Use of RMB-denominated Bonds as Collateral for Global Repo Transactions

A CCDC-ICMA Joint White Paper

CCDC | ICMA International Capital Market Association

CCDC

ICMA

International Capital Market Association

Message from Chairman of CCDC

With the growth and the integration of global financial markets, the international repo market has entered a new stage of accelerated transformation. On the one hand, as the financial industry pays more attention to the balance between risk and efficiency, collateral has become a key factor in the decision-making process of repo transactions. Thus, the supply of high-quality collateral assets has become the new focus of the market. On the other hand, with the opening-up and the development of China's bond market, the higher profile of RMB bonds have introduced a new option to the global collateral market.

As the CSD of China's bond market, China Central Depository & Clearing Co., Ltd. (CCDC) shoulders the mission of market opening-up by providing high-quality collateral management services for global investors, and has become one of the world's largest collateral management platforms. With solid expertise in the field of cross-border collateral cooperation, CCDC and the International Capital Market Association (ICMA), jointly present this white paper to explore the feasibility of using RMB bonds collateral in global repo transactions through a comprehensive analysis of key elements of Chinese and international repo markets including market structures, regulations, risk management and interoperability, so as to provide ideas and references for global investors.

As a Chinese saying goes, "With relentless pursuit, we will usher in a bright future." Promoting RMB bonds as widely accepted qualified collateral offshore is a highly professional and systematic project. We hope that the white paper can help build consensus and promote practical cooperation. CCDC will continue to work together with market participants, embrace the opportunities and challenges brought by the global financial transformation, and contribute to the high-quality development of China's financial market.

王大庆

Wang Daqing

Chairman

China Central Depository & Clearing Co., Ltd

Message from CEO of ICMA

Since its launch in 1991, China's repo market has grown to become one of the most important liquidity management tools for financial market participants onshore, with a transaction volume exceeding USD 250 trillion in 2022. In particular, the rapid development of the interbank bond repo market, now accounting for over three quarters of the Chinese institutional repo market, is distinct in its predominant use of pledged collateral as opposed to the classic title transfer underlying the Global Master Repurchase Agreement (GMRA) used in the international repo market.

As publisher of the GMRA, the International Capital Market Association (ICMA) plays a significant role in promoting the interests and activities of the international repo market, and of the product itself. Through the foundation of the European Repo and Collateral Council (ERCC), established by ICMA in December 1999 to represent the cross-border repo and collateral markets in Europe, complemented more recently by the Global Repo and Collateral Forum (GRCF), ICMA has become the industry representative body globally that develops consensus solutions to issues arising in a rapidly evolving marketplace, and consolidates and codifies best market practice.

In China, ICMA has been working closely with relevant regulators on issues concerning the development and internationalization of the domestic repo market, including the interpretation and confirmation of the effectiveness of close-out netting under the current Chinese legal system. Since the concept of netting was introduced in China at the legislative level via the Draft Amendment to the Law of the People's Republic of China on Commercial Banks, announced in October 2020, both domestic and foreign investors have paid great attention to the establishment of the termination netting system in the Chinese market.

It is expected that such a system would promote further integration of China's regulatory framework with that of major global financial markets, providing a more effective legal basis for domestic and foreign investors to participate in the domestic repo market.

Co-authored with the CCDC, this white paper provides a valuable reference of the technical differences between the domestic and international market structure, trade mechanism and documentation, providing the necessary clarity for global market participants wishing to trade in China's repo market. In line with the pace of internationalization of the RMB bond market, it is hoped that the opening of China's repo market will see further convergence in institutional rules, as channels for mutual recognition of cross-border collateral between China and foreign markets are established.

Bryan Pascoe
ICMA Chief Executive

1. Overview of China’s and Global Repo Markets

2. Latest Trends in the Global Repo Market

3. The Basis and Elements of RMB Bonds Collateral Participating in Global Bond Repurchase

CCDC

ICMA International Capital Market Association

CONTENT

1 Overview of China's and Global Repo Markets

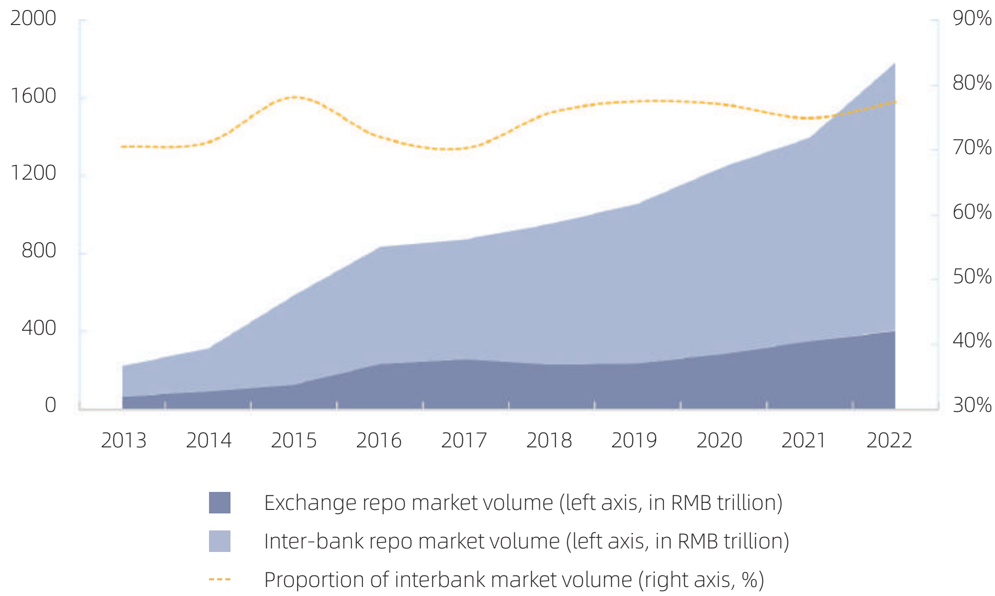
(1) Overview of China's Repo Market

In just over half a century, the repo market has become one of the most liquid and actively traded markets in many countries. Since the official launch of bond repo business in China's financial market in 1991, it has attracted a wide range of market participants. After more than 30 years of development, the volume of repo transactions in China has been rising year by year, with continuous improvement of systems and infrastructures as well as ongoing innovation and the introduction of new products. Repo has also become the most important liquidity management tool for financial institutions.

1.1 Market Basics

China's repo market has two segments: the interbank market and the exchange-traded market, with a structure that is dominated by the interbank market and supplemented by the exchange-traded market. In 2022, the cumulative transaction volume in the interbank market amounted to RMB1,380.2 trillion, accounting for about 77% of the total repo market[1]. (See Fig. 1)

Fig. 1: Annual cumulative transaction volume of China's repo market

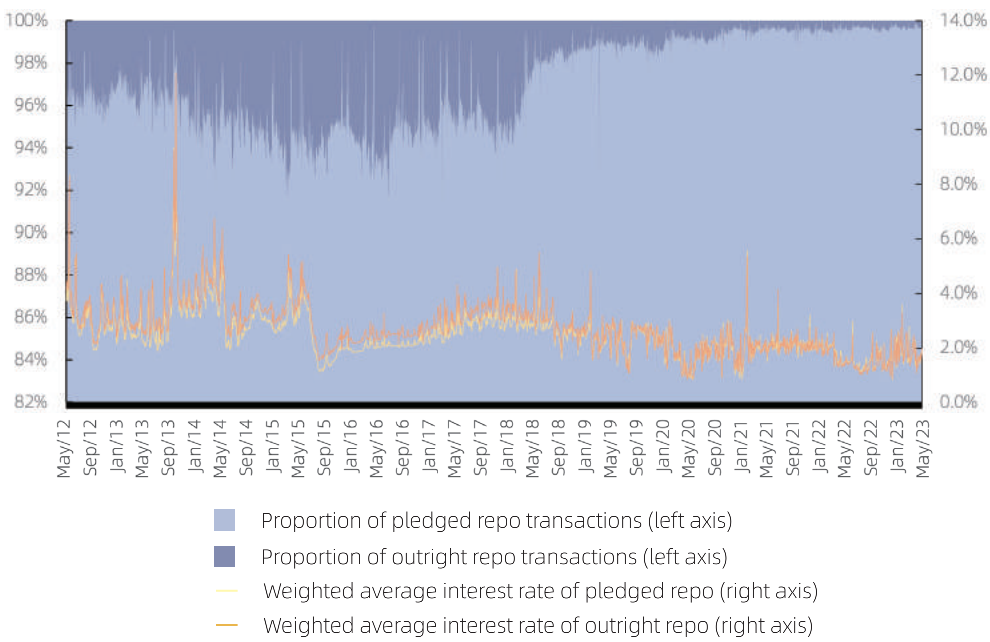


Sources: PBOC, SSE, SZSE

1 Considering the dominant position of the interbank bond repo market, this White Paper will take interbank bond repo market as the main object of analysis.

In terms of transaction volume, pledged repo occupies a dominant position in China's interbank repo market, with a cumulative volume of RMB1,374.6 trillion in 2022, accounting for more than 95% of the interbank bond repo market (see Fig. 2). According to the *Measures for the Administration of Bond Transactions in the National Interbank Bond Market*, pledged repo is defined as a loan consisting of a principal amount equal to the repayment amount and secured by the relevant bonds as collateral. In 2004, the People's Bank of China (hereinafter referred to as "PBOC") issued the *Provisions for the Administration of Bonds Outright Repurchase Agreements Business in the National Interbank Bond Market*, marking the introduction of outright repo. Unlike pledged repo, outright repo does not involve the creation of a pledge for the repo bonds under Chinese law and is closer to the "title transfer" repo used in the global market. Appendix 2 includes a more detailed discussion of the differences between the legal structures that are used in the Chinese repo market.

Fig. 2: Proportions and weighted average interest rates of pledged and outright repos (2012-2023)



Source: Wind

Broadly speaking, the divergence in the transaction volume between pledged repo and outright repo can be attributed to three main reasons:

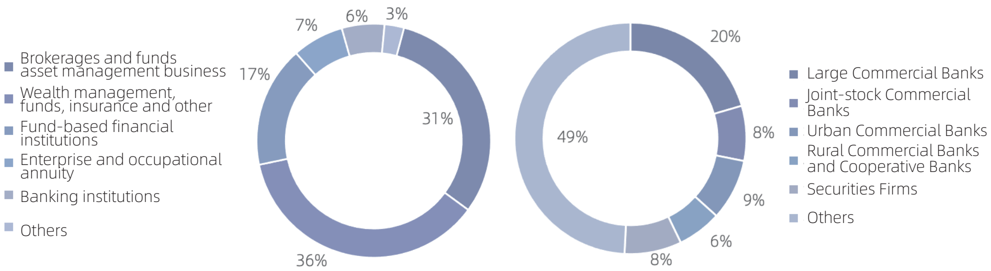
First, in terms of market practice and collateral selection, pledged repo was launched in 1997 upon the establishment of the interbank market. With a long history and wide recognition, pledged repo supports multi-bond pledges. In contrast, outright repo was not launched until 2004, and for a long time it only supported single-bond pledge on a transaction-by-transaction basis. **Second, in terms of the legal regime,** outright repo is similar to a simultaneous sale and repurchase of a cash bond with nested margin and guaranty bonds[2], while the legal status for pledged repo is often perceived as more straightforward. **Third, in terms of the function of securities lending, as the ownership of repo bonds is transferred, outright repo is also endowed with the function of securities lending.** However, with the development of a separate securities lending market in recent years, this function has been made largely redundant, further reducing the activity of outright repo transactions.

1.2 Market Structure and Trading Mechanism

(1) Structure of Market Participants

As of May 2023, there were about 50,000 participants in the interbank repo market. In terms of distribution, the number of non-bank institutions such as brokerage firms and asset management firms, wealth management firms, insurance firms, and other fund-based financial institutions accounted for more than 90% of the total (see Fig. 3); in terms of the share of institutional repo, banking institutions accounted for about 40% and non-bank institutions accounted for 60% (see Fig. 4).

Fig. 3: Statistics of interbank market members (left panel) [3]
Fig. 4: Proportion of outstanding repo volume (right panel)



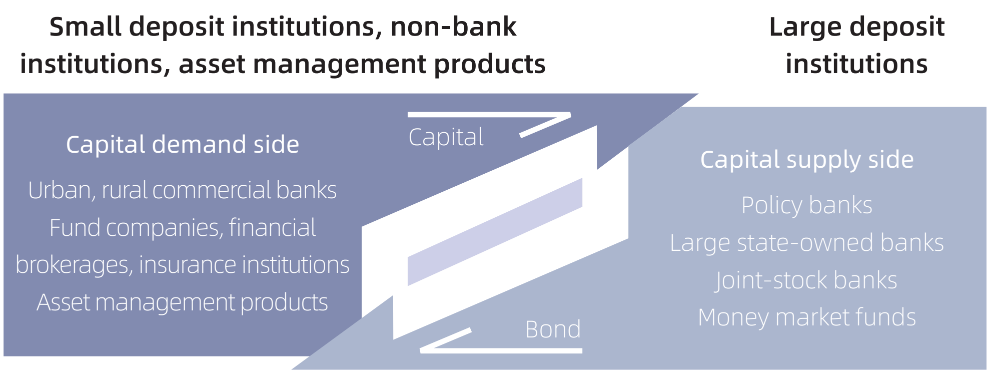
Source: Chinamoney.com

2 *The Provisions for the Administration of Bonds Outright Repurchase Agreements Business in the National Interbank Bond Market* clearly specifies that, "when conducting outright repo, both parties to the transaction may negotiate to set margin or guaranty bonds in accordance with the credit status of the counterparty. In the case of setting guaranty bonds, the guaranty bond shall be frozen in the escrow account of the provider of the repo during the repo period."

3 The statistics do not include: 1. market members who have been delisted; 2. market members who have applied to join the interbank market but have not yet completed the networking procedures.

Overall, the interbank market mainly uses repo transactions as the means to facilitate the flow of funds from large banks to small banks and non-bank institutions (see Fig. 5). This structural feature is due to the fact that policy banks, joint-stock banks, and money market funds are the most important lenders in the market, while non-bank institutions such as funds, brokerage firms, and insurance are the main borrowers. Besides, large commercial banks and joint-stock banks generally only receive rate bonds as collateral, while the main holdings of asset management products are credit bonds. Therefore, in addition to their own liquidity needs, urban and rural commercial banks often assume the role of capital bridges, absorbing funds from large state-owned banks, while financing asset management products.

Fig. 5: Structure of interbank bond repo market participants



(2) Trading Mechanism

In order to meet the diversified market demand, the interbank market has introduced various trading mechanisms (see Table 1). In pledged repo transactions, both parties agree on the transaction details such as interest rate, quantity, maturity, pledged bond type and haircuts via the electronic platform of China Foreign Exchange Trade System (hereinafter referred to as "CFETS"), and the settlement is conducted by the China Central Depository & Clearing Co., Ltd. (hereinafter referred to as "CCDC") or the Shanghai Clearing House (hereinafter referred to as "SHCH") upon the conclusion of the transaction.

To further enrich the trading mechanism of the interbank bond repo market, X-Repo and netting pledged repo have been launched to optimize the processes of transaction confirmation, collateral selection, and clearing and settlement. However, along with the rapid development of China's bond repo market, investors have asked for efficiency improvement and risk reduction. In particular, they aim to focus on financial integration and liquidity management by participating in tri-party repo to reduce costs and increase efficiency.

Table 1: Comparison of trading mechanisms of major trading varieties in China's interbank bond repo market

<table>
<tr><th colspan="4">China's interbank bond repo market</th></tr>
<tr><td>Trading mechanism</td><td>X-Repo</td><td>Pledged repo</td><td>SHCH netting pledged repo</td></tr>
<tr><td>Market participants</td><td colspan="3">All domestic institutions in the interbank market and some overseas institutions (overseas RMB clearing banks and participating banks, overseas central banks, international financial organizations and sovereign wealth funds) are allowed to participate</td></tr>
<tr><td rowspan="2">Pre-transaction preparation</td><td colspan="3">Signing the Master Repurchase Agreement on Interbank Market</td></tr>
<tr><td colspan="2">Signing the Delivery Versus Payment Agreement on Bonds Transaction and other documents with the CCDC</td><td>Signing Netting Agreement on Bonds Transaction with SHCH</td></tr>
<tr><td rowspan="2">Trading mechanism</td><td rowspan="2">Submitting quotations anonymously through the X-Repo system of CFETS; bilateral credit-granting is required in the trading system before conducting business</td><td colspan="2">Completing through the local currency trading system of CFETS</td></tr>
<tr><td>Implementing the over-the-counter market system, allowing independent negotiation between the parties themselves</td><td>Choosing netting settlement independently at the closing session or other approaches specified by SHCH</td></tr>
<tr><td>Collateral management</td><td>Only applicable to repo transactions with rate securities as pledged bonds; the variety of pledged bonds, conversion rate and valuation are in accordance with the Rules for Standard Conversion Rate of Pledged Bonds in the Interbank Bond Market</td><td>The range of eligible collateral and haircuts shall be determined by the parties themselves through negotiation</td><td>The haircut of pledged bonds included in netting settlement shall be calculated by SHCH based on the credit ratings, historical price fluctuations and market liquidity</td></tr>
<tr><td>Collateral enforcement in the event of default</td><td colspan="2">Entrusting collateral management agencies to conduct agreed enforcement methods such as conversion-to-value, auction and sale</td><td>1. Suspend the business permission of the defaulting party and charge default fees on a daily basis;
2. Activate the emergency mechanism of bank credit and complete the settlement of the non-defaulting party;
3. Freeze and auction pledged bonds</td></tr>
</table>

(3) Institutional Framework

The rapid development of the inter-bank bond repo market cannot be achieved without institutional guarantee. In order to regulate the market and legal environment, in 2013, the National Association of Financial Market Institutional Investors (hereafter referred to as "NAFMII") issued the 2013 version of the *Master Agreement for Bond Repurchase Transactions in China's Interbank-Market* (hereafter referred to as the "Master Agreement"). Based on practice in China's local market, the Master Agreement fully drew on international experience and established Chinese standards that are in line with international practices: **First, in terms of the framework structure**, the Master Agreement introduces the framework of general provisions plus special terms, reducing the costs of transaction negotiation and text management, while leaving room for future innovation in repo transaction mechanisms. **Secondly, with regard to the content**, the Master Agreement improves the identification and treatment of default and termination events in the repo master agreement, introduced a single agreement and close-out netting mechanism, establishes a dynamic adjustment mechanism for bonds repurchase, and improves the market risk management for bond repo transactions. **Third, regarding the signing method**, the Master Agreement is signed bilaterally and multilaterally to provide autonomy for customized trading needs among market participants.

1.3 Collateral Composition

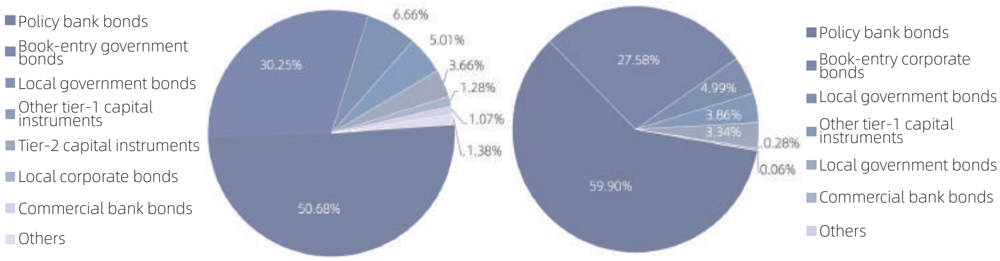
In terms of collateral composition, (quasi-) sovereign bonds such as government bonds and policy bank bonds occupy the dominant position in the inter-bank bond repo market. By May 2023, the balance of pledged repo collateral[4] was RMB7.84 trillion, mainly composed of policy bank bonds, government bonds, local government bonds, enterprise bonds and other bonds[5] (see Fig. 6) and the balance of (quasi-) sovereign bond pledges accounted for 87.6%; during the same period, the balance of underlying bonds outright repo was RMB 86 billion, and the balance of (quasi-)sovereign bonds accounted for 90.82% (see Fig. 7).

