

## Liquidity Indicators in the JGB Markets<sup>\*</sup>

### Indicators in the JGB Futures Market

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### Indicators in the SC Repo Market

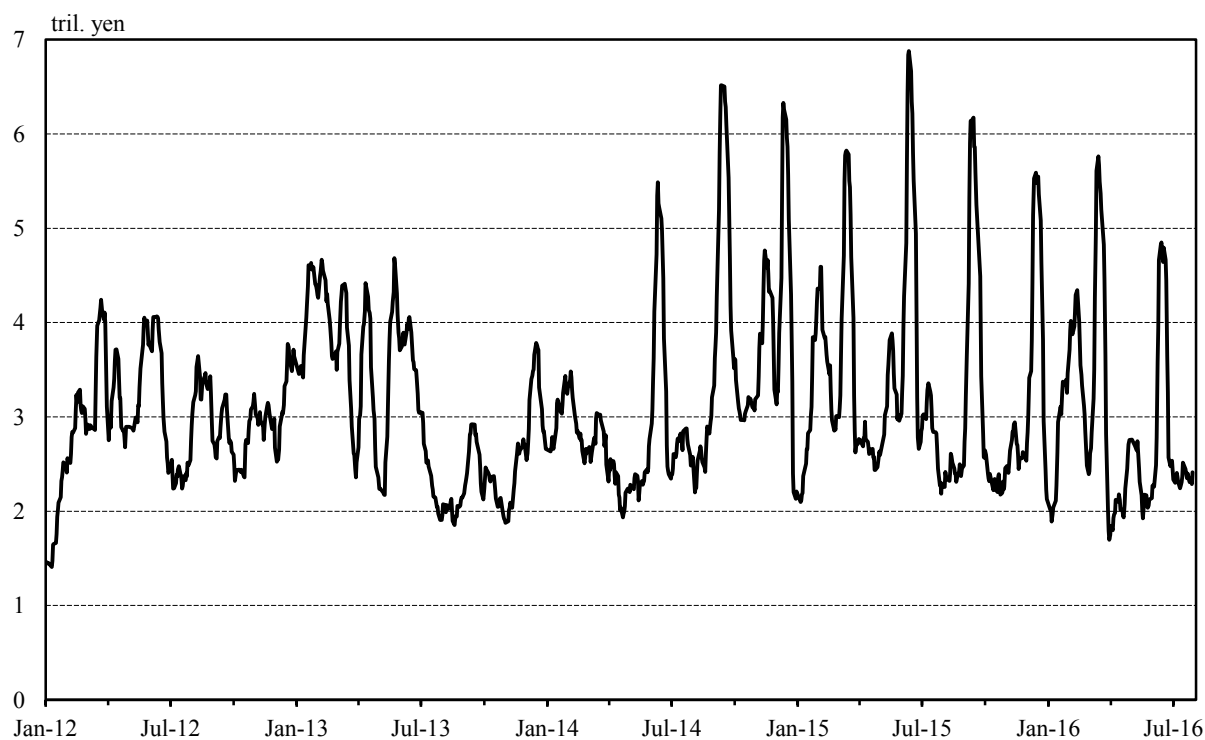
- Chart 10: GC-SC Repo Rate Spreads
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<sup>\*</sup> As for the definition of each indicator, refer to Kurosaki, Kumano, Okabe, and Nagano [2015] “Liquidity in JGB Markets: An Evaluation from Transaction Data,” *Bank of Japan Working Paper Series*, No.15-E-2, May 2015.

## Indicators in the JGB Futures Market: Transaction Volume and Trade Size

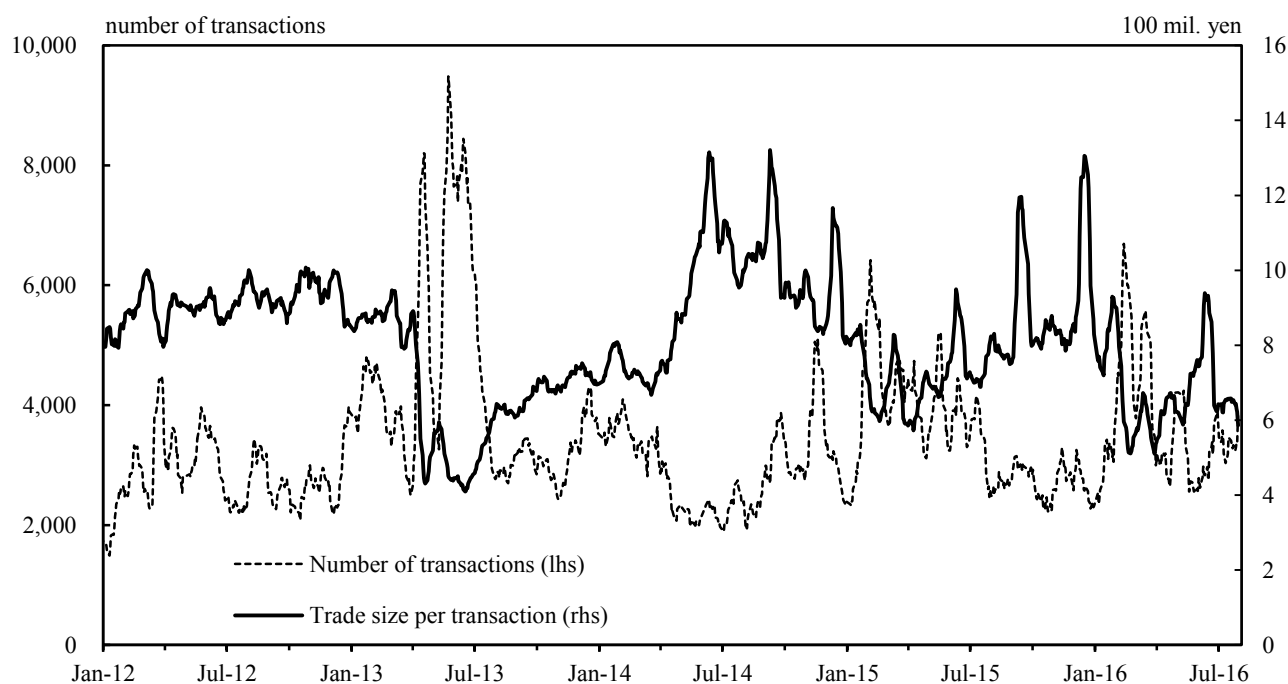
### (1) Transaction Volume of JGB Futures



Note: 10-day backward moving average. The latest data are as of end-July 2016.

Sources: QUICK; Osaka Exchange, Inc.

### (2) Number of Transactions and Trade Size per Transaction

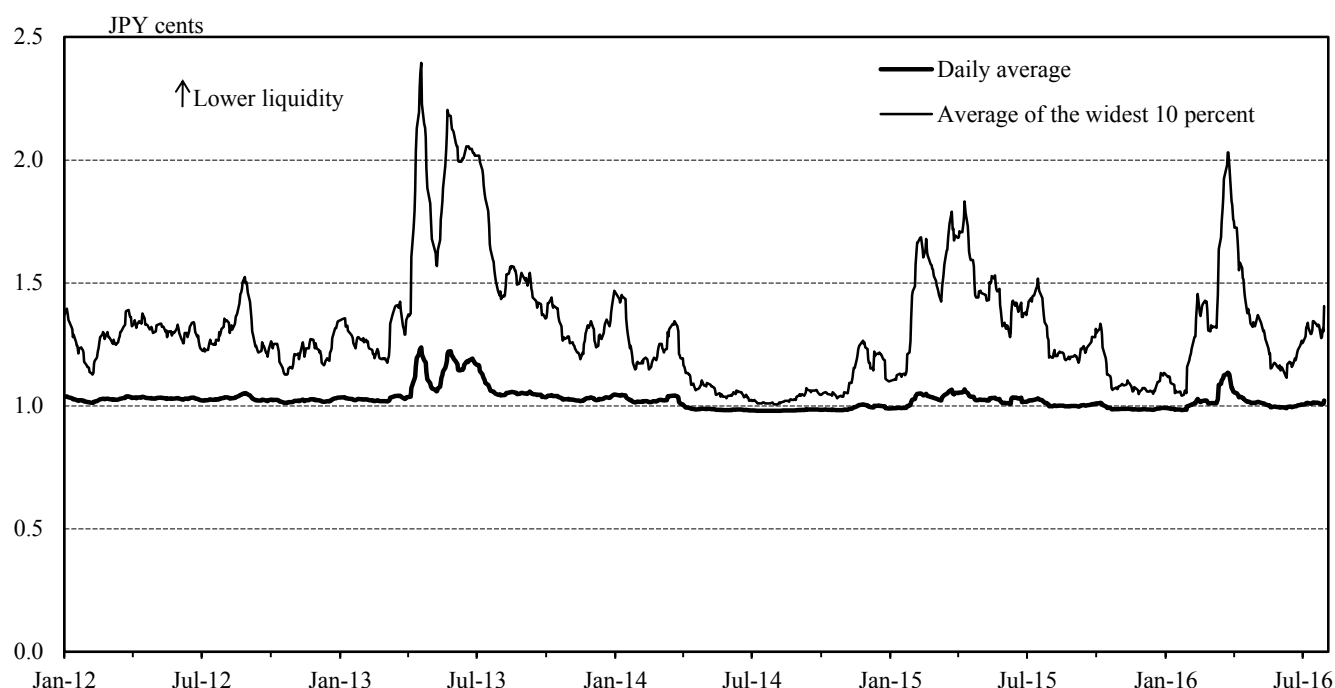


Note: 10-day backward moving average. The latest data are as of end-July 2016.

