

Liquidity Indicators in the JGB Markets*

JGB Futures Market

Chart 1: Transaction Volume and Bid-ask Spreads

Chart 2: Volume of Orders at the Best-ask Price and Price Impact

JGB Cash Market

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Chart 8: Market Depth

Chart 9: Ratio of Issues by Total Observation Time of the Best-bid (Best-ask)

Price of Inter-dealer Transactions

SC Repo Market

Chart 10: Scarcity of Specific Issues

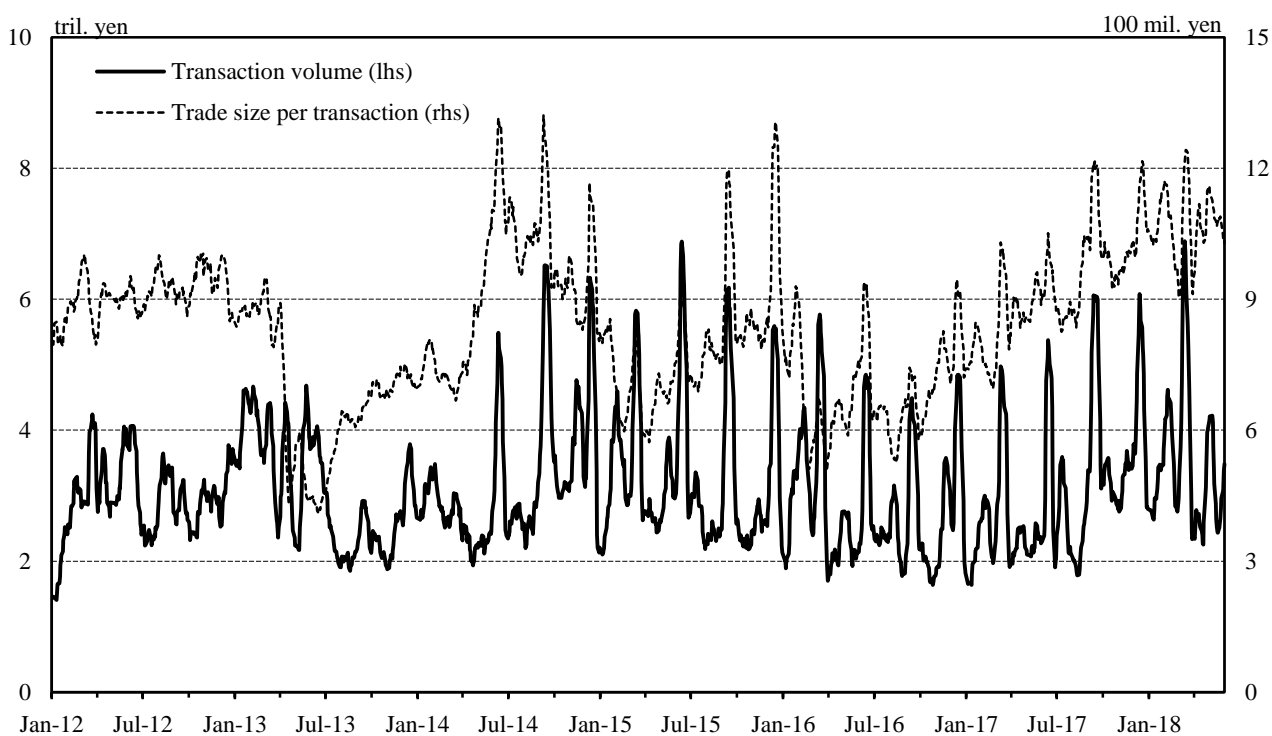
* As for the definition of each indicator, refer to

Kurosaki, Kumano, Okabe, and Nagano [2015] “Liquidity in JGB Markets: An Evaluation from Transaction Data,” Bank of Japan Working Paper Series, No.15-E-2, May 2015,

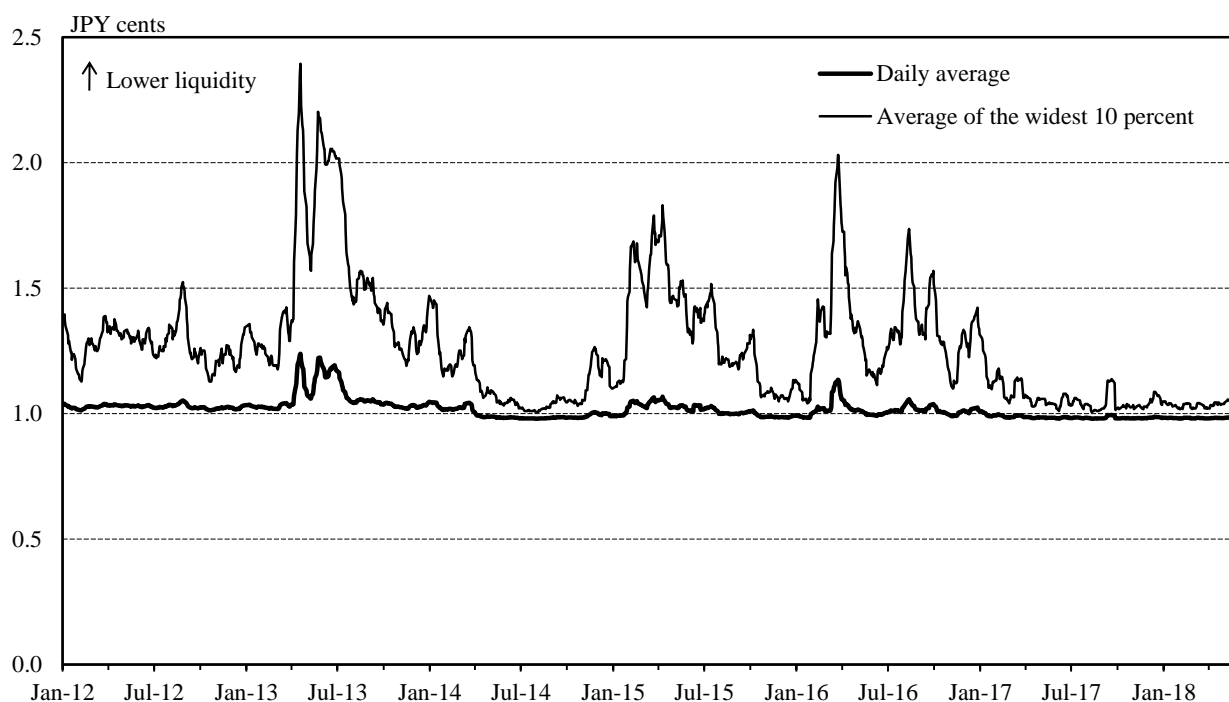
Sakiyama and Kobayashi [2018] “Liquidity in the JGB Cash Market: An Evaluation from Detailed Transaction Data,” Bank of Japan Research Papers, March 2018.