4 Only contains the bond collateral held by CCDC as custodian is counted, the same below

5 Including government-backed institutional bonds, asset-backed institutional bonds, asset-backed securities, non-bank financial institution bonds, insurance company financial bonds, project revenue bonds, central bank bills, central enterprise bonds, medium-term notes

Fig. 6: Composition of pledged repo collateral (left panel)

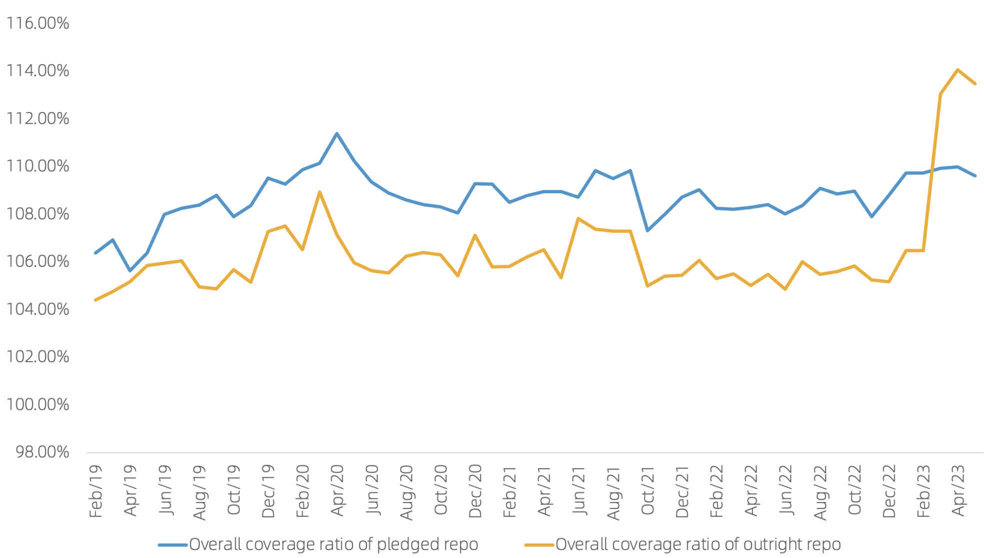
Fig. 7: Composition of underlying bonds in outright repo (right panel)



Source: CCDC

Influenced by the risk appetite of lending institutions and the position preference of borrowing institutions, the interbank bond repo market also exhibits the following characteristics: **First, the overall coverage ratio[6] of repo transactions remains in a stable range.** By May 2023, the overall coverage ratio of outstanding pledged repo was 109.62% while that of outstanding outright repo stood at 113.49% (see Fig. 8), with the overall coverage ratio maintaining reasonable fluctuations.

Fig. 8: Overall coverage ratio of repo transactions



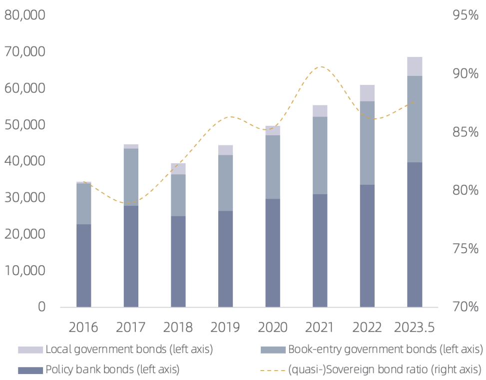
Source: CCDC

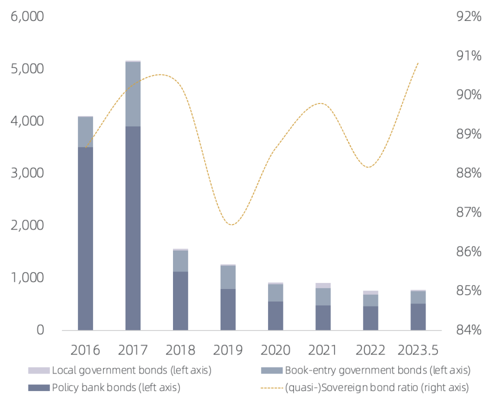
6 The overall coverage ratio of repo is the ratio of the market value of collateral for outstanding repo transactions to the amount due. The overall coverage ratio = ∑ (market value of pledged securities or transferred securities for outstanding repo transactions at full price)/ ∑ (amount due for repo), with a higher coverage ratio representing greater sufficiency in the value of collateral.

Second, the proportion of (quasi-) sovereign bond collateral is increasing. After 2019, the proportion of (quasi-)sovereign bond collateral remained high due to the tightening risk appetite of financial institutions as a result of credit events in financial markets (see Fig. 9 and Fig.10)

Fig. 9: Composition of pledged repo with (quasi-) sovereign bond as collateral; left-axis unit: RMB 100 million (left panel)

Fig. 10: Composition of outright repo with (quasi-) sovereign bond as underlying securities; left-axis unit: RMB 100 million (right panel)





Source: CCDC

Third, there is divergence in bonds used as collateral, with policy bank bonds and government bonds being the most popular collateral. As rate securities, policy bank bonds and government bonds are characterized by low credit risk and high liquidity, with a relatively large scale of single bond issuance, which makes them easier to meet the market demand for repo transactions and become the most preferred collateral for financial institutions. In addition, the higher reopening frequency and better liquidity of policy bank bond makes it easier to become the linkage between the primary and secondary markets. The policy bank bonds are held by a large number of non-bank institutions which are mainly on the borrowing side. On the other hand, local government bonds, which have the largest outstanding share in the bond market, account for a relatively small proportion, which is related to the structure of bond holders. Over 85% of local government bonds are held by commercial banks, especially large state-owned banks and joint-stock banks, and these two types of institutions are on the cash lending side, so local government bonds are not the main collateral for repo transactions despite their large balance.

1.4 Latest Development

In recent years, with the continuous development of China's bond market, China's bond repo market has witnessed a period of rapid development, with product and system innovations continuing to emerge.

(1) Strong Momentum for Tri-party Repo

The trading mechanism and instruments of the interbank repo market are continuously optimized, but there is still more room for development, especially as the market is calling for the launch of tri-party repo. Tri-party repo is one of the major repurchase instruments in the global market, the core mechanism of which is to provide centralized and unified collateral management services by a central custodian as a third party, so as to build itself into a more standardized money market instrument. Enjoying the advantages of economies of scale, tri-party repo reduces risks such as settlement failures, while ensuring that risk exposures are effectively covered during the duration of the transaction, providing enhancements in risk prevention and control capabilities. In October 2018, PBOC issued an announcement officially introducing the tri-party repo business in the interbank market, allowing bond registration and settlement institutions in the interbank market to act as agents providing tri-party repo services.

Column #1: Development of Tri-party Repo in China's Interbank Market

Tri-party repo is prevalent in the global market. The (I)CSDs or custodians, acting as a third party, provide integrated collateral management services and aim to build a more standardized money market instrument. For the time being, major tri-party collateral management service providers are large custodian banks or (I)CSDs. These institutions can combine their strength in bond custody and settlement with the automated collateral management system, so as to effectively utilize small-holding bonds and achieve significant economies of scale.

In October 2018, the People's Bank of China issued an announcement to introduce the tri-party repo business in the interbank market. As an important infrastructure of China's bond market, CCDC has completed the institutional and technical preparation for the interbank tri-party repo business based on an in-depth study of the experience of the international peer and the direction of market reform.

First, there is a tri-party repo parameter schedule to ensure safety and efficiency. An eligible collateral list and haircut schedule are keys to tri-party repo transactions. Taking market needs, operational efficiency, risk control and other factors, CCDC has formed a tri-party repo parameters schedule, which can be adjusted according to market conditions.

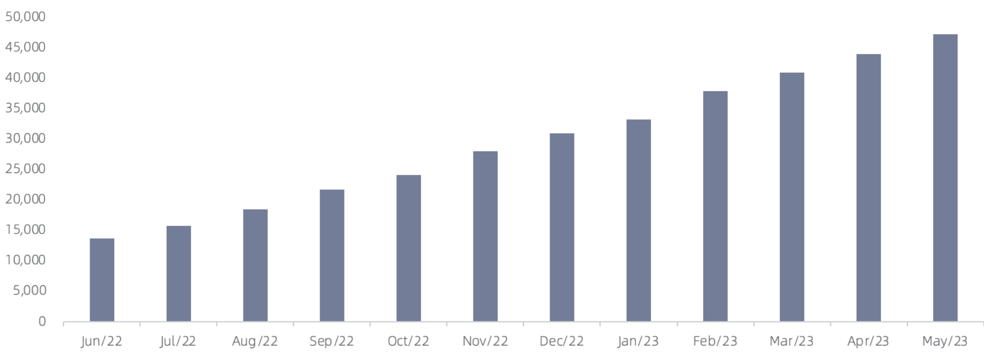
Secondly, multiple risk management tools are offered during the process of a tri-party repo transaction. CCDC provides investors with the toolkit including mark-to-market valuation, automatic supplement or return of collateral, collateral replacement and adjustments, so as to facilitate risk management.

Third, quick collateral enforcement in the event of default completes the collateral management cycle. In June 2019, CCDC issued guidelines on collateral enforcement where CCDC acts as the third party to ensure a timely and fair disposition of collateral. This completes the collateral management cycle.

(2) Rapid Development of FX Repo

In 2018, FX repo with bonds in foreign currencies as collateral was launched in the interbank market. However, the scale of the business grew slowly due to difficulties in risk management of bonds in foreign currency, the complexity of the agreement signing process and a lack of clearing and settlement back-office support. It was not until 2019 that the FX repo business with RMB bonds as collateral was officially launched, and FX repo transactions became increasingly active. FX repo includes three modes: tri-party repo, pledged repo and outright repo. In particular, the tri-party mode has effectively reduced credit risk and financing cost and improved asset allocation efficiency, which has received wide recognition from the market. In 2021, CCDC, cooperating with CFETS, introduced automatic collateral selection to FX repo. CCDC, as an independent tri-party agent, provides investors with full life-cycle collateral management services. Subsequently, benefiting from the optimization of the business model and the enrichment of bond collateral categories, the scale of FX repo has grown rapidly. By May 2023, the cumulative business volume of the FX repo business using bonds held by CCDC as the custodian as collateral has exceeded RMB 4.7 trillion (see Fig. 11), an increase of over 300% year-on-year.

Fig. 11: Cumulative volume of the FX repo with bonds under CCDC's custody (2022-2023), unit: RMB 100 million



Source: CCDC

(3) Improvement of Collateral Enforcement

Since the mainstream pledge model in China's bond repo market is different from the guarantee provided by the title transfer model popular in the international market, it makes the disposal of collateral in the event of default a business pain point where relevant domestic and overseas laws fail to observe effective convergence. With the opening-up and continuous development of China's bond market, the disposal mechanism of collateral after default has been continuously improved and optimized at the practical and legislative levels, providing clear guidelines for the exploration of collateral disposal in the case of default in the bond repo market. This has been significant in eliminating market investors' concerns about the realization of security rights and underpinning the role of risk mitigation of bond collateral.

At a practical level, in 2019, under the guidance of the PBOC, the interbank market officially launched the collateral enforcement mechanism, which ensures the quick disposal of collateral in an autonomous and flexible manner through methods such as conversion-to-value, auction and sale. At the same time, the disposal information is not publicly disclosed in order to minimize the impact and to ensure the smooth operation of the market. **At the legislative level,** since 2020, collateral enforcement is further supported in the *Civil Code of the People's Republic of China* (hereinafter referred to as the "Civil Code"). The *Futures and Derivatives Law of the People's Republic of China* (hereinafter referred to as the "Futures and Derivatives Law") implemented in 2022 also further strengthened the legal basis. On the one hand, the implementation of a collateral enforcement mechanism completes the loop of collateral management services. On the other hand, it has served to effectively alleviate the market liquidity shortage and resolve the potential market systemic risks.

Column #2: Collateral Enforcement in China's Repo Market

Collateral management is an important aspect of risk management and liquidity management in the repo market, while collateral enforcement is an important and indispensable part of collateral management and the last shield of credit risk management. The international market has established a relatively sound policy system - in the case of default, the secured party can quickly realize the security interests and rights through conversion-to-value, auction, debt offset, direct possession, etc., without institutional barriers. Due to the provisions of the *Property Law* and the *Security Law* on the "prohibition of liquid pledge", the secured party cannot directly take possession of the collateral to quickly realize the security interests. Therefore, when a default event occurs, market institutions mainly rely on judicial or negotiated solvency transfer to dispose of collateral, which greatly affects the disposal efficiency. With the rapid development of China's financial market and the corresponding increase in market risk exposure, market institutions have an increasingly urgent need for an efficient and fast way to dispose of collateral.

On May 28, 2020, the Third Session

of the 13th National People's Congress voted through the *Civil Code of the People's Republic of China*, which has an extremely profound impact on the civil and commercial activities of all subjects and has "milestone" significance. Previously, the *Property Law* prohibited creditors from directly acquiring ownership of collateral in the event that the debtors could not fulfill their obligations as they fell due, largely out of consideration for the interests of the debtor. In judicial practice, such agreements were often found to be invalid, i.e., "prohibition of strict foreclosure". The legislative approach adopted in this provision, which does not evaluate validity but only provides for legal consequences, gives certain flexibility to trading arrangements that may constitute a foreclosure, such as paying a debt in kind or sale guarantees, and to some extent balances the interests of creditors. It is worth noting that Article 428 of the *Civil Code* does not specify that the parties involved shall not agree on a foreclosure clause, which is similar to the disposal of the legal consequences of a vesting-type transfer guarantee that violates the prohibition of foreclosure in the *Summaries of the National Conference for Work of Courts on the Trial of Civil and Commercial Cases*. At the same time, Article 436 of the Civil Code maintains the same expression as Article 219 of the *Property Law*, which still recognizes the pledgee's self-relief by means of agreed discount, auction or sale when the pledger breaches the contract.

It is under the guidance of this legal spirit that CCDC issued the Guidelines for *Collateral Default Disposal of China Central Depository & Clearing Co., Ltd. (Trial)* in June 2019, which supports three methods of collateral default disposal, namely conversion-to-value, auction, and sale, and is characterized by complete disposal methods, advanced supporting technologies and rich practical experience. Through prior authorization of the central depository by both parties to the transaction, in the event of default by the pledger, the disposal agency has the right to quickly dispose of the underlying bonds to clear off debts in accordance with the unilateral application of the pledger. This can effectively enhance market efficiency with well-defined legal relationships, clear and streamlined operational processes and shorter duration.

(2) Overview of Global Repo Market

In the international market, repo transactions play multiple roles. Repo transactions are not only the most important means for various types of financial institutions to manage their capital, bond positions and liquidity, driven by various regulatory requirements such as the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR), but also a vital channel for central banks to manage liquidity and conduct monetary policy. Repo markets in different countries and regions have evolved their own market and product structures during the course of their development. In the following, this paper focuses on the U.S. and the European repo market as the two dominant markets in the world in terms of market size and depth.

2.1 US Repo Market

The US repo market can be broadly divided into four sections:

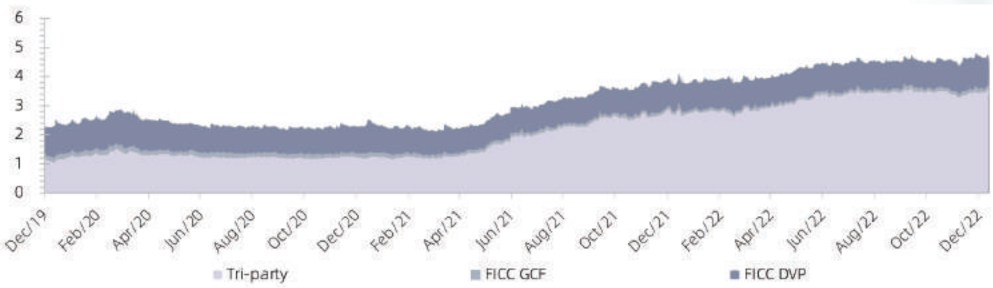
- Tri-party Repo. Bank of New York Mellon acts as the tri-party agent providing collateral management services. Tri-party repo is one of the primary funding facilities in the US repo market.
- Non-centrally cleared bilateral repo (NCCBR), where counterparties negotiate details of their trades, such as the eligible collateral and the corresponding haircuts.
- FICC DVP, centrally cleared bilateral repo, which only introduces Fixed Income Clearing Corporation[7](FICC) as the central counterparty (CCP), without third-party custodians.
- FICC General Collateral Finance (GCF). In GCF repo, Bank of New York Mellon also acts as a tri-party agent, with the difference that it introduces FICC as a CCP. GCF repo is concluded entirely through inter-dealer brokers (IDBs), ensuring anonymity throughout the transaction.

The overall scale of the US bond repo market has grown rapidly over the past years. In particular, the daily transaction volume of tri-party repo[8] has risen from USD1 trillion in 2019 to nearly USD3.8 trillion by the end of 2022 (see Fig. 12).

7 FICC, known as Fixed Income Clearing Corporation, is the fixed income division of the US Depository Trust and Clearing Corporation (DTCC) which is the main clearing agency for US treasuries.

8 Due to the relative inaccessibility to the specific transaction data for the NCCBR market, only transaction data for the other three types of repo are included.

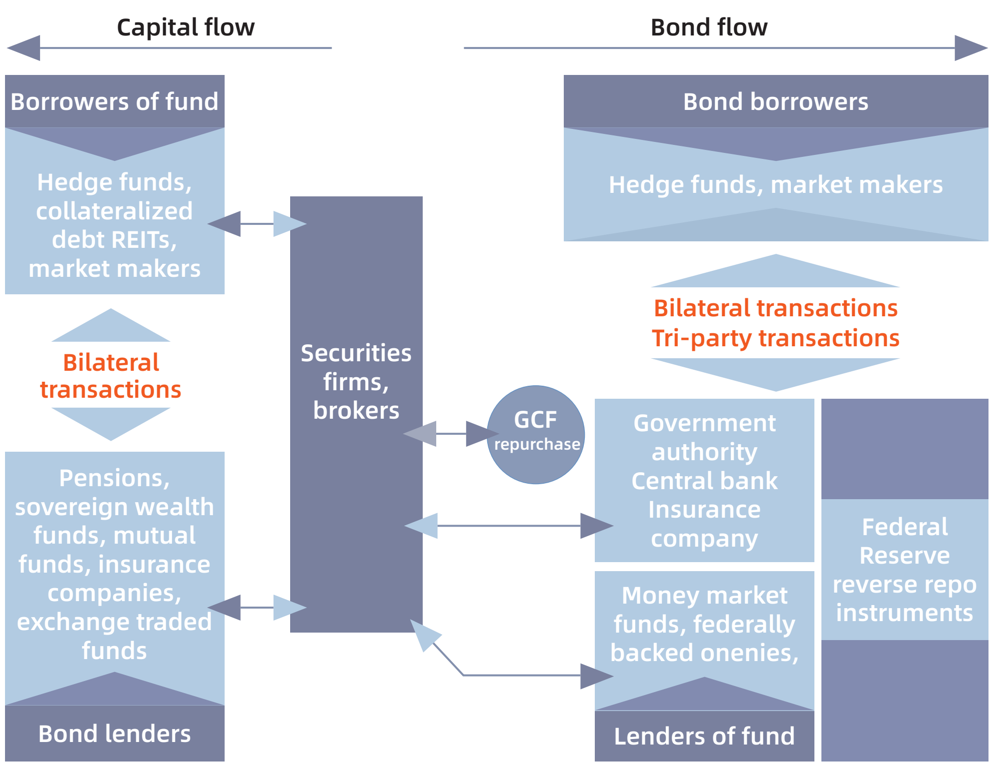
Fig.12: Daily transaction volume in the US repo market (2019-2022)



Sources: OFR, ICMA

With respect to participants in the US bond repo market, securities firms and dealers are at the center of the bond repo market, acting as market makers to connect cash and bonds among participants. Institutions that provide cash funding mainly include money market funds, banks and insurance companies, stock and derivatives exchanges, etc. Among them, money market funds account for more than half of the investment volume and are the most important suppliers of liquidity in the market. Parties receiving cash mainly include hedge funds, collateralized debt REITS, market makers, etc. Among them, hedge funds are the most important source of demand for funds in the market (see Fig. 13).

