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# Developments in JGB Market-Making Business by Securities Companies

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Securities companies function as market makers in the Japanese government bond (JGB) market by intermediating the trading needs of investors. They manage the interest rate risk they bear and earn profits from their intermediation. In this paper we analyze the developments in factors that are internally considered by securities companies, such as balance sheet size, interest rate risk, and profits, as they undertake the role of market makers, and we examine the impact of these factors on liquidity in the government bond market, including through case studies. Generally, under stable market conditions, the risk management factors of securities companies rarely have a significant impact on the liquidity of the government bond market. However, during the market turmoil in April 2025, the cautious stance of securities companies toward taking on additional risks may have contributed to the widening of bid-ask spreads. Moving forward, it remains important to deepen our understanding of the developments in market-making business.

## Introduction

Securities companies function as market makers in the Japanese government bond (JGB) market by intermediating the trading needs of investors. In doing so, they manage the interest rate risk they bear and earn profits from their intermediary activities. In addition, previous studies conducted abroad suggest that factors related to internal risk management of market makers could affect the liquidity in government bond markets.[1]

An example of a previous study on the U.S. Treasury market is a study by economists at the Federal Reserve, which highlights that dealers are more inclined to reduce their positions as they get closer to value-at-risk (VaR) limits.[2] The study also points out that under such circumstances, dealers require higher compensation to take on additional risks.[3]

Additionally, a study by economists at the Federal Reserve Bank of New York finds that, in normal times, volatility explains most of the variation in Treasury market liquidity. However, it notes that when the capacity utilization[4] of individual dealers surpasses a certain threshold, dealers' incentives to supply additional liquidity diminish, leading to a nonlinear decline in market liquidity.[5]

Economists at the Federal Reserve Bank of Boston have analyzed the extent to which the US Treasury market can be affected by the supplementary leverage ratio (SLR)[6] and internal limits (such as VaR). The study indicates that, in response to tighter constraints, dealers reduce their Treasury positions, triggering a reduction in aggregate turnover. This is accompanied by lower liquidity in the Treasury market. If internal limits were tightened, dealers require greater compensation for additional risk taking, causing a widening in bid-ask spreads.[7]

A study focusing on the European corporate bond market by economists at the European Central Bank (ECB) points out that bid-ask spreads expand as the dealer's position approaches its leverage ratio limits.[8]

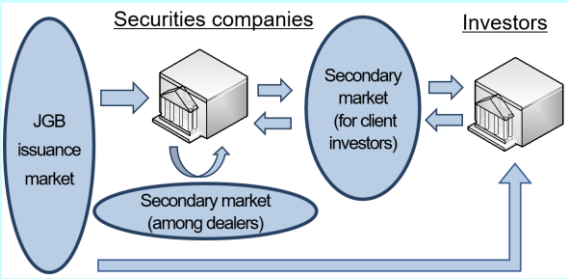
In this paper, we introduce the role and risk management methods of market makers in the JGB market. Using data reported by securities companies, we analyze the developments in factors that are internally considered by securities companies, such as balance sheet size, interest rate risk, and profits. Furthermore, we conduct a case study on the market turmoil in April 2025 to analyze how risk management factors in securities companies affect liquidity in government bond markets.

## The Role of Market Makers and Risk Management

### *Role of Market Makers*

The government bond market consists of the government bond issuance market (primary market) and the secondary market for trading. The secondary market is an over-the-counter (OTC) market where financial institutions trade directly with client investors and among dealers. Market makers are entities that supply liquidity to the secondary market by offering "bids" (buy quotes) and "offers" (sell quotes) for government bonds and responding to investor orders. In the JGB market, this role is primarily undertaken by securities companies. They participate in auctions in the government bond issuance market, temporarily holding JGBs in their inventory, and then connect the buy and sell needs of various participants in the secondary market (Chart 1).[9]

[Chart 1] Conceptual Diagram of Market Making by Securities Companies




Notes: Arrows indicate the flow of JGBs. Some investors directly participate in the JGB issuance market.