Source: Nikkei Inc., "NEEDS."

## Indicators in the JGB Futures Market: Bid-ask Spreads

### (1) Bid-ask Spreads (Daily Average and Average of the Widest 10 percent)



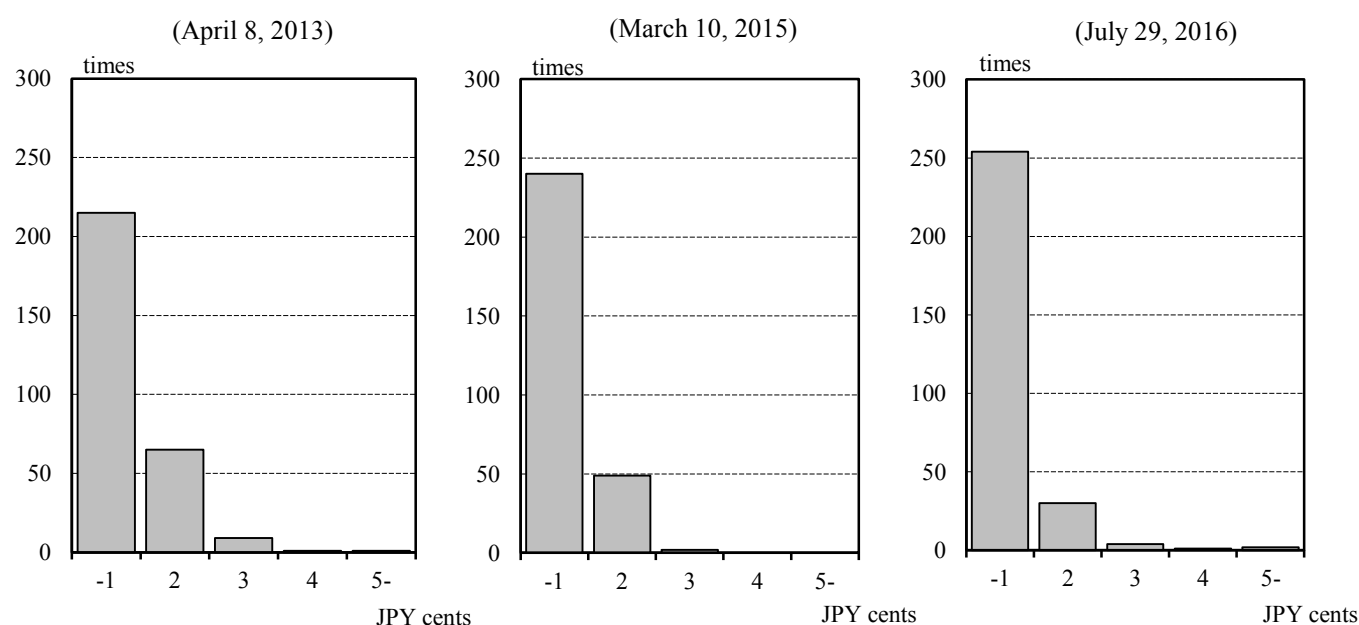
Notes: 1. The latest data are as of end-July 2016.

2. "Daily average" is the average of the bid-ask spread data with a 1-minute frequency within each business day.

"Average of the widest 10 percent" is the average of the widest 10 percent of that data.

A 10-day backward moving average is then applied to both time-series.

### (2) Histogram of the Bid-ask Spreads



Notes: 1. Figures are calculated by summing up the appearance frequency of the bid-ask spread with a 1-minute frequency within each business day.

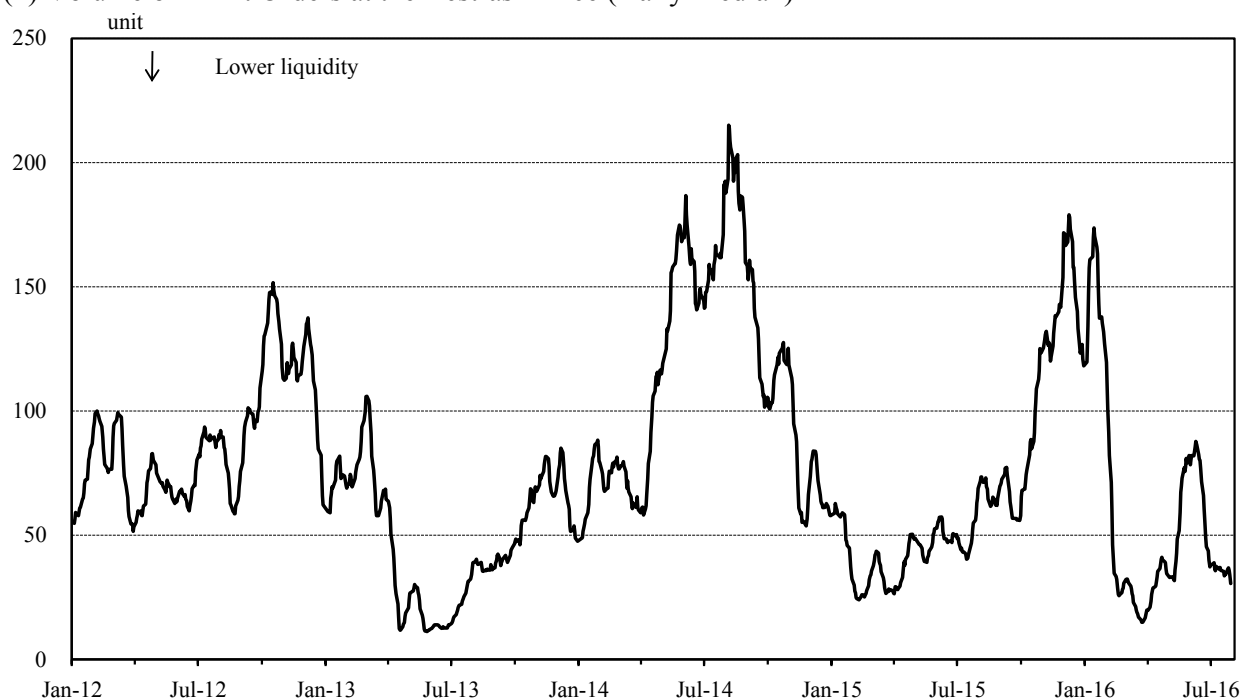
2. March 10, 2015 is the day on which "average of the widest 10 percent" is the largest during 2015.

3. July 29, 2016 is the day on which "average of the widest 10 percent" is the largest between May and July 2016.

Source: Nikkei Inc., "NEEDS."