Fig. 13: Structure of participants in the US repo market

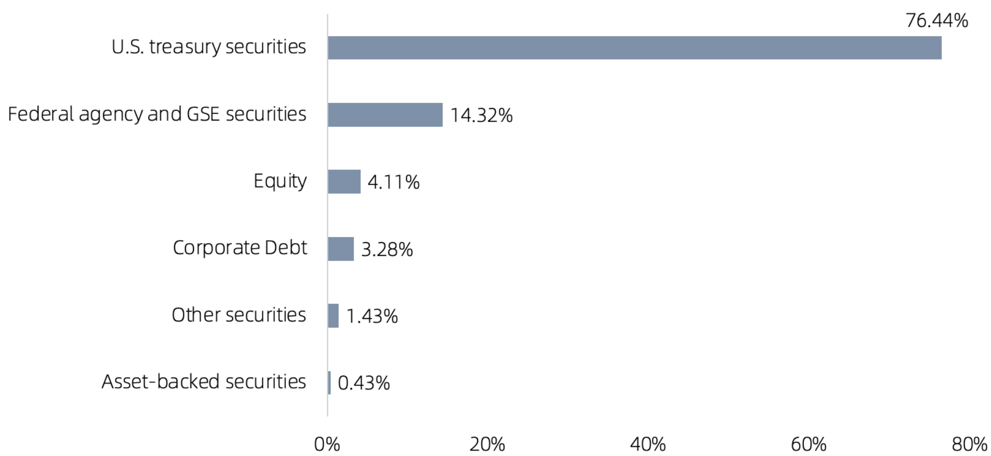


As for the trading mechanism, dealers are the primary source of liquidity, providing pricing and assuming principal risk (known as "matched-book" trading). In the bilateral repo market, the dealer exchanges collateral directly with its counterparty. In the tri-party repo market, after the trading parties negotiate and determine the main trading elements, both parties transmit the trading orders to the Bank of New York Mellon instantly.

In terms of clearing and settlement, dealers usually act as custodian banks for their customers to settle inter-customer repos in the bilateral repo market. Inter-dealer repo transactions are generally sent to the FICC for netting and are then cleared through Fedwire or DTCC. In the tri-party repo market, Bank of New York Mellon completes the settlement and ownership transfer of repo transactions on the same day and provides collateral management services during the life of the repo, and the clearing bank will transfer the ownership of funds and bonds again on the repurchase date.

In terms of collateral composition, the US repo market primarily relies on high-grade government bonds as the main type of collateral. By the end of 2022, among primary dealer repo transactions in the US repo market, US government bonds (US T-bonds and government agency bonds) accounted for more than 90% of all collateral used (see Fig. 19).

Fig. 14: Primary dealer repos by collateral type -US market

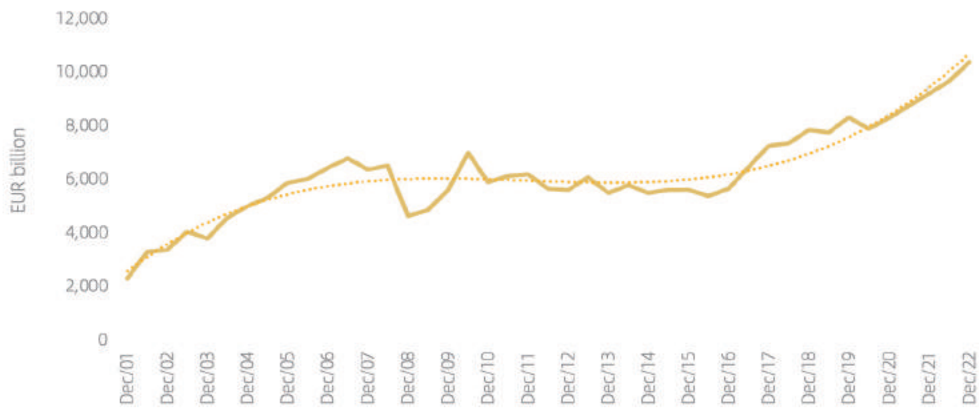


Sources: ICMA, OFR

2.2 European Repo Market

The European repo market has been growing significantly over the past years. By December 2022, the overall size of the market in terms of the value of outstanding repo transactions was estimated at over EUR 10 trillion according to ICMA's European Repo Market Survey (see Fig. 15 below). It is important to note that this measures the stock of outstanding repo transactions at a specific point in time as opposed to turnover or flow data.

Fig. 15: The total value of repos and reverse repos outstanding in the European repo market (2001-2022)



In terms of market structure, the European repo market can be broadly categorized with respect to three levels of activity: (i) trading (negotiation and execution), which can be direct between two counterparties or via a trading platform, (ii) clearing (bilateral or CCP), and (iii) collateral management, which can be bilateral or outsourced to a triparty agent. Similar to the US repo market, dealers are the primary source of liquidity, acting as intermediaries by providing pricing and assuming risk onto their balance sheets. The three principal trading models are:

- **Traditional OTC** repo (bilateral clearing and collateral management) , which remains dominant in terms of the value of outstanding repo with a share of around 50% by the end of 2022.
- **Electronic trading** on an automatic trading system (ATS), which is overwhelmingly CCP-cleared, with bilateral collateral management, accounts for around 30% in terms of the value of outstanding repo;
- **Triparty repo,** in which the collateral management function is outsourced to one of the triparty agents. This category includes traditional triparty (directly traded and non-CCP

cleared) and GC financing (electronically traded, CCP-cleared). Overall, triparty repo typically accounts for up to 10% of the total market in terms of the value of outstanding transactions.

- Other scenarios are possible and account for the remainder of the total. These include direct trading with post-trade registration at a CCP.

It is important to note that most repos that are traded electronically and cleared by a CCP are very short-term transactions (mostly overnight repos). This means that their share expressed in terms of turnover (as opposed to outstanding) would be significantly higher, probably around 60-70% of the total repo flow.[9]

As regards participants in the European repo market, the structure is broadly similar to the US. The principal users of repo on the sellers' side of the market are securities market intermediaries (market-makers and other securities dealers) and leveraged and other bond investors seeking funding. On the buyers' side, the main users have traditionally been cash investors seeking secure short-term investments, many of whom are highly risk-averse. These include large commercial banks, central banks investing foreign currency reserves, international financial institutions, money market mutual funds, agents investing cash collateral received by their securities lending clients, asset managers with temporary cash surpluses and the treasuries of large non-financial corporates and financial market infrastructures such as central counterparties (CCPs) and central security depositories (CSDs). Since the Financial Crisis, because of generally higher risk aversion and regulatory pressure, repo has reportedly been attracting smaller commercial banks, as well as a greater number of non-bank financials such as sovereign wealth funds.

As for trading, clearing and settlement, as noted above, the main trading models include direct trading (via telephone or electronic messaging), intermediation by voice brokers, or trading on electronic trading platforms. For the latter, so-called automatic trading systems (ATS) which are mainly used in the inter-dealer market can be distinguished from automated trading platforms which are increasingly used in the D2C market connecting customers to multiple dealers through request-for-quote (RFQ) systems. Most electronic trading platforms support straight-through processing and offer direct connectivity to CCPs, triparty agents and CSDs.

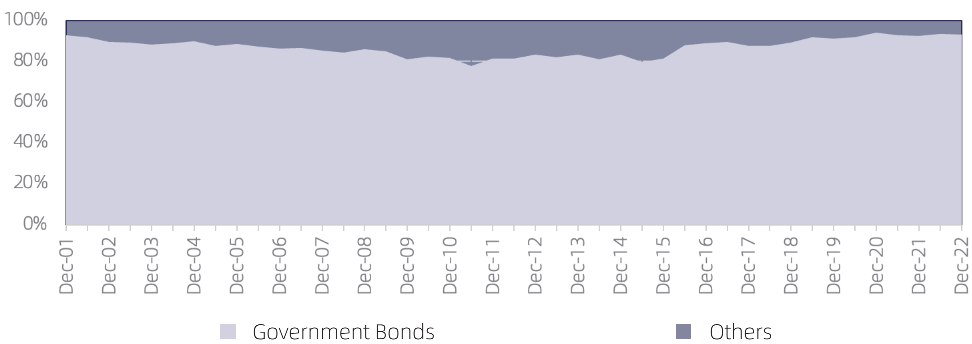
The overwhelming majority of repos

9 Some turnover figures are available for instance from data reported under the EU SFT Regulation, which is available in an aggregated form on the ICMA website.

traded electronically via an ATS are CCP-cleared. The two main CCPs active in the European repo market are LCH SA and Eurex Clearing, but a number of other CCPs exist as well. As mentioned above, it is also possible to register a bilaterally executed repo transaction with a CCP post-trade. In terms of settlement of the transaction, this can take place either in one of the domestic central securities depositories (CSDs), in which case payment is generally in central bank money, or alternatively in one of the two international CSDs (ICSDs) (Euroclear Bank and Clearstream Banking Luxembourg), in which case payment is generally in commercial bank money. Market participants can hold an account directly at the (I)CSD or access the (I)CSD indirectly through an agent custodian bank. Most domestic CSDs in Europe form part of a single settlement platform called TARGET2-Securities which is operated jointly by the ECB and four national central banks.

In terms of collateral composition, the most commonly used type of collateral in the European repo market are bonds issued domestically by central governments which account for over 90% of EU-originated repo collateral (see Fig. 16 below). Government bonds of the six largest European sovereign issuers alone (Germany, UK, France, Italy and Spain) account for over 60% of the total. Repo using collateral other than high-quality government bonds is often called credit repo. On the cusp between government and credit collateral are high-grade bonds issued by supranational institutions, as well as sovereign issues (foreign currency bonds issued by governments) and agency issues (issued by public sector bodies such as the government-guaranteed mortgage agencies in the US). Private sector assets, which are much less liquid although higher yielding, form the smallest sector of the repo market, including assets such as corporate bonds, equity, covered bonds, MBS, ABS and others.

Fig. 16: The Composition of Collateral in the European repo market (2001-2022)



2.3 Latest Developments

(1) Global Regulatory Challenges for the Repo Market

Following the 2007-2008 financial crisis, the G20, through the Financial Stability Board (FSB), has committed to building a safer and more resilient economy by developing and coordinating a comprehensive framework for global financial regulation. As part of the overall framework, the FSB identified a number of financial stability risks specifically related to securities financing transactions (SFTs), which includes repo, and grouped the risks into those that impact the banking system and those that arise in what was previously referred to as the "shadow banking" sector[10], which is now more commonly termed "Non-Bank Financial Intermediation" (NBFI).

One of the most critical post-crisis regulatory reforms which have also reshaped the dynamics of the repo market is the Basel III reform. It aims to address a number of problems in the pre-crisis regulatory framework. Some of the key components of Basel III include requirements on regulatory capital, as well as the introduction of the Leverage Ratio (LR) and different liquidity buffers including the Liquidity Coverage Ratio (LCR[11]) and the Net Stable Funding Ratio (NSFR[12]).

Looking more specifically on repo, the Leverage Ratio introduced by Basel III is probably the single most impactful measure to mention. The LR measures institutions' exposure to the risk of excessive leverage and is currently set at 3% for all balance sheet assets[13], based on a non-risk-based measure of exposure. This creates significant constraints for low-risk businesses such as repo, especially for balance sheet intensive and low-margin repo activity in highly-rated securities such as government bonds. As a result, market participants seek to offset repo assets and liabilities through netting.

The LCR and NSFR also impact the behavior of participants in the repo market. LCR requires regulated banks to hold sufficient high-quality liquid assets (HQLA) to cover projected 30-day net cash outflows during a stress period, making short-term funding under 30-days less attractive, and at

10 *Shadow banking is defined as the system of credit intermediation that involves entities and activities outside the regular banking system.*
11 *https://www.bis.org/fsi/fsisummaries/lcr.htm*
12 *https://www.bis.org/fsi/fsisummaries/nsfr.htm*
13 *In the US, top-tier banks must also hold an additional buffer of 2% (for a total of 5%), known as the Supplementary leverage Ratio (SLR).*

the same time, makes holding liquid assets more appealing. On the other hand, NSFR requires sufficient "stable" funding to sustain the financing of their assets and off-balance sheet positions during a year-long market crisis, further reducing reliance on short-term funding. To summarize, LR, LCR and NSFR all impact the repo market in different ways, considerably adding to the cost of capital required to run a repo book.

(2) European Market: Promoting Tri-party Repo and Market Integration

In the early 1990s, in order to help international investors reduce the cost of cross-border repo financing, the European market began to introduce the tri-party repo mechanism. However, due to the low concentration of tri-party repo services, it was difficult to take advantage of any potential "economies of scale" of tri-party repo. In addition, the fragmentation of financial market infrastructure and a lack of harmonization across European markets, meant that the rules, technologies and standards related to tri-party repo lacked sufficient standardization.

In 2017, the European Central Bank through its Advisory Group on Market Infrastructures for Securities and Collateral (AMI-SeCo) launched an initiative to promote standardization in the area of securities clearing and settlement within the euro system with a particular focus on collateral management. The core objectives have been to develop a set of pan-European, unified collateral management rules, to promote the use of the latest international standards (e.g., ISO 20022), and to improve the efficiency of collateral use through straight-through processing, thereby enhancing the connectivity of financial systems and financial market infrastructure within the euro area, and optimizing the operational efficiency of the European bond repo market. This led to the adoption of the Single Collateral Management Rulebook for Europe (SCoRE) which sets out common rules for managing collateral in Europe and is seen as an important step towards a more integrated European post-trade space.[14]

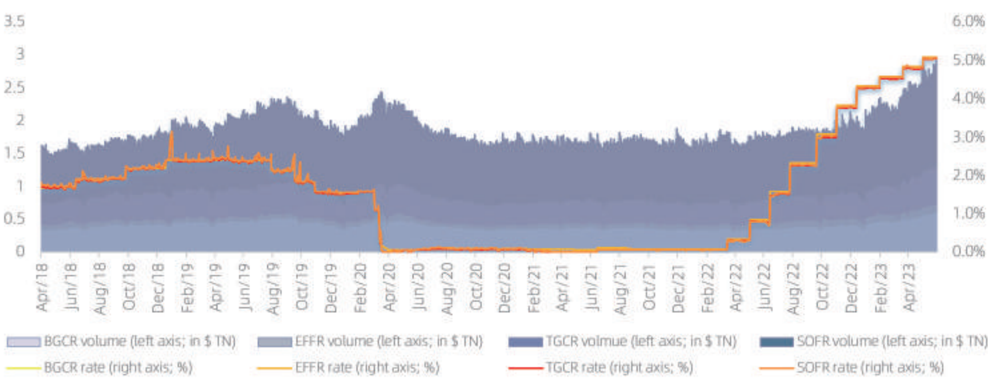
14 Further details on the ongoing work on collateral management harmonization are available on the ECB website. *https://www.ecb.europa.eu/paym/integration/collateral/html/index.en.html*

(3) US Market: Increased Correlation between Repo Benchmark Rates and Monetary Policy

After the financial crisis in 2008, the Federal Reserve's operating framework for monetary policy was adjusted. Due to the large-scale quantitative easing policy, the price signals of interbank offered rates such as the federal funds rate began to weaken. In response, the Fed created a new monetary policy tool, the overnight reverse repo instrument (ON RRP), and gradually formed an interest rate corridor with the Overnight Reverse Repo Rate as the floor and the Interest on Excess Reserves (IOER) as the ceiling. In particular, since March 2022, the Fed has scaled up its efforts to regulate liquidity through the repo market, which has further increased the importance of repo market rates.

Currently, the most important benchmark interest rate in the US bond repo market is the US Secured Overnight Financing Rate (SOFR). The SOFR is derived by calculating the median repo transaction rate on the basis of the Tri-Party General Collateral Rate (TGCR) and the Broad General Collateral Rate (BGCR), excluding the portion that is clearly a special repo transaction, which measures the overall interest rate situation in the US bond repo market. Besides, SOFR moves in lockstep with the Fed's monetary policy cycle. In early 2020, when the Fed initiated a large-scale unconventional monetary policy in response to the global pandemic, SOFR fell rapidly, reducing the financing cost for financial institutions. Meanwhile, after the Fed started the tapering process in response to inflation, SOFR showed a stepwise upward trend, keeping in line with the Fed's rate hike cycle (see Fig. 17), and it can be said that the Fed's efforts to channel monetary policy through the bond repo market are beginning to bear fruit.

Fig. 17: Federal Reserve Bank of New York overnight reference rates and corresponding volumes (2018-2023)



Source: OFR

At the beginning of 2022, the London Interbank Offered Rate (LIBOR), which has served as the core benchmark interest rate for global financial markets for the past three decades, started to be gradually phased out. In this context, monetary authorities of various countries successively announced a new benchmark rate to replace LIBOR (see Table 2). It could be found that these new benchmark rates were generally developed based on the overnight money market transactions, which avoid the moral hazard of the original LIBOR mechanism and can more realistically reflect the supply and demand and funding levels in the money market. In addition, another important reason why the repo rate represented by SOFR is used as the new benchmark rate was that these repo contracts use Treasury bonds as collateral and can therefore be approximated as risk-free.

Table 2: New benchmark rates to replace LIBOR in major money markets

Money markets	New benchmark interest rate	Interest rate type	Collateralization
US dollar	Secured overnight financing rate (SOFR)	Overnight repo rate	Collateralized
British pound	Sterling Overnight Index Average (SONIA)	Overnight interbank loan	Non-Collateralized
Euro	Euro Short-Term Rate (€ STR)	Interbank overnight lending	Non-Collateralized
Japanese yen	Tokyo Overnight Average Rate (TONA)	Interbank overnight lending	Non-Collateralized
Swiss franc	Swiss Average Rate Overnight (SARON)	Overnight repo rate	Collateralized

The cumulative total of SOFR-linked financial products has exceeded USD150 trillion since the SOFR was published in 2018. As of October 2021, the nominal outstanding amount of SOFR amounted to approximately USD7.95 trillion. Among them, swaps in SOFR derivatives account for about USD5.85 trillion while related futures reached about USD1.95 trillion[15]. In the future, as the repo market interest rate represented by SOFR becomes more widely used in the pricing of various financial products, accordingly, the systematic importance of the bond repo market in the global financial system will be further enhanced.

15 *Data about SOFR is from: BOC Research: Risk Analysis Framework and Insights Based on SOFR Benchmark Interest Rate System*

2

Latest Trends in the Global Repo Market

(1) Emerging Technology

1.1 Revolutionary Fintech

Technology is reshaping the way financial markets operate. Driven by the increasing need for efficiency, liquidity as well as regulatory requirements, the global repo market is actively embracing technology across its trading lifecycle.

