

Japan Rates Viewpoint

Japan Rates Basics

JGB market guide

Ahead of our upcoming basic seminar (for Japanese investors) and Rates University (for US investors) in the week of 24 April, this report covers the basics of (A) the Bank of Japan's (BOJ) operations and (B) the Ministry of Finance's (MOF) JGB issuance.

(A) BOJ operations

The BOJ has a broad range of tools for its market operations. As of April 2023, it is deploying three in particular: (1) outright JGB purchases ("rinban" operations), (2) fixed-rate purchases, and (3) its securities lending facility. For details on its Funds-Supplying Operations against Pooled Collateral, see [Japan Rates Watch: Q&A on BoJ's Funds-Supplying Operations against Pooled Collateral 20 January 2023](#).

(1) Rinban operations

The BOJ's rinban operations involve it supplying funds to the market through outright JGB purchases, with no conditions stating that it will resell the bonds after a set period. It makes these purchases via either competitive auctions or fixed-rate purchases. Rinban operations refer to the former. The competitive auction method involves the BOJ accepting bids starting with the highest yield bid (the bid with the lowest price) followed by the second highest and so on¹. It makes offers for JGBs with coupons (excluding inflation-indexed JGBs (JGBi) and floating-rate JGBs) by residual maturity.

Purchase amounts and schedule: The BOJ announces the amounts and schedule for its outright purchases in the next quarter at quarter-end (Exhibit 1), and next month's purchase schedule at month-end. It may conduct additional unscheduled operations in the event of considerable upward pressure on yields. Purchases can also exceed its planned range.

Parsing outcomes of BOJ operations: The outcomes of outright purchase operations are determined mainly by (1) the bid-to-cover ratio, and (2) the tail², i.e., the spread between the pro-rata yield spread and the average successful spread. A high bid-to-cover ratio indicates strong selling demand for JGBs, while a low ratio indicates weak demand. The BOJ also bids at the lowest price first, and a fat tail tends to indicate weak selling demand.

¹ Financial institutions participating in the auction bid their "desired yield spreads," which are calculated by subtracting "benchmark yields" (the previous trading day's closing value based on the JSDA's Reference Statistical Prices (Yields) for OTC Bond Transactions) from the yields at which counterparties seek to sell to the Bank.

² Pro-rata rate: When the cumulative value of bids at a specific rate exceeds the amount offered, the BOJ apportions the sales pro rata among the bids made at this rate.

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Timestamp: 23 April 2023 10:26PM EDT

24 April 2023

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- Notification times: The BOJ announces offers to buy JGBs at 10:10 JST. The cutoff for bid submissions is 11:40, and it notifies auction participants of the results around 12:00.
- Financial institutions eligible for JGB purchase operations: Institutions with BOJ current account deposits. This essentially precludes overseas investors from participating directly in the BOJ's operations.

Exhibit 1: BOJ's quarterly JGB purchase schedule

BOJ releases offer amounts and number of operations for next quarter at quarter-end

1Q2023

Residual maturity	Purchase size (JPY bn)	Frequency of auction (per month)
Up to 1yr	150	1
More than 1yr and up to 3yr	425-575	4
More than 3yr and up to 5yr	500-650	4
More than 5yr and up to 10yr	575-775	4
More than 10yr and up to 25yr	200-400	4
More than 25yr	100-300	3
JGBi	60	1
Floating-rate bonds	30	1 per quarter
Total JGBs	7,250-10,650	Per month

2Q2023

Residual maturity	Purchase size (JPY bn)	Frequency of auction (per month)
Up to 1yr	150	1
More than 1yr and up to 3yr	350-650	4
More than 3yr and up to 5yr	425-725	4
More than 5yr and up to 10yr	475-875	4
More than 10yr and up to 25yr	100-500	4
More than 25yr	50-350	3
JGBi	60	1
Floating-rate bonds	30	1 per quarter
Total JGBs	5,700-12,200	Per month