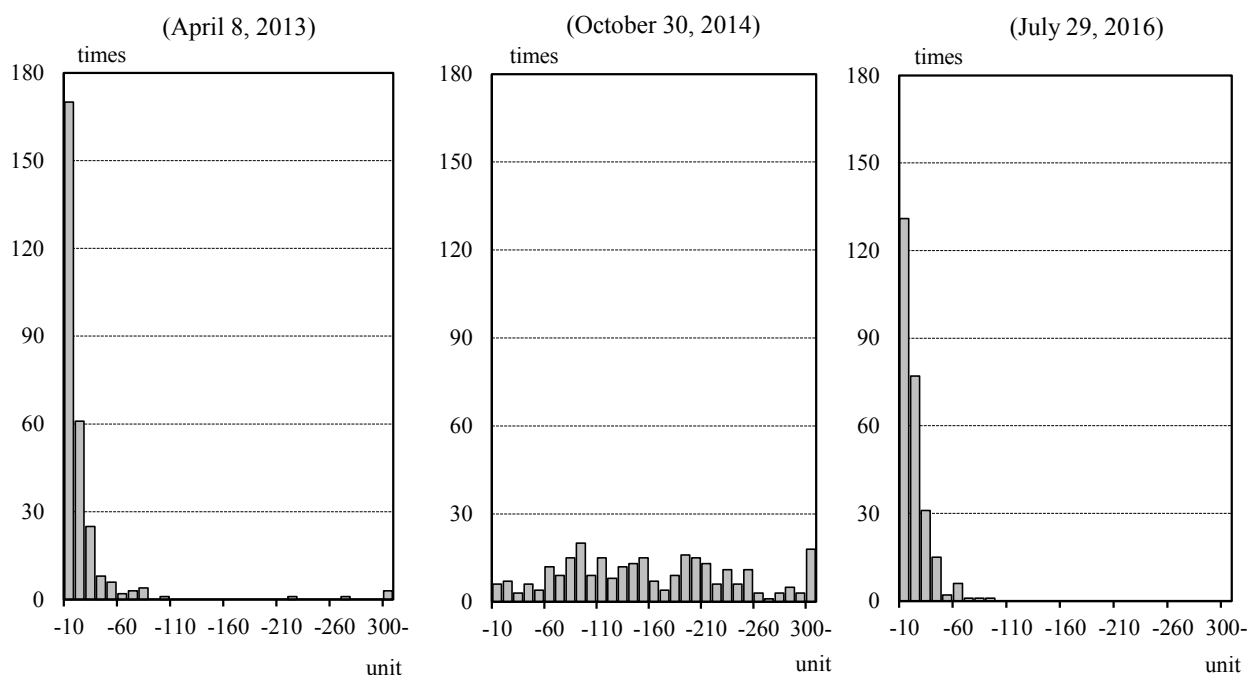
## Indicators in the JGB Futures Market: Volume of Limit Orders at the Best-ask Price (Market Depth)

### (1) Volume of Limit Orders at the Best-ask Price (Daily Median)



Note: Figures are calculated by taking the median of the volume of limit orders at the best-ask price with a 1-minute frequency within each business day, and then applying a 10-day backward moving average. The latest data are as of end-July 2016.

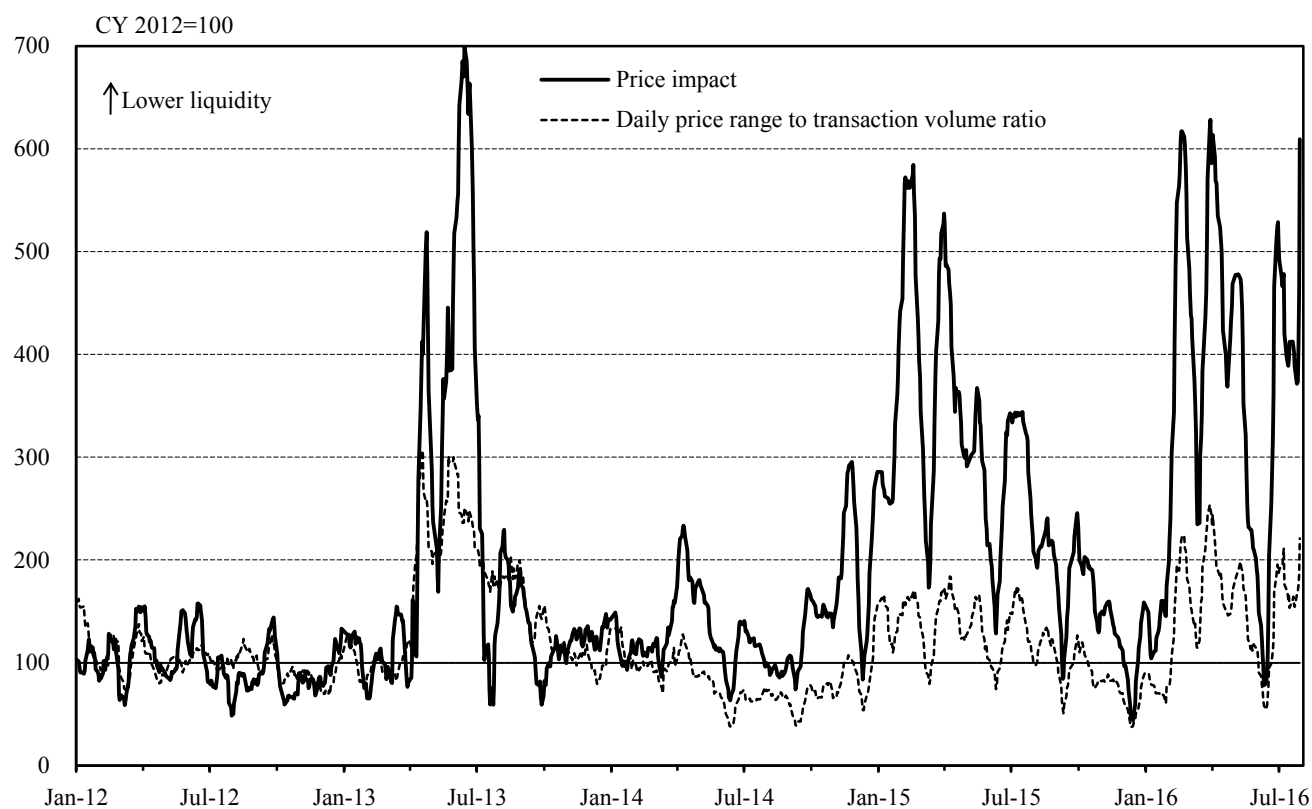
### (2) Histogram of Volume of Limit Orders at the Best-ask Price



Note: Figures are calculated by summing up the appearance frequency of the volume of limit orders at the best-ask price with a 1-minute frequency within each business day.

Source: Nikkei Inc., "NEEDS."

# Indicators in the JGB Futures Market: Price Impact

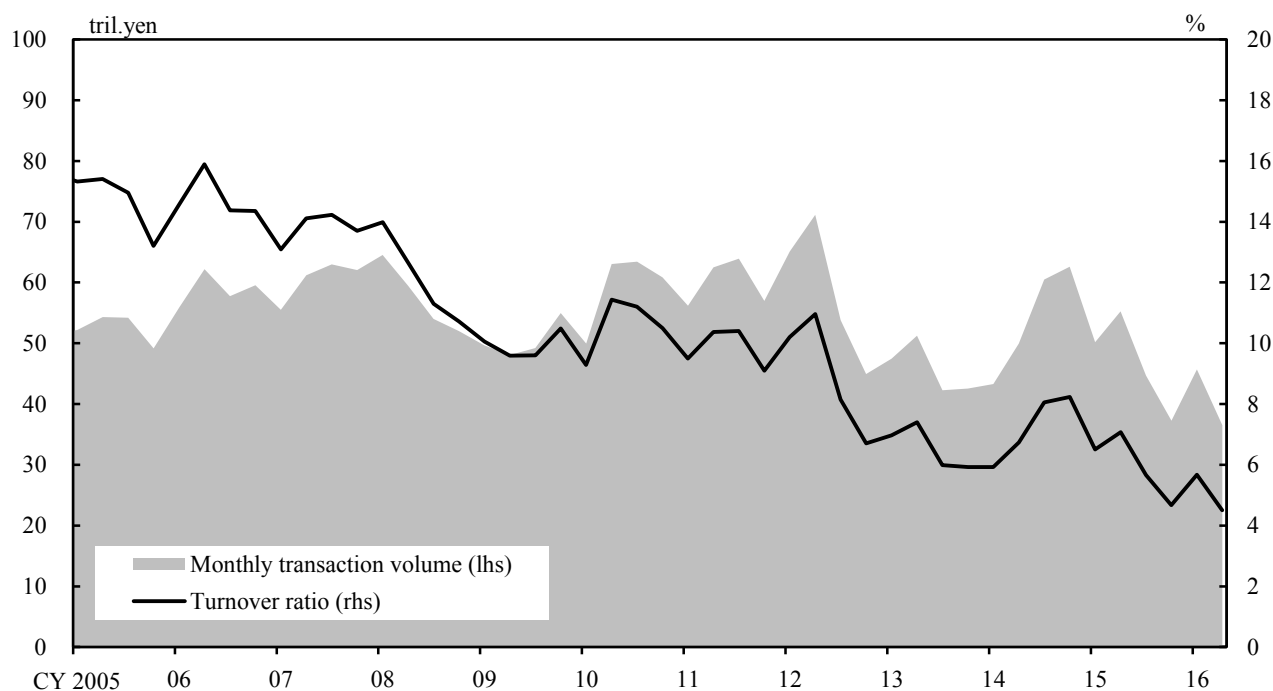


Note: "Price impact" is calculated by taking the average of each business day. A 10-day backward moving average is then applied to both time-series. The latest data are as of end-July 2016.