(1) Digital Technology Reconstructs the Repo Market

A noticeable trend in the current global repo market is the increasing automation and importance of electronic trading, with many electronic trading venues rapidly emerging and expanding. According to recent analysis, electronic trading in repo accounts for over 50% at end of 2021[16] in the EU today. Order management systems (OMS) and execution management systems (EMS) provide market participants with better connectivity and interoperability with financial infrastructures when trading repos. Furthermore, relevant service providers have developed more than 200 complementary post-trade and ancillary technology solutions[17],covering all parts of the trade lifecycle from clearing to collateral management, liquidity monitoring, and corporate actions. In addition, there is a prospect to digitalize repo transactions through distributed ledger technology (DLT)[18].

The first step in the application of DLT is the representation of securities and cash in digital records. Many central banks have started to look into the viability and usability of Central Bank Digital Currency (CBDC). Market institutions are using or have announced plans to use DLT for repo transactions and settlements[19].For example, the European Investment Bank (EIB) issued its first DLT bond on a public blockchain in April 2021, which was subsequently used in a securities financing transaction, collateralized by a triparty agent on the back of a traditional contractual setup[20].All of these developments lay the groundwork for a wider adoption of DLT in the future including repo trading. In fact, there are already a handful of examples of repo transactions that have been traded on blockchain[21].Regulators and policymakers are also responding by adapting laws[22].

---

16 European Repo Market Survey: Electronic trading in the European repo market, using UK and EU SFTR data on trading venues as a proxy for automatic trading systems (ATS). ATS is defined as either a fully-automatic or semi-automatic electronic trading platform. https://www.icmagroup.org/assets/Repo-Survey-Electronic-Trading-April-2022.pdf?vid=4

17 See ICMA Operations Fintech directory. https://www.icmagroup.org/market-practice-and-regulatory-policy/fintech-and-digitalisation/operations-fintech-directory/

18 Distributed Ledger Technology refers to the protocols and supporting infrastructure that allow computers in different locations to propose and validate transactions and update records in a synchronised way across a network, see https://www.bis.org/publ/qtrpdf/r_qt1709y.htm.

19 For example, Broadridge launched its distributed ledger repo trading platform in June 2021, where market participants can agree, execute and settle transactions on a decentralised platform that utilises blockchain.

20 https://www.sgforge.com/securities-finance-trade-digital-bond-on-public-blockchain/

21 See New Fintech Applications in Bond Markets under Repo and Collateral markets

22 See ICMA Distributed Ledger Technology (DLT) regulatory Directory.

(2) Standardized Data Models

At present, financial institutions use different systems and processes to manage repo transactions, and the form of transaction details is not uniform, which makes the exchange of information inefficient and inconsistent. In response, ICMA is working together with the International Swaps and Derivatives Association (ISDA) and the International Securities Lending Association (ISLA) on a joint trade association initiative called the Common Domain Model (CDM). The CDM is a standardized data model that provides a generic definition for how financial products are traded and managed in the form of executable code. It enables firms' IT systems to speak the same language through the standardization of product representations, events and processes. As the CDM facilitates the translation of existing messaging protocols and data standards and consolidates the transaction data into a single view, market participants will not be required to interpret and program lifecycle events and processes into their IT systems individually. This will reduce costs, support STP and provide a foundation for innovation.

Beyond trading and settlement, legal documentation is another area that could benefit from further standardization in order to streamline the negotiation and execution of repo trading agreements. In October 2021, ICMA launched a project to develop a GMRA Clause Taxonomy and Library, which aims to build an industry-wide, foundational library of standardized contract clauses, which will help firm shorten negotiations time and reduce operational risk, while also helping to simplify the extraction of agreement data. Together with the CDM mentioned above, a completed GMRA clause taxonomy and data model can provide a significant accelerator for the digital transformation of repo and collateral markets.

1.2 Repo & Sustainability Becomes an Industry Focus

In order to achieve various net-zero targets worldwide, sustainable finance has become a focal point in the financial market. As an important component of the financial system, the repo market is playing its part in the development of sustainable finance.

In 2021, ICMA published a first consultation paper on the role of repo in sustainable finance[23], which contemplated how the repo market could potentially be embedded into sustainable finance, considering three aspects of a repo: the underlying collateral, cash proceeds and counterparties' sustainability profile. In 2022, ICMA further introduced a high-level classification of sustainability-related repo transactions in a follow-up report[24]. Based on current market practices, the paper describes four types of intersections between repo and sustainability, which fall into two broad categories (see Table 3): 1. the wider sustainability considerations in the existing repo business through the differentiated treatment of collateral and counterparties and, 2. specific repo products providing sustainable financing, such as sustainable "use of proceeds" repo and "sustainability-linked" repo.

Table5 Combination of repo transactions and sustainability types

Repo supporting sustainable financing	Repo providing sustainable financing
Collateral Considerations A repo transaction in which buyer and seller use sustainable asset(s) as collateral for the trade.	Sustainable Use of Proceeds (UoP) Repo A repo transaction where the cash is used exclusively to finance or re-finance, in full or in part, new and/or existing eligible sustainable projects or the borrower's sustainable asset portfolio.
Counterparty Considerations A repo transaction that considers the sustainability credentials of the counterparties to the repo transaction, i.e., counterparties that meet certain sustainability criteria.	Sustainability-Linked(SL) Repo A repo transaction in which the financial and/or structural characteristics of the repo is linked to the seller's performance with respect to a set of predefined Sustainability Key Performance Indicators(KPIs) or Sustainability Performance Targets(SPTs).

23 https://www.icmagroup.org/assets/documents/Regulatory/Repo/ICMA-ERCC-Green-and-sustainable-finance-role-of-the-repo-market-CP-220421.pdf

24 https://www.icmagroup.org/assets/ICMA-Sustainability-in-the-repo-market-20221025.pdf

From a regulatory perspective, current ESG-related policies deal largely with incorporating ESG factors into securities, investments and operations as well as with their classification, disclosure and reporting, and indirectly influence the repo market through the management of collateral and counterparties. In Europe, regulators and central banks are already promoting collateral with sustainability credentials. From the beginning of 2021, the ECB began accepting sustainability-linked bonds as collateral for Eurosystem credit operations and also incorporated climate change considerations into its monetary policy strategy, including differentiated treatment for collateral and assets purchases that meets certain eligibility criteria. Furthermore, the Eurosystem also announced that they will begin to consider climate-related factors when evaluating corporate bonds used as collateral[25]. Similarly, the Bank of England is also considering implementing stricter green criteria in its corporate bond purchase program[26], prompting companies to manage their non-green collateral more actively and effectively.

Column #3: Development of Sustainability-related Repo Products and Transactions in Global Market

The large capital flow seeking to support sustainable activities has brought more innovative products into the repo market. In November 2020, a Green Bond GC basket was launched by Eurex, providing the first standardized basket which integrates repo and sustainability in Europe. The basket is CCP eligible and consists of Euro-denominated high-quality liquid assets (HQLAs) that are issued in adherence with various Green Bond guidelines, in particular ICMA's Green Bond Principles. The trading volume on the basket, however, remains low. According to Eurex's update in 2022, the overall traded volume in Green Bonds is below 1%. The bonds in the basket also vary in terms of the type of issuers and credit quality, which is untraditional for GC baskets. This is due to insufficient short-term green issuance. On the

25 ECB takes further steps to incorporate climate change into its monetary policy operations. https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220704~4f48a72462.en.html

26 Bank of England publishes its approach to greening the Corporate Bond Purchase Scheme. https://www.bankofengland.co.uk/news/2021/november/boe-publishes-its-approach-to-greening-the-corporate-bond-purchase-scheme other hand, a number of triparty agents and electronic platforms are also introducing ESG eligibility criteria into their collateral management services, providing capabilities for clients to express ESG preferences by factoring ESG ratings (for individual securities) into eligibility criteria, collateral margin as well as concentration limits. However, as mentioned in the previous section, it is questionable whether using sustainable assets as collateral in itself generates any additional financing for the green ecosystem. Instead, inspired by the existing market standards from the bond and loan side, the repo market also shifts its attention from the collateral to the cash proceeds. For example, in December 2020, the Agricultural Bank of China's Singapore branch (ABC SG) entered a $50 million repo deal with BNP Paribas whereby the cash proceeds of the repo will be allocated to green projects based on the branch's internal Sustainable Financing Framework. ABC SG has engaged Sustainalytics to review the assets funded by this repo transaction and provide an assessment as to whether the projects met the Use-of-Proceeds criteria and the Reporting commitments outlined in the framework. This type of transaction creates funding directly for designated green projects and tends to follow well-established market practices such as ICMA's Green and Social Bond Principles or the Green Loan Principles. As the market evolves, more firms across the globe are developing use-of-proceeds repo transactions and an integrated approach which combines the use-of-proceeds with sustainable assets also started to appear in the market.

Apart from the collateral and cash legs of the repo, some market practitioners choose to focus on the sustainability profile of their counterparty and their overall sustainability goals. Sustainability-linked repo is a repo transaction in which the repo rate is linked to the seller's performance with respect to a set of predefined Sustainability Key Performance Indicators (KPIs) or Sustainability Performance Targets (SPTs). It is another sustainability-related repo product that has emerged. In August 2021, Deutsche Bank and Akbank executed a US $300 million repo transaction which marked the first sustainability-linked repo in Central and Eastern Europe, Middle East and Africa (CEEMEA). The structure of the transaction links the repo interest rate to the borrower's performance on their three sustainability key performance indicators (KPI). Throughout the life of the transaction, Deutsche Bank monitored Akbank's sustainability performance based on these KPIs and adjusted the pricing rate of the repo accordingly. Similar to use-of-proceeds repos, the number of sustainability-linked repos is also growing. However, as of now, sustainability-linked repos are mainly used as part of a firm's overall sustainable finance framework, and it is unclear whether they can be transacted independently outside the framework due to the mismatch between a repo's short-term nature and firms' long-term sustainability objectives.

Despite the popular trends in the sustainability repo space, the market is still at an early stage. There are still a lot of questions that remain unanswered, including considerations from a legal, reporting and disclosure perspective. Nonetheless, there is no doubt that repo plays an important role in sustainable finance and the current market standards could be applied to sustainable-related repo transactions with the appropriate adaptation. A key challenge for this emerging field is finding the right balance between promoting sustainability while at the same time ensuring the efficiency of the repo market and safeguarding the crucial role it plays for the wider financial market. It is also important to avoid any unwanted claims about sustainability that could be perceived as greenwashing.

The Basis and Elements of RMB Bonds Collateral Participating in Global Bond Repurchase

3

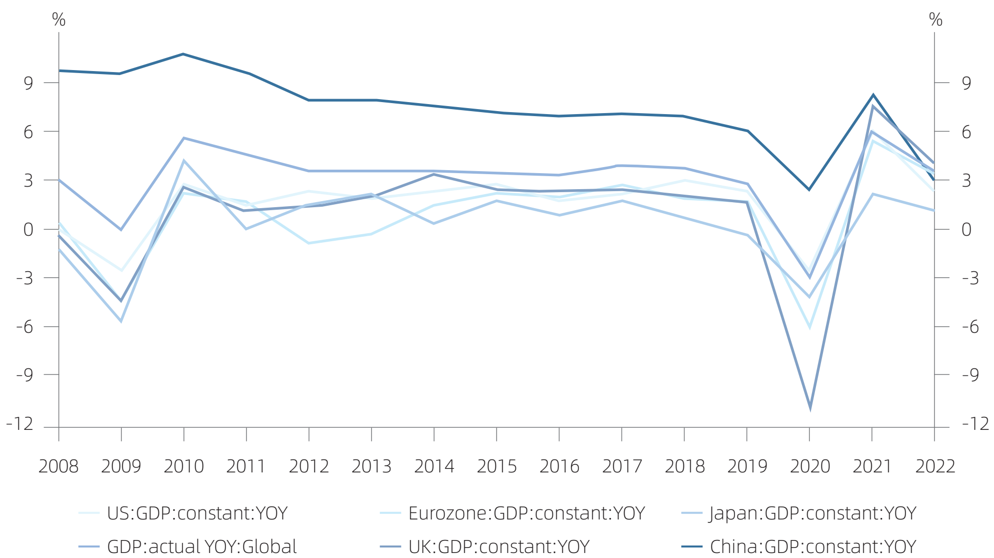
Due to the steady growth of China's economy and the accelerated process of RMB internationalization, China's bond market has grown substantially in size, with continuous improvement in operating mechanisms while gradually opening up. China's bond market is today the second largest in the world and increasingly international institutions have begun to explore the potential of using RMB bonds as collateral in the global financial market.

(1) Deeper Opening-up of China's Bond Market

1.1 China's Macroeconomic Outlook is Stable and Promising, and RMB Internationalization has Achieved Significant Progress

The internationalization of China's bond market is closely related to China's integration into the global economy. In 2022, China's GDP reached RMB 121.02 trillion, accounting for approximately 18.1% of the world's GDP. The GDP growth rate is 3.0%, which is faster than most major economies in the world (see Fig. 18).

Figure 18 GDP growth rates of major economies

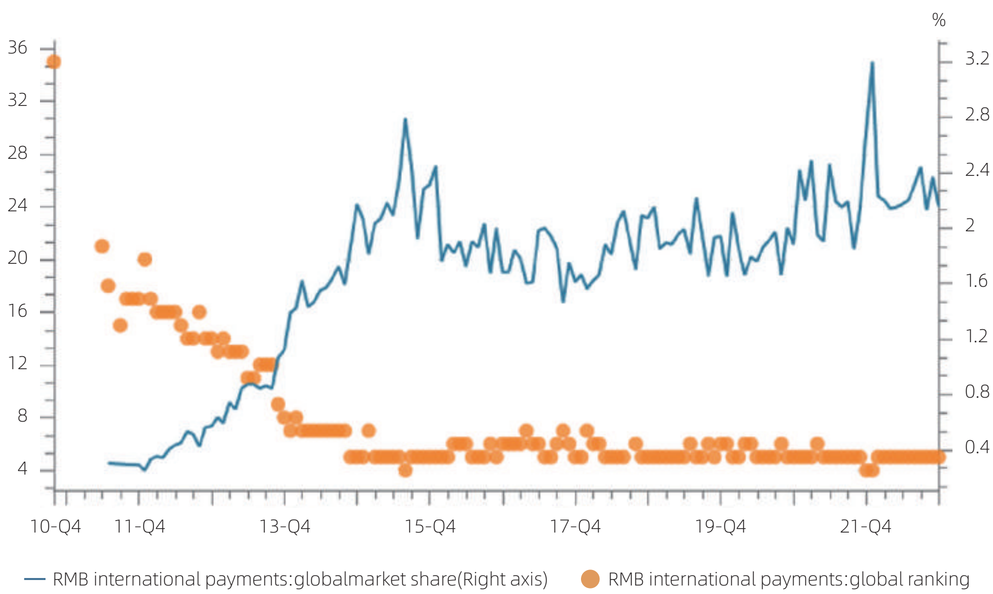


Data sources: Wind

The internationalization of RMB also coincides with the opening of the bond market. The expansion of use of RMB creates favorable conditions for the opening-up of the bond market. Establishing a bond market with sufficient depth, breadth, and international integration can also accelerate the process of RMB internationalization, promoting the transition of RMB from a settlement currency to international currency, encompassing function as both an investment currency and reserve currency. According to data released by the International Monetary Fund (IMF), RMB's proportion in the global foreign exchange reserves was only 1.08% when RMB joined the SDR (Special Drawing Rights) in October 2016. By the end of Q3 2022, RMB's share had risen to 2.76%, ranking fifth globally. In terms of global FX transaction volume, according to the Bank for International Settlements (BIS), RMB ranked eighth.

In addition, according to data released by the Society for Worldwide Interbank Financial Telecommunications (SWIFT), at the end of 2022, RMB was the fifth most active currency in terms of global payments, accounting for 2.15%. RMB ranked third in global cross-border trade, accounting for 3.91% of the total, which was nearly double the proportion during the same period in 2021 (see Fig. 19). As of September 2022, more than 70 central banks worldwide had used RMB as a reserve currency, with RMB accounting for nearly 2.76% of the global central banks' foreign exchange reserves, making it the fifth largest reserve currency in the world. At present, the People's Bank of China has signed bilateral local currency swap agreements with central banks of 40 countries and regions, with a swap fund scale of RMB 4.02 trillion, and the willingness of various economies to hold RMB assets has increased.

Figure 19 Global market share and ranking of RMB international payments (2010-2022)



Data sources: Wind

In May 2022, the IMF increased the weight of RMB in the SDR from 10.92% to 12.28% (see Table 4), with the US dollar weight also increasing, while the weight of the euro, yen, and pound decreased. This measure not only confirmed the increasing global influence of China's macroeconomic and financial openness, but also the role of RMB in supporting, stabilizing, and enhancing global trade and financial development. Overall, the cross-border use of RMB continues to grow rapidly, with significant growth in cross-border RMB settlement for trade and direct investment, and new breakthroughs in commodity pricing. The payment function of RMB continues to be strengthened, the financial transaction function continues to be deepened, there are breakthroughs in developing its pricing function, while its reserve function is gradually emerging.

Table 4 SDR weighting adjustment details in May 2022

Currency	Before adjustment	After adjustment	Adjustment range
US Dollar	41.73%	43.38%	+1.65%
Euro	30.93%	29.31%	-1.62%
RMB	10.92%	12.28%	+1.36%
Yen	8.33%	7.59%	-0.74%
Pound	8.09%	7.44%	-0.65%

1.2 Gradual Opening of China's Bond Market

Reviewing the history of China's bond market, its opening-up is closely related to RMB internationalization. In the context of RMB internationalization, the opening-up of China's bond market exhibits the following characteristics. Firstly, it involves the launching of pilot initiatives, followed by supporting policies. Secondly, there is a sequential progression of "bringing in" foreign participation before "going global". Thirdly, the initial implementation of layered pilot projects has expanded over time. To summarize, the opening-up of China's bond market is characterized by stability and development. It has a stable opening-up process and has gradually opened up at different levels, including four stages of "brewing strength, opening doors, paving roads, and deep integration".

(1) "Brewing Strength" (2002-2010): Testing the Participation of Overseas Institutions in the Domestic Market

In this stage, regulatory authorities officially clarified the standards for qualified foreign investors and launched pilot businesses. In 2002, the People's Bank of China and the China Securities Regulatory Commission (hereinafter referred to as the "CSRC") issued Provisional Measures on Administration of Domestic Securities Investment of Qualified Foreign Institutional Investors, officially launched the Qualified Foreign Institutional Investor (QFII) system, defined the criteria for qualified foreign investors, and stipulated that qualified foreign investors can enter China's securities market. In 2005, Pan-Asian Bond Index Fund, sub-fund of the Asian Bond Fund, was allowed to enter the inter-bank bond market, becoming the first foreign institution to enter China's bond market. In 2009, with the promulgation of the Measures for the Administration of Pilot RMB Settlement in Cross-border Trade, the pilot cross-border RMB settlement was officially launched, promoting the RMB internationalization, and accumulating initial momentum for the follow-up development of China's bond market.

