nominee holder, and use this account to record the bonds which are owned and put under their custody by end investors. The general agency account is segregated from their proprietary bond account. End investors should open accounts with the commercial banks or savings government bond underwriters which will then submit to CCDC the details of the bond account they open for end investors, account balances and changes on a daily basis. CCDC will update the balance of the mirror accounts of the investors in its books accordingly. If end investors plan to trade the bonds or transfer them to other markets, the commercial banks or underwriters will report to CCDC the account changes related to such operations on a daily basis. Account transfer instruction is generated after verification to transfer bonds between the general agency account and the proprietary account or between two general agency accounts.

As prescribed by the *Administrative Measures for the Registration, Depository and Settlement of Bonds in the Interbank Bond Market*, the bond registration, depository and settlement institution is not entitled to any kind of ownership of bonds under its depository and should refrain itself from bond misappropriation. In the event of bankruptcy, dissolution, division, merger or termination of the bond registration, depository and settlement institution, the bonds and other assets put under its depository by its clients are exempt from liquidation. There is sound legal basis for CCDC to segregate the assets under its depository from its own assets.

11.6 A CSD should identify, measure, monitor, and manage its risks from other activities that it may perform; additional tools may be necessary in order to address these risks.

CCDC's main business scope is: supporting bond issuance; opening and managing bond and cash accounts; bond registration, depository and settlement; distributing principal and interest payments; managing pledged bonds; exercising bond-related rights on behalf of bondholders against bond issuers; providing commercial bank counter investors with balance check and inquiry service; offering information, inquiry, advisory and training services related to bond registration, depository and settlement.

Besides, CCDC offers collateral management services and bond pricing products based on its resources and expertise. Such services and products provide added value to market participants, helping them manage risks, learn about market conditions, conduct performance evaluations and meet accounting needs. The provision of such services will not bring credit risk or liquidity risk to CCDC itself or its participants.

PRINCIPLE 12: EXCHANGE-OF-VALUE SETTLEMENT SYSTEMS

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Key Consideration

12.1 An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.

CCDC adopts the real-time gross DVP settlement method (BIS DVP Model I). The delivery of bonds is the precondition for the transfer of funds and vice versa. Bonds transfer and funds transfer occur simultaneously so as to ensure final settlement and eliminate principal risks. The specific process is as follows: CCDC's bookkeeping system will check whether sellers' bonds are sufficient on the settlement date designated by both parties. If sufficient, the bonds will be blocked, and an instant fund transfer message will be generated and sent to the payment system. The payment system will process the transfer of funds in real time and feed back to the bookkeeping system which will then complete the bond settlement. If the bonds are insufficient, the bookkeeping system will wait for the replenishment of bonds until the end of the day when unsettled contracts will constitute settlement failure. The settlement of each transaction is based on an independent settlement contract and not linked to other settlements.

PRINCIPLE 13: PARTICIPANT-DEFAULT RULES AND PROCEDURES

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Key Considerations

13.1 An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.

CCDC does not provide liquidity support or settlement guarantee, nor does it recognize default events in transactions. CCDC may determine whether the settlement has failed, but whether the settlement failure constitutes default is determined by the relevant agreements between the trading parties, e.g. the provisions on default and termination events in the *NAFMII Bond Repurchase Master Agreement*. In case of issuers failing to make interest or principal payments in full when due, CCDC will report the facts to the competent authorities which will determine whether it constitutes an event of default.

According to the *Client Services Agreement*, CCDC is not liable for: settlement failure resulting from the fact that the participant or the counterparty fails to perform settlement obligations due to insufficient bond or cash (cash clearing bank included in this case); settlement delay or failure resulting from the fact that the instructions sent by the participant lack necessary elements, or the instructions are not confirmed, or the electronic signature attached to the instructions does not meet the requirements, or some settlement contracts with special requirements are not confirmed; and the settlement failure caused by the fact that the bonds in the account are frozen or deducted by competent authorities.

13.2 An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.

CCDC's settlement rules clearly stipulate the settlement processing procedures for each transaction in the bookkeeping system. In case of settlement failure, the bookkeeping system will clearly show the cause of settlement failure to both parties, either due to insufficient bonds or insufficient funds. CCDC has no discretion over whether a default occurs.

According to the PBC Public Announcement No.12 [2013] and other regulations, in case of settlement failure, CCDC will contact both parties of the transaction promptly to gain an understanding of the situation. Both parties of the transaction are obliged to submit a written explanation to CCDC on the next working day, and CCDC will summarize the information and report to the PBC on the following working day.

At least once a year, CCDC evaluates the internal plan for default management and report the evaluation results to the company's top management. If it is necessary to adjust the rules for handling settlement failure, CCDC will clearly define them through regulatory provisions or business rules after reporting to the PBC. The current arrangement has become effective since September 2013.

13.3 An FMI should publicly disclose key aspects of its default rules and procedures.

CCDC does not provide liquidity support or settlement guarantee. Currently, CCDC handles settlement failure by issuing delivery failure notice to trading parties, looking into the situation and reporting to regulatory authorities, and issuing risk alerts to the parties. If the two trading parties fail to reach an agreement as to how to manage the default, the judicial authority shall determine liability for the default, and CCDC will perform accordingly with judicial decision.

13.4 An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.

The default of settlement participants will not expose CCDC to credit, liquidity or other risks. CCDC formulates detailed default-related rules in accordance with regulations of the competent authorities, and opinions from market participants and other stakeholders are fully considered. Please refer to Key Consideration 17.6 for business continuity plans.

PRINCIPLE 15: GENERAL BUSINESS RISK

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Key Considerations

15.1 An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.

The general business risks of CCDC refer to the risks brought about by the administration and operation of the company, which are unrelated to the settlement default of the customers. They mainly include: IT and operational risks (See Principle 17 for details of relevant management and control measures); reputational risks, which are controlled through public opinion monitoring and media communication programs; company operation-related risks, which are actively assessed through strategic planning and high-level office meetings; ethical risks, which are controlled through vocational education, authorization and double-check mechanisms, and internal audits; financial risks, which are regularly assessed and checked by the Accounting Department; and compliance risks, which are assessed and managed by the General Administration Department.

15.2 An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.

CCDC has a registered capital of RMB 5 billion and holds adequate liquidity to ensure the continuous operation and provision of services. It evaluates its liquid net assets funded by equity regularly every quarter, and has been determined by competent authorities that it meets the requirements of providing services as a going concern.

15.3 An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.

CCDC has a registered capital of RMB 5 billion and determines if its liquid net assets funded by equity is adequate based on its exposure to general business risks. At present, CCDC’s liquid net assets funded by equity is much larger than the current six-month operating expenses, adequate to cover general business risks. At the request of the competent authorities, CCDC has prepared risk provisions sufficient to cover the company's commercial risks. CCDC is not exposed to credit risks and meets the requirements for the segregation of risk provisions. It has also developed business recovery plans and emergency response plans, taking into account factors such as unexpected incidents, staffing arrangement, organization and coordination, and operational solutions.