JGB Futures Market: Transaction Volume and Bid-ask Spreads

(1) Transaction Volume



(2) Bid-ask Spreads



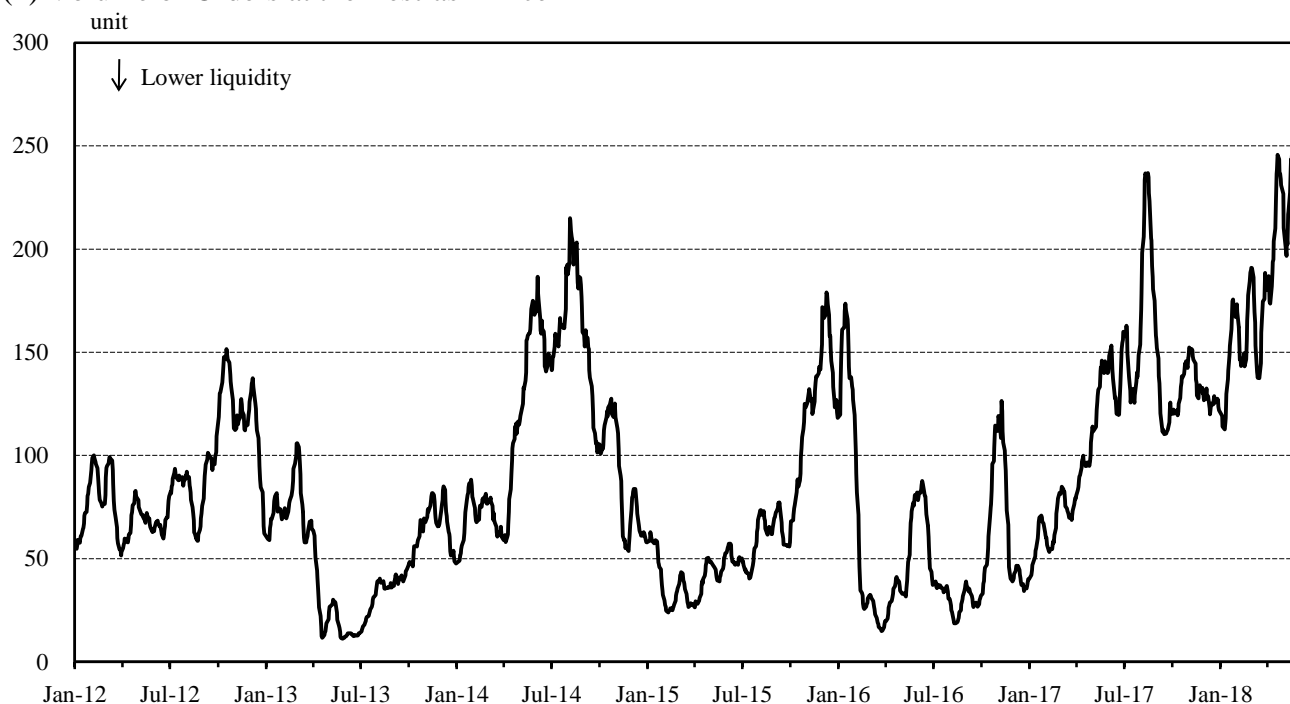
Notes: 1. "Daily average" in (2) is the average of bid-ask spreads with a 1-minute frequency. "Average of the widest 10 percent" in (2) is the average of the widest 10 percent of the bid-ask spread with a 1-minute frequency.

2. 10-day backward moving average. Latest data as at end-May 2018.

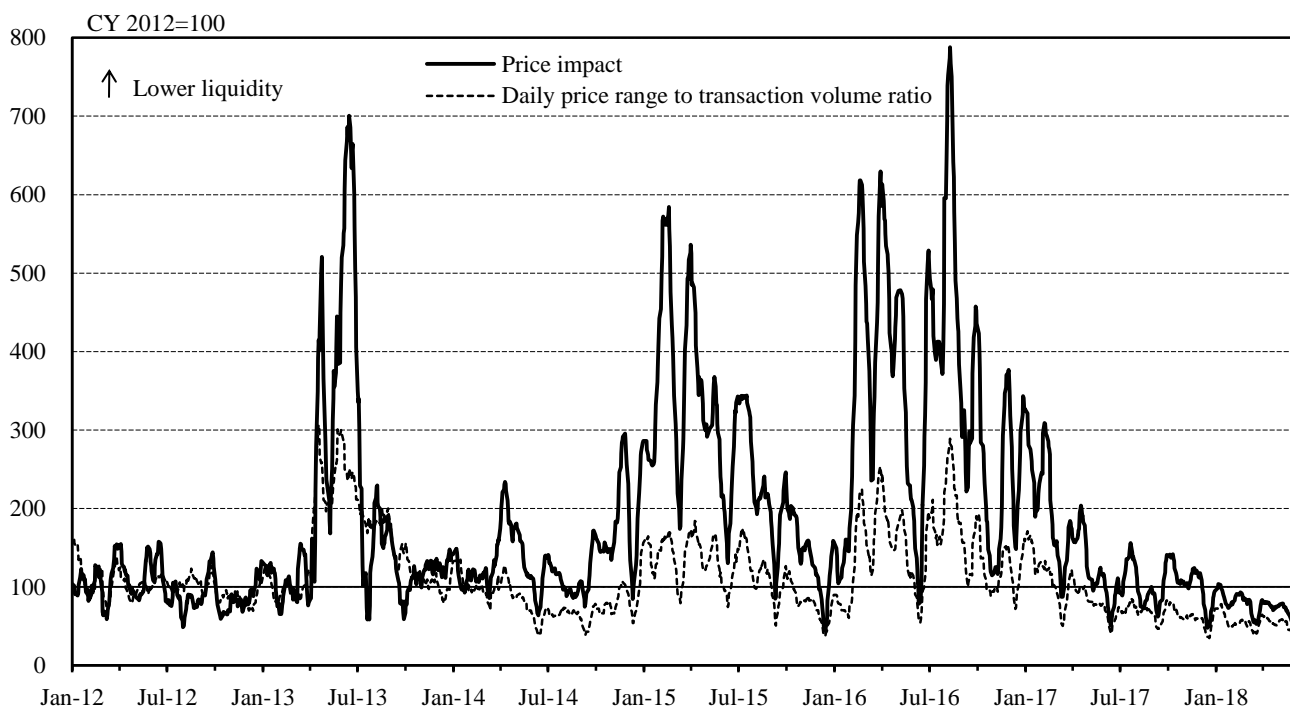
Sources: QUICK; Osaka Exchange, Inc.; Nikkei Inc., "NEEDS."

JGB Futures Market: Market Depth and Resiliency

(1) Volume of Orders at the Best-ask Price



(2) Price Impact

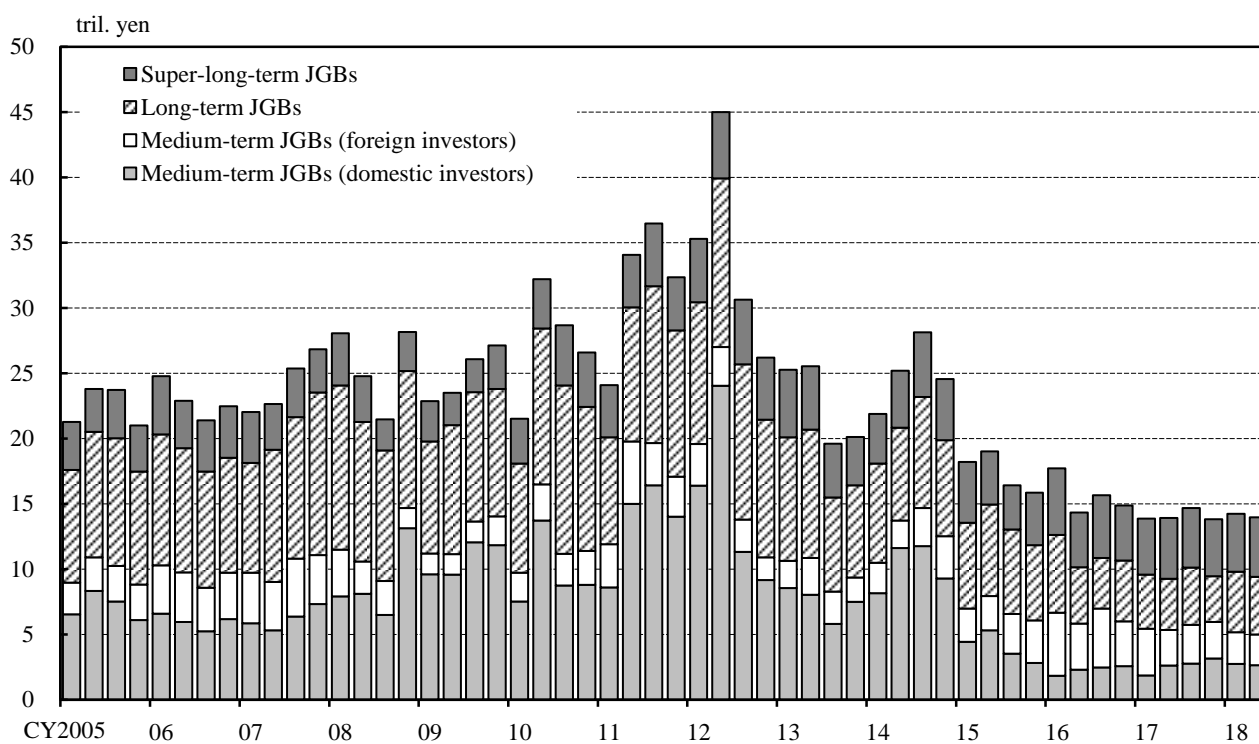


- Notes: 1. (1) is calculated by taking the median of the volume of orders at the best-ask price with a 1-minute frequency.
 2. "Price impact" in (2) is the average price impact with a 5-minute frequency. "Daily price range to transaction volume ratio" in (2) is daily price range (difference between the highest and the lowest prices) divided by transaction volume.
 3. 10-day backward moving average. Latest data as at end-May 2018.