Source: Bank of Japan, BofA Global Research

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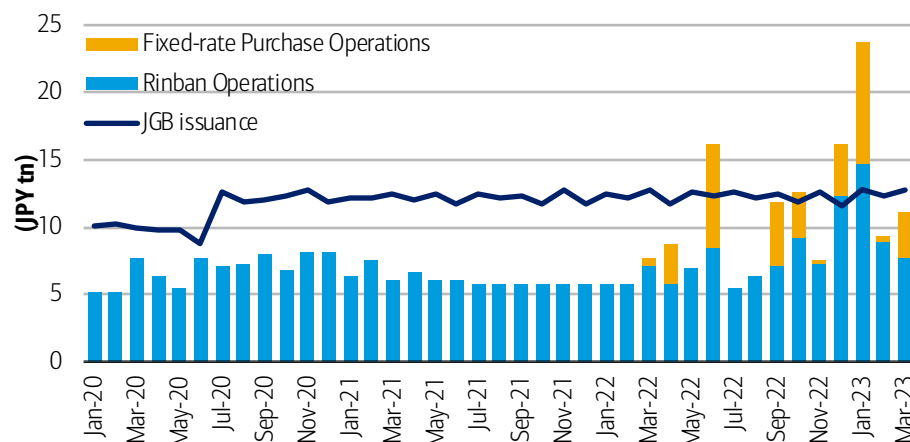
(2) Fixed-rate purchase operations

Fixed-rate purchase operations refer to the BOJ's outright purchases of JGBs via the fixed-rate auction method. It positions these operations as one of its tools for achieving yield-curve control (YCC), and introduced them alongside YCC at its September 2016 monetary policy meeting (MPM). It subsequently introduced fixed-rate purchase operations on consecutive days (i.e., every day of a predetermined period) at its March 2021 MPM.

- Maturities and purchase amounts: Thus far in April 2023, the BOJ has conducted fixed-rate purchase operations for the on-the-run 10yr and cheapest-to-deliver 7yr issue every trading day with an unlimited purchase amount. In the past, it has also bought on-the-run 2y, 5y, and 20y issues at fixed rates.
- Fixed-rate applied in each auction: The BOJ purchases JGBs at a fixed rate that it calculates by adding the yield spread for each issue, which it determines each day, to the above benchmark yield. The purchasing yield for the on-the-run and cheapest-to-deliver 10yr issues is 0.500% as of April 2023.
- Notification times: The BOJ also makes offers for fixed-rate purchases at 10:10, but the bid-submission cutoff is 15:30 and the notification to auction participants is around 15:50. While it also makes offers for fixed-rate purchases at 14:00 in some cases, the bid-submission cutoff and notification times are the same as for offers in the morning.

Exhibit 2: Monthly JGB issuance and BOJ purchases

BOJ buying JGBs via outright/fixed-rate operations



Source: Ministry of Finance, Bank of Japan, Bloomberg, BofA Global Research

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(3) Securities lending facility

The BOJ's securities lending facility refers to the sale of JGBs with repurchase agreements, and involves it temporarily supplying specific issues to stabilize the market where it foresees a potential decline in liquidity.

- **Decision on use of facility:** The BOJ uses the securities lending facility as needed, but in principle only (1) when it is requested to implement an offer by one or more counterparties per issue, or (2) following natural disasters or large-scale system outages.
- **Auction method:** Counterparties bid "selling yields" (yields for the period during which securities are held by counterparties), and the BOJ accepts bids by starting with the lowest desired selling yield and continuing up until the total amount of bids accepted reaches the amount offered per issue.
- **Upper limit on selling yields:** The BOJ sets an upper limit on selling yields based on the overnight Tokyo Repo Rate minus the 0.25% minimum fee rate.
- **Rollovers:** Financial institutions that purchased JGBs from the BOJ using its securities lending facility may request a rollover up to 21 times per issue.
- **Option to reduce repurchases:** Financial institutions that purchase JGBs from the BOJ can pay a fee to request that it reduce the repurchase amount (by up to 100%) if they do not have the JGBs to deliver. In principle, they can also pay a fee to make a similar request for all cheapest-to-deliver issues.
- **Acceptance of requests for offer:** The BOJ accepts requests from 9:00-11:15 and 12:30-13:15; it makes offers at 11:50 for the former, with the bid-submission cutoff at 12:15. It notifies participants of the auction results around 12:30. For the latter, it makes offers at 13:50, the bid-submission cutoff is 14:15, and it notifies results around 14:30.