15.4 Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.

The liquid net assets funded by equity of CCDC mainly consists of cash which are deposited in systemically important commercial banks. Those assets are adequate to cover the current and expected operating expenses even under unfavorable market environment. The Accounting Department regularly evaluates the company’s liquid net assets funded by equity based on the principles of simple composition and strong liquidity.

15.5 An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.

CCDC has no plan to raise additional equity for the time being. If there is any demand, the Accounting Department will report to the company’s leadership and ask for MOF’s approval. CCDC is exposed to rather limited credit risk and liquidity risk, and has sufficient capital to cover operational needs.

PRINCIPLE 16: CUSTODY AND INVESTMENT RISKS

An FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

Key Considerations

16.1 An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

CCDC deposits its own funds in national and systemically important domestic banks. CCDC selects its custodian bank based on the following criteria: 1) be supervised by national regulatory authorities; 2) have sound business processes and systems; 3) have good credit quality; and 4) have no bad records and news. When conducting settlement in offshore markets on behalf of its clients, CCDC will choose overseas banks as the custodian. In this case, CCDC will require the custodian to be supervised by pertinent regulatory authorities, have good reputation and professional experience, and have sufficient information disclosure.

CCDC will regularly review the financial statements of the custodian banks to understand their financial position, internal control process, and the safekeeping procedures.

16.2 An FMI should have prompt access to its assets and the assets provided by participants, when required.

According to Article 35 of Chapter 5 of the *Administrative Measures for the Registration, Depository and Settlement of Bonds in the Interbank Bond Market*, "the bond registration, depository and settlement institution is not entitled to any kind of ownership of bonds under its depository and should refrain itself from misappropriation. In the event that the bond registration, depository and settlement institution is subject to bankruptcy, dissolution, division, merger or termination, the bonds and other assets put under its depository by its clients shall be exempt from liquidation." CCDC has no interest or claim in the assets under its depository. Its own assets are segregated from participants' assets and can be quickly withdrawn. The default of participants has no financial impact on CCDC.

16.3 An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.

CCDC selects multiple custodian banks to avoid risk concentration. It also regularly evaluates the custodian banks' financial position, credit risks and level of risk concentration.

16.4 An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.

CCDC publicly discloses that it implements a robust investment strategy in line with its overall risk management strategy, obtaining certain return with no risk of capital loss. CCDC's investments have no price risk, able to be liquidated quickly, and conform to the policy requirements of the regulatory authorities, and that the financial expenditure is controllable and will not cause risks to the company's financial stability and cash flows. CCDC's financial situation is disclosed to the MOF on a regular basis.

PRINCIPLE 17: OPERATIONAL RISK

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Key Considerations

17.1 An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.

Identifying operational risk

CCDC has established an operational risk management framework as a core component of its comprehensive risk management framework. This framework takes an integrated approach that combines frontline identification, aggregate assessment and professional appraisal to identify and assess operational risk. Frontline identification refers to business and IT departments conducting risk assessment according to their respective responsibilities prior to updating business processes or launching new systems, as well as regularly reviewing, summarizing and updating their respective risk areas. Aggregate assessment refers to the Risk Management Department regularly organizing identification and assessment of major operational risks by all departments and revising the risk management manual. Professional appraisal refers to engaging authoritative third parties to conduct case-by-case evaluations or audits, such as the information security graded protection appraisal , professional IT evaluation of information security, and audits on IT projects, among others.

CCDC identifies operational risks internally and externally. Internal sources of risks include (a) information systems, such as system hardware failure and software failure; (b) business procedures and operations, such as policy deficiencies, and human operational errors; and (c) internal staff, such as the leave or absence of key employees, unauthorized access, and breach of confidence. External sources of risks include (a) public utility providers, such as regional power or network outages; (b) market participants, such as risks posed to CCDC's information systems due to the system failure or information security loopholes of a participant; (c) other FMIs, such as the malfunctions of the HVPS, CFETS, the CA system, etc.; (d) external service providers, such as a decline in their service level, or staff turnovers.

Monitoring, managing and recording operational risks

In respect of information system risks, CCDC has (a) introduced software quality control tools and management processes; (b) established a centralized demand control policy; (c) introduced third-party professional testing; (d) developed and issued emergency response plans and other policies; (e) established a comprehensive monitoring system,and maintenance framework centered on the maintenance and monitoring platform to identify, monitor and manage operational risks; (f) built a disaster recovery mechanism that features three centers situated in two locations; (g) placed critical equipment on hot standby or cluster configuration; (h) adopted cluster configuration and dynamic load balance for production system servers so that resources on the host platform can be dynamically deployed to meet the operating indicators; (i) incorporated performance indicators into operation maintenance requirements when designing the system's application software, with full consideration given in framework design and service design, and verified the indicators' fitness by performance tests; and (j) kept identifying risks through internal processes such as risk screening, and operation maintenance inspection, and by using external resources such as IT audits, information security graded protection appraisals, and information security assessments.

In respect of risks concerning business procedures and operations, CCDC has (a) complied a *Business Operation and Risk Management Handbook*, and conducts annual assessment and revision; (b) formulated and issued *Interim Emergency Response Procedures*, *Interim System Failure Emergency Response Operational Guidelines,* as well as the *CIOP Emergency Response Codes* to standardize the emergency management process; (c) established a business authorization mechanism to standardize internal authorization management; and (d) specified technical operation and risk management requirements for market participants in *Client Services Agreement*.

In respect of risks concerning internal staff, please refer to "internal control measures" below.

In respect of risks concerning public utility providers, CCDC's external telecommunication access is provided by two network operators. It has stable and sustainable supply of electricity supported by dual power supply, emergency power generators, and long-run time UPS as backup, and conducts annual drills and assessment.

In respect of market participant risks, CCDC has developed emergency operating procedures using fax and electronic authentication device to prevent operational risks posed by market participants owing to the latter's IT system or communication failures.

In respect of risks concerning external service providers, CCDC has formulated outsourcing management policies and procedures to mitigate and eliminate outsourcing risks.

In respect of risks brought by other FMIs, CCDC and these FMIs have signed joint operation agreements and introduced effective liaison mechanisms, so that they can jointly assess the risks arising from changes in business rules and system upgrades, search for countermeasures, and carry out switchover drills when necessary.

The monitoring and management of the aforesaid operational risks are recorded and stored in the form of policy files, ledgers or system logs.

Managing major incidents and significant changes

CCDC has set up an IT management department to (a) plan and design the project management system at CCDC level and supervise its implementation, and take charge of the overall control of CCDC's project groups; (b) implement the overall management of projects, formulate annual project plans, make plans for annual system construction tasks, and manage the resources requirements and changes to the current system; (c) implement project control policies by grade and category, and rigorously carry out quality control, progress control, control over change, and risk control covering the full lifecycle of a project, ensuring that the goals for implementing the system change are successfully achieved, and supporting the steady operation of the system.