(2) "Opening Doors" (2010-2015): Foreign Participating Institutions Increased Rapidly

In this stage, concerning the scope of opening-up the bond market, China has steadily promoted the diversification of participating institution types. From 2010 to 2011, in order to cooperate with the cross-border trade RMB settlement pilot program, China expanded the channels for RMB capital return by permitting foreign institutions to invest in the domestic bond market. Regulatory authorities introduced relevant regulations[27]. First, allowing foreign central banks, RMB clear-

---

27 In 2010, the People's Bank of China issued ***Notice of the People's Bank of China on Issues Concerning the Pilot Program on Investment in the Interbank Bond Market with RMB Funds by Three Types of Institution Including Overseas RMB Clearing Banks PBC Document No. 217 [2010].*** *In 2011, the China Securities Regulatory Commission, the People's Bank of China and the State Administration of Foreign Exchange issued* ***Measures for the Pilot Program of Investment by Fund Management Companies and Securities Companies Approved as RMB Qualified Foreign Institutional Investors in Domestic Market.***

ing banks in Hong Kong and Macao, and foreign participating banks to use RMB to invest in the interbank bond market after approval. Later, eligible domestic fund management companies and Hong Kong subsidiaries of securities companies were allowed to use RMB funds raised in Hong Kong to invest in the domestic securities market (i.e., establish the RQFII system). In 2013, the scope of RQFII was further expanded, stipulating that Hong Kong subsidiaries of domestic commercial banks and insurance companies or financial institutions whose domiciles and main business locations were in Hong Kong can participate in the RQFII, and can invest in the interbank bond market after approval.

(3) "Paving Roads"(2015-2018): Continuously Improving the Convenience of Foreign Institutions' Participation in RMB Bond Market

In this stage, China continued to relax restrictions and promoted innovation of the bond market, further improved the liquidity of RMB bonds, and enriched the domestic RMB financing means of foreign institutions. In 2015, the People's Bank of China successively issued relevant notices[28], gradually allowing foreign RMB clearing banks and participating banks to use their RMB bonds to participate in bond repurchase business in the domestic interbank market. Subsequently, the access of foreign central banks, international financial institutions, and sovereign wealth funds to invest in the interbank market using RMB was changed from an approval system to a filing system, while the range of products that these three types of investors can participate in was expanded, and relevant foreign institutional investors could independently decide the investment scale. In 2016, the People's Bank of China issued Announcement No. 3 of the People's Bank of China, which stipulated that foreign commercial banks, insurance companies, securities companies, fund management companies, and other asset man-

28 In 2015, the People's Bank of China issued ***Notice on Overseas RMB Business Clearing Banks and Overseas Participating Banks Conducting Bond Repurchase Transactions in the Interbank Market***. In the same year, the People's Bank of China issued ***Notice of the People's Bank of China on Issues Concerning Investment of Foreign Central Banks, International Financial Institutions and Sovereign Wealth Funds with RMB Funds in the Inter-bank Market.***

agement institutions can issue investment products in accordance with the law and regulations, while pension funds, charitable funds, donation funds and so on can participate in bond transactions in the interbank market through settlement agency. In in order to facilitate foreign investors in Hong Kong and other countries and regions, the People's Bank of China and the Hong Kong Monetary Authority jointly announced the launch of interconnection and cooperation between the bond markets of the Chinese mainland and Hong Kong. This formed the basis for further interconnection and cooperation between Hong Kong and mainland infrastructure institutions in trading, custody, settlement, and other aspects.

(4) "Deep Integration" (2018-present): Accelerated Promotion of Bilateral Opening up

At this stage, China continuously expands the business scope of foreign financial institutions and improves the degree of two-way opening-up of the capital market. In 2018, President Xi Jinping announced at the Boao Forum for Asia that China would significantly relax market access, including in the financial sector. In the following two years, more than 50 measures for opening-up were established, including the complete abolition of restrictions on the proportion of foreign shares in banking, securities, funds, futures and personal insurance. From 2019 to 2021, China's treasury bonds have been included in the three major international bond indexes, which not only means that more foreign funds will participate in China's bond market, but also reflects that China's efforts in bond market opening-up have been recognized by global investors. In May 2022, the People's Bank of China, the CSRC, and the State Administration of Foreign Exchange (hereinafter referred to as the "SAFE") jointly issued a notice, in accordance with the principle of "one set of institutional rules, one bond market", to synchronously promote the opening-up of the interbank and exchange bond markets, making the interbank and exchange bond markets connected at the opening-up level.

1.3 Trends and Prospects of China's Bond Market

In recent years, the ways in which overseas institutions participate in China's domestic bond market have become increasingly diverse. The international influence of China's bond market has continued to rise. China's bond market has attained key achievements in opening-up. From 2017 to 2021, China's cross-border bond investment inflows were surpassed only by the United States, the United Kingdom, and Japan, ranking fourth globally. As of the end of January 2023, the balance of China's bond market was RMB 14.49 trillion. According to investment data released by the Shanghai Head Office of the People's Bank of China, a total of 1,075 overseas institutions entered the market during this period. Overseas institutions hold RMB 3.28 trillion worth of bonds in the interbank market, accounting for approximately 2.6% of the total amount of bonds held in custody in the interbank bond market.

Looking ahead, China's bond market will continue to open up to the world. The use to Chinese bonds held by overseas institutions will gradually expand:

Initially, the influence of the RMB and China's bond market will continue to increase. The RMB has maintained its position as the world's fifth-largest reserve currency and the eighth-largest foreign exchange trading currency. As an important allocation target for overseas institutions' RMB assets, China's bond market will further increase its influence on the global bond market in the future. At the same time, the opening-up of the bond market plays a pivotal role in the internationalization of the RMB, improving the global liquidity and efficiency of RMB bonds. It is conducive to the deeper development of the international use of the RMB, spanning from trade to finance.

Simultaneously, the investment value of RMB bonds will be further emphasized. From a historical perspective, the stability of Chinese bond returns is relatively high. From 2018 to 2021, the monthly return of the Chinese domestic bond index converted into US dollars had an annualized volatility of 4.7%, which is lower than the volatility of US bonds during the same period (6.5%). From the perspective of portfolio management, due to the strong autonomy of China's macro policies, the domestic economic and policy cycles are not synchronized with those of major developed economies such as the United States. The correlation between the Chinese domestic bond index and the US Treasury bond index is only 0.2, which is a relatively low level, providing an important choice for global investors to diversify their investments. In terms of investment proportion, foreign investment accounts roughly for only 3% of China's bond market, which is relatively low compared with developed economies and some emerging market countries. That suggests room space for a large increase in allocation. **Finally,** the appeal for the internationalization of RMB bond collateral will grow rapidly. Previously, with the opening-up of China's bond market, some international investors have begun to pay attention to the use of RMB bonds as collateral in the international financial market and have pushed relevant institutions to take corresponding measures. During the 10th China-UK Economic and Financial Dialogue held in 2019, it became a consensus to promote RMB bonds as qualified collateral that would be widely accepted in the UK market. In 2021, Hong Kong announced that local government bonds issued on offshore markets in RMB and other currencies would be included in the list of eligible collateral for RMB liquidity arrangements. In the future, there will be a continuing increase in demand to include RMB bonds as international collateral and to promote the use of existing assets, enhancing the internationalization of RMB bond collateral.

(2) Internationalization of RMB Bonds Collateral

RMB bonds have gradually gained recognition in the international market. However, RMB bonds still fall short of the cross-border application and have yet to become widely accepted as collateral in the global financial market compared to the G7 sovereign bonds. This section discusses the institutional environment, cooperation status, and related exploratory practices of the cross-border application of RMB bond collateral.

2.1 Gradual Convergence with International Legal Systems and Rules

A sound legal and regulatory system is an essential prerequisite for the operation of collateral businesses. For a long time, there have been differences between China's security interest and those of other jurisdictions, resulting in some unique trading habits and operational mechanisms in the

Chinese market. However, due to the convergence of domestic and foreign markets, the institutional environment for the cross-border application of RMB bonds is gradually improving.

In terms of legal basis, the official promulgation of the Civil Code further clarified the institutional foundation of security interest. This development has been instrumental in guiding practical business operations in this field. Furthermore, the promulgation of the Futures and Derivatives Law incorporates non-standard security arrangements, such as assignment guarantee, in compliance with the Civil Code and its judicial interpretations. It provides space for innovative applications of domestic bonds as collateral. In 2018, the establishment of the Shanghai Financial Court provided an essential platform for resolving complex and international financial disputes, which further improve China's financial legal environment.

In terms of business rules, China's bond market collateral business practices continue to break through and are ahead of the legislative process. Financial infrastructure represented by CCDC has established a collateral business rule system, which is highly combined with internationalization and localization, through standardized documents such as business guidelines. The industry association represented by NAFMII has fully absorbed international advanced experience and closely integrated with China's market demand. They have established a complete set of master agreement documents applicable to over-the-counter derivatives trading, bond repurchase transactions, and bond lending transactions. It helps to promote the legal construction and standardized development of China's financial market.

In terms of supporting mechanisms, the procedures for foreign investors to enter the Chinese market have been continuously simplified. Tax policies have become more certain. The types of investable assets have been continuously enriched, and the transparency of data disclosure has been steadily improved. The business environment has seen ongoing improvements. Meanwhile, a series of facilitation measures have been successively launched, such as extending the trading time of the interbank foreign exchange market and providing special settlement cycle trading services. It provides foreign investors with more efficient and higher-quality market services. China has established an initial support system that aligns with its level of openness to the outside world.

2.2 Cross-border Connectivity between Domestic and Foreign Markets is Increasing

As institutional rules converge, the connectivity between the domestic and foreign markets has become tighter. Consequently, foreign investors' willingness to strengthen their connectivity with the Chinese bond market has gradually increased. The internationalization of China's bond market inevitably leads to the internationalization of its bond collateral. With the growth of foreign investors' holdings of RMB bonds, cooperation in the field of cross-border collateral has also been put on the agenda and has become an important aspect of the connectivity and cooperation between domestic and foreign markets.

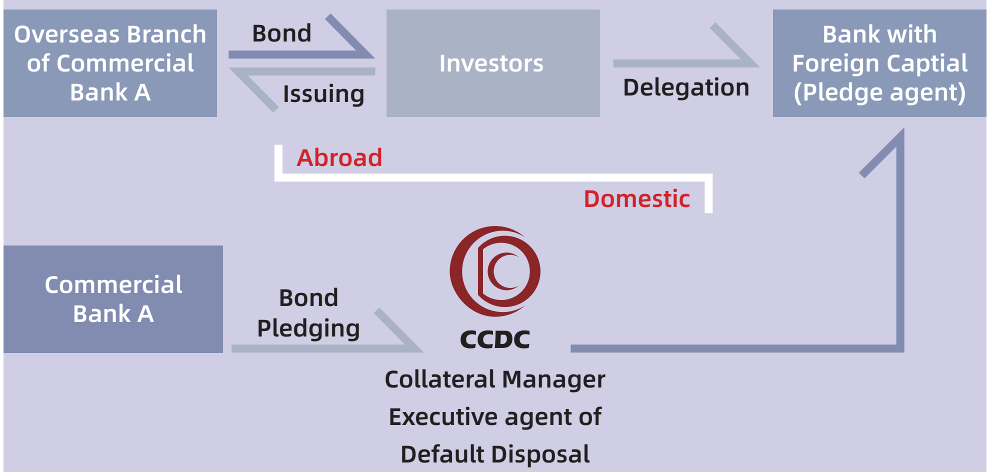
At the level of cross-border mutual recognition, on the one hand, "promoting RMB bonds as eligible collateral widely accepted in the UK market" has been included in the policy achievements of the 10th China-UK Economic and Financial Dialogue, reflecting the national level of attention. Subsequently, with the support of cooperation platforms such as the China-UK Capital Markets Working Group, all parties are actively promoting the international acceptance of RMB bond assets. On the other hand, financial infrastructure institutions such as CCDC have established cooperation relationships with more than ten international peers, such as Clearstream, Euroclear, and JP Morgan, actively exploring cross-border collateral cooperation and establishing channels for mutual recognition of cross-border collateral between China and foreign markets.

At the level of business practice, with the continuous opening-up of China's bond market, the demand for cross-border applications of RMB bond collateral is constantly increasing. Financial infrastructure represented by CCDC strongly supports the innovative implementation of bond collateral business and there have been numerous applications in the cross-border field (see Column 4). It provides full-process service support for financial institutions' cross-border financing and issuance and lays a solid foundation for the internationalization of RMB bond collateral. To establish a solid foundation for expanding the cross-border application of RMB bonds, several measures should be considered. These include exploring various use cases for RMB bond collateral, enhancing the depth and quality of China's bond market as it opens up, and aligning it more closely with international bond markets.

Column #4: Cases of RMB Bonds Cross-border Application

Case One: Issuing Overseas Bonds Secured by Domestic Bonds

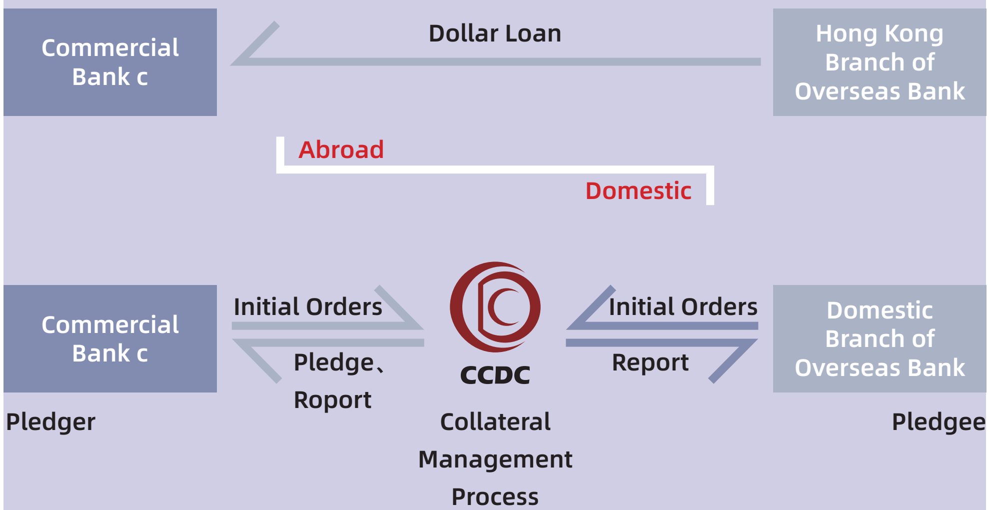
In October 2016, Chinese domestic commercial bank A issued green bonds secured by assets denominated in US dollars on a foreign exchange. The bonds were backed by a pool of domestic bonds held by bank A, which were pledged to the overseas trustee bank of its foreign branch, providing security for the issuance of the overseas bonds. In this transaction, bank A's domestic guarantee bonds were held in custody by CCDC,with pledge registration and collateral management services provided by CCDC.



This approach of using domestic bonds as collateral to issue overseas bonds effectively reduces the issuance cost of overseas bonds for Chinese financial institutions. While gaining recognition from international investors, it offers a better financing option for Chinese financial institutions overseas.

Case Two: Using Domestic Bonds as Collateral for USD Loans

In 2017, the Hong Kong branch of a foreign bank and domestic commercial bank C conducted overseas USD loan business, with the domestic branch of the foreign bank accepting the bonds, held by C, under CCDC's custody as collateral. In this transaction, bank C used RMB bonds held in custody domestically to obtain foreign currency liquidity in overseas markets, which not only broadened the cross-border application of RMB bonds but also enhanced their efficiency, further promoting connectivity between domestic and overseas markets.



Continuous innovation breakthroughs in the cross-border application of collateral provide valuable practical experience for promoting the participation of RMB bond collateral in cross-border repos. Based on this, another key issue is to construct a cross-border transfer framework for RMB bond collateral that is more tailored to the needs and trading habits of domestic and overseas institutions.

(3) Core Elements Affecting the Use of RMB Bonds as Collateral in Global Repo Transactions

With the continuous deepening of RMB internationalization, RMB bonds have made significant progress in terms of regional distribution and investor base. As collateral for international repo, RMB bonds have a significant potential. However, the differences in the construction of domestic and foreign systems, market operations, and the lack of a cross-border custody system for financial infrastructure have hindered the participation of RMB bonds in global repurchase transactions.

3.1 Agreement Element: Compatibility and Integration between Domestic and Foreign Master Repo Agreements

The repo agreement is the prerequisite legal document for both parties to engage in transactions. Unlike the domestic bond repo market, which mandates the signing of the NAFMII Master Repurchase Agreement, the primary master agreement used in the international repo market is the Global Master Repo Agreement (GMRA). Overseas institutions who want to participate in the domestic interbank repo market through the direct investment mode are required to complete market access filings and sign the NAFMII Master Repurchase Agreement. The complex process to access the market and the differences in legal agreement texts fundamentally restrict the participation of overseas institutions in the domestic interbank repo market. With the continuous opening-up of the interbank market, the access mechanism for the repo market urgently needs improvement. The procedure for overseas investors filing for admission needs further simplification. Furthermore, the equivalence between domestic and foreign market repo agreements should be recognized, which would facilitate transactions for overseas institutions and promote the integration of domestic and foreign rules.

3.2 Systematic Element: Implementation of Close-out Netting

Close-out netting is a fundamental provision in international financial derivative contracts, including the termination of transactions, valuation, and determination of net settlement amounts. This concept also has applications in the repo market. In the cross-border use of RMB bond collateral, the effectiveness of netting provisions under the Chinese legal system has been a controversial subject and a market focus. In the close-out netting mechanism, relevant netting actions are not suspended, invalidated, or revoked due to the entry into bankruptcy proceedings by one party to the transaction or a settlement participant. However, current Chinese laws, particularly, the *Enterprise Bankruptcy Law of the People's Republic of China* do not explicitly address this issue. Therefore, foreign counterparties have generally regarded domestic financial institutions as non-netting transaction counterparties. Interpreting and confirming the effectiveness of close-out netting under the current Chinese legal system is a key factor that affects the cross-border application of RMB bond collateral.

It is worth mentioning that China has gone through a series of developments and breakthroughs in the construction of the netting and settlement system. Firstly, the netting and settlement system has been gradually recognized at the level of financial market trading systems and regulatory practices. For example, an authoritative official from the China Banking and Insurance Regulatory Commission (CBIRC), which is now the National Financial Regulatory Administration (NFRA), explicitly confirmed the legal certainty of close-out netting in derivative transactions under Chinese law (including repo transactions) when answering questions from reporters. Additionally, at the legislative level, the concept of netting is explicitly mentioned in the Draft Amendment to the Law of the People's Republic of China on Commercial Banks announced in October 2020, and the Futures and Derivatives Law, passed in April 2022, further clarifies and explicitly recognizes netting in respect of derivatives contracts. The promulgation of the Futures and Derivatives Law marks a significant breakthrough in establishing legal recognition and enforceability of close-out netting in China. Continuing legislative focus and development around the application and enforceability of close-out netting provides a stronger legal basis for domestic and foreign investors to engage in over-the-counter derivatives and repo transactions, creating more favorable conditions for the cross-border application of RMB bond collateral. In the repo market, the uncertainty around close-out netting directly impacts the ability of financial institutions to enjoy the benefits and advantages that close-out netting can provide in relation to risk mitigation and capital savings under repo transactions.

In a previous notice issued by CBIRC regarding the measurement rules for counterparty default risk assets in derivative instrument transactions, it is clarified that, apart from the NAFMII Master Repurchase Agreement, the China Securities and Futures Market Master Agreement, and the 2002 ISDA Master Agreement in the international market, other legally valid netting master agreements recognized by CBIRC can also serve as a basis for commercial banks to calculate counterparty default risk exposure on a net basis. It is also mentioned that the default risk and capital measurement of commercial bank bond repo transactions can be executed in accordance with the relevant provisions of derivative instrument transaction netting. These two aspects of the explanation leave some policy room for the confirmation of the close-out netting system in the repurchase agreement market. However, currently, the relevant regulations regarding the close-out netting in the repo market are still at the level of regulatory interpretation, and there are no formal documents issued at the legislative level. This is the primary concern of many domestic and foreign investors participating in the repo market and something that all parties will need to address as the next step in developing the market.