B) MOF JGB issuance

The Ministry of Finance (MOF) issues JGBs with coupons, inflation-indexed bonds (JGBi), and T-bills to fund fiscal expenditure and make up for shortfalls in tax revenue. We look below at the basics regarding this issuance.

(1) JGBs with coupons

MOF issues 2yr, 5yr, 10yr, 20yr, and 30yr JGBs monthly and 40yr JGBs once every two months. Issuance amounts differ by maturity; it discloses the frequency and amounts for the upcoming fiscal year in the JGB issuance plans it typically releases in late December (**Error! Reference source not found.**).

- Financial institutions eligible to participate in auctions: The financial institutions that can participate in MOF auctions are mainly domestic deposit-taking corporations and securities brokerages. As a rule, overseas investors cannot participate directly in JGB auctions.
- Auction formats: MOF conducts auctions in the conventional auction format for 2yr, 5yr, 10yr, 20yr, and 30yr JGBs and in the Dutch format for 40yr issues and JGBi. In the conventional format, auction participants submit bids and MOF allocates to them in descending order, starting with the highest price bid, until the planned issuance amount is reached. In the Dutch format, bids are filled from the highest bidder downward, with the auction closing when the value of bids reaches the planned issuance amount; the lowest accepted price then applies to all bids.
- New and existing issues: JGBs are divided into new issues and existing bonds that already trade on the secondary market. Issuance for the latter is via reopenings with the same coupon/principal and interest payment date, which are treated as identical to the issue that already trades.
- Nominal coupon: When issuing new JGBs, MOF sets the nominal coupon for each issue at close to the expected market yield. Specifically, it uses a value close to the yield for when-issued (WI) transactions, which we discuss below.
- When-issued transactions: These are trades executed prior to issuance, with JGBs delivered on the issue date; they are conditional on issuance as per the original schedule. Trades are made between the auction announcement (usually a week before the auction date) and the day prior to issuance. The Japan Securities Dealers Association (JSDA) publishes daily data on WI transactions.
- Interpreting auction results: JGB auction results are mainly judged on (1) bid-to-cover ratio, (2) the tail (spread between average successful yield and pro-rata yield), and (3) the lowest accepted price relative to the consensus. A high bid-to-cover ratio indicates strong buying demand, while a low ratio indicates weak demand. A fat tail is usually viewed as indicating weak demand given that JGB auction bids are accepted from the highest price downward. Bloomberg also provides market participants' lowest accepted price forecasts. Buying demand is judged to be weak when the lowest accepted price is lower than the consensus.
- Liquidity enhancement auctions: These involve additional issuance of existing JGB issues where there is either a structural lack of liquidity or a temporary increase in demand results in a lack of liquidity, to facilitate trading and redress market distortions. MOF's liquidity enhancement auctions are split into three maturity ranges: 1-5, 5-15.5, and 15.5-39 years. Issuance per auction is around ¥500bn. Auctions are held monthly for the 5-15.5 year category and once every two months for other maturities.

Exhibit 3: MOF's JGB issuance plans

MOF typically announces next-FY JGB issuance plans in late December

(JPY tn)	FY2022 (2nd supplementary budget)				FY2023 (initial)				Difference
40-year	0.7	×	6	4.2	0.7	×	6	4.2	0.0
30-year	0.9	×	12	10.8	0.9	×	12	10.8	0.0
20-year	1.2	×	12	14.4	1.2	×	12	14.4	0.0
10-year	2.7	×	12	32.4	2.7	×	12	32.4	0.0
5-year	2.5	×	12	30.0	2.5	×	12	30.0	0.0
2-year	2.8	×	9	33.9	2.9	×	12	34.8	0.9
	2.9	×	3						
TBs				64.6				50.7	-13.9
10-year Inflation-Index	0.2	×	4	0.8	0.25	×	4	1.0	0.2
Auction for Enhanced-liquidity				12.0				12.0	0.0
Total				203.1				190.3	-12.8