In terms of application change management, CCDC has (a) established application releases and system change control processes, (b) formulated an annual application system release date plan, releasing monthly change plans every month, and grading changes according to the degree of impact, (c) formulated release standards and specifications for deliverables, (d) organized relevant appraisals of event changes with rigorous change control and verification, and (e) formulated change reversion plans, and key post-change assurance plans and emergency response plans. It also regularly summarizes changes summary, continually improving application change procedures, and reducing the adverse impact of the release and change of applications on the operation of the system.

In terms of application development project management, CCDC has developed reasonable and effective control solutions that identify projects according to type, size and scope. At the project approval stage, each project control strategy is specified, and rigorously implemented during the project implementation process, which specifically include: milestone deliverable appraisal, and testing and acceptance at each stage and by type, ensuring application delivery quality, and reducing the adverse impact of the release and change of applications on the operation of the system.

Internal control measures

CCDC fully refers to ITIL, ISO27001 and other international standards, rigorously implements national standards such as the graded protection of information security, and observes the PFMI and international securities settlement standards. Improvements are continually made to IT systems, internal procedures, staff management, risk management and other areas to ensure correct implementation of operating procedures.

In respect of staff risks, CCDC has a rigorous recruitment process, as well as reasonable remuneration policies and corporate culture to help inculcate staff loyalty. Fraud prevention at the professional ethics level is carried out by way of staff training, and entering into confidentiality agreements as well as statement of responsibility on clean conduct and practices at work with staff, among others. At the operational level, fraud is prevented by refining the operational processes of job positions, formulating risk management manuals, introducing the business authorization management mechanism and relevant systems, and requiring every operation to be handled and reviewed by two persons. CCDC and its external service providers have agreed on rigorous confidentiality provisions. It has also formulated strict evaluation and management policies targeted at external providers to prevent fraud from the institutional perspective.

17.2 An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.

Operational risk management framework and allocation of responsibilities

CCDC has set up the Risk Management Committee, and has incorporated operational risks into its comprehensive risk management system to review the overall objectives and principles of risk management including operational risks, as well as risk management policies and procedures. As the control level, the Risk Management Department leads the organization and implementation of establishing a comprehensive risk management system that covers operational risks, and organizes the identification, assessment, monitoring and control of risks. It also oversees the implementation status of operational risk management policies and procedures, investigates violations and offers accountability advice. As the operational level, the business and IT departments identifies, monitors, assesses and reports on operational risks according to their respective responsibilities, puts forward and implements risk mitigation measures The Audit Department is responsible for auditing risk management status including operational risks, and reports to CCDC's most senior leadership.

CCDC's senior leadership reviews and approves CCDC's comprehensive risk management framework which is under the leadership of the Risk Management Committee. And under the comprehensive risk management framework, the operational risk management framework is reviewed and approved by the Risk Management Committee. CCDC's management also sits on the Risk Management Committee. The Risk Management Committee deliberates on matters related to the operational risk framework annually by way of meetings or countersigning.

Assessment and drills

CCDC (a) conducts annual self-inspection and external evaluation of graded protection of information security, and engages professional entities on an ad-hoc basis to conduct information system security IT evaluations; (b) carries out various table simulations and switchover drills annually, including but not limited to emergency response power supply switchovers, network core equipment switchovers, storage backup system disaster switchovers, application system disaster switchovers and other planned switchover drills to test and examine the responsiveness and efficiency of its IT systems in the event of emergencies; (c) accepts annual inspection and assessment by regulators on its business operations including risk management, and accepts external audits at least once a year; and (d) inspects and evaluates external providers as required by the measures of graded protection of information security. The external assessment and audit results are key references for CCDC to modify and improve the operational risk management framework.

17.3 An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.

CCDC exercises CSD and SSS functions, and provides key services through its CIOP. As for the CIOP, the general requirement is to achieve safe, stable, efficient and sustainable operation, and its overall availability is above 99.99% since its launch. Through setting availability, availability design implementation, operation maintenance management, availability improvement and evaluation reporting, CCDC implements system availability management covering the entire process, and ensures the achievement of its targets through effective management measures.

In terms of the availability targets, CCDC specifies its operational reliability objectives through comprehensive business strategy planning and impact analysis and based on the development planning of its IT capabilities. By introducing *Measures on the Management of Development Strategies*, formulating and updating the Company's development strategies and IT development plans, conducting regular business impact analysis, and comprehensively managing the functional requirements, CCDC ensures that its operational reliability objectives meet the requirements for offering FMI services.

When designing the availability architecture, CCDC develops its application, IT and underlying architectures in accordance with the availability targets, refines and decomposes them into a set of key indicators at the application and system levels, and act on the management requirements throughout the system development process, to attain the operational reliability objectives. The standardized project management arrangement, architecture governance procedures and norms, and the implementation-level management rules for system design, development and testing together ensure the effectiveness in the availability design phase.

In the operation maintenance management phase, CCDC carries out configuration, change, service, business continuity, incident and problem management activities to ensure that all availability indicators meet functional and design requirements, and deal with any incidents that may affect system availability according to the emergency response plan in a timely manner. CCDC has issued the *Management Measures for Availability of Production Operation and Maintenance*, the *Management Measures for Configuration of Production Operation and Maintenance*, the *Management Measures for Change of Production Operation and Maintenance*, the *Management Measures for Maintenance of the Operation Maintenance System*, the *Management Measures for Incidents and Problems of Production Operation and Maintenance*, the *Management Measures for the Service Level of Production Operation and Maintenance*, the *Interim Emergency Response Procedures*, the *Interim System Failure Emergency Response Operational Guidelines*, and the *CIOP Emergency Response Codes* to specify the requirements for different maintenance management activities.

In the availability improvement and evaluation reporting phase, CCDC adopts effective measures to evaluate the results of availability management and makes continuous improvements. The Information Technology Committee of CCDC holds regular meetings to review the IT development plan and ensure its consistency with the Company’s overall business strategy and major development strategies, and to evaluate the general effect and efficiency of the Company’s IT and IT risk control activities. The Information Technology Committee also reviews the operational reliability objectives and implementation results on an annual basis.

17.4 An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.

CCDC effectively assesses business growth by formulating medium and long-term strategies and implementing them step-by-step through the completion of annual tasks. CCDC provides its main services through the CIOP. Scalability designs and capacity management have been incorporated in the planning, design, construction and maintenance of the system. CCDC has introduced such technical means as micro-service architecture, distributed deployment, load balancing, cloud infrastructure to build the horizontal and vertical scalability of the system. Before major system changes or new system launch, CCDC will carry out stress testing to verify the processing capacity of the system. In actual operations, CCDC has introduced performance capacity management procedures to monitor the system's computing, storage and network resources in real time. Relative to the known peak resource usage, CPU performance, memory usage, storage capacity and network bandwidth maintain sufficient redundancy. If any performance capacity indicator exceeds threshold, CCDC will expand resources or optimize applications in a timely manner according to the priorities and the contingency plan specific to the performance degradation. Through the above measures, CCDC's system can effectively handle the estimated business growth.