3.3 Risk Management Element: Clarifying the Outbound Fund Flow Path after Enforcement

In addition to advancing the practical implementation of procedures related to the disposal of collateral in the event of default, the policy regarding the outbound fund flow after the disposal of RMB bonds also needs to be clarified. From a legal and institutional perspective, there are currently no specific laws, policy guidelines, or operational instructions that explicitly address the cross-border remittance of funds resulting from the realization of defaulted collateral when RMB bonds are used as cross-border collateral.

Taking the CIBM direct access pattern as an example, foreign investors who directly enter the market usually open non-resident accounts (NRA) with custodian banks or settlement agents in China as they can remit the principal and investment returns to overseas through this account. This pattern has been explicitly approved by the State Administration of Foreign Exchange (SAFE). However, for foreign investors participating in the interbank bond market, there are no corresponding institutional policy provisions that include the proceeds from the disposal of defaulted RMB bond collateral in the scope of income and expenses of the overseas institution's RMB settlement account. The relevant legal and policy provisions in this area are relatively ambiguous.

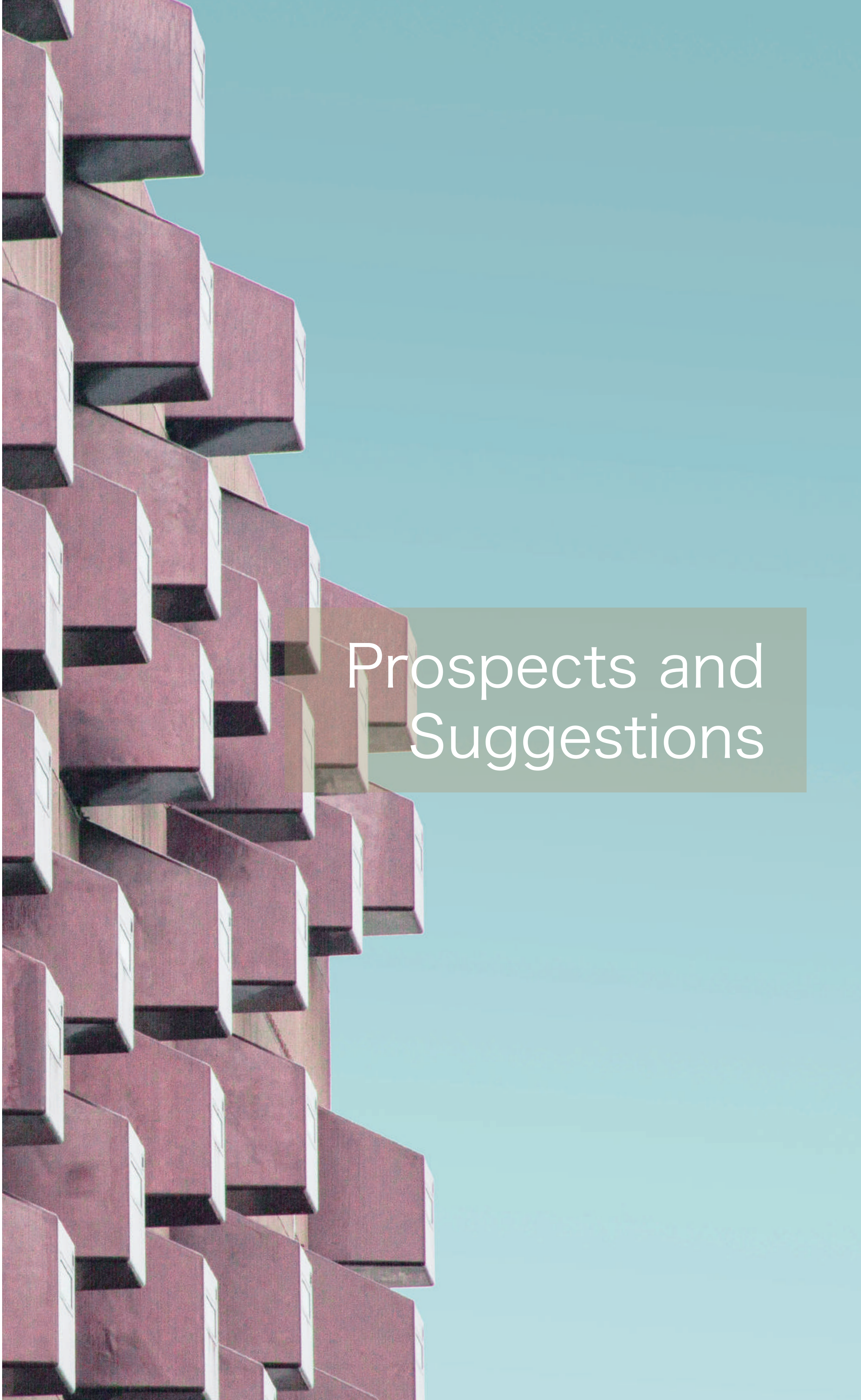
Therefore, the issue of cross-border fund flow after the disposal of RMB bonds remains a significant factor hindering foreign investors from participating in the domestic bond repo market. It still requires further clarification and regulation in terms of relevant laws and rules, which should also be an important direction for future market development and improvement.

3.4 Interoperability Element: Building a Cross-Border Custody System

The soundness and stable operation of financial infrastructures are necessary prerequisites and foundations for the use of RMB bonds in the global repo market. A cross-border custody system between domestic and foreign repo markets, providing convenient access, is crucial.

In recent years, major global financial infrastructures have conducted a series of collaborations in establishing more efficient channels for the cross-border allocation of collateral and facilitating effective operations in overseas markets. Currently, mainstream bond collateral is centrally registered and held by a few large custodians and depository institutions, so that investors can access global markets through these custodians or institutions, enabling the allocation and application of collateral assets on a global scale.

In contrast, only investors with RMB bond accounts opened at domestic custodian institutions can directly pledge or hold RMB bonds as collateral. For foreign investors who have not opened accounts with domestic custodian institutions, the existing custody system fails to meet the requirements for accepting onshore RMB bonds as collateral. Currently, there is no established cross-border connectivity between China and foreign custodian institutions, making it difficult to support the cross-border allocation of RMB bond assets. This directly affects the range of investors eligible to use RMB bonds as qualified collateral as well as the cross-border application and development of RMB bond collateral. Establishing cross-border connectivity with global custodians or depositories will facilitate the cross-border use of RMB bonds as collateral. This will serve as an important infrastructure guarantee for RMB bonds to be used in the cross-border repo market.



4

Prospects and Suggestions

Along with the progress in RMB internationalization, the promotion of RMB bonds as collateral in global repo transactions is entering a crucial phase. The international use of RMB bond collateral can promote the integration between China and international financial markets and bring a wide range of development opportunities for Chinese and foreign investors. In order to promote this systemic market development, it is recommended to start with a top-level framework that can be applied across various layers, such as regulatory policies, infrastructure development, institutional agreements and market construction, among others. It is recommended that the development strategy should be formulated and implemented in phases, initially focusing on key areas to achieve necessary progress in the short term, while continuing to consider and implementing a range of measures in the medium to long term, to further promote the repo market from a holistic perspective, paving the way for the cross-border application of RMB bond collateral.

(1) Short-term Preparations and Arrangements

1.1 Regulatory Level: Expanding Repo Market Access and Improving Enforcement Procedures

An important step in promoting the use of RMB bond collateral in global repo transactions is to support and encourage foreign investors that are already active in the domestic market in China to use their RMB bond assets in repo transactions within China’s domestic market. Although the formation of China's two-way opening-up financial system is accelerating, there are still certain restrictions on international investors when it comes to the repo market itself and the development of an effective, transparent and comprehensive default disposal mechanism is fundamental to the development of the repo market. At present, the market has concerns about the current situation in relation to the remittance of funds after a default disposal of RMB collateral. In order to strengthen the confidence among foreign investors, unblock cross-border transaction channels and enhance credit risk

prevention and controls, we recommend that:
Authorities should progressively ease the current restrictions of access to foreign investors, specifically by expanding the types of foreign investors eligible to participate in China's repo market and continuing to enhance the openness and international influence of China's repo market. Considering the important role of the repo market as a reservoir for maintaining market liquidity and attracting foreign investments, we also recommend exploring comprehensive upgrades to the repo market's product and service system, such as promoting the adoption of innovative models (e.g. tri-party repo), further enriching the variety of market transactions, supporting a wide range of different financing needs as well as facilitating the use of RMB bonds by foreign investors for liquidity management purposes.
Finally, it is also recommended that the foreign exchange authorities should strengthen coordination with the financial infrastructure and clarify the relevant policies and operations with respect to the transfer of funds in the execution of RMB bond collateral enforcement. At present, the RMB collateral default disposal mechanism already fully covers the domestic market, and there is no longer any obstacle at the institutional level. On this basis, clear operational rules and dealing procedures should be introduced to regulate and guide the cross-border remittance of funds upon default disposal of RMB-denominated bonds in cross-border performance guarantees. It is also crucial to strengthen prudential supervision over foreign exchange funds used in default disposal through financial infrastructure to ensure risk control as well as minimize the concerns of international institutions in using RMB-denominated bonds as collateral.

1.2 Infrastructure Level: Achieving Efficient Linkages and Promoting Interconnectivity

Cross-border collateral redeployment has become an important trend in global financial markets. To achieve global collateral redeployment in the true sense, a series of technical and institutional challenges, including technical operations, regulatory coordination and market monitoring, need to be overcome. The financial market infrastructure, especially the Central Securities Depository (CSD), is a hub of the financial market and a key institution that connects the local market to the global asset network. Therefore, relying on the special market function of CSDs, it is recommended to promote cross-border connectivity between global financial market infrastructures (FMIs).

On the one hand, FMIs should play a leading role to strengthen cooperation with overseas markets through multiple channels, including improved connectivity between domestic and foreign trading platforms, registration and custody institutions, settlement platforms and other FMIs in terms of market linkage, data standards, information interaction and market monitoring, etc.

On the other hand, an interconnected system between domestic and foreign FMI providers should be established in phases, to improve the convenience of cross-border collateral transfers. In order to build an open and inclusive cross-border eco-system, it is important to attract (I)CSDs, global custodians, various trading desks and market participants to participate in the RMB bond market, to explore cooperative solutions that are in line with market rules, and to build a complete and smooth mutual recognition channel for the cross-border use of collateral.

(2) Medium and Long-term Recommendations

2.1 Extending the Legal Certainty of Close-out Netting and Promoting the Compatibility among Agreements

Nowadays, various domestic regulatory rules and institutional frameworks in China's market have become more compatible with international standards. In order to further optimize the market, efforts can be made on both the institutional and agreement levels to create an open market system that is internationally compliant, with a sound system and reasonable rules.

Firstly, the legal certainty and enforceability of close-out netting has been a major concern of the market, and the announcement of the Futures and Derivatives Law represents an official recognition of close-out netting in China. Whilst the Futures and Derivatives Law is directly applicable to derivative transactions, it is also of particular interest and relevance to the repo market. Market participants have called for the formal extension of those rules to repo agreements, which is key to credit risk mitigation and capital saving. In addition, it can enhance the competitiveness of Chinese institutions in the international financial market as well as increase the activity of international investors in China's repo market thereby enhancing a two-way opening-up of China's financial market.

Secondly, compatibility among legal agreements is important as these are the basis for conducting financial transactions. In order to take into account the various business needs and considerations of both domestic and international institutions, it is recommended that international industry associations, financial market infrastructures, law firms and market institutions should further communicate and cooperate to establish an understanding between domestic repo master agreements and the respective international repo master agreements to reduce transaction compliance costs and facilitate the conduct of financial transactions such as repo for both domestic and international institutions. It is also important to strengthen the interaction between collateral management service agreements and business agreements, regulate the rights, obligations, and business logic of all parties involved in collateral management, and establish effective dispute resolution channels and methods to clarify disposal rules and stabilize market expectations.

2.2 Expanding the Two-way Opening-up of Financial Markets and Encouraging the Development of Multi-level Markets

The expansion and opening-up of China's financial markets is conducive to the modernization and internationalization of China's financial market system, and is a precondition for promoting the international use of RMB bond collateral. The financial industry is a competitive service industry by nature, which means openness and competition are integral parts of the development of the financial market. The successful experience of China's financial market reform has proven that the opening-up of the market not only optimizes market structure and increases the supply of financial factors, but also promotes the improvement of the institutional rules. Based on the above considerations, we recommend that:

It is vital to expand the two-way opening-up of financial markets. The key to the new development pattern lies in making better use of domestic and international markets. On the one hand, we should utilize the full potential of the domestic market, further developing basic systems, improving market trading functions, actively exploring comprehensive upgrades of the product and service system, promoting agreements and other system-based openness, enhancing market competitiveness and attracting global investors to the market. On the other hand, we should encourage foreign institutional investors to bring their investment ideas and capital management experience to the Chinese market and support Chinese institutions to familiarize themselves with the rules of the international market and participate in the global financial market. The two parts form a synergy to empower market innovation, realize the effective linkage between the capital market and bond market, and establish a high-level open financial market.

It is also important to encourage the development of multi-level markets. In the process of RMB internationalization and the progressive opening of the bond market, a multi-layered market structure is a fundamental element for the stable development of the capital market. The objective rules of capital market development should be followed to strengthen the construction of tiers for market makers, dealers and investors, and promote the formation of a reasonable gradient in markets, services, prices and models to meet the risk preferences and liquidity needs of various types of investors. This should involve leveraging the effectiveness of intermediaries and financial market infrastructures in expanding market capacity, diversifying types of institutions and innovating trading models, as well as maintaining a high level of dynamic balance between market liquidity and risk prevention and control, thus, to promote the steady development of China's financial markets in the direction of standardization and internationalization.

Appendix 1

Offshore RMB Market and RMB Bond Collateral

(1) An overseas fund pool is the key to the development of long-term offshore repurchase business

Given that China's capital account is not fully open yet, the RMB and its denominated assets form two sub markets: onshore (CNY) and offshore (CNH) (See Table 1).The RMB bond transactions involving foreign investors are further divided into two categories: domestic RMB bonds (hereinafter referred to as domestic bonds) and offshore RMB bonds (hereinafter referred to as offshore bonds).

At present, there is basically no qualification threshold for foreign investors to participate in offshore bond trading, and their funds are mainly sourced from the CNH fund pool.

The size of the CNH fund pool, the volume and price stability of CNH funds will have a direct impact on investors' interest in participating in offshore bond trading and even RMB bond repurchase business.

The development of offshore RMB fund pools is crucial for offshore RMB bonds to participate in the international repurchase market.

In the long term, it is expected that the development of the CHN capital pool overseas will lead to the establishment of an offshore dollar liquidity system similar to the "Eurodollar" market. This will provide financing for overseas RMB bond participants, further promote the development of the RMB repo market and expand the cross-border application scenarios of RMB bonds as collateral.

Table 1 Comparison of Overseas Investors' Investment in onshore and offshore RMB Bonds

ategory	Onshore RMB (CNY) bonds	Offshore RMB (CNH) bonds
Issuer	Ministry of Finance, Chinese financial institutions, Chinese industrial and commercial enterprises, panda bond issuers, etc	Ministry of Finance, PBOC, Chinese financial institutions, overseas corporation and other Dim sum bond issuers
Investor	Foreign investors with CIBM and Bond Connect qualifications	Various overseas investors

Managed mode	CIBM is directly managed by domestic custodian institutions Bond Connect is a two-layer cross-border managed mode of domestic+Hong Kong CMU	Following the multi-level trusteeship model in the overseas market, trusteeship is conducted at a trustee institution or bank
Funding source	CNH fund pool/foreign currency exchange within China	CNH fund pool
Financing mode	Offshore acquisition/foreign exchange in domestic market swaps	Lending, loans, Foreign exchange swap
Repurchase restrictions	CIBM allows some commercial institutions to participate in interbank repo Bond Connect is not allowed to participate in repo temporarily	There are no policy restrictions on CNH repurchase, but there are fewer participating institutions

First of all, the current size of CNH fund pool remains relatively small and experiences significant fluctuation. Since 2004, the People's Bank of China has been progressively allowing CHN to become freely convertible. Subsequently, CNH has gradually formed a capital pool in Hong Kong, Taipei, London, New York and other major cities. Due to the early national policy support and extensive trade, tourism, financial exchanges with the Chinese mainland, Hong Kong's CNH fund pool is the largest among them. However, the scale is still quite limited compared to onshore CNY. The overall size of Hong Kong's capital pool is on the rise and it reached its peak in January 2022, which was only RMB1,095.89 billion (see Figure 1). Besides, the size of the Hong Kong CNH fund pool fluctuated significantly, with its size dropping back to RMB522.48 billion in 2016. Financial institutions that hold a large amount of CNH, in addition to Bank of China (Hong Kong), which serves as a clearing bank for CNH in Hong Kong, are also cash issuing banks such as HSBC and Standard Chartered with a large corporate deposit base, as well as various commercial banks with retail networks. The current scale of overseas CNH fund pools and CNH assets continues to consolidate. If further expansion of the CNH fund pool is needed, more countries, institutions, and individuals need to hold RMB as reserve assets to increase the idle funds and interest rate stability of CNH.

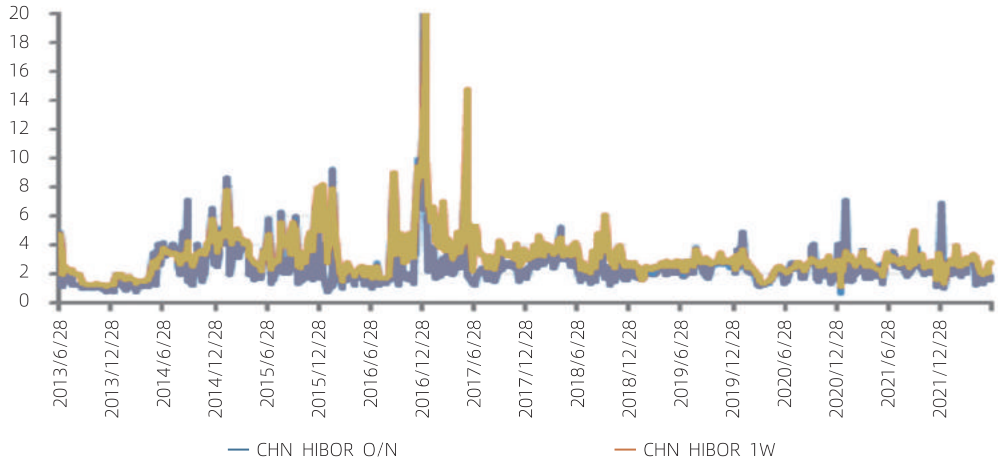
Figure 1 Scale of Hong Kong offshore RMB fund pool: Hong Kong CNH deposits (in billions of yuan)

Source: Hong Kong Monetary Authority

Secondly, in terms of the regulatory mechanism of CNH financial system, bond investors have relatively limited access to CNH through channels such as interbank lending and loans, and RMB bond repo has not yet become a mainstream choice due to the limited number of market participants. On the one hand, the credit financing of overseas investors is restricted by line of credit, institutional participation qualification, etc. Currently, the overseas lending market is limited to banks. On the other hand, the flow of CNH among financial institutions is currently mainly in the form of foreign exchange swap. Most foreign investors need to obtain CNH through foreign exchange swap with good liquidity unless they own more RMB cash and deposits.