Source: Ministry of Finance, BofA Global Research

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(2) 10yr JGBi auctions

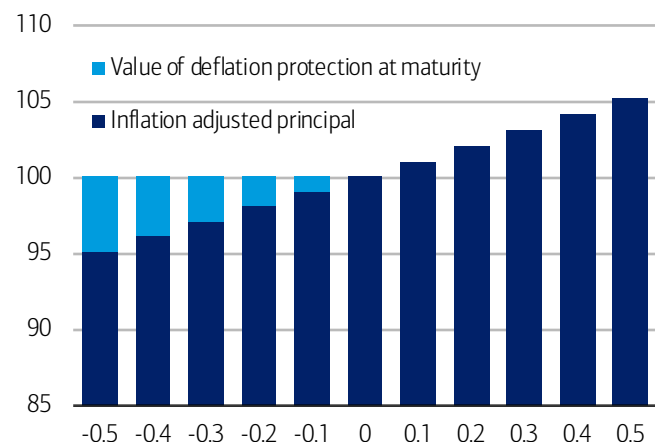
MOF temporarily halted issuance of 10yr inflation-indexed bonds (JGBi) in October 2008, but restarted it in October 2013. As of April 2023, it plans to issue JGBi four times a year (in February, May, August, and November), with a value of ¥250bn per issue.

- **JGBi structure:** The principal amount for typical fixed-coupon JGBs remains constant from issuance to redemption, and the same coupon rate applies to all interest payments. In contrast, JGBis' principal amount changes in line with inflation. This means that when inflation results in an increase in the inflation-adjusted principal, interest payments also rise. JGBis are linked to the consumer price index (CPI, headline ex. fresh food) released by the Ministry of Internal Affairs and Communications (MIC).
- **JGBi principal guarantee:** The key hallmark of JGBi is the principal guarantee; if the indexation coefficient (which we discuss below) falls below 1, the principal amount is redeemed at face value (Exhibit 4).
- **Calculating inflation-adjusted principal:** The inflation-adjusted principal changes daily, and is calculated by applying the day's indexation coefficient to the bond's face value. The coefficient on a given date is calculated by dividing the reference index on that day by the index as of the 10th day of the issue month. The reference index and indexation coefficient for each day can be found on the MOF website³.
- **MOF buybacks:** As of April 2023, MOF is buying back around ¥20bn in JGBi per month to maintain tight supply-demand conditions. Combined with the BOJ's ¥60bn in monthly purchases, the two therefore absorb ¥240bn of the ¥250bn in quarterly JGBi supply (Exhibit 5).

³ https://www.mof.go.jp/jgbs/topics/bond/10year_inflation-indexed/keisuu/index.htm

Exhibit 4: Relationship between inflation and redemptions

JGBi includes floor option

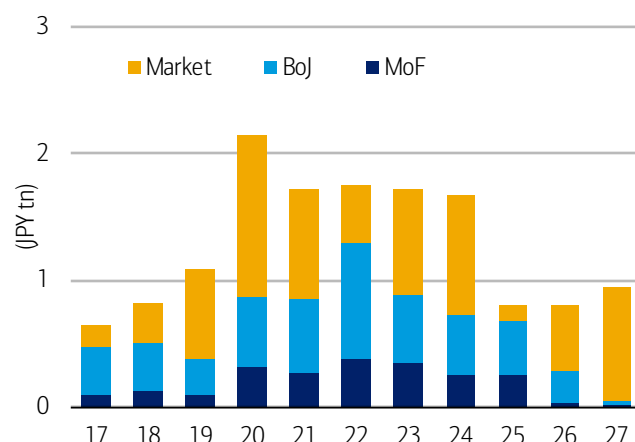


Source: Bloomberg, BofA Global Research

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Exhibit 5: Value of MOF buybacks, BOJ holdings, and market ownership by issue