With regard to data centers, CCDC has preliminarily formed an IT landscape that features "three centers in two locations". The infrastructure, network and hardware of the local production center and local backup center are basically of the same configuration. The remote disaster backup and recovery centers meet the basic configuration requirements of key business processing systems, and the processing capacity of all data centers can be expanded horizontally. Meanwhile, CCDC's new data centers in Beijing and Shanghai will soon be put into operation. The goal is to develop them into backbone data centers for the operation of the RMB bond market that can process the depository of bonds worth hundreds of trillion RMB, and cash settlement worth more than a quadrillion RMB.

In terms of safeguards and reviews, CCDC's mechanism for the short term is to conduct statistical analysis of business processing volume on a daily basis, summarize and analyze key resources on a weekly basis, and prepare system operation reports on a monthly basis. CCDC compares the growth trend of estimated business processing volume and actual business processing volume, and will take appropriate countermeasures as planned promptly once the actual processing volume is found to exceed the estimate. For the mid to long term, the Information Technology Committee regularly adjusts the development objectives and paths of the IT system according to the actual implementation of the Company's strategic plans to ensure that the system's scalability is forward-looking, targeted, proactive and effective.

17.5 An FMI should have comprehensive physical and information security *policies that address all potential vulnerabilities and threats.*

With regard to the management of physical and information security, CCDC has, in accordance with the international standard of ISO/IEC 27001 for an informational security management system, as well as domestic standards including *GB/T 22239-2019 Information Security Technology - Baseline for Graded Protection of Information Security*, *GB/T 22240-2008 Information Security Technology - Guide for the Grading of Information Security Protection*, *JR/T 0071—2012 Implementation Guide for Graded Protection of Information System of Financial Industry*, *JR/T 0072—2012 Testing and Evaluation Guide for Graded Protection of Information System of Financial Industry*, and *JR/T 0073-2012 Testing and Evaluation Service Security Guide for Graded Protection of Information System of Financial Industry*, and to rigorously implement the requirements of the Ministry of Public Security, the Cyberspace Administration, PBC and CBIRC, established a sound physical and information security management system, and introduced a series of physical and information security policies, including the *Information Security Management Measures*, *Data Center Regional Management Rules*, *Computer Room Security Management Policy*, *Equipment Security Management Policy*, *Storage Media Management Policy*, *Information System Pre-launch Security Assessment Procedures*, *Operational Procedures for System Vulnerability Scanning Management*, *Operational Procedures for Antivirus Protection*, *Operational Procedures on Network Security Management*, *Management Measures for Change of Production Operation and Maintenance*. It regularly inspects and continuously optimizes the implementation of these documents.

In terms of the IT system for physical and information security, CCDC has built five security subsystems dedicated respectively to user identity and trust management, access control, information flow control, integrity, logging and auditing. By deploying over 30 security components such as security baseline, vulnerability assessment, code auditing, digital certificate, intrusion detection, and log auditing in the physical environment, network, host, applications and data, CCDC can offer six security services including account authentication and authorization, risk assessment, application security, data security, security monitoring, data security, and security compliance, to monitor, assess and manage possible physical security and information security risks.

17.6 An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a widescale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme *circumstances. The FMI should regularly test these arrangements.*

Business continuity plans

According to business continuity requirements, CCDC has formulated business continuity plans in its role as an FMI, including an overall emergency response plan, information system disaster recovery plan, information system all-sector emergency response plan, business operation emergency response plan, office premises emergency response plan, fire emergency response plan as well as other special emergency response plans. CCDC conducts relevant emergency response drills annually, including disaster recovery and backup switchover operations in remote sites, primary data center backup system switchovers, local backup center switchovers, network switchovers, payment system interface switchovers, emergency response power generation switchovers, as well as fire drills, among others. Market participants, regulators, China National Clearing Center (CNCC), CFETS, and other FMIs will be engaged in the drills.

Disaster backup and recovery plans

CCDC has formulated *Interim Emergency Response Procedures*, *Interim System Failure Emergency Response Operational Guidelines*, *CIOP Emergency Response Codes*, and *Interim Emergency Response Business Operating Rules (2018 revised edition)* stipulating the reporting and response processes in the event of a disruption, specifying the various roles and responsibilities in the emergency response process, and establishing a comprehensive set of emergency response procedures.

In the event that a market participant is unable to carry out normal business operations via the CIOP Client Terminal because of its own system or communication failure, referring to *Interim Emergency Response Business Operating Rules (2018 revised edition)*, the participant may submit an electronic encrypted emergency voucher or bring the relevant materials to the site to deal with the emergency. CCDC will, upon receiving the emergency response business request, verify the validity of the request and related materials, and use the emergency response settlement function to carry out the settlement services for the participant accordingly. In the event that business fails to be processed owing to CCDC's system failure, emergency response procedures will be carried out according to *Interim System Failure Emergency Response Operational Guidelines*, and *CIOP Emergency Response Codes.*

In addition, CCDC has adopted many measures in terms of resource commitment, capacity building, staff and responsibility arrangements to ensure that operations can resume within two hours after the business disruption and settlement can be completed by the end of the day. Specifically, the measures include: (a) building a monitoring system that covers the three existing data centers, with on- and off-site staff on duty at multiple stations on a 24/7 basis, and establishing a local backup data center that can take over core services, thus creating a three-level operation and maintenance support system centered on the 360 operation maintenance and monitoring platform as well as the 999 emergency call center; (b) building a relatively comprehensive business authorization mechanism, making plans for alternative measures for critical businesses, and staffing each key post with two employees; and (c) building a liaison mechanism and joint emergency response mechanism with PBC's payment system, CFETS and other FMIs, building a emergency response plan related to extending the operating hours of the HVPS, regularly conducting internal switchover testing and drills as well as ad-hoc joint emergency response drills so as to support the identification, monitoring, and management of the risks of itself with market participants and with other FMIs. CCDC is able to achieve a recovery time objective (RTO) for critical services of not more than two hours. Even under extreme circumstances, it can ensure that settlement is completed by the end of the day of the disruption. The recovery point objective (RPO) for resuming critical services is less than 30 minutes.

Data protection

CCDC's business continuity plan covers emergency response plan of various information systems, with emphasis on the measures and steps to confirm trade status, and resume business operation under a disruption, including the encrypted transfer of trade data with the CFETS, and emergency instruction confirmation with clients. In terms of protecting business data security, CCDC adopts adequate IT measures to prevent data loss. The data mirroring in the primary and backup sites of the data centers is implemented in a asynchronous manner, with delay minimized to within minutes. Process data adopts synchronization tools, meaning that the data storage is centralized and synchronization happens in real time, enabling the backup database to take over immediately in case of disruption. In the event of customer business data loss, verification may be carried out by way of account reconciliation. The lost data may either be resent or emergency response operation may be implemented. If the interactive data with linked entities are lost, CCDC will verify the data through account reconciliation with linked entities, and resend the lost data.