During this market-making process, securities companies do more than just connect buyers and sellers; they take proprietary positions, holding long (or short) positions in JGBs temporarily. The interest rate risk[10] arising from these positions is typically hedged by some method. For example, a long JGB position can be hedged through short positions in JGB futures, short-selling other JGB issues,[11] or entering into fixed-rate payer yen interest rate swaps.[12] The price impact of these hedges, the reduction in interest rate risk, the cost of maintaining hedge positions, and other factors vary depending on the hedging method used.[13] In addition to these factors, the choice of hedging method is also affected by traders' market views on the relative value of each hedging tool and the internal risk management factors of the securities companies, which will be discussed later.[14]

### *Risk Management by Securities Companies*

Securities companies monitor daily the interest rate risk arising from market-making activities by measuring and quantifying it from various perspectives to ensure it remains within regulatory required levels and internal management limits.

First, from the perspective of capital adequacy ratio regulations, the financial instruments held by securities companies for market-making purposes are typically classified as trading assets, and the market risk equivalent amount stemming from fluctuations in market interest rates and other factors is included in the denominator when calculating the capital adequacy ratio.[15] The maximum market risk equivalent amount that can be undertaken without the capital adequacy ratio falling below regulatory required levels serves as a regulatory constraint (based on certain assumptions regarding capital and other risk amounts).[16]

Within the framework of internal risk management, securities companies typically measure risk levels using methods such as VaR.[17] Under the constraint of regulatory requirements, they set the required risk level necessary to achieve their business objectives and then allocate the risk capital by department.[18] The risk limits allocated to each department represent one of the management resources for generating returns. In determining these limits, factors such as the profitability relative to risk levels of each department, profit targets, and overall business strategies are taken into account.[19]

In addition, interest rate risk is evaluated through various parameters such as DV01 (value of a one basis point interest rate change) and estimated loss amounts under stress scenarios, with corresponding limits established. Moreover, risk management typically includes setting loss limits not only based on potential future losses due to interest rate fluctuations but also on losses already incurred, calculated using methods like maximum drawdown (the largest decline from peak cumulative profit).

Furthermore, from the perspective of leverage ratio regulations, the size of the balance sheet is a factor that can be taken into consideration in conducting market-making activities. Specifically, JGBs held on proprietary accounts usually lead to a reduction in the leverage ratio through the expansion of the balance sheet. Therefore, securities companies subject to leverage ratio regulations frequently set limits on their balance sheet size to ensure compliance with regulatory requirements.

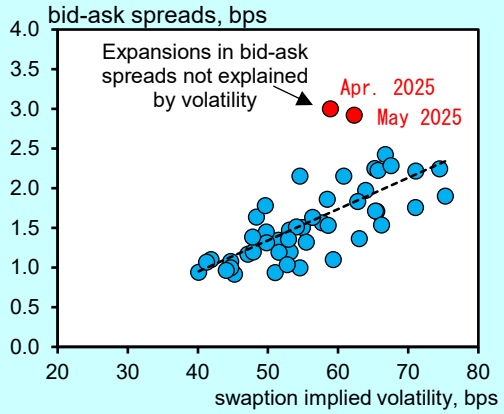
In addition to the above, securities companies conduct market-making while continually monitoring various risk management indicators, such as liquidity limits, from the perspective of funding stability.

### *Relationship with Liquidity in Government Bond Markets*

Securities companies, as market makers, quote prices for each issue of JGBs. The difference between the bid and offer prices is referred to as the bid-ask spread, which reflects the interest rate risk and costs borne by securities companies in market-making activities, as well as intermediary margins. The bid-ask spread is also one of the key proxy indicators of market liquidity from the perspective of investors, with an expansion of the spread indicating a decline in market liquidity.

In general, when market volatility increases, the price fluctuation risk associated with positions temporarily held by securities companies rises, and hedging costs also increase. These costs are passed on to the prices quoted to customers, resulting in an expansion of bid-ask spreads. In fact, in the JGB market, there have been instances where bid-ask spreads expanded in proportion to heightened interest rate volatility (Chart 2).

[Chart 2] Relationship Between Bid-Ask Spreads and Volatility (On-the-run 30-Year JGBs)




Notes: Data from April 2022 to March 2026, calculated as monthly averages. The dashed line represents the regression line. The vertical axis shows the average of second-by-second bid-ask spreads for on-the-run 30-year JGBs, determined only when both bid and ask quotes were available. The horizontal axis represents the implied volatility of 6-month into 30-year swaptions.