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

## Indicators in the JGB Cash Market: Inter-dealer Transaction Volume

### (1) Inter-dealer Monthly Transaction Volume



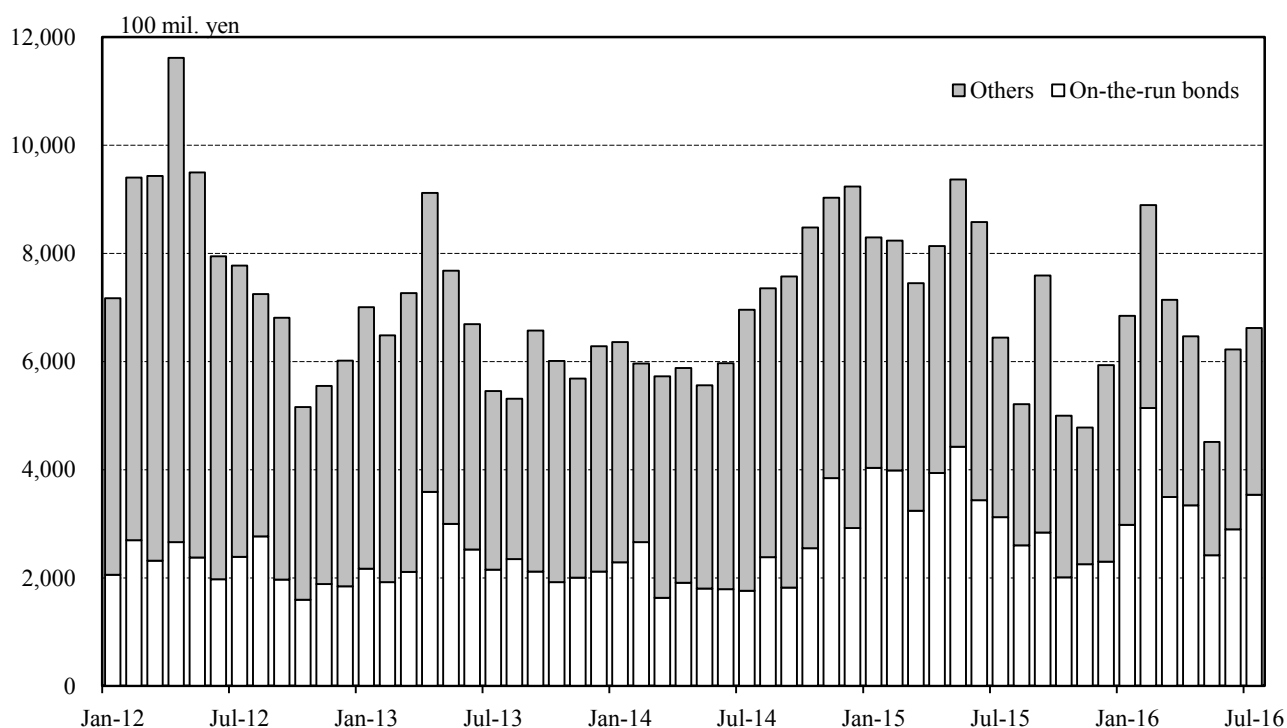
Notes: 1. The latest data are as of April-June 2016.

2. Treasury Discount Bills, etc. are excluded from transaction volume.

3. "Turnover ratio" is calculated by dividing the transaction volume by the outstanding amount.

Sources: Japan Securities Dealers Association; Ministry of Finance.

### (2) Inter-dealer Daily Transaction Volume (via Japan Bond Trading)



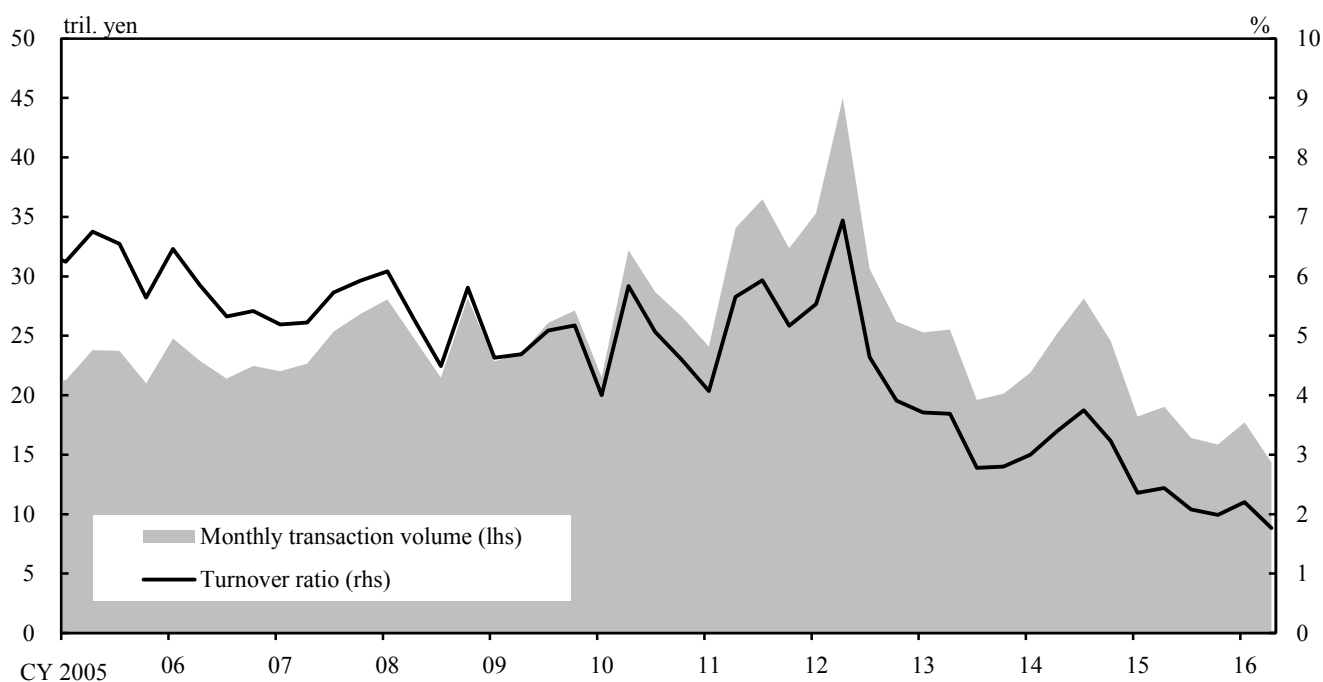
Note: Daily transaction volume of 2-year, 5-year, 10-year, 20-year, 30-year, and 40-year JGBs via Japan Bond Trading.

The latest data are as of July 2016.