Backup sites

CCDC's business continuity plan includes the emergency response plan about the switchover to the disaster backup center in the event that the primary data center site is unavailable, as well as the emergency response plan about switching to the backup sites should the main office venue become unavailable. In the event of large scale or major disruptions, the local disaster backup data center is able to take over, restore and resume critical business operations within two hours. Meanwhile, CCDC has backup business operation sites which can be activated in the event of large scale or major disruptions, supporting the takeover, restoration and resumption of critical services.

CCDC chooses its data center venues according to the requirements of domestic standard GB50174-2017. The external electricity of the primary data center and the local disaster backup data center are supplied by different power stations which can ensure power supply at the data centers when one of the power supply breaks down. In addition, the external telecommunication routes of the two data centers can meet the two-circuit requirements of at least two telecommunication service providers, and external telecommunication disruptions arising from communication failures of telecommunication service providers will not occur. Moreover, a remote disaster backup data center has been built 1,150 km away from the primary data center. Presently, CCDC is advancing the construction of two large-scale data centers. One is in Beijing, which is 28 km from the existing primary data center. The other is a remote disaster backup data center located in Shanghai, some 1,220 km from the existing primary data center. At the time of the construction of the data centers, the two-circuit power and water supply requirements must be fulfilled at the minimum, and regions with frequent earthquake, flood and other natural catastrophes are avoided. A reasonable and safe distance from airports, highways, chemical plants, hazardous goods warehouses and other such areas should be maintained. The construction of multiple data centers in different locations can ensure risk independence between backup sites and the primary data center.

Internal and external communication and reporting mechanism

CCDC has formulated and issued *Interim Emergency Response Procedures*, and *Bond Business System Emergency Response Codes*, specifying that CCDC leader in charge of IT (CTO) shall take charge of emergency response, and CCDC President shall be the decision maker of major events. The person in charge of emergency response, i.e. the CTO, shall convene emergency response discussions, command the implementation of emergency response measures, coordinate between departments, and report to CCDC President. The decision maker of major events, i.e. CCDC President, shall make decisions on emergency arrangements and unconventional emergency response measures based on the CTO’s report in the event of a major emergency, and report to the Chairman. The *Bond Business System Emergency Response Codes* defines the criteria for major emergencies, specifies the responsibilities of relevant departments in the event of an emergency, and formulates the internal and external reporting procedures, ensuring that internal and external communication can proceed efficiently in an orderly manner.

Review and testing

CCDC regularly reviews its business continuity plans and emergency response arrangements. The departments also conduct reviews according to their respective responsibilities on an ad-hoc basis. Conditions that trigger a review include (a) new mid to high level threats are found during risk assessment; (b) scenarios pertaining to past emergency response events are found not set in business continuity plans, and (c) new emergency scenarios or new threats are found during drills, among others.

CCDC regularly conducts business continuity emergency response drills with market participants, key service providers, and other FMIs to test the effectiveness of its emergency response arrangements. The drills include disaster backup data center switchover drills, key disaster backup business system switchover drills, special disruption scenario emergency response drills, and system partial switchover drills. Drill frequency varies from monthly to annually depending on the purpose of the drill.

CCDC reviews its special business continuity plans such as for power outage, fire, disaster backup switchovers annually. and other business continuity plans every three years. The business continuity plans will also reviewed when departments launch new services or significant changes to information systems take place. In respect of network events, CCDC conducts network event drills to test its business continuity plans once a year. In 2019, CCDC carried out more than ten IT system switchover drills, including two local disaster backup center switchover drills, effectively verifying the availability of the local disaster backup center.

17.7 An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.

CCDC's key participants, other FMIs, as well as external service and public utility providers include market participants, CNCC which is responsible for the actual daily operation of the PBC's HVPS, and CFETS which is responsible for operating the trading platform of the CIBM, telecommunication operators, and power suppliers, among others. Risks posed by the aforesaid entities fall under external risks as described in 17.1, and primarily include: payment system breakdown that may result in settlement failures, interruption of external communication in the data center, and power outage, among others.

Identification and control

CCDC has adopted the following measures to identify, monitor and manage the aforementioned risks:

CCDC has (a) achieved efficient, secure and reliable system connection with the HVPS of the PBC, and has established a direct interface with the CFETS for the STP of trades in the CIBM; (b) signed a joint operation agreement with CNCC, which prescribes that the two parties will convene regular liaison meetings to study and assess mutual risks arising from the launch of new systems and changes in business rules, and to carry out joint system switchover drills as required; (c) established a similar liaison mechanism with the CFETS. CCDC monitors the operation of CIOP and its links with other FMI through the 360 operation maintenance and monitoring platform, and monitors abnormal business conditions through its business monitoring system, both on a real-time basis.

In respect of market participants, CCDC has a developed emergency operation procedures using fax and electronic authentication device to prevent operational risks posed to CCDC by market participants owing to the latter's IT system or communication failures. In respect of IT and other outsourced services, outsourcing management policies and procedures have been formulated to mitigate and eliminate outsourcing risks. Meanwhile, CCDC uses two telecommunication operators to guarantee its external communication, boasts dual power supply, emergency power generators, and long-run time UPS as backup, and conducts annual drills and assessments.

Managing external service providers

The core businesses of CCDC do not rely on eternal services, although some ancillary functions are outsourced to external service providers. CCDC has formulated comprehensive and extensive outsourcing management policies, and limits the authority given to external providers. External providers in principle are not allowed to access the production system. Meanwhile, CCDC's in-house staff will (a) guide and supervise the work of the external providers, (b) arrange for external providers to participate in emergency response drills and emergency operations, (c) evaluate the performance of external providers, and (d) dismiss under-performing or delinquent providers.

Other FMIs

CCDC's system malfunctions or operational errors may cause data transmission failure with other FMIs, affecting business processing. For this reason, CCDC monitors the operation of its system through the monitoring platform, and abnormal business conditions through its business monitoring system, both on a real-time basis. In addition, CCDC has entered into joint operation agreements with other FMIs (such as the HVPS), and formulated relevant emergency response procedures. CCDC also holds regular liaison meetings to assess risks arising in and from changes in business rules and IT system upgrades, and to look for countermeasures. Meanwhile, CCDC and other FMIs also alternately organize switchovers from local site to remote disaster backup sites, from primary data center to backup data center, and from current system to local backup system, as well as network switchovers, emergency power generation switchovers, etc., to ensure the effectiveness of emergency response plans.

PRINCIPLE 18: ACCESS AND PARTICIPATION REQUIREMENTS

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Key Considerations

18.1 An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.

CCDC sets out fair and open access standards for its settlement participants. Market institutions can become settlement participants of CCDC as long as they can meet market access provisions set out by the PBC, complete the relevant approval or filing procedures, make internal preparations as to system setup and personnel training, abide by CCDC's rules and procedures, and enter into services agreement with CCDC.

Based on their qualification and way of participation, CCDC divide settlement participants into type-A, -B and -C. Type-A participant, in addition to their proprietary business, can function as the settlement agent for other participants as approved by the PBC. Type-B participants can only conduct proprietary bond settlement. Type-C participants should entrust type-A participants to conduct settlements. All the three types of participants are direct participants of CCDC.