Source: Japan Bond Trading; LSEG.

However, there have also been cases where bid-ask spreads expanded beyond the relationship with market volatility that was observed between April 2022 and March 2026. As suggested by previous studies, factors related to the internal risk management of securities companies, in addition to market volatility, could also have affected bid-ask spreads. Similarly, in the Japanese market, internal risk management factors of securities companies might have contributed to such developments.

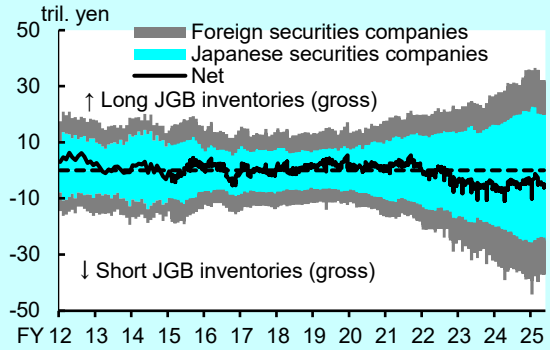
Therefore, in the following section, based on the data reported by securities companies to the Bank of Japan, an analysis will be conducted to examine trends in factors that market makers in the JGB market take into account for risk management, such as balance sheet size, interest rate risk, and profits.

## Trends in Securities Companies' Balance Sheet Size, Interest Rate Risk, and Profits

### *Changes in Balance Sheet -- Inventory of JGBs*

Looking at the holdings of JGBs by securities companies, an increase in inventories across both long and short positions has been observed, particularly among Japanese securities companies (domestic securities companies), against the background of growing trading opportunities as interest rates have gradually risen since 2022 (Chart 3).

[Chart 3] Positions of JGBs Held by Securities Companies

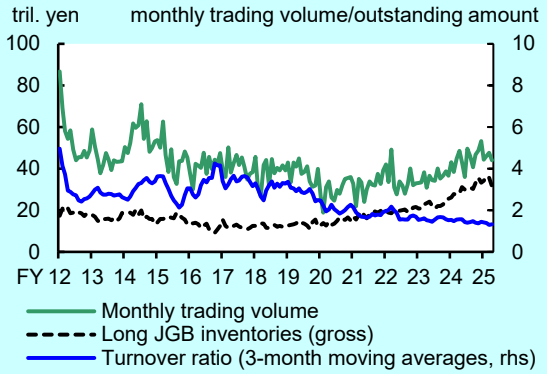



Notes: Compiled based on data reported by some securities companies that hold current accounts with the Bank of Japan. The same principle applies to subsequent charts (excluding Chart 8). Excludes short-term government securities. The number of reporting entities varies across charts due to differences in the scope of data reporting.

Source: BOJ.

While long JGB inventories have increased, trading volume has also risen correspondingly, and there have been no significant changes in the simply calculated inventory turnover rate when looking at developments since 2022 (Chart 4). At present, among domestic securities companies that have increased their inventories, only a limited number have reported that the expansion of their balance sheets presents a significant constraint on their ability to act as market makers.

[Chart 4] Inventories and Turnover of JGBs Held by Securities Companies



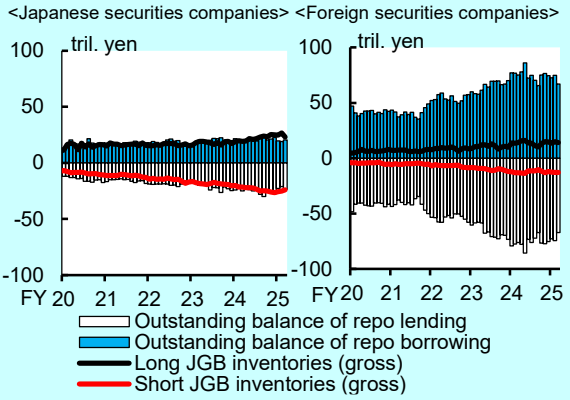

Notes: Monthly trading volume is based on outright purchases by bond dealers (on a gross basis). Turnover ratio is calculated as monthly trading volume (outright sales amount on a gross basis) / end-of-month balances (long JGB inventories). Excludes short-term government securities.