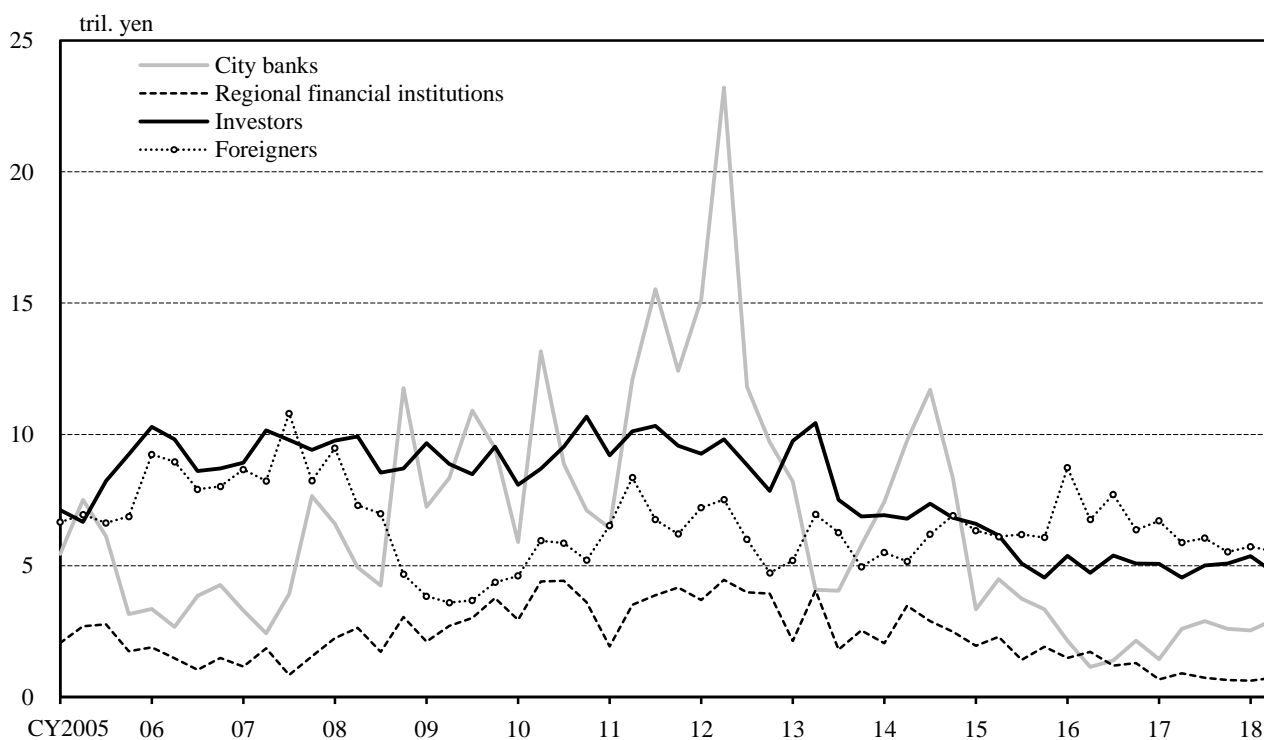
Sources: Nikkei Inc., "NEEDS;" QUICK; Osaka Exchange, Inc.

JGB Cash Market: Dealer-to-client Transaction Volume

(1) Monthly Transaction Volume (Gross Amount Purchased by Clients)



(2) Monthly Transaction Volume by Clients (Gross Amount Purchased by Clients)



Notes: 1. Treasury Discount Bills, etc. are excluded from the transaction volume.

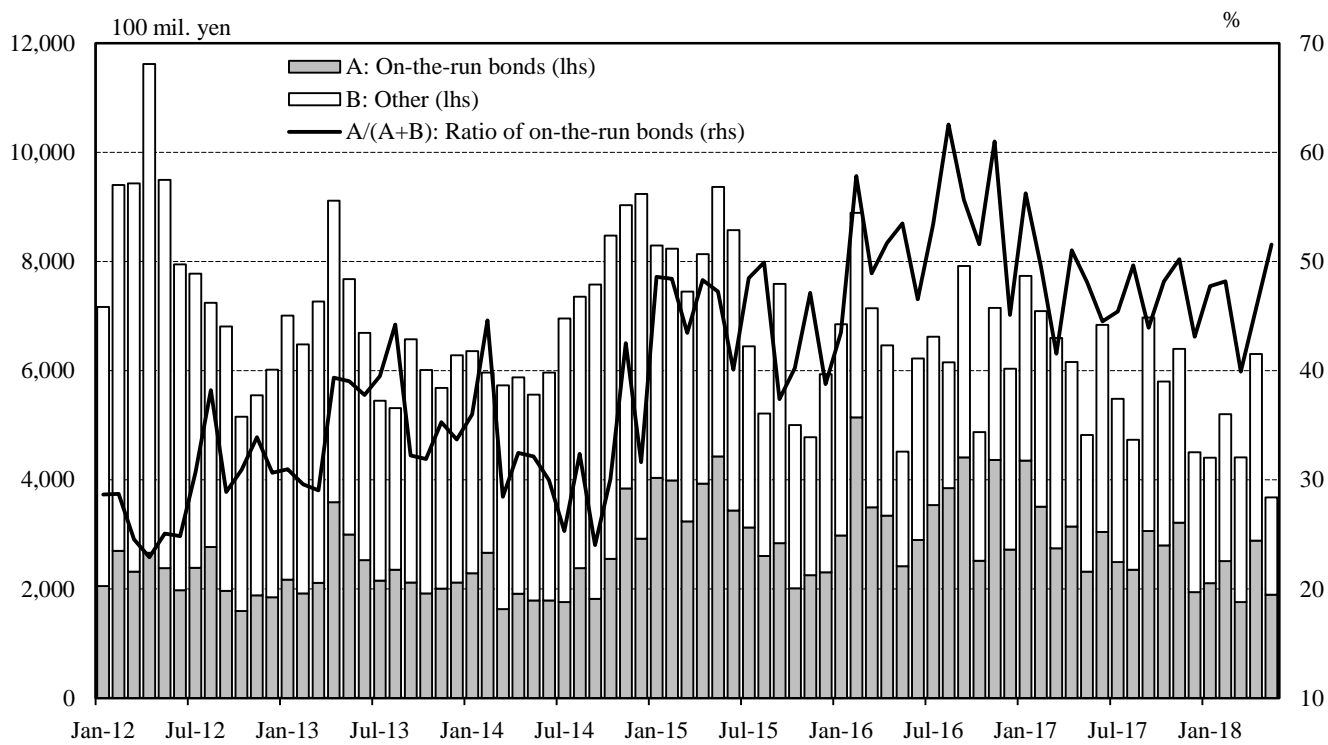
2. "Clients" include city banks, regional financial institutions, investors, and foreigners. Other institutions (government, Bank of Japan, Japan Post Bank, Japan Post Insurance, business corporations, other financial institutions, etc.) are excluded from "clients."