18.2 An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.

CCDC's participation requirements for settlement participants are mainly based on provisions of regulatory authorities, supplemented by certain requirements on IT systems and personnel. The regulators' access provisions are made out of public interest considerations such as security and efficiency, and according to the industry characteristics and risk features of different institutions. Regulators set out different access requirements for different types of settlement participants.

Type-A participants should obtain the required qualifications and the approval of the PBC in order to become settlement agents. Specific requirements are as follows: 1) ranking among the top in the CIBM in terms of bond trading amount and underwriting amount over the past two years; 2) having a sound internal control mechanism and full-time employees competent to provide settlement agency services; 3) having good bond settlement and cash clearing capabilities; 4) having no defaults or violations over the past two years; and 5) other requirements set out by the PBC.

Type-B participants consist of legal entities and unincorporated financial products. Investors as legal entities should satisfy following requirements: 1) legally established within the territory of the People's Republic of China; 2) having put in place a sound corporate governance structure, sophisticated internal control mechanism, and risk management mechanism; 3) investing with legally obtained funds; 4) having employees with an intimate knowledge of the CIBM; 5) able to identify, know and bear the risk of bond investment; 6) conducting business according to laws and regulations and having no major violations of laws and regulations related to bond business over the past three years; and 7) other requirements set out by the PBC.

Investors as unincorporated financial products shall meet the following requirements: 1) constructed in accordance with the applicable laws and industry regulations, and are registered with or approved by regulatory authorities or self-regulatory organizations authorized by those authorities; 2) under the custody of an eligible financial institution ("the custodian") which safekeeps the funds of clients in segregated accounts for separate accounting; 3) asset managers of which shall have asset management license issued by regulatory authorities; having net assets worth no less than RMB 10 million and paid-in capital ranking among the top of the industry in the case of private equity managers registered with the industry self-regulatory organization; 4) asset managers and the custodians of which shall have a sound corporate governance structure, sophisticated internal control mechanism, risk management mechanism and related professionals; 5) asset managers and custodians of which shall conduct business according to laws and regulations and have no major violations related to bond investment over the past three years; and 6) other requirements set out by PBC.

Type-C participants are mainly overseas institutional investors. To invest in the CIBM, overseas institutional investors shall meet the following requirements: 1) established according to the pertinent laws of the country/region of residence; 2) having a sound governance structure and internal control policies, operating in a standardized and reliable manner without any major penalties by the regulators due to violation of laws or regulations in bond investment business over the past three years; 3) investing with legally obtained funds; 4) able to identify, know and bear risks of bond investment; and 5) other requirements prescribed by PBC.

Access requirements can be found at the official website of the PBC Shanghai Head Office (the *Service Guideline for Filing for Accessing the China Interbank Bond Market and Obtaining Administrative Permissions*).

CCDC is not responsible for the formulation and review of the access requirements.

18.3 An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, *or no longer meets, the participation requirements.*

As authorized, CCDC monitors participants' activities on the frontline. Its business rules, which are disclosed to the public, provide explicitly that for any violation committed by a participant, CCDC will investigate the situation and give verbal notice, written warning or reprimand to the participant depending on the seriousness of its offense. It may suspend or terminate the offender's participation and report it to the PBC.

PRINCIPLE 19: TIERED PARTICIPATION ARRANGEMENTS

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

Key Considerations

19.1 An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.

Type-A, Type-B and Type-C participants of CCDC are all direct participants.

In accordance with the *Rules for Settlement of Transactions in the Counter Bond Market*, and the *Operational Rules for the (Electronic) Savings Government Bond Business* issued by CCDC in 2002 and in 2016 respectively, the commercial bank counter market and (electronic) savings government bonds in the CIBM adopt a see-through two-tiered depository structure. Specific arrangements are as follows: counter investors open bond accounts with a commercial bank or a savings government bond underwriter. The commercial bank or underwriter open general agency accounts with CCDC as nominee bondholders and use such accounts to record the bonds which are owned and put in their depository by counter investors. The commercial banks should report to CCDC counter investors' account materials, account balances, and account changes on a daily basis. CCDC should simultaneously open up mirror accounts for the counter investors and record the depository details in its books accordingly. CCDC does not have any direct legal relations with the counter investors.

After counter investors open their accounts, the commercial banks or savings government bond underwriters will transmit data on account opening to CCDC by the end of each business day. The transmitted data include the counter investor's ID certificate type, ID code, and account number. Account information can be updated on a daily basis, for instance, if an investor's ID code used for account opening is updated, the commercial bank or underwriter will transmit the changed data to CCDC by the end of the current business day.

The major risk to CCDC caused by such a two-tiered participation arrangement lies in the commercial banks and underwriters, that is, if they over-issue bonds or misappropriate clients' bonds, they will bring CCDC with reputational risk. To manage this risk and safeguard the rights and interests of counter investors, CCDC has set up an account balance check and inquiry mechanism through which counter investors may verify by phone calls whether the information on their bond holdings provided by the commercial banks or underwriters is authentic and accurate. This mechanism effectively prevents commercial banks or underwriters from over-issuing or embezzling bonds. This mechanism has been running since the start of the counter bond business, and no risk incident has ever occurred.

19.2 An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.

Commercial banks open segregated see-through real-name accounts for counter investors in the investors' real names. The *Measures for the Administration of the Commercial Bank Counter Business in the National Interbank Bond Market* and the *Measures for the Formation of Savings Government Bond Underwriting Syndicate* both set out clear qualifications and requirements for the commercial banks undertaking the counter market business and savings government bond underwriters. Only qualified institutions are allowed to apply for counter bond market business. Besides, related administrative measures also allow counter investors to open accounts with different commercial banks or underwriters. In the CIBM, counter investors may mobilize their bonds deposited in different commercial banks by way of custodian transfer. Therefore, in the counter market, individual investors have dependencies on the commercial banks or underwriters. But as the commercial banks and underwriters have met the necessary qualification requirements and are under the supervision of the PBC, plus the daily monitoring of the counter market by CFETS and CCDC, the risks brought to CCDC by such dependencies are limited.

19.3 An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.

In the counter bond market, CCDC has the information of the general agency accounts opened by the commercial banks and underwriters as well as the balance information of the counter investors' accounts. Furthermore, direct participants who act on behalf of indirect participants in large numbers as well as indirect participants that contribute large transaction amounts in the system can be identified by CCDC. However, CCDC does not have any direct legal relations with the counter investors.

19.4 An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

The current tiered participation arrangements are made by the competent authorities as per the pertinent laws and regulations and are assessed on an ongoing basis based on market developments. Pursuant to the administrative measures promulgated by the competent authorities, CCDC has released business rules which make explicit explanations and requirements as to the counter market data verification mechanism, and the balance check and inquiry mechanism. Since the CIBM is dominated by direct-holding arrangements, the tiered participation arrangement, which in comparison is much smaller, incurs no substantial risk to CCDC.