Source: JSDA; BOJ.

## *Changes in Balance Sheets -- Outstanding Balances of Repo Transactions*

Next, looking at the outstanding balances of JGB repo transactions by securities companies, these balances have increased in recent years for both cash borrowing and lending (Chart 5). Although the purposes of conducting JGB repo transactions vary among securities companies, this paper categorizes them broadly into three groups: (1) funding for their own long bond positions (and covering short bond positions); (2) intermediating repo transactions among market participants such as hedge funds; and (3) conducting transactions to secure their own collateral or to manage funds.

[Chart 5] Outstanding Balances of JGB Repo Transactions by Securities Companies




Source: BOJ.

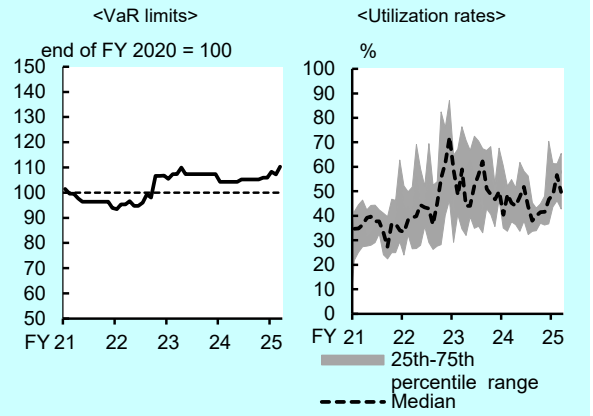
In light of the abovementioned purposes (1) through (3), examining developments in repo transactions by securities companies reveals significant differences in approach between domestic securities companies and foreign securities companies. Specifically, for domestic securities companies, the outstanding balances of repo transactions are broadly consistent with their outright holdings of JGBs. In contrast, foreign securities companies have significantly expanded their repo transaction positions. This divergence can be attributed to the predominant purposes behind the transactions: for domestic securities companies, the majority of repo transactions are conducted for purpose (1), while foreign securities companies mainly engage in repo transactions for purposes (2) and (3). Particularly, the expansion of positions by foreign securities companies since 2022 has been largely driven by purpose (2).[20]

Recently, foreign securities companies that have significantly increased their outstanding balances of repo transactions have been conducting transactions in a nettable manner by using central counterparties (CCPs) or offsetting transactions with identical counterparties. This has allowed them to mitigate the effects of such transactions on leverage ratio regulations while conducting repo transactions.[21]

## *Changes in Interest Rate Risk*

Looking at the trends in VaR limits set by securities companies for risk management purposes, the limits have remained broadly stable since fiscal 2021.[22] Against this background, the utilization rate of these limits has somewhat increased since fiscal 2022 through the present, partly reflecting a rise in interest rate volatility (Chart 6).[23]

[Chart 6] VaR Limits and Utilization Rates in Yen Interest Rate-Related Departments of Securities Companies




Notes: The left-hand panel represents the average of VaR limits in the yen interest rate-related departments of securities companies, indexed to 100 at the end of fiscal 2020 for each company. When multiple limits exist, the strictest limit is used. The right-hand panel indicates the utilization rates (maximum monthly VaR / VaR limit). Note that the methodology for calculating VaR and the range of products handled by the yen interest rate-related departments vary across securities companies.

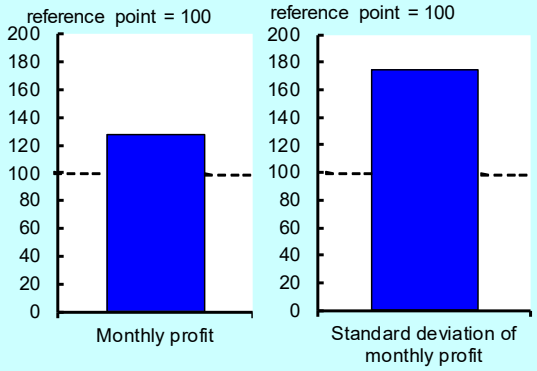
Source: BOJ.