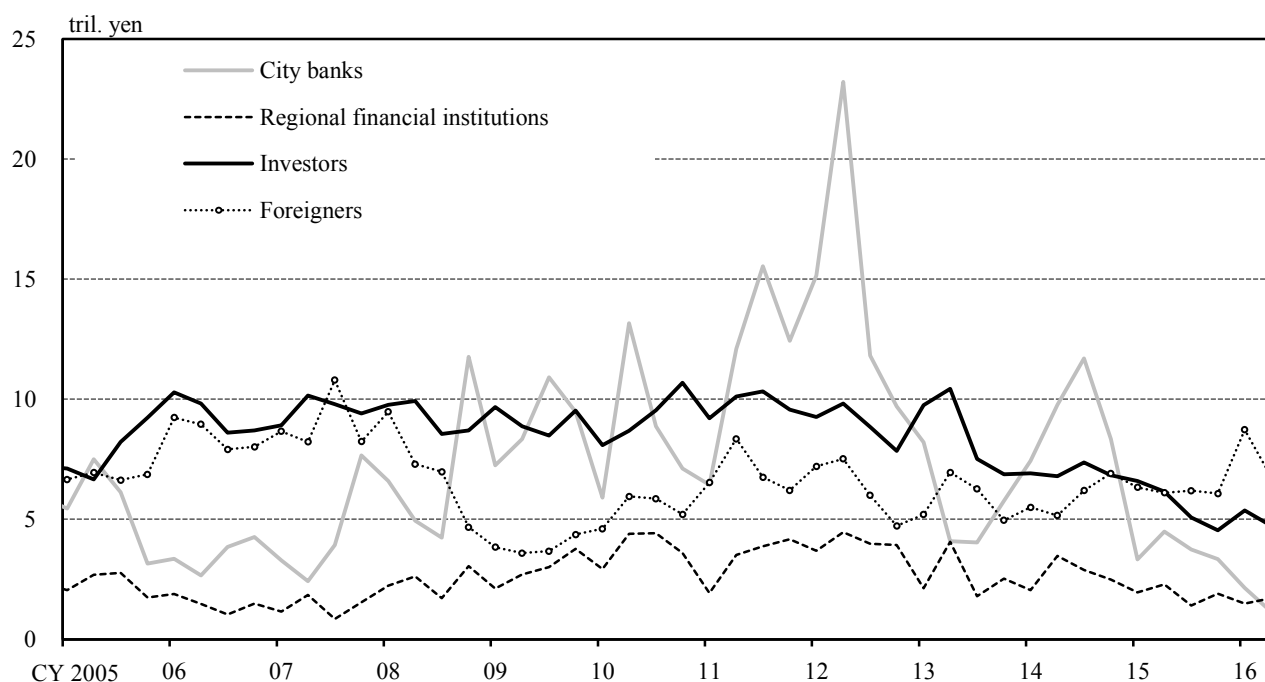
Source: QUICK.

## Indicators in the JGB Cash Market: Dealer-to-client Transaction Volume

### (1) Dealer-to-client Monthly Transaction Volume (Gross Amount Purchased by Clients)



### (2) Breakdown of Dealer-to-client Monthly Transaction Volume (Gross Amount Purchased by Clients)



Notes: 1. The latest data are as of April-June 2016.

2. Treasury Discount Bills, etc. are excluded from transaction volume.

3. "Turnover ratio" is calculated by dividing the transaction volume by the outstanding amount.

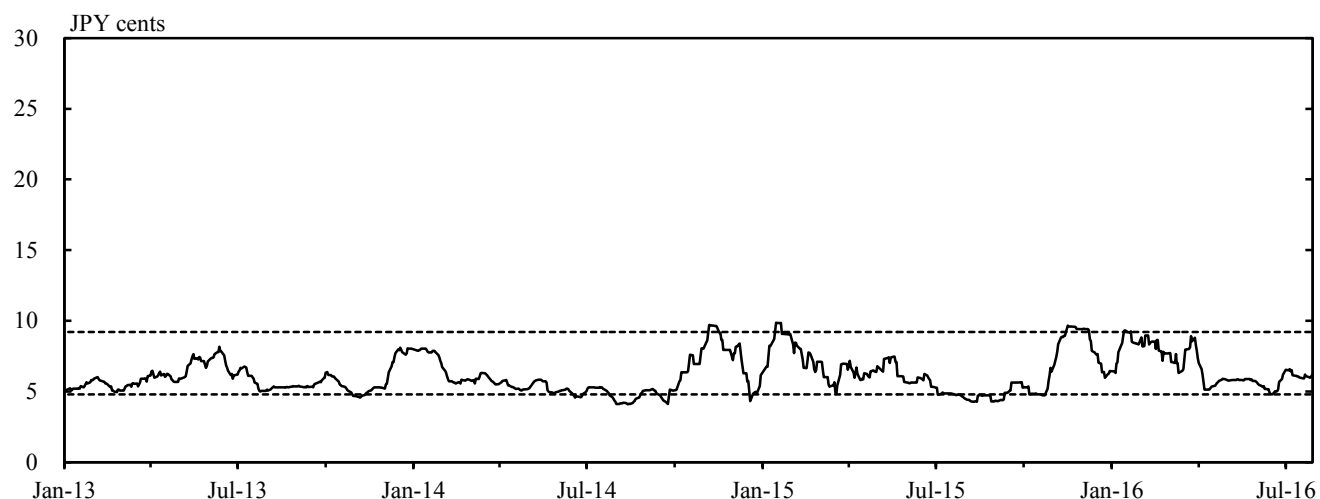
4. Government, Japan Post Bank, Japan Post Insurance, Bank of Japan, etc. are excluded from "clients."

5. "Investors" are agricultural, forestry and fishery financial institutions, insurance companies, investment trusts, national and local public officers mutual aid associations, and trust banks.

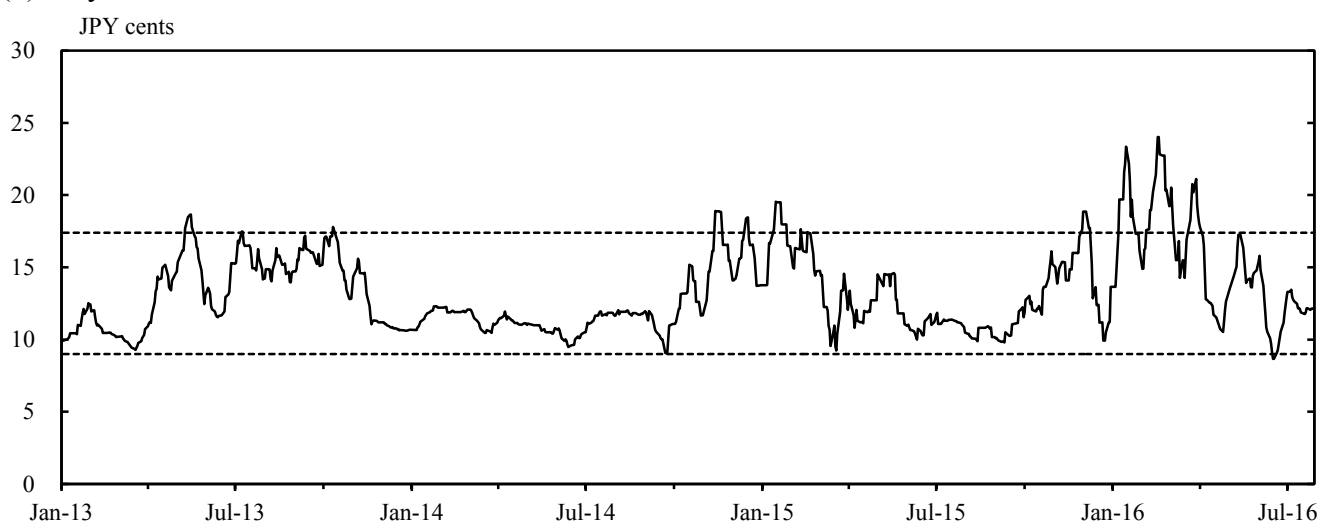
Sources: Japan Securities Dealers Association; Ministry of Finance.

## Indicators in the JGB Cash Market: Bid-ask Spreads in the Dealer-to-client Market

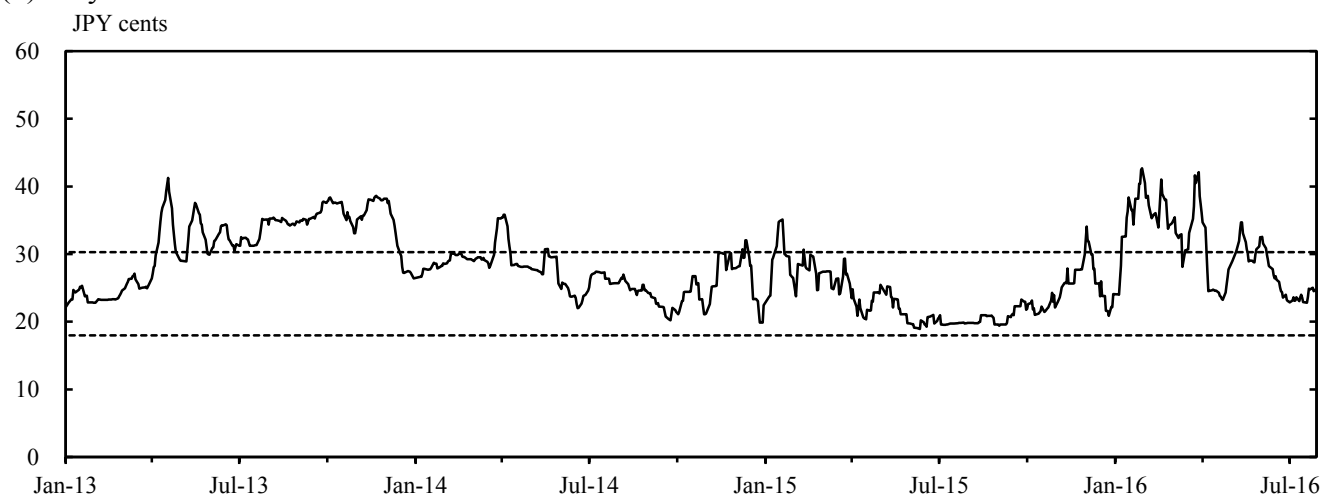
### (1) 5-year JGBs



### (2) 10-year JGBs



### (3) 20-year JGBs



Notes: 1. 10-day backward moving average. The latest data are as of end-July 2016.