CCDC's links with CSDC and Hong Kong CMU also involves tiered participation arrangements. Please refer to Principle 20 for details.

PRINCIPLE 20: FMI LINKS

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

Key Considerations

20.1 Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.

The link arrangements of CCDC currently in place include: a) CCDC has a direct link interface with the HVPS of the PBC to offer DVP settlement services for bond transactions; b) CCDC has a direct link with CFETS to receive instructions from the trading system; c) CSDC holds a nominal account with CCDC for the depository transfer of bonds between the CIBM and the exchange bond market; d) CCDC has a link with CFFEX to process the physical delivery of China government bond futures, which effectively connects the settlement system of the bond market and the trading platform of the derivatives market; e) CCDC is linked with the SHCH for the purpose of providing collateral management services to such transactions as the medium-term lending facilities which may use different types of financial assets as collateral; f) The Hong Kong CMU holds a nominal account with CCDC to give overseas investors access to the CIBM, i.e. the Hong Kong Bond Connect (Northbound Trading); and g) CCDC is connected with the CIPS, effecting DVP settlement for the Hong Kong Bond Connect.

Before establishing any links with other FMIs, CCDC identifies and evaluates the risks arising from the link, including the FMI's operation and reputation as well as the feasibility and risk level of the link project. Upon approval by the Company's management, CCDC and its counterparty will report the project to their respective regulatory authorities for approval before entering into a cooperation agreement to specify the rights and obligations of each other according to the advice of the regulatory authorities, so as to promote implementation of the link. As for compliance control and implementation of the agreement, on the one hand, the link of CCDC with the other FMI is designed and implemented in accordance with the market and the Company's business practices, so as to ensure that the link conforms to the PFMI; on the other hand, after the signing of the link agreement, CCDC will conduct followup evaluations, and update the PFMI self-assessment report every year to evaluate compliance of the link agreement. If it is found that either or both parties fail to comply as agreed or significant matters change, the agreement will be revised or terminated.

Moreover, CCDC will regularly monitor and identify major risks concerning the link through key indicators, and report the monitoring results to the regulatory authorities.

20.2 A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.

Currently, the only cross-jurisdictional link of CCDC is with the Hong Kong CMU (i.e. the Hong Kong Bond Connect). The link is governed by the laws of mainland China in accordance with the *Interim Measures for the Administration of the Mutual Bond Market Access between Mainland China and Hong Kong SAR* (PBC Decree No. 1 [2017]).

To ensure firm legal basis for the links, CCDC examines and analyzes the legal environment and the regulatory framework of the counterparty's local market before establishing a link, including property rights, settlement finality, due diligence, data protection and taxation. Besides, CCDC employs lawyers who are familiar with the local legal system to provide advice and lead the compilation of relevant business documents, so as to ensure that the design of the link is feasible and effective. During establishment of the link, CCDC keeps close communication with regulators in the two markets and actively promotes mutual recognition so as to ensure that the link meets local requirements. In addition, CCDC signs business agreements with its counterparty FMI and promulgates relevant business rules to specify and secure the operation mode of the link as well as the rights and obligations of both parties, and regularly evaluates the execution of the agreements and rules. In case of any major changes that make the connection impossible, CCDC will report to local regulatory authorities in a timely manner.

20.3 Linked CSDs should measure, monitor, and manage the credit and liquidity risks arising from each other. Any credit extensions between CSDs should be covered fully with high-quality collateral and be subject to limits.

Currently, CSDs that maintain links with CCDC include CSDC and the Hong Kong CMU. The link between CCDC and CSDC only involves the transfer of bonds between the CIBM and the exchange market and will incur no liquidity or credit risks.

As for the Bond Connect link with Hong Kong CMU, CCDC does not provide any credit arrangement or settlement guarantee for Hong Kong CMU, hence no credit or liquidity risks.

20.4 Provisional transfers of securities between linked CSDs should be prohibited or, at a minimum, the retransfer of provisionally transferred securities should be prohibited prior to the transfer becoming final.

CCDC's link with other CSDs does not allow provisional transfer of securities.

20.5 An investor CSD should only establish a link with an issuer CSD if the arrangement provides a high level of protection for the rights of the investor CSD's participants.

CCDC as the issuer CSD opens nominal bond accounts for CSDC and Hong Kong CMU to record all the bonds held by their clients in the CIBM and under CCDC's depository. Those nominal accounts are strictly separated from other participants' accounts in CCDC and CCDC's own assets, so as to ensure that CCDC and its other participants do not have any claims on the assets in the above accounts.

In terms of account reconciliation, CCDC provides a channel for CSDC and Hong Kong CMU to check the balance of the bond accounts and settlement details in real time, so as to meet their daily account reconciliation needs. In addition, Hong Kong CMU will submit its participants' transaction details and end-of-day holdings on the prior business day to CCDC on a daily basis.

At present, CCDC has not yet played the role of an investor CSD facilitating its participants' investment in overseas securities markets.

20.6 An investor CSD that uses an intermediary to operate a link with an issuer CSD should measure, monitor, and manage the additional risks (including depository, credit, legal, and operational risks) arising from the use of the intermediary.

The existing links of CCDC with other FMIs involve no intermediary. Key Consideration 20.6 does not apply.

PRINCIPLE 21: EFFICIENCY AND EFFECTIVENESS

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Key Considerations

21.1 An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures

As a core FMI in China's financial market, CCDC complies with fair international securities settlement standards and the PFMI. Its comprehensive business framework meets the differentiated needs of various participants in the market. CCDC integrates the functions of bond issuance, registration, depository, settlement, interest payment and principal redemption, information disclosure, and collateral management, and has developed CIOP independently, offering the market a complete package of services covering the whole life cycle of the bond. CCDC adopts a direct-holding depository arrangement and RTGS on a DVP basis to serve institutional investors, and adopts a two-tiered depository arrangement and end-of-day net settlement to serve the retail market. CCDC has achieved STP by having links with the CFETS, CFFEX and other trading platforms. It settles transactions in central bank money via its links with the PBC's HVPS and CIPS and can ensure settlement finality. CCDC provides collateral management services and bond lending services, which have been incorporated as core bond business, supporting the implementation of monetary policies and safeguarding participants' settlement activities. CCDC provides three channels for its clients to access its system and service, namely, direct interface, desktop client terminal and web-based client terminal, to meet the needs of different clients. With the implementation of its conglomeration strategy, CCDC has expanded its service scope to include bonds, bank loans, trust products, wealth management products, etc. By offering centralized and dematerialized registration and depository services to these financial assets, CCDC effectively maintain the order of bond depository and settlement while ensuring the safety of investors' assets. CCDC has also developed a set of ChinaBond pricing products, including yield curve, valuation, index and VaR of bonds with various credit ratings, reflecting the value and risk level of RMB bonds. These pricing products effectively promote the formation of bond fair price, market transparency, interest rate liberalization and RMB internationalization. CCDC also publishes bond-related magazines and provides training services for institutional clients.