While there have been some reports indicating a heightened awareness of limit approaches during periods when positions tend to temporarily expand, such as around government bond auctions, many securities companies still have sufficient buffer under their limits, as interest rate risk is controlled through hedging. At present, there is only limited feedback suggesting that these VaR limits pose significant constraints on market-making activities. Furthermore, some have expressed a willingness to raise their limits in response to expanded profit opportunities.

### *Profit Trends*

Looking at the earnings of securities companies' yen interest rate departments, the profit levels have improved since fiscal 2024, following the removal of yield curve control (YCC), compared with the period before the increase in JGB trading volume and volatility (fiscal 2020-2021). However, it has also been observed that the standard deviation (degree of profit fluctuation) has expanded significantly (Chart 7).

[Chart 7] Monthly Profit and Its Standard Deviation in Yen Interest Rate-Related Departments of Securities Companies (Since the Removal of YCC)




Notes: The reference period is fiscal 2020 to 2021, before the increase in trading volume. The left-hand panel shows the median growth rate of average monthly profits, calculated individually for each securities company. The right-hand panel uses the median growth rate of standard deviations for monthly profits, calculated individually for each securities company. Note that the range of products handled by the yen interest rate-related departments varies across securities companies.

Source: BOJ.

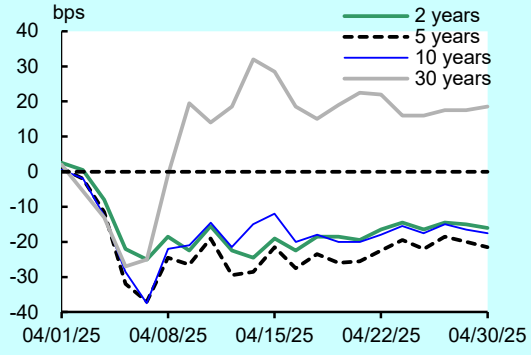
The profitability levels and stability of the market-making business, as well as its profitability relative to invested capital, could have a medium- to long-term impact on securities companies' liquidity provision stance through changes in their resource allocation policies for this business.[24] Furthermore, from a short-term perspective, there is a possibility that factors such as proximity to loss limits could affect securities companies' liquidity provision stance.

## Analysis of the April 2025 Market Turmoil

Previous studies suggest that market makers adjust their liquidity provision stance not only in response to market factors such as volatility but also due to their own risk management factors. Therefore, it is important to examine factors that could impose constraints, such as the size of the balance sheet and interest rate risk, along with profitability, as these could affect resource allocation policies over the medium to long term. During periods of market turmoil, indicators used for risk management, such as VaR, and proximity to loss limits may directly affect market makers' liquidity provision stance. In this context, a case study is conducted to examine the April 2025 episode of market turmoil.

Looking at developments in JGB yields across maturities, the yield curve as a whole declined following the announcement of reciprocal tariffs by the United States at the beginning of April 2025. However, amid heightened market volatility, there was a surge in selling of longer-maturity bonds. This was accompanied by an unwinding of investor positions, leading to a significant rise in yields in the super-long-term zone (Chart 8).[25]

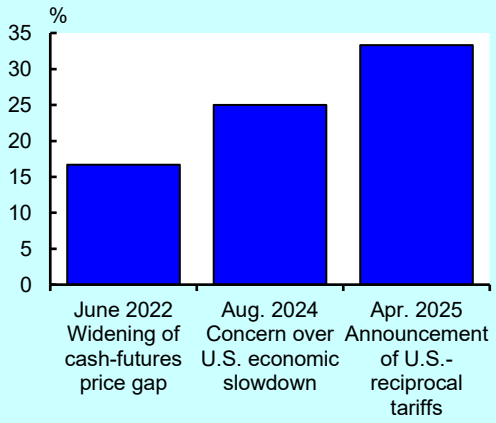
[Chart 8] Changes in Yen Interest Rates




Source: LSEG Workspace.

Particularly, on April 9, 2025, a sharp steepening of the yield curve was observed, as the price of 30-year bonds declined significantly, relative to 10-year bonds. Under these conditions, the share of securities companies recording monthly losses exceeding two standard deviations was higher than in past phases of market turmoil, indicating the significant extent of the shock (Chart 9). Amid heightened uncertainty and concerns about proximity to loss limits, there were also movements to rapidly reduce interest rate risk (Chart 10).