3. Latest data as at April-May 2018.

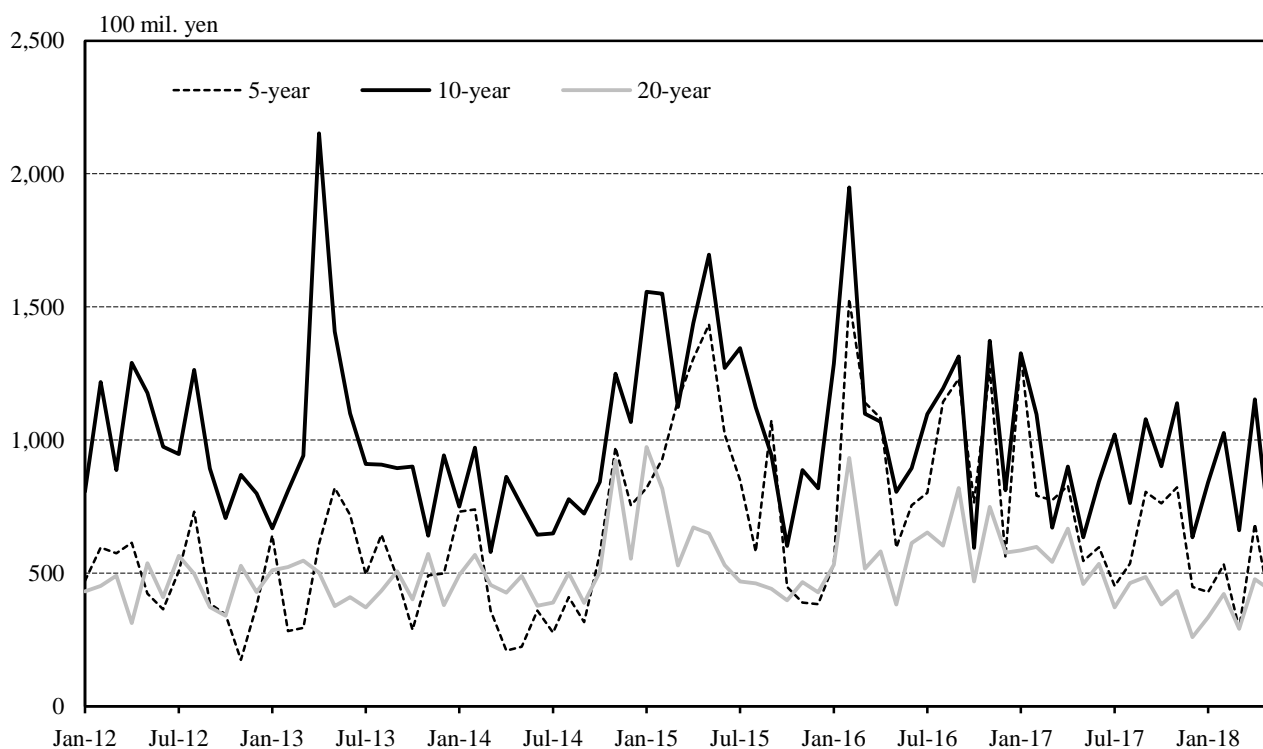
Source: Japan Securities Dealers Association.

JGB Cash Market: Inter-dealer Transaction Volume

(1) Daily Transaction Volume



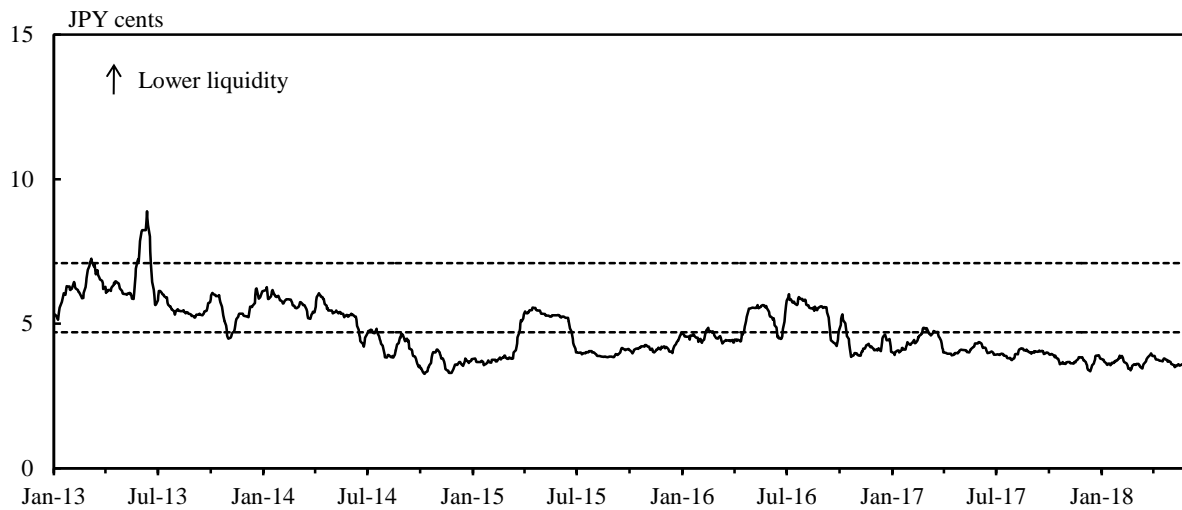
(2) Daily Transaction Volume of On-the-run Bonds by Maturity



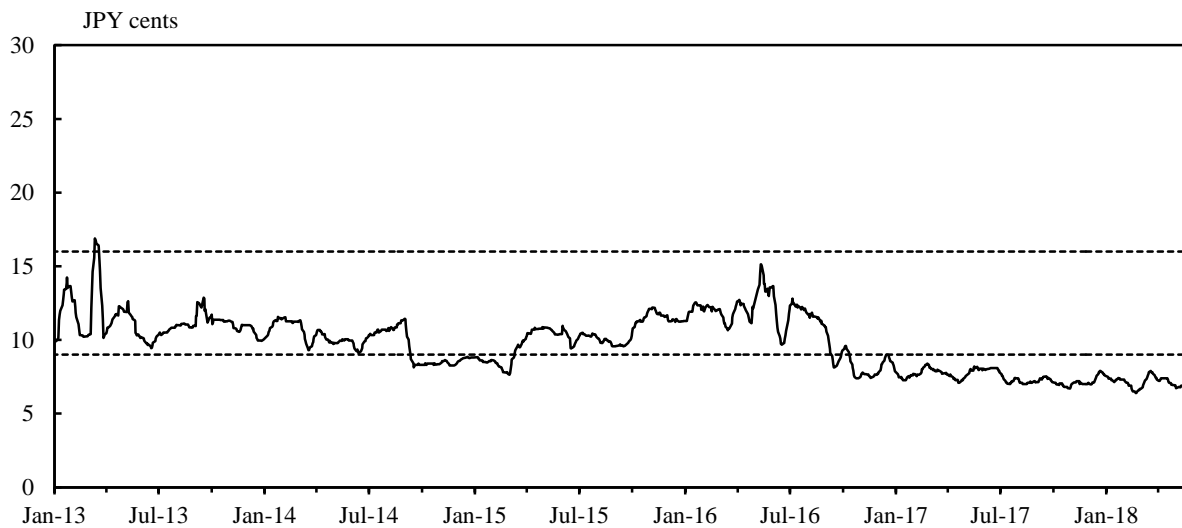
Notes: 1. Daily transaction volume in (1) is the sum of 2-year, 5-year, 10-year, 20-year, 30-year, and 40-year JGBs via Japan Bond Trading.
 2. Latest data as at end-May 2018.
 Source: QUICK.