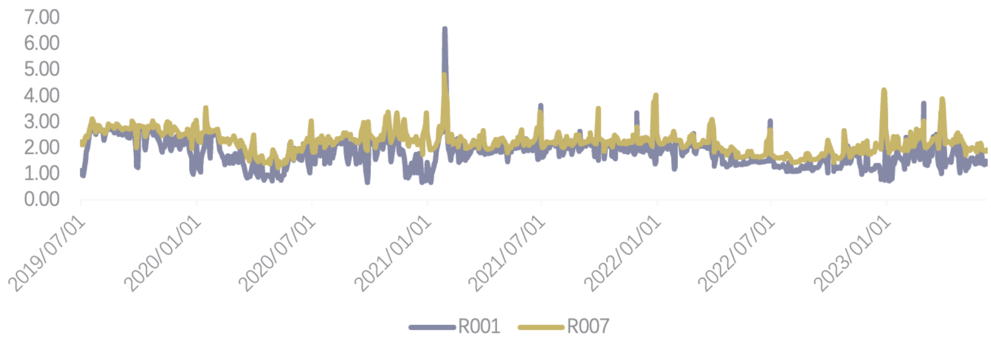
In addition, due to the large fluctuations in the size of CNH fund pool and a lack of effective liquidity leveling mechanisms, CNH experiences relatively severe fluctuations, which in turn dampen investor trading activities. Benefiting from a number of CNH liquidity optimization mechanisms and increasing familiarity among CNH participants with market rules, the price fluctuation of the overnight and one week term interbank lending market rate of Hong Kong banks has gradually converged (see Figure 2). But overall, the fluctuation of the CNH rate remains relatively intense. In contrast, due to the large scale of CNY deposits and the policy guidance of the central bank, the domestic market has much lower interest rate fluctuations than overseas markets (see Figure 3).

Figure 2 Overnight and 1-w price fluctuations of Hong Kong interbank CNH offered rates (%)



Data source: Hong Kong Association of Banks, Bloomberg, Reuters, Foreign Exchange Trading Center

Figure 3 Price fluctuation of R001 and R007 (%)



Data source: Hong Kong Association of Banks, Bloomberg, Reuters, Foreign Exchange Trading Center

The fluctuation of interest rates has greatly deterred investment and trading activities of sovereign institutions, bank accounts, insurance companies and other configuration-oriented investors (Real Money). At the same time, it also reduced the enthusiasm of trading institutions such as bank trading books, institutional market making, self-operated securities firms and funds to participate. In addition, the carrying value of holding bonds is very unstable and prone to be negative, which makes it more difficult for trading institutions to control the profit, loss and risk when participating in offshore bond trading compared to other types of bonds. Trading accounts have a high demand for bond repurchase financing. Thus, high interest rate fluctuations make the RMB repurchase trading market lack a relatively active participant group.

(2) The investment and financing functions and reserve currency attributes of the RMB need further development

The use of RMB bonds as collateral for repo fundamentally relies on the development of RMB and RMB denominated assets. By attracting countries around the world to use RMB as a currency for financing, investment and reserves, and significantly enhancing the attractiveness of the RMB to overseas institutions and individuals can fundamentally increase the scale of overseas RMB denominated assets, and thus develop and strengthen the RMB denominated bond ecosystem.

Taking dim sum bonds as an example, the international market size and market acceptance of RMB denominated bonds need to be improved.

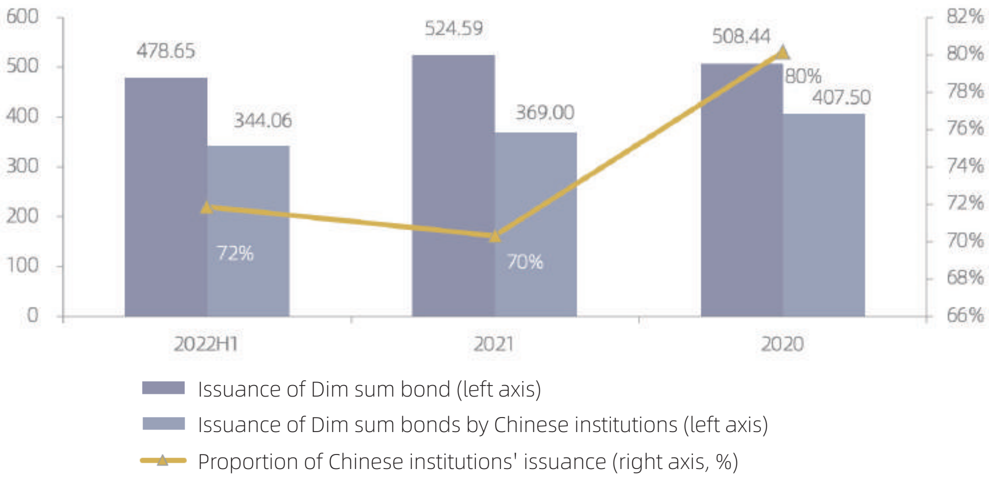
First of all, compared with the volume of US dollar- or Euro-denominated bond and domestic RMB bond, the market size of dim sum bond is relatively small. The reason is that there is a relatively low demand for CNH financing by issuers overseas, and the CNH obtained is not widely used in overseas markets. If it is used in the Chinese mainland, it is better to directly raise funds in the domestic market instead of CNH financing; besides, the participation of overseas investors in dim sum bond investment is not active.

Secondly, the annual issuance of dim sum bonds is close to the outstanding volume, with the short maturity. Thus, they are rarely used for short-term repos. In actual transactions, both issuers and investors mainly use dim sum bonds as an investment and financing tool in the money market rather than a financing channel for long-term projects. The yield of dim sum bonds with short duration is often close to the cost of repo financing, so dim sum bonds are less effective in terms of leverage, long-term bonds used for financing transactions, band operations, etc., which makes it difficult to meet the needs of investors using repo as a financing tool.

In addition, the issuers of dim sum bonds are mainly Chinese institutions (see Figure 4-5), and the main participants in the overseas dim sum bond repo market are also Chinese funded institutions. Restricted by the concept of wrong way risk in the risk management system of overseas institutions, market participants deem the default of dim sum bonds is highly correlated with the probability of default of repo counterparties, so the attractiveness of dim sum bonds as collateral is limited, and the accompanying risk premium also makes the financing cost high.

Figure 4 Total Issuance of dim sum bond and proportion of Chinese funded institutions

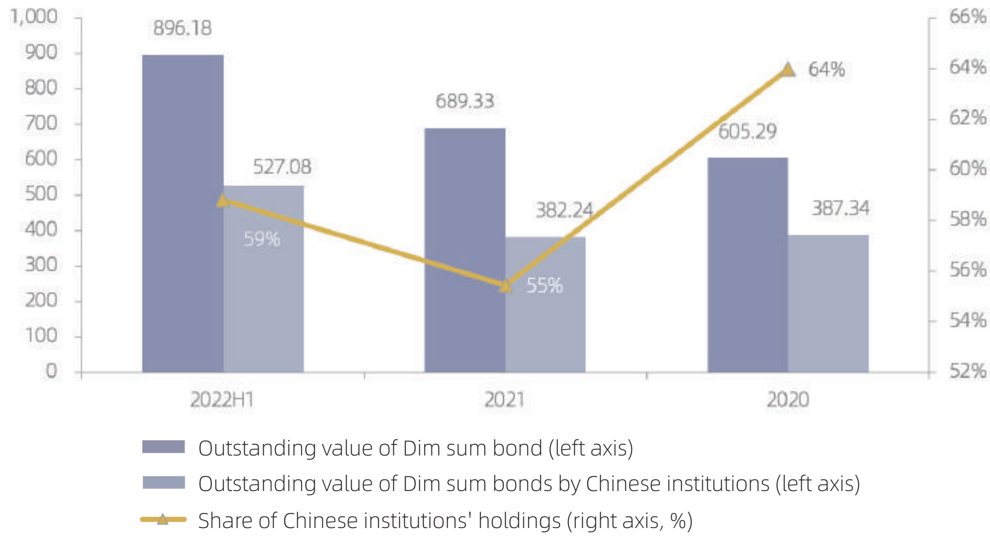
Unit:in RMB Billion



Data source: Bloomberg

Figure 5 Outstanding volume of dim sum bonds and proportion of Chinese capital

Unit:in RMB Billion



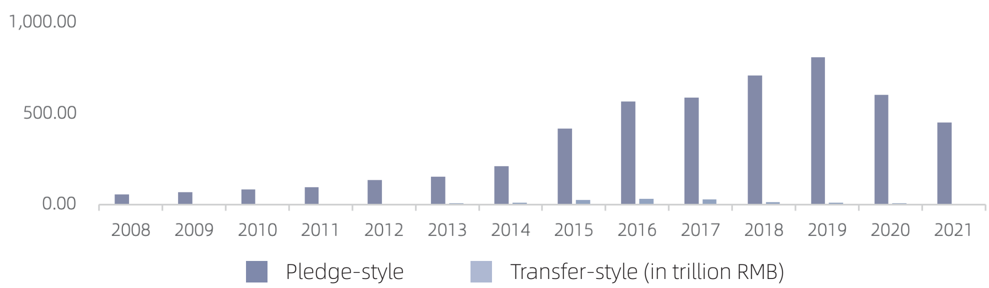
Data source: Bloomberg

2 Appendix

Getting Ready for Onshore Repo Documentation: A High-level Comparison between NAFMII MRA and GMRA

China's renminbi (**"RMB"**) bond repurchase market began to take shape in 2000 when the People's Bank of China (**"PBOC"**) issued the Measures on the Administration of Bond Transactions in National Inter-bank Bond Market. Under the measures, bond repurchase transaction made its debut as a type of "bond transactions" . At the time, a "bond repurchase transaction" or "bond repo" was essentially comprised of a loan with a principal amount equal to the repayment amount which is secured by a pledge over the underlying bonds (**"Pledge-style Repo"**) and which is governed by the laws of the People's Republic of China ("**PRC**" or "**China**"). The Pledge-style Repo differs significantly from a repo transaction commonly seen in the international markets, which involves an outright "title-transfer" of the underlying bonds. In 2004, the PBOC published the *Measures on the Administration of Bond Outright Transfer Repurchase Transactions in National Inter-bank Bond Market*, which signals of the start of title transfer repo transactions (**"Transfer-style Repos"**) in the onshore market. Unlike Pledge-style Repos, Transfer-style Repos do not involve the creation of a PRC law governed pledge over the underlying bonds.

Unlike the international repo markets that are dominated by Transfer-style Repos, the vast majority of domestic market participants in the China inter-bank bond market (**"CIBM"**) prefer Pledge-style Repos over Transfer-style Repos. As illustrated by the chart below, Pledge-style Repos account for more than 98% of the PRC domestic repo market in recent years. This reflects the historic development of the onshore bond repo market where the Pledge-Style Repo was definitely an "early bird" and remains the "bigger bird" .



Source: Wind

As from 2015, overseas RMB clearing banks, overseas RMB participating banks, foreign central banks, foreign monetary authorities, international financial organisations and sovereign wealth funds have been allowed to enter into bond repos in the CIBM. However, due to some regulatory and policy considerations (for example, the remittance of funds relating to repo transactions out of the PRC is still a hotly debated issue), the CIBM bond repo market has not, in practice, opened up to the majority of the foreign participants, comprising qualified foreign institutional investors (**"QFIIs"**), RMB qualified foreign institutional investors (**"RQFIIs"**), overseas institutional investors that have filed with the Shanghai Head Office of the PBOC to access the CIBM with a direct bond account and cash account (**"CIBM Direct Participants"**) and foreign investors accessing via Bond Connect.

At the *Bond Connect 1st Anniversary Summit* held on 3 July 2018, Mr. PAN Gongsheng, Governor of the PBOC, publicly stated that the PBOC will further open up the CIBM by granting foreign investors access to the onshore repos and derivatives markets. With the implementation of further relaxed market access policies for foreign institutional investors (such as the removal of the QFII/RQFII investment quota in the second half of 2019), an increasing number of foreign institutional investors are expected to engage in CIBM bond transactions (including bond repos) in the near future. This will facilitate the more efficient holding and use of CIBM bonds.

In addition to different market conventions, transaction types and legal bases, the legal documentation governing CIBM bond repos is also different from that used in the international repo markets. Parties to CIBM bond repo transactions enter into the *Master Repurchase Agreement (2013 version)* ("**NAFMII MRA"**) published by the National Association of Financial Market Institutional Investors (**"NAFMII"**), while parties use the Global Master Repurchase Agreement (**"GMRA"**) published by the International Capital Market Association (**"ICMA"**) in the international repo markets. We compare the NAFMII MRA and the GMRA further below. Unless the context otherwise requires, capitalised terms not defined herein shall have the same meaning ascribed to them in the NAFMII MRA or the GMRA, as applicable.

Similarities between the NAFMII MRA and the GMRA

Like most internationally-recognized master agreements governing repos and/or derivatives transactions, the NAFMII MRA is a framework or master agreement. The NAFMII MRA and its Supplement (or Annexes) set out the general terms and conditions in respect of the rights and obligations of the parties, basic representations and warranties, standard events of default, termination events and their consequences. Neither the NAFMII MRA nor the Supplement contains the commercial terms of any specific repo transaction. Historically, a party to a master agreement was concerned about the bankruptcy of its counterparty because a bankruptcy administrator may exercise its "cherry-picking" rights, which would adversely affect the non-defaulting party's right to close out all outstanding transactions under the master agreement in a prompt and efficient manner. Depending on the systemic importance of the counterparty, this may even give rise to financial stability concerns. Therefore, like the GMRA, the NAFMII MRA (as applied to Transfer-style Repos) contains the following key provisions to address these cherry-picking risks.

(I) **Single Agreement.** The NAFMII MRA contains a single agreement provision that applies to Transfer-style Repos but not to Pledge-style Repos. Accordingly, all Transfer-style Repos documented under an NAFMII MRA form a "single and complete" agreement together with the Master Agreement, the Transfer-style Repo Special Terms and the Supplement. Significantly, each Transfer-style Repo does not constitute its own individual agreement.[29]

This "single agreement" provision in the NAFMII MRA is to its counterpart in the GMRA and other industry standard repo and derivatives master agreements used internationally. In contrast, it is worth noting that the "single agreement" provision in the NAFMII MRA does not apply to Pledge-style Repos, meaning that Pledge-style Repos do not form a single agreement. Instead, the NAFMII MRA provides that

29 Section 1(II), General Terms of the NAFMII MRA provides that: *"With respect to all Title Transfer Repos under this Agreement, the Master Agreement, the Supplement and all Effective Transaction Confirmations constitute one single and complete agreement between the Parties"*.

a Pledge-style Repo confirmation, together with the General Terms of the Master Agreement, the Pledge-style Repo Special Terms and the Supplement, constitutes its own individual and complete agreement, separate from any other Pledge-style Repo under the NAFMII MRA. pledge-style repo transactions under The NAFMII MRA.

(II) **Flawed Assets.** The term "flawed assets" (also known as "conditions precedent" in the market) is not a legal concept expressly recognised under PRC law. However, it is analogous to the legal concepts of "*defence for simultaneous performance*" and "*defence of uncertainty for performed contract*" under the PRC Civil Code. According to those concepts, the non-defaulting party can withhold the performance of its payment or delivery obligations upon the occurrence of the counterparty's default.

Paragraph 6(j) of the 2011 GMRA provides that the parties may specify in Annex I that each obligation of a party is subject to the condition precedent that no event of default has occurred and is continuing with respect to the other party. The "flawed assets" clause is also common in the internationally recognised derivatives master agreements, such as section 2(a)(iii) of the ISDA Master Agreement. Contractual arrangements similar to the "flawed asset" provision are found in the NAFMII MRA and apply to both Pledge-style Repos and Transfer-style Repos[30]. In particular, with respect to Transfer-style Repos, the occurrence of any event of default in respect of any Transfer-style Repo can result in a suspension of the non-defaulting party's payment or delivery obligations in respect of it and all other Transfer-style Repos because of the single agreement provision. By contrast, with respect to a Pledge-style Repo, a party's obligations in respect of it is conditional upon the non-occurrence of any events

30 Section 4(II) of the NAFMII MRA provides that: *"A Party's performance of its payment or delivery obligations in accordance with the terms of an Effective Transaction Confirmation in relation to a Transaction shall be subject to the satisfaction of all the following conditions precedent:*
(1) no Event of Default or Potential Event of Default under this Agreement with respect to the other party has occurred and is continuing;
(2) with respect to a Transaction resulting in such payment or delivery obligation, no Early Termination Date in relation to that Transaction has occurred or has been effectively designated; and
(3) any other conditions precedent as may be agreed by the Parties. With respect to the Title Transfer Repo, if the other party fails to satisfy any of the above conditions at any time, the Party shall be entitled to suspend the payment or delivery obligations under all Title Transfer Repos until the date that all the above conditions have been satisfied."

of default in respect of the other party under that same Pledge-style Repo (as opposed to any other Pledge-style Repos).

(III) **Close-out Netting.** Close-out netting is one of the most common and important provisions in internationally recognised repo and derivative master agreements.

Similar to close-out netting provisions used in the international market, the Transfer-style Repo Special Terms of the NAFMII MRA provide for a close-out netting mechanism that applies to the Transfer-style Repos. Close-out netting is a process comprising three steps initiated by the Non-defaulting Party following the occurrence of an Event of Default (including a Bankruptcy Event) in respect of the Defaulting Party, namely:

- early termination of all outstanding Transactions by notice or automatically;
- valuation of each terminated Transaction or class of terminated Transactions (but there is no need to make the outstanding payment in respect of each Transaction immediately); and
- determination of one single net amount payable by one party to the other under the master agreement.[31]

In contrast, when the Repurchaser of a Pledge-style Repo (i.e., the pledgor) defaults, the Reverse-repurchaser (i.e., the pledgee) is generally permitted to dispose of the bonds pledged in connection with that same Pledge-style Repo (but not any other Pledge-style Repos under the NAFMII MRA) by conversion into value, private sale and/or auction in accordance with the PRC Civil Code and other relevant PRC enforcement rules. Significantly, the Reverse-repurchaser would not be able to commence enforcement action in respect of other non-defaulting Pledge-style Repos due to, among other things, the absence of a single agreement provision that applies to Pledge-style Repos.

31 Section 3(V) of the Title Transfer Repo Special Terms provides that: *"Under Sub-section 4 of this Section, where the Non-defaulting Party terminates all outstanding Title Transfer Repos under this Agreement, the relevant Terminated Transactions shall be terminated on the Early Termination Date and close-out netting will apply to all the payments under such Early Terminated Transactions; in other words, only the Early Termination Payment Amount calculated by the Non-defaulting Party using the formula agreed in Item 1 of this Sub-section on a netting basis needs to be paid, and the Parties do not need to make individual payments in respect of each Terminated Transaction"* .

(IV) **Other provisions.** Many other provisions in the NAFMII MRA are substantially similar to those found in the GMRA, such as the Event of Default provisions. For example, both master agreements contain the failure to pay or deliver, misrepresentation, breach of obligations, repudiation and bankruptcy events of default. The NAFMII MRA also contains some other common Events of Default found in the NAFMII Master Agreement for Financial Derivatives (**"NAFMII Derivatives MA"**), such as Cross-default, Default under Specified Transactions and Merger without Assumption.