MOF/BOJ driving tighter JGBi supply/demand



Source: Bloomberg, BofA Global Research

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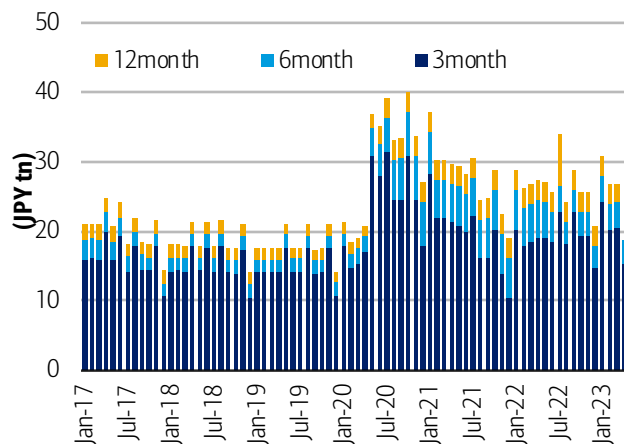
(3) T-bills

MOF issues two types of treasury discount bills (T-bills): financing bills (FB) that finance the national treasury on a short-term basis or cover temporary fund shortages in a special account, and treasury bills (TB) that finance fiscal expenditures.

- **T-bill issuance:** T-bill auctions are conducted via the above conventional (price-competitive) method.
- **T-bill maturities:** T-bills are issued with 3/6/12-month maturities; 3-month T-bills are usually issued weekly, resulting in higher issuance than other maturities (Exhibit 6, Exhibit 7). Also, as MOF explicitly states in its JGB issuance plans, it flexibly adjusts the maturity, frequency, and amount of T-bill issuance to respond to market conditions and investment requirements; this resulted in a jump in T-bill issuance during the COVID-19 pandemic.
- **High overseas ownership of T-bills:** According to the BOJ's quarterly Flow of Funds data, overseas investors owned around 67% of T-bills as of end-2022 (Exhibit 8). They held just 6% of JGBs (excluding T-Bills) at the same point (Exhibit 9), underscoring the extent of their T-bill market presence. We would note that heightened USD demand allows overseas investors to receive both the US-Japan interest rate spread and a premium when they lend USD to Japanese deposit-taking corporations to raise JPY, enabling them to diversify their investments even if T-bill yields are negative.

Exhibit 6: T-bill issuance trends (monthly)

3-month T-bills make up majority of issuance

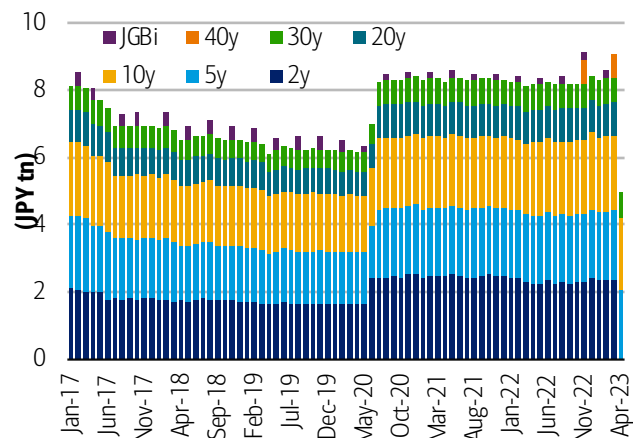


Source: Ministry of Finance, Bloomberg, BofA Global Research

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Exhibit 7: JGB issuance by maturity (monthly)

MOF issues JGBs with multiple maturities



Source: Ministry of Finance, Bloomberg, BofA Global Research

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Exhibit 8: Overseas investors' T-bill ownership

Foreign investors own higher percentage of T-bills than JGBs

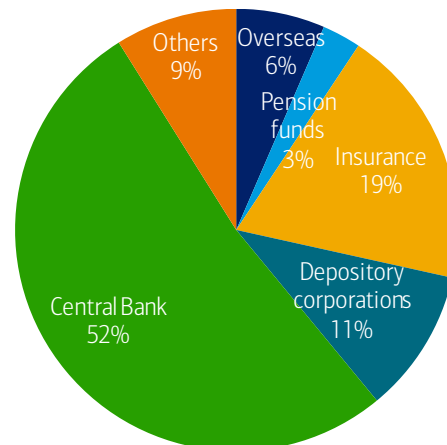


Source: Bank of Japan, BofA Global Research

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Exhibit 9: JGB ownership by investor type, end-Dec 2022

Overseas investors held just 6% of JGBs



Source: Bank of Japan, BofA Global Research

Note: excluding TBill

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