JGB Cash Market: Bid-ask Spreads of Dealer-to-client Transactions

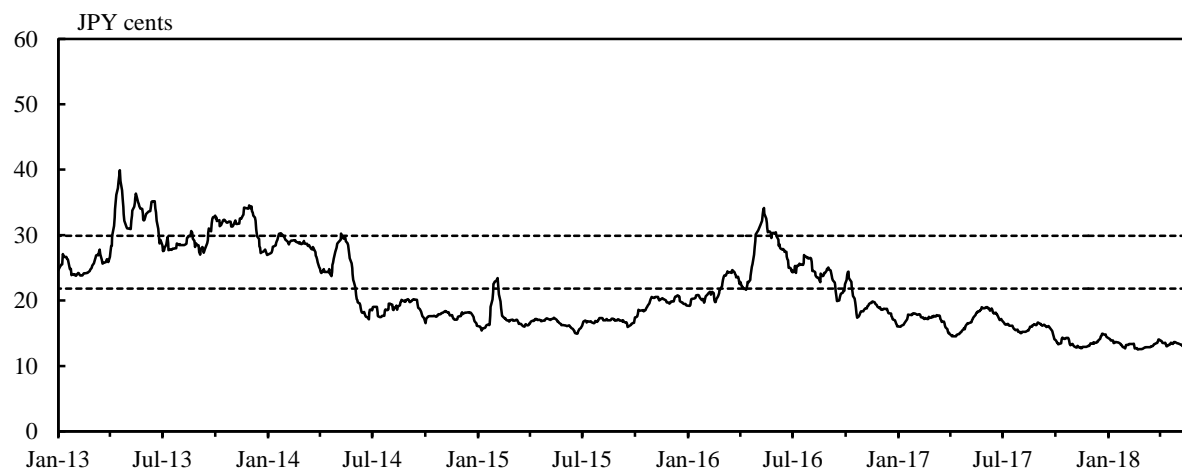
(1) 5-year JGBs



(2) 10-year JGBs



(3) 20-year JGBs



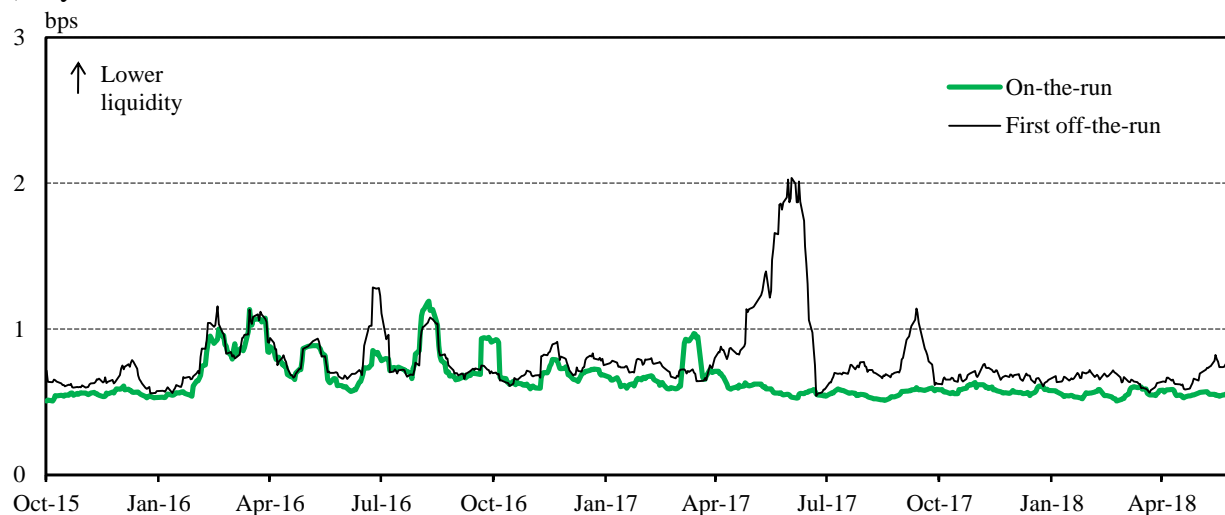
Notes: 1. Quotations through Trade web as of 3:00 p.m. Dotted lines indicate the first/third quartile spreads between January 2010 and March 2013.

2. 10-day backward moving average. Latest data as at end-May 2018.

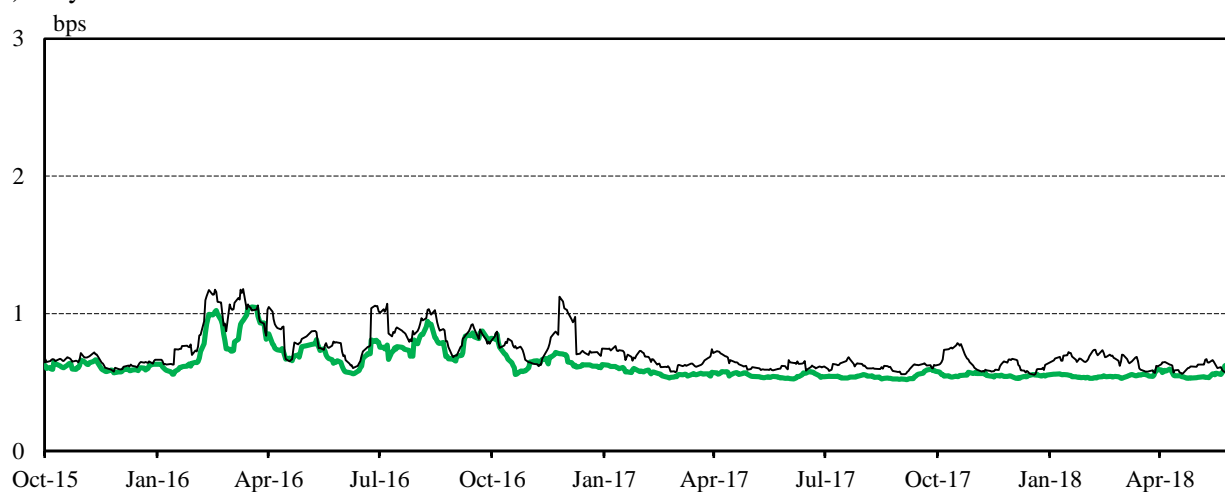
Source: Thomson Reuters.

JGB Cash Market: Bid-ask Spreads of Inter-dealer Transactions

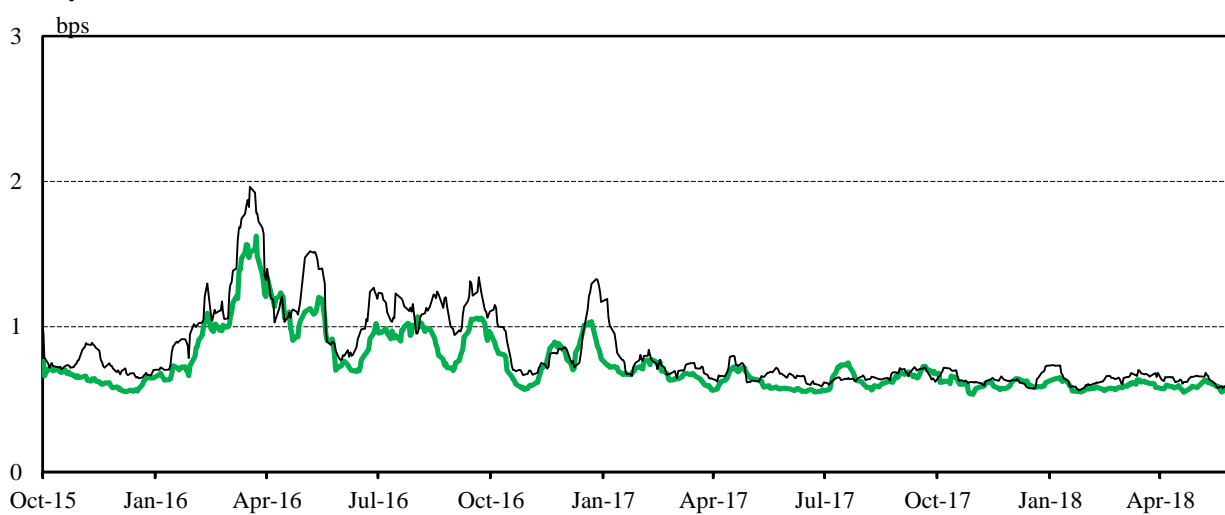
(1) 5-year JGBs



(2) 10-year JGBs



(3) 20-year JGBs

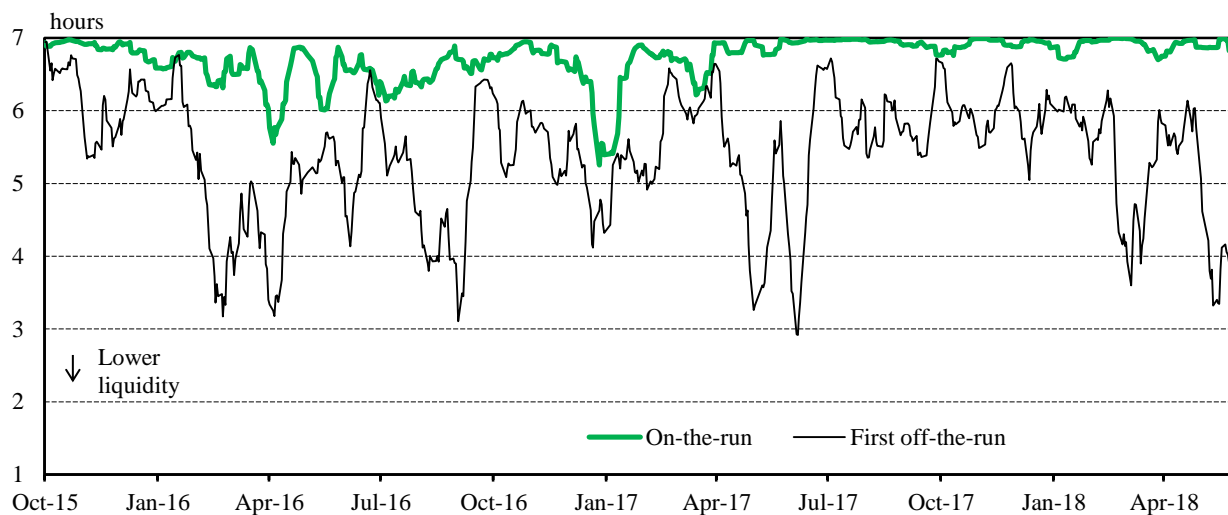


- Notes: 1. Figures indicate the average of bid-ask spreads with a 1-second frequency.
 2. Bid-ask spreads are calculated only for time periods in which both best-bid and best-ask prices were submitted.
 3. 10-day backward moving average. Latest data as at end-May 2018.