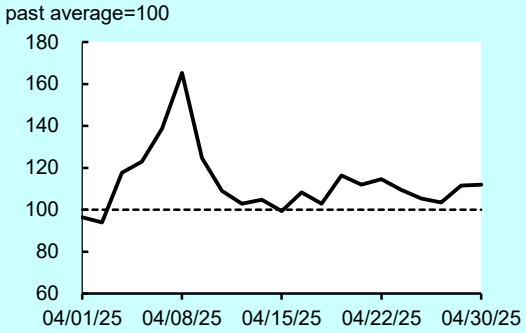
[Chart 9] Share of Securities Companies Recording Monthly Losses Exceeding 2 Standard Deviations in Yen Interest Rate-Related Departments




Notes: Calculated based on monthly profit/loss data from fiscal 2017 onward. It should be noted that the range of products handled by yen interest rate-related departments varies across securities companies.

Source: BOJ.

[Chart 10] Interest Rate Risk in Yen Interest Rate-Related Departments (Average of Securities Companies)




Notes: Figures represent the average of indices for each securities company, calculated by setting the average value of VaR over the past three years as 100. It should be noted that the range of products handled by yen interest rate-related departments varies across securities companies.

Source: BOJ.

The widening of bid-ask spreads (Chart 2) may have been partly attributable not only to the increased volatility triggered by the announcement of U.S. reciprocal tariffs and the unwinding of investor positions but also to the position reductions by market makers.

## Conclusion

This paper examines the factors affecting the market-making business using data reported by securities companies.

Securities companies, as market makers providing liquidity, conduct market-making activities by hedging the risks associated with transactions to ensure compliance with various risk limits. Under normal circumstances, it is considered that such restrictions seldom pose significant constraints on risk-taking capacity in this business. However, during the market turmoil in April 2025, in addition to external factors such as increased volatility and investor flows, internal risk management factors of securities companies, including loss limits, may also have contributed to the widening of bid-ask spreads.

Since the risk management frameworks for market-making and the policies for allocating management resources to this line of business within securities companies can potentially influence liquidity in government bond markets, it remains important to deepen our understanding of these aspects going forward.

* Previously at the Financial System and Bank Examination Department.

[1] Liquidity in government bond markets is often assumed to refer to the condition in which market participants can quickly sell (or buy) desired quantities at prices close to the "market price" observed at any given time. For further details and efforts toward quantitative assessments of liquidity, see, for example, Kurosaki, T., Kumano, Y., Okabe, K., and Nagano, T., "Liquidity in JGB Markets: An Evaluation from Transaction Data" (May 2015) and Sakiyama, T., and Kobayashi, S., "Liquidity in the JGB Cash Market: An Evaluation from Detailed Transaction Data" (March 2018).

[2] Short for "value-at-risk." Based on historical data for a specified period, VaR refers to the maximum potential loss that could occur within a specified time frame (holding period) at a certain confidence level.

[3] Li, D., Petrasek, L., and Tian, M. (2025), "Risk-averse Dealers in a Risk-free Market -- The Role of Trading Desk Risk Limits," FRB Finance and Economics Discussion Series, 2025-034.

[4] The ratio of each dealer's VaR, gross/net positions, or gross/net trading volumes in client markets, to the maximum value observed during the analysis period. Since the actual limits within securities companies cannot be directly observed, the maximum value during the observation period is calculated as a proxy for the limit.

[5] Duffie, D., Fleming, M., Keane, F., Nelson, C., Shachar, O.,

and Van Tassel, P. (2023), "Dealer Capacity and U.S. Treasury Market Functionality," Federal Reserve Bank of New York Staff Reports, No.1070.

[6] Unlike risk-based capital adequacy regulations, leverage ratio regulations require the holding of a certain level of "capital" against exposure amounts, which include off-balance sheet items and are not adjusted by risk weights.

[7] Bräuning, F., and Stein, H. (2024), "The Effect of Primary Dealer Constraints on Intermediation in the Treasury Market," Federal Reserve Bank of Boston Working Papers, No.24-7.