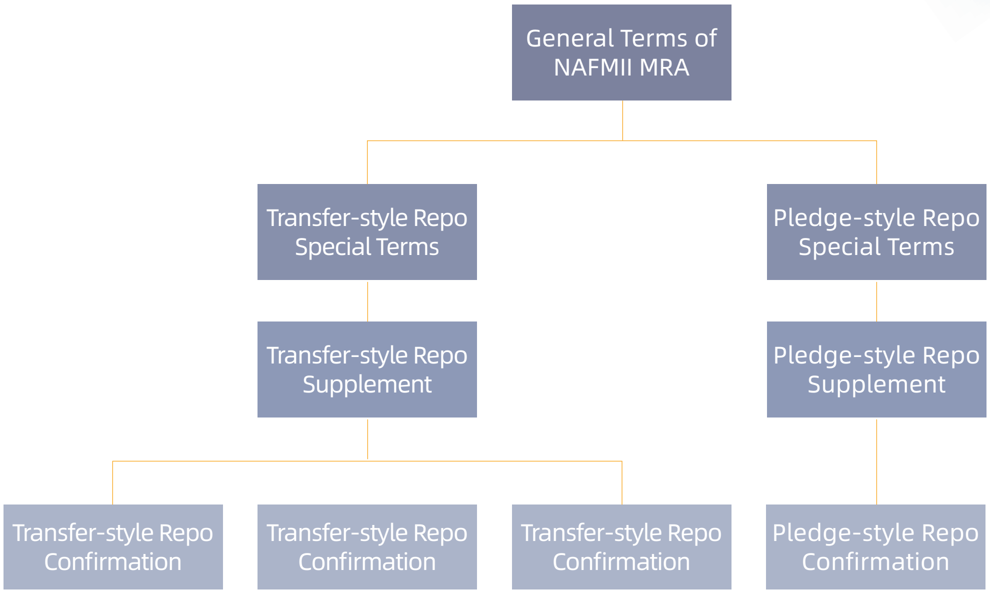
We can conclude from the foregoing analysis that the NAFMII MRA (especially as applied to Transfer-style Repos) contains key provisions that are very similar to those found in the GMRA and other internationally recognised repo and derivatives master agreements. Foreign institutional investors that are familiar with the international master documentation architecture should not have major difficulties in understanding the structure of the NAFMII MRA. However, there is a bit of a learning curve when it comes to Pledge-style Repos, which are a unique feature of the PRC repo market.

Having examined the similarities between the NAFMII MRA and the GMRA, we shall now consider their major differences.

Differences between the NAFMII MRA and the GMRA

The NAFMII MRA contains the following unique features:

(I) **Multi-layer document architecture for Transfer-style Repos and Pledge-style Repos.** In light of its origin and development roadmap, the NAFMII MRA contains terms and considerations applicable to both Pledge-style Repos and Transfer-style Repos. The following chart illustrates a documentation structure of the NAFMII MRA. As can be seen, there are two sets of Special Terms sitting underneath the General Terms, followed by two sets of Supplement templates applicable to Transfer-style Repos and Pledge-style Repos respectively.



(II) **The Parties.** The Seller and the Buyer to a GMRA are respectively referred to as the Repurchaser (in Chinese: 正回购方) and the Reverse-repurchaser (in Chinese: 逆回购方) in the NAFMII MRA. Specifically, the Repurchaser is the Seller and the Reverse-repurchaser is the Buyer in a Title Transfer Repo, while the Repurchaser is the pledgor and the Reverse-repurchaser is the pledgee in a Pledge Repo.

GMRA	Buyer	Seller
NAFMII MRA	Repurchaser	Reserve-repurchaser

(III) **Pricing adjustment and margin arrangements.** As the mark-to-market value of the underlying bonds fluctuates relative to the repurchase price, one party would have an additional credit exposure to the other. To deal with this exposure, the parties to the GMRA can make pricing adjustments to the repo or post (or return) margin in the form of cash or securities. Margin is exchanged under the GMRA by way of outright title transfer.
In contrast, the NAFMII MRA contains much more complicated mechanisms for dealing with the additional exposure arising

from fluctuations in the value of the underlying bonds:

- In respect of a Pledge-style Repo, the parties to a NAFMII MRA can only make adjustments to the quantity of the underlying bonds (i.e., the pledged bonds) to mitigate the exposure. Such adjustments are effectively achieved by way of creating new or releasing existing bond pledges under PRC law; and
- In respect of a Transfer-style Repo, the parties to an NAFMII MRA may elect to: (a) make adjustments to the quantity of the underlying bonds and/or (b) post (or return) cash margin and margin securities.

Under option (a) above, the adjustment is made to the amount of the underlying bonds which are subject to the title transfer arrangement. In contrast, under option (b) above, cash margin and margin securities are actually subject to a PRC law governed pledge.

		MTM Adjustments of Exposure	**Legal Basis**
GMRA		Repricing	Title transfer
		Cash margin and margin securities	Title transfer
NAFMII	**Transfer-style Repos**	Adjustments to the quantity of the underlying bonds	Title transfer
		Cash margin and margin securities	Pledge
	Pledge-style Repos	Adjustments to the quantity of the underlying bonds	Pledge

(Ⅳ) Income from the underlying bonds. Under international market practice, the Buyer becomes the owner of the underlying bonds and the income arising from the bonds will be distributed to the Buyer as the beneficial owner. The GMRA contains a "manufactured payment" contractual arrangement whereby the Buyer will pay an amount equal to the income received by it to the Seller.

The NAFMII MRA contains a similar manufactured payment provision with respect to Transfer-style Repos. Under that provision, the Reverse-repurchaser (i.e., the Buyer) is entitled to the income on the underlying bonds but such income must be taken into account as the Interest Payable on the Final Settlement Date when calculating the Final Cash Settlement Amount. This effectively means that the income will be passed on to the Repurchaser (i.e., the Seller). There is however no similar contractual arrangement for Pledge-style Repos because the legal owner of the underlying bonds (i.e., the pledgor) remains unchanged and continues to be entitled to receive the income from the underlying bonds.

(V) **Governing law, jurisdiction and others provisions.** Like the NAFMII Derivatives MA, the NAFMII MRA is governed by and construed in accordance with PRC law, and any dispute arising from or in connection with the NAFMII MRA shall be submitted to a PRC court or a PRC arbitration tribunal (as selected by the parties in the Supplement). These governing law and jurisdiction provisions are mandatory and may not be modified.

The NAFMII MRA and Supplements entered into by the parties must also be filed with NAFMII.

In contrast, the GMRA is governed by English law and there is no formal filing requirement.

Looking Forward

(I) **Recharacterisation risk of Transfer-style Repos.** One of the threshold questions a foreign investor may ask before entering into a NAFMII MRA is whether a Transfer-style Repo will, due to its economic effect, be recharacterised as a security interest or a secured loan as opposed to an outright transfer of title in the underlying bonds.

In this respect, we note that there is a market view that, in the context of financial transactions involving onshore or offshore bonds, there is **no material risk** that an outright transfer of title in respect of such bonds would be recharacterised by the PRC courts as transferring or constituting a lesser form of interest in the bonds, for example, a security interest, provided that the true intention of the parties to the title transfer arrangement is to transfer outright ownership in the bonds and not to create a security interest over them.

After the publication and implementation of the *Minutes of the National Conference on Civil and Commercial Judicial Work of the Courts* (**"Civil Adjudication Minutes"**) and especially after the publication and implementation of the Interpretation of the Supreme People's Court of the Application of the *Relevant Guarantee & Security System of the Civil Code of the People's Republic of China* (**"Civil Code Interpretation (Security)"**), the concept of "assignment security" is explicitly recognised by the Supreme People's Court (**"SPC"**) as a non-conventional security interest. This give rise to a question of whether a "Transfer-style Repo" will be recharacterised as "assignment security".

Under PRC law, "assignment security" refers to an arrangement where the assignor transfers an asset "in form" only (but not "in substance") to the assignee to secure obligations owed to the assignee. The major differences between "Transfer-style Repos" and "assignment security" are as follows:

	Transfer-style Repos	**Assignment Security**
(I) ownership of the title of assets	Based on outright transfer of the ownership in the underlying bonds	Based on a transfer of the assets of the assignor to the assignee "in form" only but not in "substance"
(II) provider of the assets	The Seller of the Transfer-style Repo (the Repurchaser)	The debtor or a third party assignor
(III) type of assets	CIBM bonds	Real estate and unlisted equity securities
(IV) right to possess, use, gain yields and dispose of assets	The Buyer (the Reverse-repurchaser) has absolute title and is free to use, receive income from and dispose of the bonds.	The assignee shall not use or dispose at its discretion.

(V) ownership of the income arising from the assets	Income is received by the Buyer (i.e. the Reverse-repurchaser) because it is the owner of the bonds. The Buyer then contractually undertakes to make a "manufactured payment" to the Seller.	Income is received by the owner (i.e., the assignor).
(VI) The return of the assets	The Buyer (i.e. the Reverse-repurchaser) returns Equivalent Securities instead of exact same bonds to the Seller (i.e. the Repurchaser).	The assignee generally returns (i.e. by giving up control of) the original collateral when it receives the repayment of the debt.
(VII) Handling of default	Because the the Buyer (i.e. the Reverse-repurchaser) becomes the owner of the bonds, no enforcement process is necessary. After the Seller (i.e. the Repurchaser) enters into the bankruptcy proceedings, and the bonds do not form part of the bankruptcy estate of the insolvent Seller. The Buyer (i.e., the Reverse-repurchaser), as the non-defaulting party, will treat the Buyer's obligations as Unpaid Amounts when exercising its close-out netting rights and calculating the Early Termination Amount pursuant to the Transfer-style Repo Special Terms of the NAFMII MRA.	The assignee may apply to enforce its security interest by disposing of the asset through auction or private sale (being the remedies of a secured creditor), but it may not automatically obtain ownership of the assets. After the assignor enters into the bankruptcy proceedings, the asset remains the property of the insolvent assignor. According to the Minutes of the National Court Work Conference on Bankruptcy Trials, the secured creditors may in bankruptcy proceedings request the administrator to enforce its security interest over the collateral posted by the insolvent assignor by liquidating the collateral, and the administrator must promptly effect such liquidation.
(VIII)Bankruptcy of the party possessing the assets	If the Buyer (i.e. the Reverse-repurchaser) enters into bankruptcy proceedings, the underlying bonds which are owned by it outright form part of the Buyer's bankruptcy estate.	If the assignee in an assignment security arrangement enters into bankruptcy proceedings, the asset does not form part of its bankruptcy estate and the assignor has the right to ask for return of the exact same assets

As can be seen from the above comparison, the differences between a title transfer arrangement and assignment security centre around whether the underlying assets are transferred ‘in form’ only or ‘in substance’. The market is generally of the view that if Transfer-style Repos are recharacterised as "assignment security", then the Transfer-style Repos cannot form part of a single agreement and thus cannot benefit from the close-out netting mechanism instead, the underlying bonds would become collateral subject to a security interest to secure the payment of the final termination cash settlement amount. This kind of recharacterisation can have a very detrimental impact on the market, as highlighted in items (IV) and (VII) in the above table. *Firstly*, if so recharacterised as an "assignment security", it would be unlawful for the Buyer (i.e. pledgee) to use of the underlying bonds because the PRC Civil Code generally requires the pledgee to safekeep the pledged assets and not to use or disposal of the pledged assets without the consent of the pledgor. *Secondly*, when the Seller (i.e., the Repurchaser) defaults, the Buyer (i.e., the Reverse-repurchaser) cannot directly take the underlying bonds and can only be repaid from the money into which the underlying bonds are converted or from the enforcement proceeds from an auction or private sale of the underlying bonds. These enforcement processes take time and expose the Buyer to significant mark-to-market movements. Therefore, practitioners in the onshore financial repo market firmly believe that "assignment security" and Transfer-style Repos are two entirely different concepts and that courts should not recharacterise one as the other.

In this respect, we note that the NAFMII MRA is formulated under the guidance of the PBOC, and that Pledge-style Repos and Transfer-style Repos are expressly recognised and endorsed by the *PBOC Circular [2012] No. 17*. The Supreme People’s Court (**"SPC"**) issued guidance to all PRC courts on 10 February 2012 (the **"2012 SPC Guidance Note"**), setting out a framework of judicial support for China’s financial reform and development. The 2012 SPC Guidance Note expressly states that, when assessing the legality and validity in respect of cases involving an innovative financial product, PRC courts at all levels should:

(a) respect the specific features, customary concepts and market practices applicable to the relevant financial transaction;

(b) fully respect and observe (i.e., defer to) the opinions of the relevant PRC financial regulators;

(c) avoid holding an innovative financial transaction as invalid based solely on lack of clarity under PRC laws or regulations; and

(d) provide sufficient space for financial innovation to flourish.

The 2012 SPC Guidance is just one of the many reasons supporting the market view that, in the context of financial transactions involving onshore or offshore bonds, there is **no material risk** that an outright transfer of title in respect of such bonds would be recharacterised by the PRC courts as transferring or constituting a lesser form of interest in the bonds, for example, a security interest, provided that the true intention of the parties to the title transfer arrangement is to transfer outright ownership in the bonds and not to create a security interest over them.

(II) **Timely Enforcement of Pledge-style Repos.** After a Pledge-style Repo is entered into on the China Foreign Exchange Trade System (**"CFETS"**), CFETS will send the transaction data to China Central Depository & Clearing Co., Ltd. (**"CCDC"**) or Interbank Market Clearing House Co., Ltd. (a.k.a. Shanghai Clearing House, **"SHCH"**), as applicable. CCDC or SHCH will complete the settlement of the Pledge-style Repo so as to create and perfect the PRC law pledge over the underlying CIBM bonds.

According to Section 3 of the Pledge-style Repo Special Terms under the NAFMII MRA, when the Repurchaser (i.e., the pledgor) of a Pledge-style Repo defaults (including bankruptcy), the Reverse-repurchaser (i.e., the pledgee) has the right to dispose of the pledged bonds by auction, private-sale and/or conversion into value as agreed with the defaulting party. In the past, it was difficult in practice to initiate any self-help enforcement measures.

In June 2019, a series of enforcement rules were published and implemented by the CCDC, SHCH and CFETS to provide for a clearer mechanism by which secured parties may enforce against, and procure the sale of, CIBM bonds following a default. The enforcement rules mark a new chapter for the timely enforcement of pledged CIBM bonds. In our experience, foreign institutional investors are particularly concerned about the following enforcement issues:

(a) **Can foreign investors take advantage of the the enforcement mechanisms mentioned above?** Yes, the enforcement rules published in 2019 do not impose any special requirements on foreign investors. Therefore, as more and more qualified foreign investors enter into Pledge-style Repos in the future, they too can benefit from these timely enforcement mechanism. Also, in light of the capital accounts and bond accounts already opened by qualified foreign investors (such as QFIIs, RQFIIs and CIBM Direct Participants), there should be no obstacle for the repatriation of the enforcement proceeds out of China.

(b) **How will self-help enforcement be impacted by the onshore Repurchaser (i.e. the pledgor) entering into the PRC bankruptcy proceedings?** There are generally three types of bankruptcy proceedings under the *PRC Enterprise Bankruptcy Law*, being liquidation, reconciliation and reorganisation. According to the *Minutes of the National Court Work Conference on Bankruptcy Trials*, during liquidation and reconciliation proceedings, a secured creditor is entitled at any time to request the administrator to enforce its security interest over collateral posted by the insolvent company by liquidating the collateral, and the administrator must promptly effect such liquidation. Therefore, when the Repurchaser (i.e., the pledgor) of a Pledge-style Repo enters into liquidation and reconciliation proceedings, the Reverse-repurchaser (i.e., the pledgee) should still be able to rely on the abovementioned self-help enforcement measures to quickly dispose of the underlying bonds. This was also confirmed in a set of questions and answered published by the CCDC.

In terms of reorganisation, although Article 75 of the *PRC Enterprise Bankruptcy Law generally* requires the enforcement of security interests to be suspended during the reorganisation period ("Reorganisation Suspension"), we believe that the Reorganisation Suspension should not apply to Pledge-style Repos because, *inter alia*,

- *Firstly*, most market participants in the CIBM are PRC financial institutions, and all PRC financial institutions would first undergo a regulator-led takeover or resolution process before being permitted by PRC financial regulators to enter into formal bankruptcy proceedings. Currently, there is on stay on enforcement during the regulator-led takeover or resolution process;

- *Secondly*, even after the completion of the regulator-led takeover or resolution process (which usually lasts one to two years), it is highly unlikely for a PRC financial institution to go into the reorganisation proceedings as opposed to liquidation proceedings because the purpose of a reorganisation is to revive an insolvent entity and the PRC financial institution in question has already failed to be revived during the takeover or resolution process; and
- *Thirdly*, the overall purpose of a reorganisation is to try to revive financially distressed but economically viable PRC companies, and the Reorganisation Suspension serves this overall purpose by suspending enforcement efforts of secured creditors against assets that are necessary to the reorganisation and by giving the insolvent PRC company breathing space to continue its operations as a going concern while preparing and negotiating a reorganisation plan with its creditors. According to paragraph 112 of the Civil Adjudication Minutes, if the collateral is not considered necessary for the reorganisation, then such collateral must be promptly liquidated so that the secured party can get paid in priority. In our view, the underlying bonds in a Pledge-style Repo would not be necessary assets that would be subject to the Reorganisation Suspension because such bonds are already'locked-up' by virtue of the pledge and cannot be used by the insolvent company for the purposes of reviving its business operations.

Conclusion

We encourage and welcome further communications, knowledge-sharing and collaboration between domestic and foreign market participants in order to better understand each other's financial markets and related legal documentation. This will help promote the further opening-up and development of the onshore repo market and usher in a new era for the CIBM.

China Central Depository & Clearing Co., Ltd. (CCDC)

China Central Depository & Clearing Co., Ltd. (CCDC), founded in December 1996 and funded by the State Council, is the only one of the central financial enterprises to specialize in financial regulatory support.
Since its establishment, CCDC has been committed to its role as national financial infrastructure and contributed to the development of China's bond market. CCDC has become an important operation platform for China's bond market, a supporting platform for implementation of macroeconomic policies, a benchmark service platform for China's financial market, and a key gateway for opening-up of of China's bond market. As at end-2022, CCDC had over RMB133 trillion worth of financial assets under registration and management.
CCDC launched its innovative collateral management service in 2011. Upholding the service tenet of professionalism, intelligence, and internationalization, CCDC collateral management service is committed to maintaining the stability and liquidity of China's financial markets with comprehensive, multi-level, and cross-sector collateral management services. In June 2016, the CCDC Collateral Management Center was officially established and professional teams were built in both Beijing and Shanghai. As of June 2023, the total value of outstanding collateral under CCDC's management reached RMB24.05 trillion and the number of institution clients exceeded 3,800. CCDC has become one of the world's biggest collateral management platforms.

International Capital Market Association (ICMA)

The International Capital Market Association (ICMA) is an international trade association that is a highly influential voice for the global capital market. ICMA represents institutions worldwide, who are active in the international capital markets on a cross border basis. Founded in 1968, ICMA has its head office in Zurich, with a subsidiary in London and representative offices in Paris, Brussels, and Hong Kong. ICMA liaises closely with regulatory and governmental authorities, both at the national and supranational level, to provide industry-driven rules, principles and recommendations that promote coherent, resilient and well-functioning international cross-border debt securities markets.

ICMA's market conventions and standards have been the pillars of the international debt markets for over 50 years. While ICMA has been most active in the international debt markets, it takes full account of the increasing integration between the debt and equity, cash and derivatives markets.

Membership continues to grow, with currently more than 600 members based in over 60 jurisdictions. ICMA members include global investment banks, commercial and regional banks, brokers, private banks, institutional asset managers, pension funds, central banks, sovereign wealth funds and other institutions with a pronounced interest in the securities market, such as supranational institutions, infrastructure providers, rating agencies, law firms, audit firms and media.

CCDC

ICMA

International Capital Market Association

CCDC

ICMA

International Capital Market Association