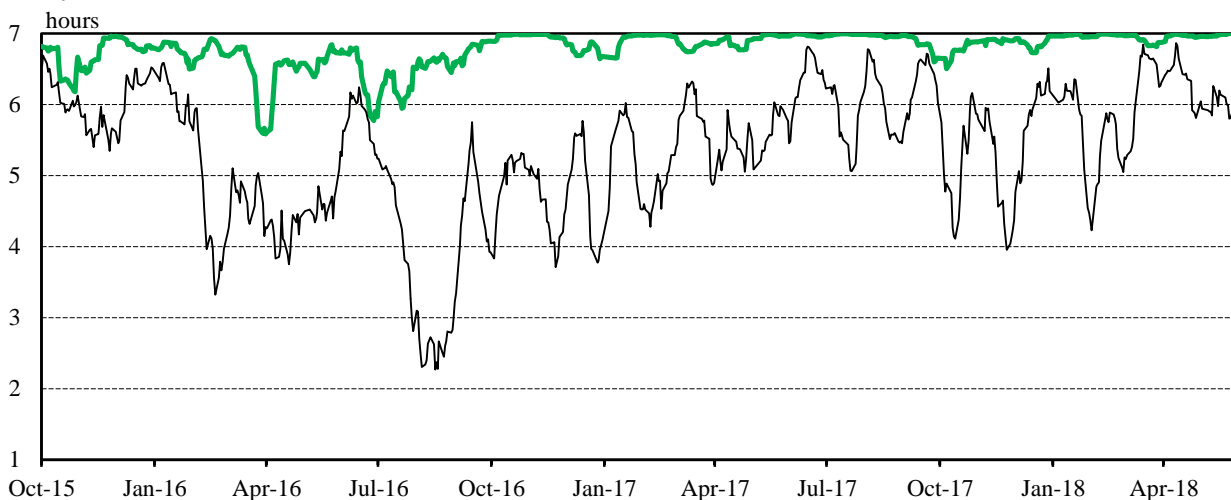
Source: Japan Bond Trading.

JGB Cash Market: Total Observation Time of Bid-ask Spreads of Inter-dealer Transactions

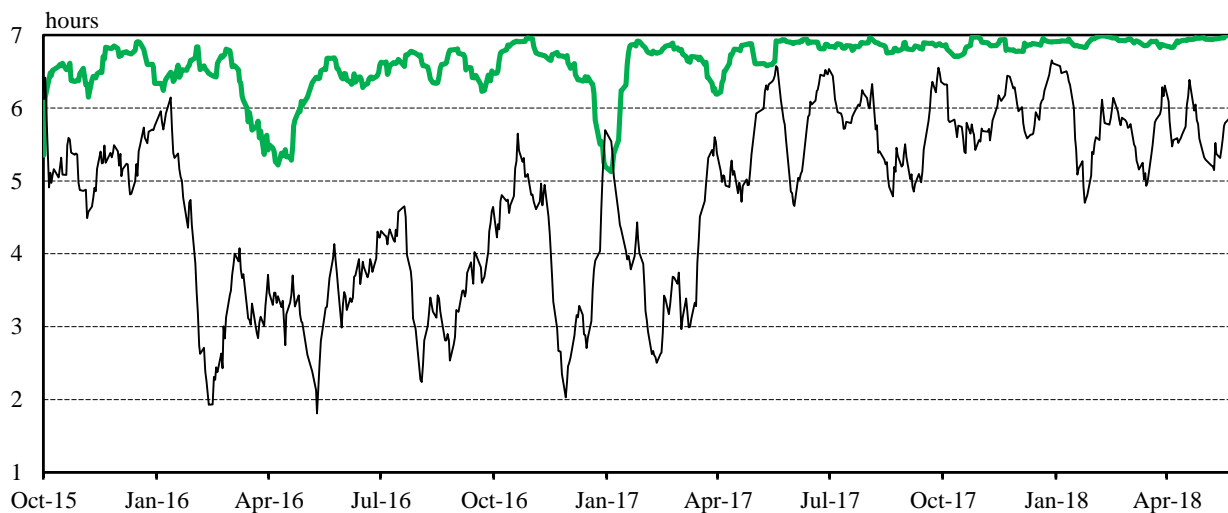
(1) 5-year JGBs



(2) 10-year JGBs



(3) 20-year JGBs



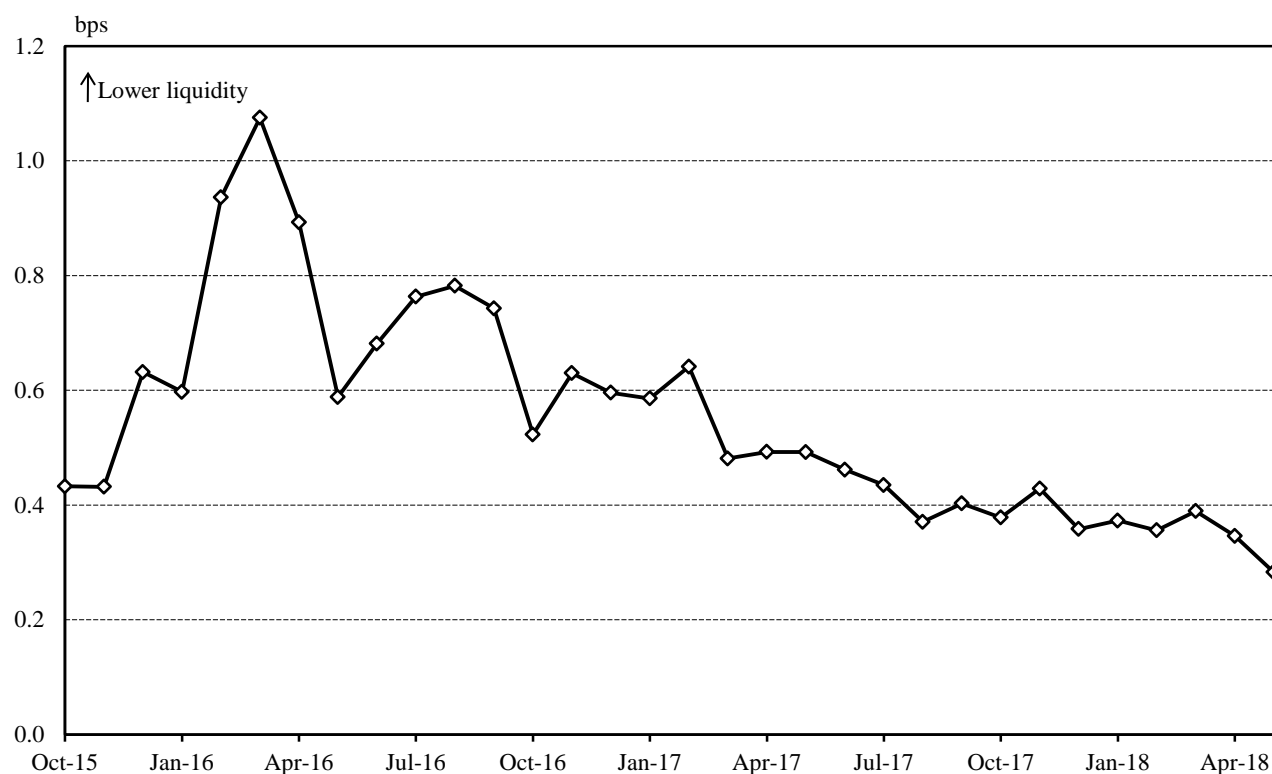
Notes: 1. Figures indicate the total length of time in which both best-bid and best-ask prices were submitted.

2. 10-day backward moving average. Latest data as at end-May 2018.