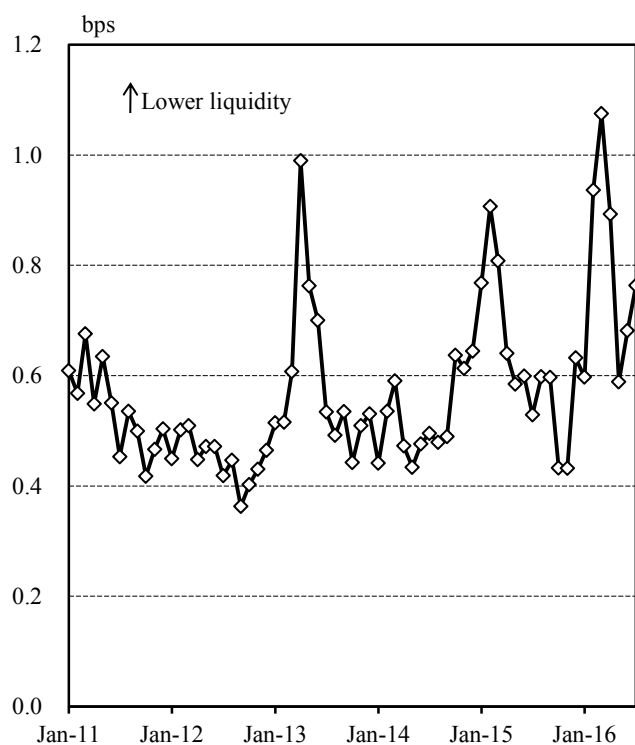
2. Dotted lines indicate the first/third quartile spreads between Jan. 2010 and Mar. 2013.

Source: Thomson Reuters.

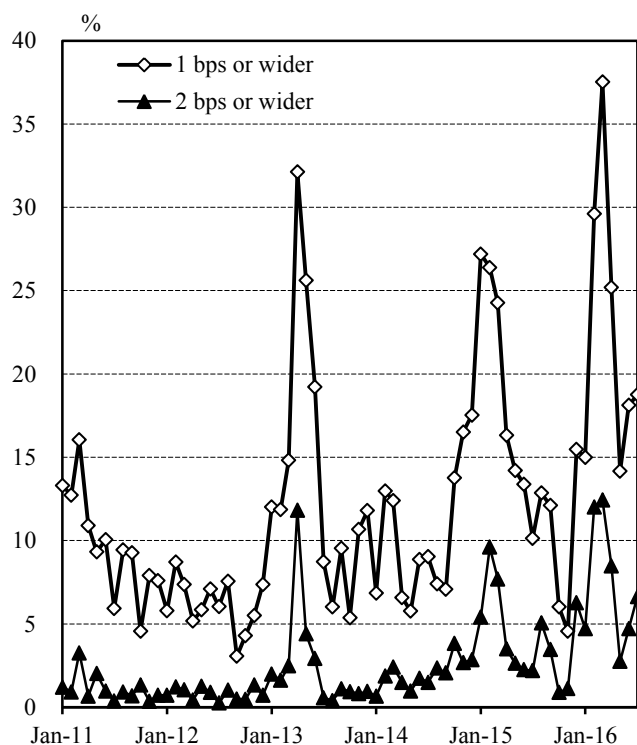


## Indicators in the JGB Cash Market: Best-worst Quote Spreads

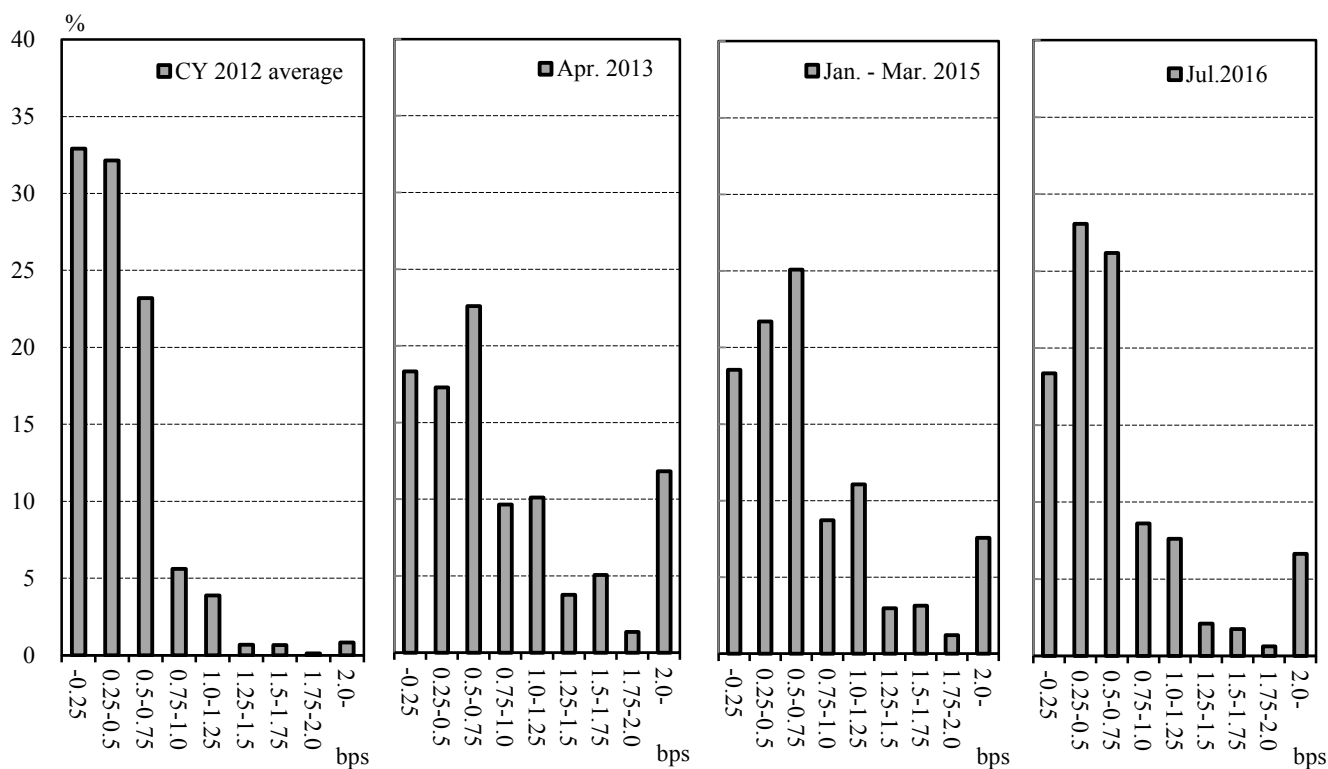
(1) Best-worst Quote Spreads (Average)



(2) Probability that the Best-worst Quote Spread is 1 bps (2 bps) or wider



(3) Histogram of Best-worst Quote Spreads



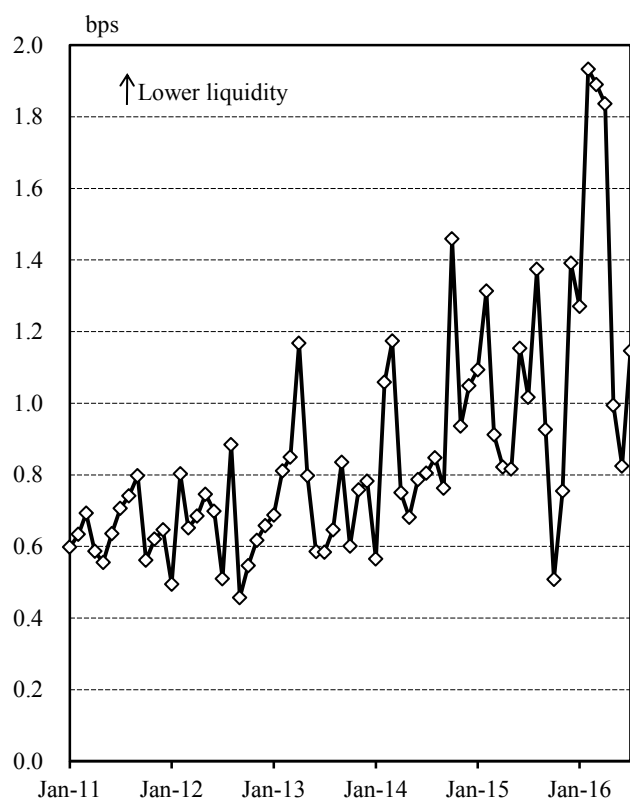
Notes: 1. A portion of transactions with the spread wider than 10 bps is excluded from the calculation.