[8] Breckenfelder, J., and Ivashina, V. (2021), "Bank Balance Sheet Constraints and Bond Liquidity," ECB Working Paper Series, No.2589.

[9] In Japan, the "JGB Market Special Participants Scheme" (commonly known as the "Primary Dealer System") was introduced in October 2004 to promote the market's stable absorption of government bonds and to maintain and enhance the liquidity of government bond markets.
Under the scheme, the government debt issuance authority grants special entitlements to certain auction participants when they carry out responsibilities essential to debt management policies, such as active participation in JGB auctions. As of August 2026, 19 entities, including securities companies and banks, are registered under this system.

[10] Refers to the risk of incurring losses from holding financial assets or liabilities, or engaging in financial transactions, due to interest rate fluctuations.

[11] Refers to a transaction in which bonds not held are sold, and the bonds sold are procured by borrowing from others for delivery. Profits are realized when the short-sold bonds are purchased back to close the position after interest rates rise (resulting in a decline in bond prices).

[12] Refers to an interest rate swap transaction where a fixed interest rate is paid in exchange for receiving a floating interest rate. When interest rates rise, the market value of the position increases.

[13] Refers to the degree to which trade execution impacts market prices. In general, the lower the liquidity, the greater the price impact.

[14] When a securities company receives a sell order for cash JGBs, for example, it can hedge interest rate risk by selling relatively undervalued products among individual cash JGB issues or futures. By doing so, it can also generate profits from correcting overvaluation or undervaluation between instruments (leading to relative value changes).

[15] The denominator of the capital adequacy ratio under the Basel regulatory framework is calculated as "(the total amount of credit risk-weighted assets) + (the aggregate amount equivalent to market risk divided by 8 percent) + (the aggregate amount equivalent to operational risk divided by 8 percent)."

[16] The maximum amount of risk that can be absorbed while satisfying regulatory requirements is often referred to as "risk capacity."

[17] It should be noted that the methodology for calculating the market risk equivalent amount under regulatory requirements does not necessarily align with the method used for calculating VaR for internal management purposes.

[18] The amount of risk needed to achieve business objectives is often referred to as "risk appetite."

[19] Given that JGB yields serve as benchmarks for various transactions in domestic financial markets, the profitability and importance of the government bond market-making business are considered to require comprehensive assessment, taking into account its connections with other business domains.

[20] For details of trends in the Japanese repo market since 2022, see Asamatsu, H., and Asada, T., "Trends in Japan's Repo Market and Recent Features," *Bank of Japan Review Series*, No. 25-J-7, 2025 (available in Japanese).

[21] Refers to a central counterparty (CCP). It acts as an intermediary between financial institutions in transactions, becoming the counterparty to both sides. By using a CCP, market participants can centralize their counterparties for transactions with the CCP.

[22] Each financial institution positions limits differently and generally establishes multiple types of limits, such as alarm points that trigger reporting and discussions with management, and hard limits that mandate the reduction of positions. In Chart 6, where multiple limits exist, the strictest limit is used.

[23] For the calculation of internally managed VaR, it is common to reference historical data on interest rate fluctuations over a certain period. If interest rate volatility increases during the reference period, the calculated VaR for the same position is likely to be higher. Note that the reference period and processing methods (e.g., whether to apply greater weighting to more recent data) vary across securities companies, resulting in differing degrees of impact from increased realized market volatility.

[24] For instance, when the profitability relative to invested capital is high and stable earnings can be expected in the future, securities companies may adopt a policy of expanding risk limits for the respective business, potentially leading to increased liquidity provision in the market.

[25] Regarding the rise in interest rates in the super-long-term zone in April 2025, the following factors have been pointed out against the backdrop of perceived structural weakness in investor demand, due to a peak in regulation-driven investment demand from life insurance companies: (1) the unwinding of flattener positions (short positions in short- and medium-term JGBs and long positions in super-long-term JGBs) and asset swaps (buying super-long-term cash JGBs and paying swaps) built by banks and foreign investors before the announcement of reciprocal tariffs; and (2) sales flows associated with portfolio rebalancing by pension funds in response to declining stock prices. For details, refer to Box 2 of "Market Operations in Fiscal 2025" released by the Financial Markets Department, Bank of Japan in 2026.

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