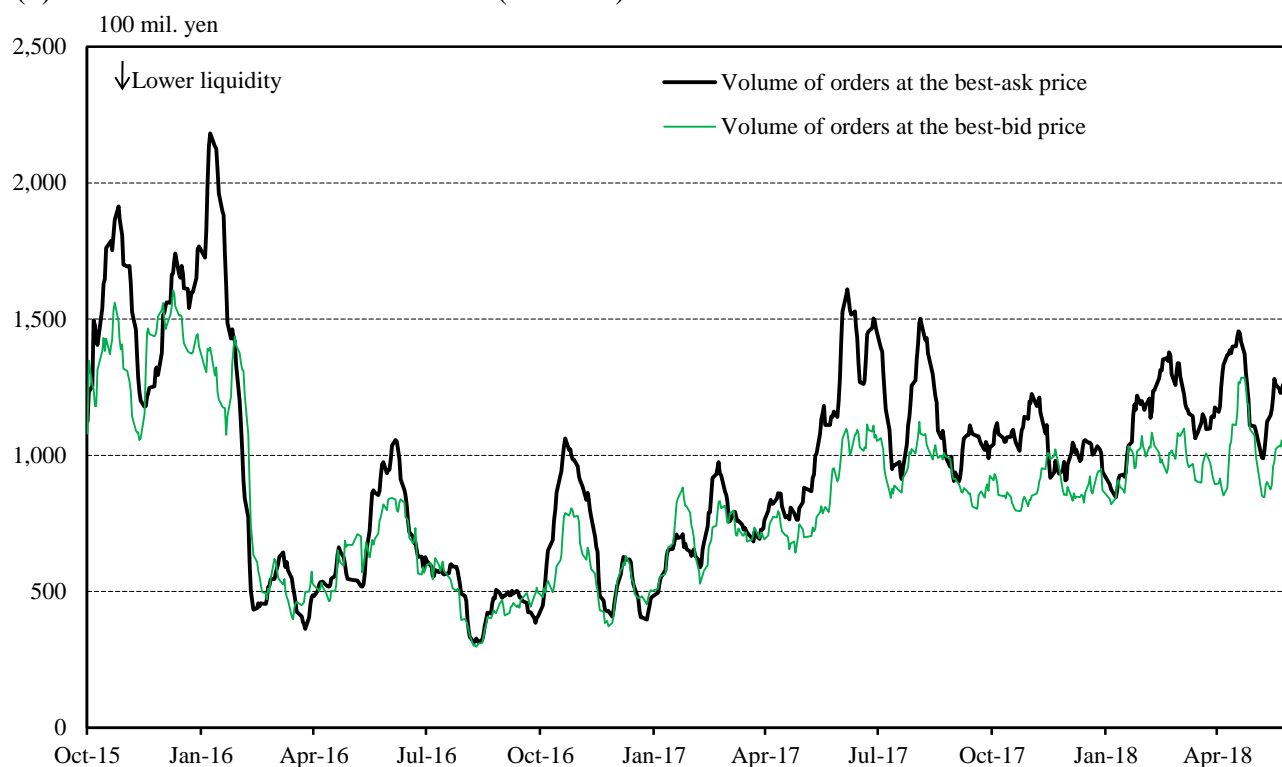
Source: Japan Bond Trading.

JGB Cash Market: Market Depth

(1) Best-worst Quote Spreads of Dealer-to-client Transactions



(2) Volume of Orders at the Best-ask (Best-bid) Price of Inter-dealer Transactions

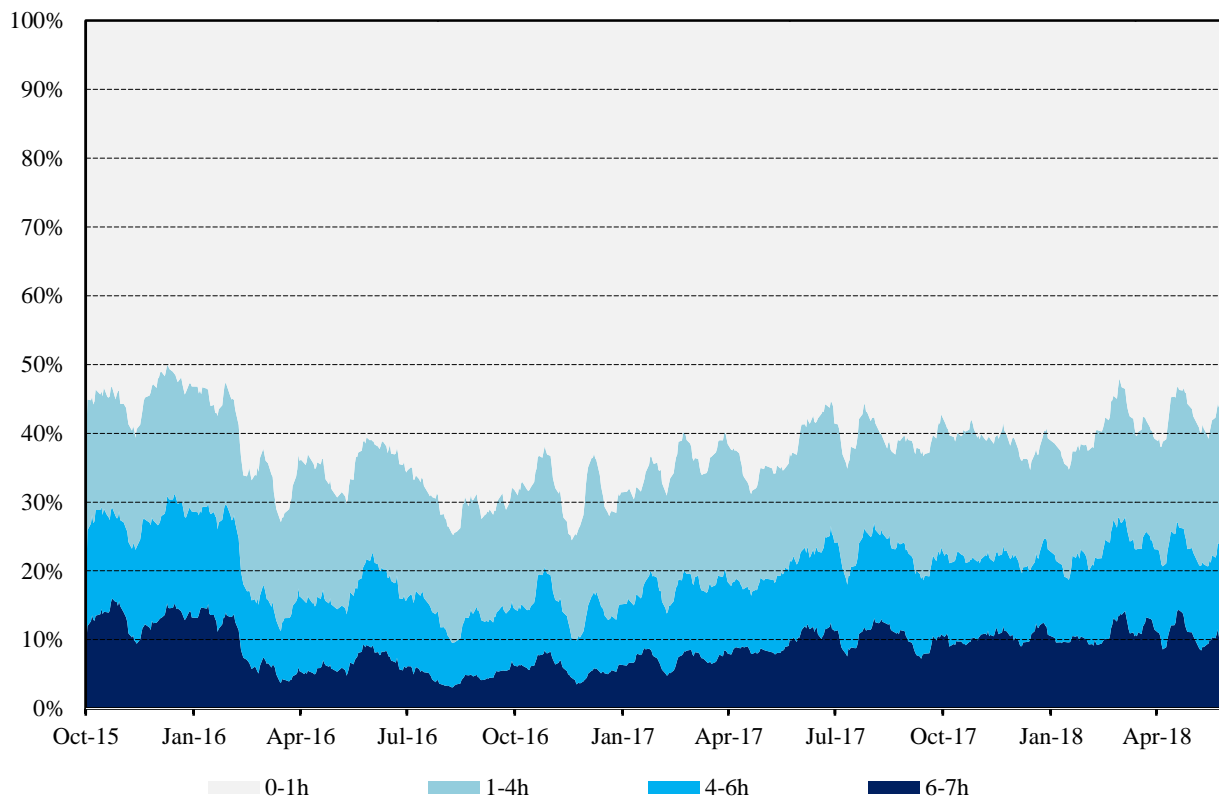


- Notes: 1. (1) is calculated by averaging the spreads between the best and worst quotes offered by dealers against each client request. Transactions with spreads wider than 10 bps are excluded from the calculation.
2. (2) is calculated by summing up the median of volume of orders at the best-ask (best-bid) price with a 1-second frequency per issue. 10-day backward moving average.
3. Latest data as at end-May 2018.

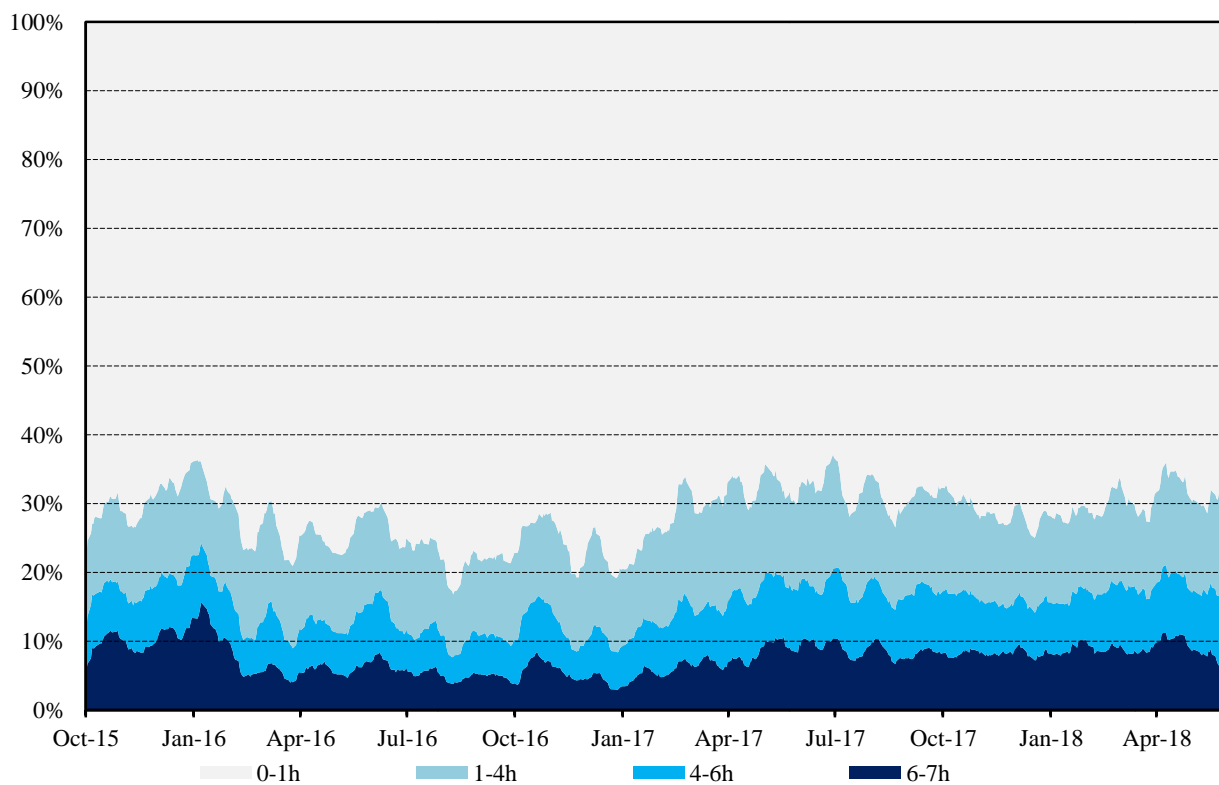
Sources: Yensai.com; Japan Bond Trading.