2. As for figures (1) and (2), the latest data are as of July 2016.

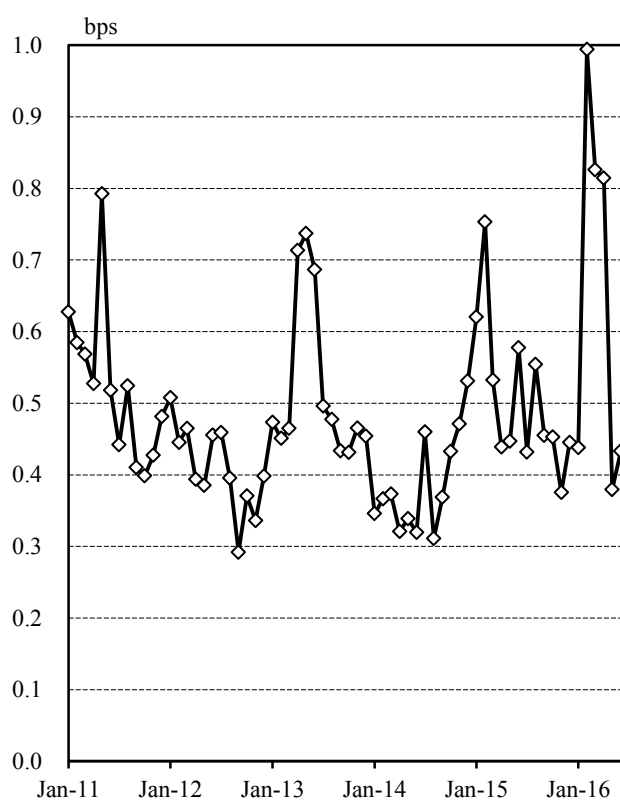
Source: Yensai.com.

## Best-worst Quote Spreads (by Residual Maturity)

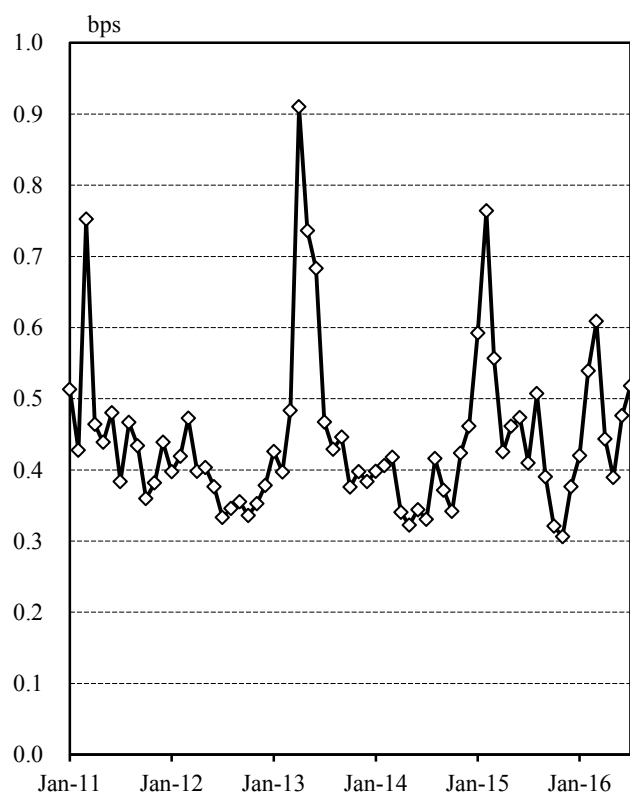
(1) Short-term (2 years or less)



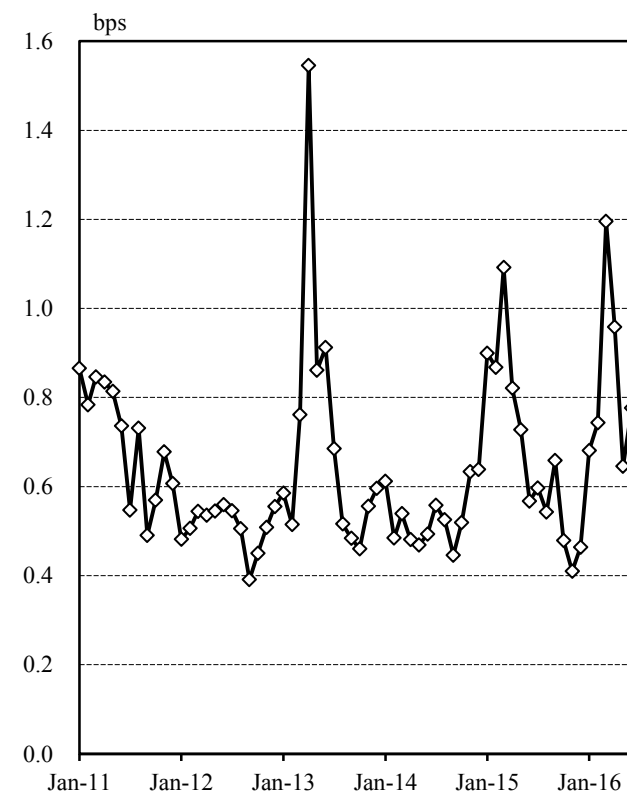
(2) Medium-term (2-5 years)



(3) Long-term (5-10 years)



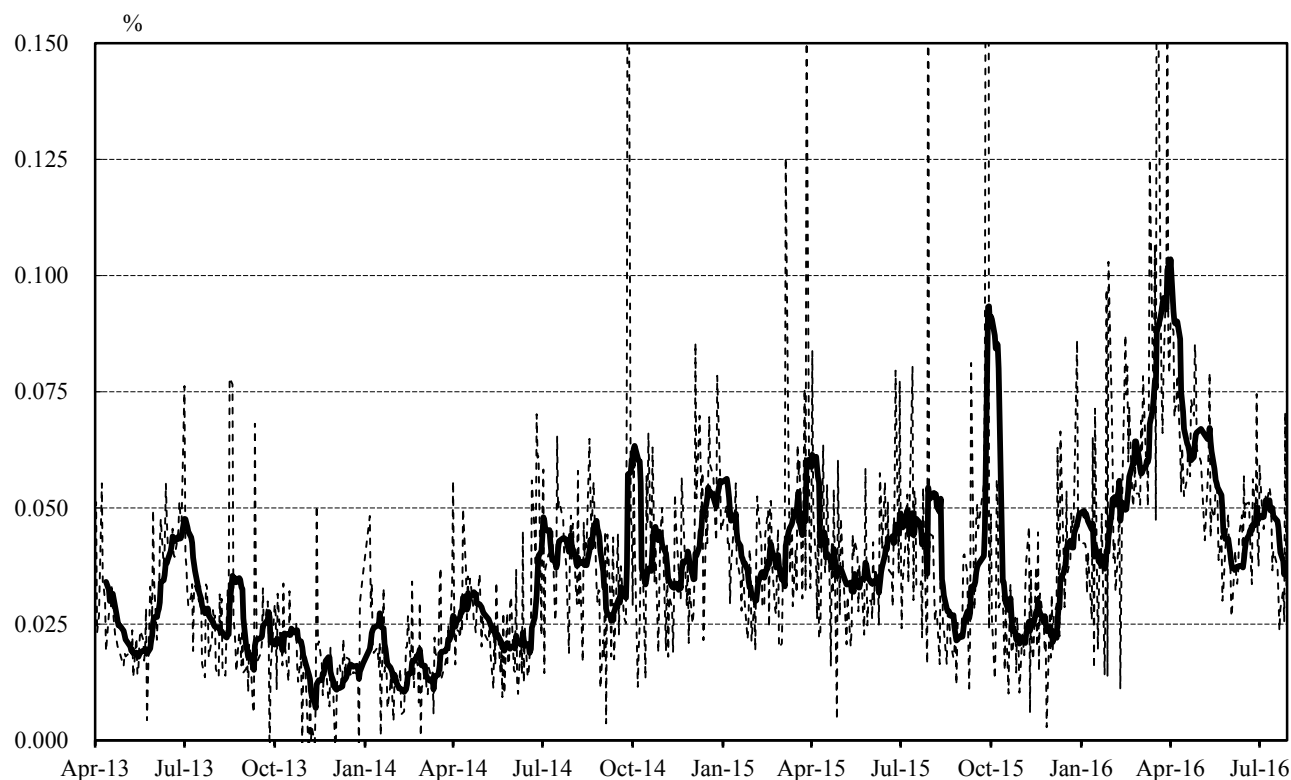
(4) Super-long-term (over 10 years)