In addition, CCDC has always been committed to providing safe, high-quality and efficient services to participants and markets, constantly improving system and service performance, and responding to and meeting the requirements of participants and markets in a timely manner. These efforts can be demonstrated in detail as follows.

In terms of meeting clients' demands, CCDC has established a comprehensive customer service mechanism that covers customer support, customer information and demand management, and marketing. CCDC has introduced such measures as customer satisfaction surveys, customer service monitoring and evaluation, as well as customer demand collection, and has established the customer service call center to promote business development driven by clients' needs. The company has designed products and service modes based on the market, products, rules, settlement methods, investor access, and market monitoring, built standardized and modular business processing modes and structures, so as to quickly identify and timely respond to the needs of the market and participants. In addition, CCDC has assigned dedicated personnel to service the regulatory authorities, and has been carrying out first-line monitoring effectively to meet the regulatory needs at different levels of the financial market.

In terms of communication and technical support, CCDC adopts a messaging standard developed using the ISO20022 methodology, and offers diversified communication options to ensure that all clients can employ the most reasonable and economic communication access. Clients can choose to use multiple dedicated data lines at the same time according to their own business continuity requirements to handle different businesses or keep them as backup lines, or choose the low-cost 3G VPDN or internet channels (only for inquiry). CCDC also provides fax plus electronic authentication device as an emergency operation method in case of communication disruption or failure of client terminals. In addition, the company allows clients to make inquiries through a voice and fax inquiry system CCDC has also set up an IT service hot line to receive and respond to customers' questions and suggestions in a timely manner.

21.2 An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.

With the mission of "providing safe, efficient and professional infrastructure services", CCDC operates around a series of core indicators such as cost efficiency of services, client satisfaction, system operation safety rate, and financial sustainability.

CCDC formulates development strategies and divides them into annual work plans. In the plans, measurable and achievable objectives are specified and assigned to relevant departments to ensure orderly implementation. CCDC has a satisfactory overall operation, reviews and evaluates the completion of target tasks on an annual basis, and reports the results to competent authorities.

21.3 An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.

CCDC reports to the CBIRC, the MOF and other competent authorities on a regular basis, and delivers performance evaluation reports to the competent authorities according to their requirements, go through internal and external audits that evaluate its efficiency and effectiveness, and evaluate the performance of departments and employees at the end of each year based on the implementation of the annual plan. CCDC collects service feedback from market participants through the “three centers”, namely the Customer Service Center, the Product Center, and the Operation Center, to continuously improve customer satisfaction and cost efficiency in service. CCDC reviews its efficiency and effectiveness at least once a year.

PRINCIPLE 22: COMMUNICATION PROCEDURES AND STANDARDS

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

Key Consideration

22.1 An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

CCDC utilizes internationally accepted communication procedures and standards for efficient business processing, payments, data recording, and cross-border linkage.

Participants may access CCDC's system via the direct interface which uses two sets of messaging standards, namely the ISO 20022-based standard for single instructions and XML format for batch download of files. The messaging applications adopt TCP/IP protocols.

In DVP settlements, CCDC communicates with the payment system using the payment messages defined by the PBC and the MQ middleware.

As for data recording standards, the bond code used in CCDC's system is issued by CCDC and serves and the standard code for bonds in the domestic market. The corresponding ISIN code is also defined for each bond by CCDC based on international standards. Currently, as required by the PBC, CCDC is promoting the appliation of LEI the registration and depository business.

In the Bond Connect scheme, Hong Kong CMU holds a nominal account with CCDC. The settlement activities of this account, on the cash leg, are handled through the CIPS operated by the PBC using the cross-border payment messaging standard developed by PBC based on ISO20022 and the MQ middleware, on the bond leg, are processed via CCDC's systems, using messaging standards developed with reference to ISO20022, and the TCP/IP protocols.

PRINCIPLE 23: DISCLOSURE OF RULES, KEY PROCEDURES, AND MARKET DATA

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Key Considerations

23.1 An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.

CCDC's rules and procedures are formulated in accordance with the relevant national laws and regulations and the rules of the competent authorities, forming a complete system of rules, guidelines and agreements. General business rules, guidelines and agreements, as well as emergency operational guidelines are all formally disclosed on the company's website (www.chinabond.com.cn). CCDC's business rules and procedures have sufficient legal basis and cover all business areas. See Key Consideration 1.2 for details.

According to the *Measures for the Administration of the Registration, Depository and Settlement of Bonds in the Inter-bank Bond Market*, the formulation and modification of CCDC's articles of association, internal control policies, risk management policies, business rules and emergency plans shall be submitted to the PBC for approval; CCDC shall publicly disclose its fee schedule related to the bond registration, depository and settlement services; and when formulating or adjusting the fee schedule, CCDC shall solicit opinions from industry associations, bond issuers and bondholders, and report to the PBC.

23.2 An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.

CCDC's IT system consists of the bond business system (i.e. CIOP) and the innovative business system. The CIOP includes 15 subsystems, including the bookkeeping system, the cash account management system, the collateral management system, the securities management system, the commercial bank counter business system, the issuance system, the customer management system, the billing system, and the certificate management system, together with the supporting pricing product and statistical systems. The IT system structure and the comprehensive governance framework are disclosed to market participants through the company's websites, annual reports, training courses, teaching materials and other channels. Major system renovation and new system construction will be reported to the competent authorities and implemented upon approval.

23.3 An FMI should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI.

CCDC enhances participants' understanding of its rules, procedures and potential risks through information disclosure on its website (www.chinabond.com.cn), training courses and customer service hot lines. Participants can take part in the company's training sessions and obtain training certificates by passing examinations before starting actual business. For individual participants who lack understanding of rules, procedures and risks, CCDC will take measures such as communication, training and guidance as appropriate.

23.4 An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.

CCDC provides detailed descriptions for its paid services, and discloses the fee standard and available discounts of each paid service on its website (www.chinabond.com.cn). Changes in services and fees will be announced on the official website and the CIOP or via text messages if necessary. The fee standards are based on the fee standards of other domestic FMIs, and reference is made to fee standards of international peers. Clients can make horizontal comparisons accordingly. CCDC discloses factors that may affect its costs such as IT and telecommunication, and will respond to relevant questions raised by investors.

23.5 An FMI should complete regularly and disclose publicly responses to the CPSS-IOSCO Disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.

CCDC discloses information mainly through its websites and WeChat official account. It uses Chinese as the main disclosure language, but English translation is provided for reference for important rules, contracts and business information. Basic statistics such as settlement volume and amount are disclosed on its website (www.chinabond.com.cn). Settlement information can be queried in real time and by time period; statistical data on issuance, depository, settlement and other businesses are published monthly; investor ranking are published monthly; and bond yield curves are published daily. In addition, the company's news and developments, information on its participants, disclosure of issuer information, important announcements or notices by the competent authorities, training information, research articles, etc. are also released on its websites. CCDC' self-assessment report on PFMI was first completed and disclosed in 2016, and a long-term working mechanism has been established to update the report on an annual basis.