JGB Cash Market: Ratio of Issues by Total Observation Time of the Best-bid (Best-ask) Price of Inter-dealer Transactions

(1) Ratio of Issues by Total Observation Time of the Best-bid Price



(2) Ratio of Issues by Total Observation Time of the Best-ask Price



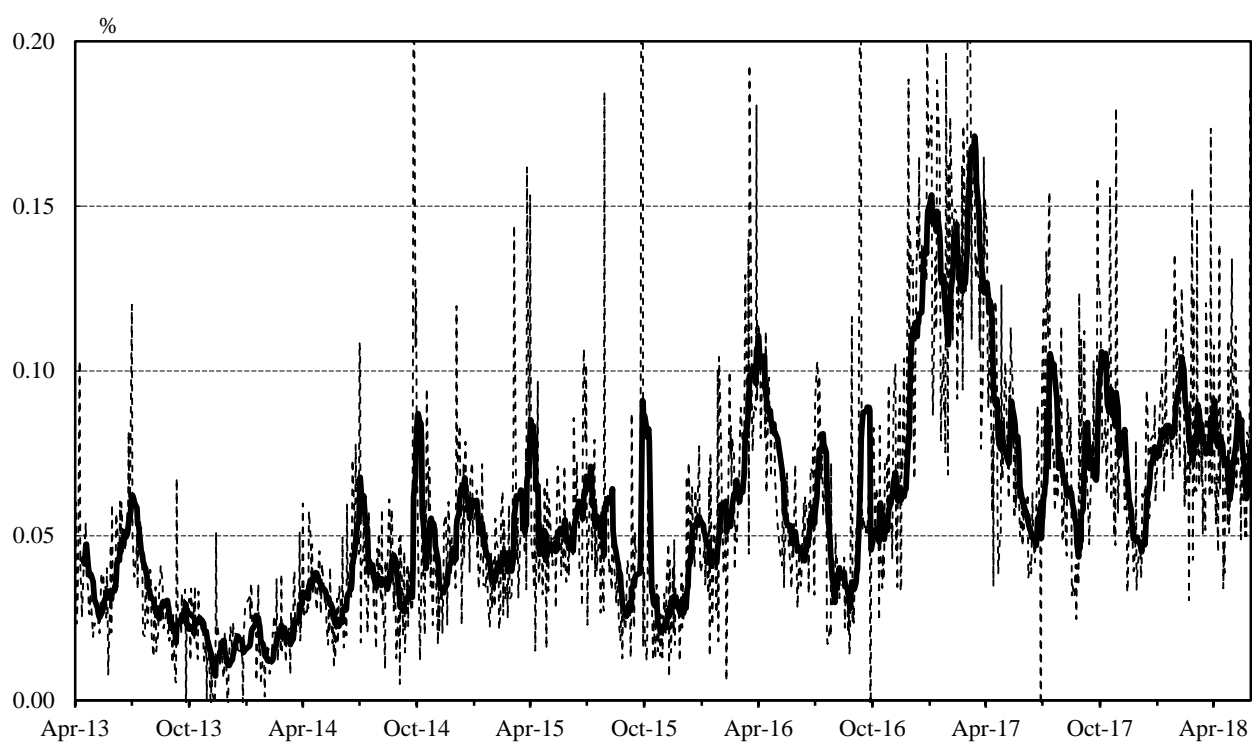
Notes: 1. Figures indicate the percentage of issues by daily observation time, 0-1hours, 1-4hours, 4-6hours, 6-7 hours, of best-bid (best-ask) prices.

2. 10-day backward moving average. Latest data as at end-May 2018.

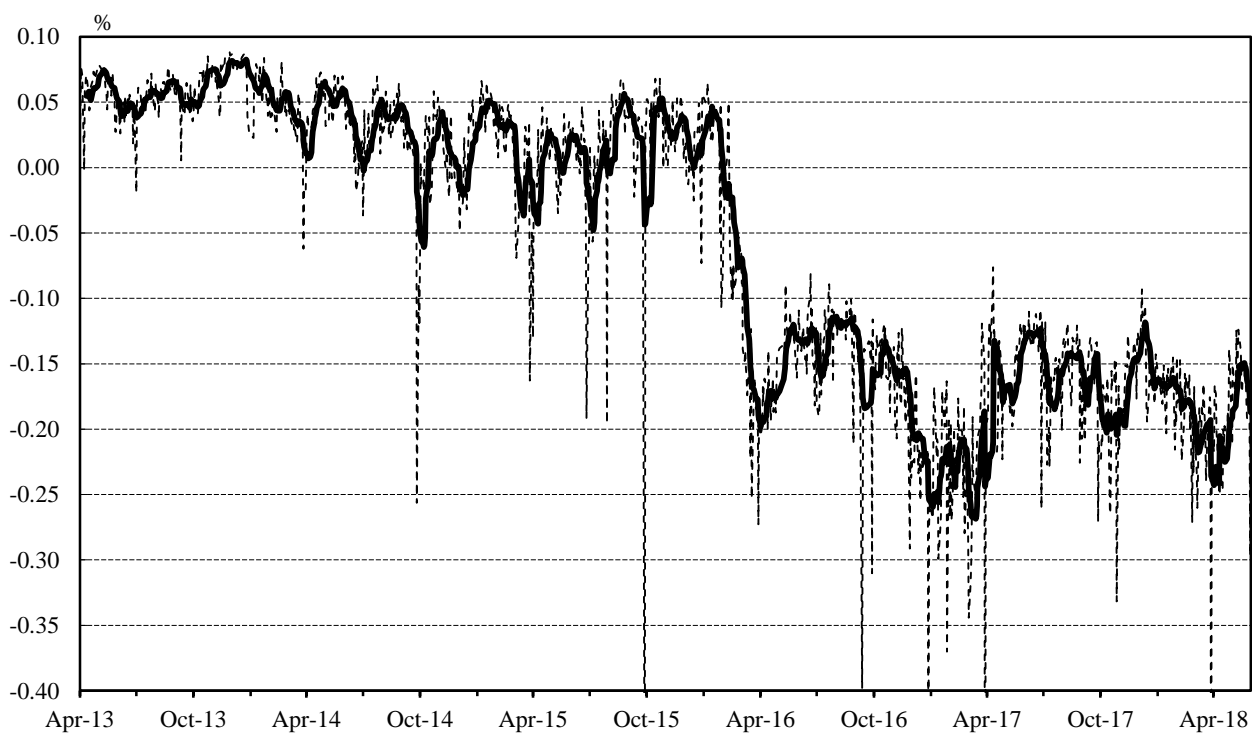
Source: Japan Bond Trading.

SC Repo Market: Scarcity of Specific Issues

(1) GC-SC Repo Rate Spreads



(2) SC Repo Rates



Notes: 1. SC repo rates are calculated by volume weighted average of all traded issues for S/N trades (until April 2018) or T/N trades (from May 2018). GC repo rates are defined by the Tokyo Repo Rate (until April 2018; T/N, from May; O/N).
2. The bold lines indicate 10-day backward moving average. Latest data as at end-May 2018.

Sources: JBond Totan Securities; Japan Securities Dealers Association.