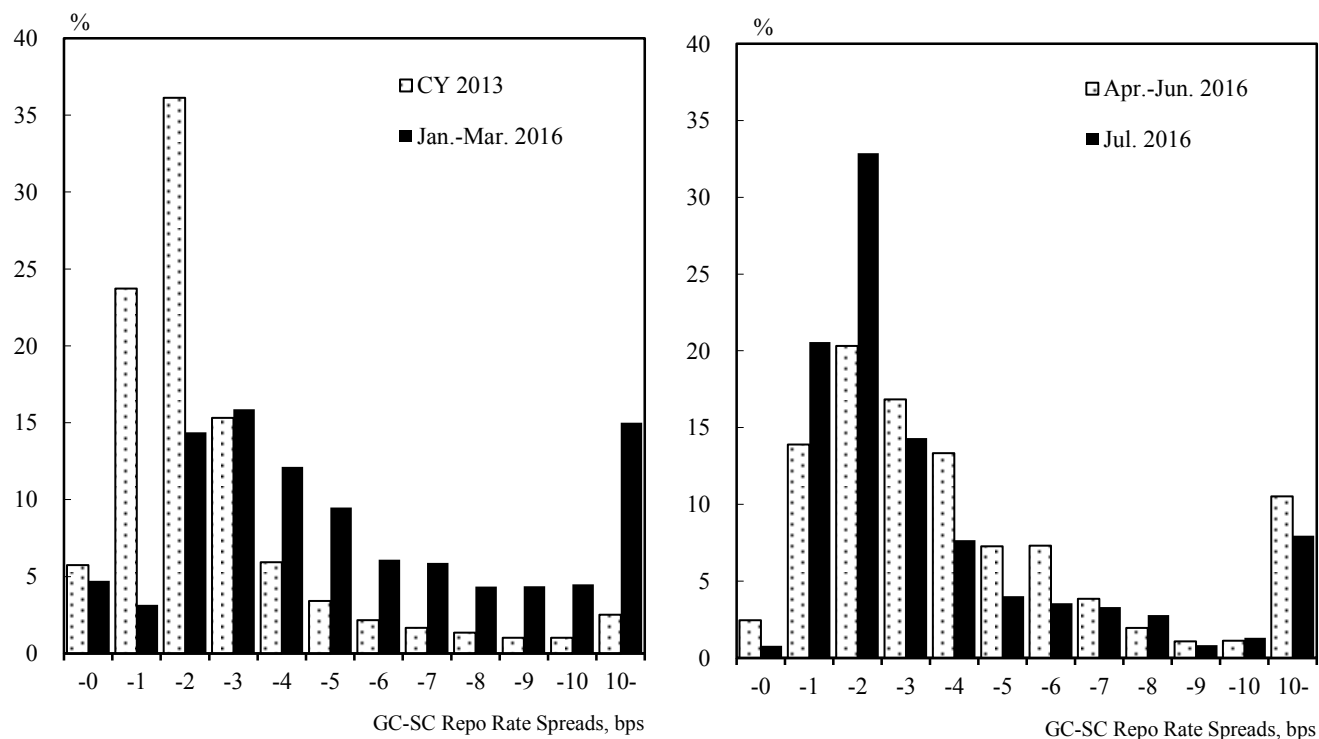
Note: A portion of transactions with the spread wider than 10 bps is excluded from the calculation. The latest data are as of July 2016.  
Source: Yensai.com.

## GC-SC Repo Rate Spreads

### (1) Simple Average of All the Traded Issues



### (2) Histogram

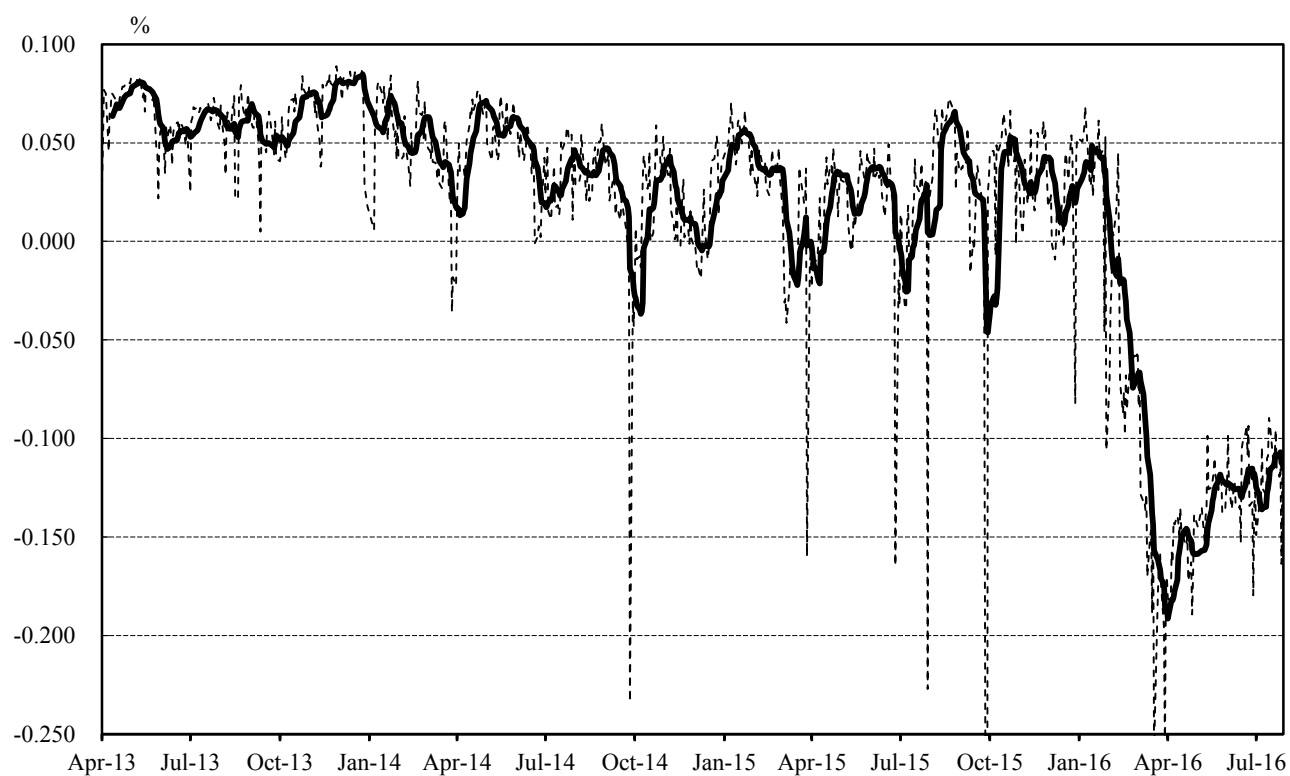


Notes: 1. As for figure (1), the latest data are as of end-July 2016. The bold line indicates 10-day backward moving average.

2. CY 2013 in figure (2) is the average of April to December 2013.

Sources: Japan Securities Dealers Association; JBond Totan Securities.

## SC Repo Rates



Note: Figures are the simple average of all the traded issues. The latest data are as of end-July 2016. The bold line indicates 10-day backward moving average.

Source: JBond Totan Securities.