

## Revision of Trading Rules to Improve Market Functions

January 28, 2019

Tokyo Stock Exchange, Inc.

### I. Purpose

In light of recent changes in the environment surrounding the stock market, such as developments in IT and the spread of algorithmic trading, Tokyo Stock Exchange, Inc. (TSE) has been working on an upgrade of arrowhead, its cash equities trading system, with the aim of not only maintaining stable market operations and reliability of the market but also improving trading rules and enhancing trading services to meet the needs of market users. Based on these objectives, TSE has summarized the revisions to trading rules to be implemented at the time of arrowhead upgrade as indicated below.

Specifically, sharp price fluctuations will be more easily deterred by improving the Sequential Trade Quote mechanism. At the same time, trade executions will be facilitated even under situations where trading needs are high for the afternoon closing auction by doubling the executable price range at the closing auction in the afternoon session. In addition, based on situations where there have arisen needs for using U.S. stocks as securities in lieu of security deposits for margin transactions, measures such as adding U.S. stocks to the securities in lieu of security deposits will be implemented with the aim of improving convenience for market users.

### II. Outline

| Item   | Description  | Remarks   |
|--|--|---|
| 1. Improvement of Sequential Trade Quote (STQ) mechanism | <ul style="list-style-type: none"><li>- In order prevent sharp price fluctuation, price movements beyond the price range deemed appropriate by TSE will be prohibited until a time period deemed appropriate by TSE elapses.</li><li>- Specifically, when, after a STQ is displayed, a counter order comes in and a transaction is executed by Itayose call auction (hereafter "Itayose"), the reference execution price and time that has elapsed therefrom will not be reset until one minute elapses from the reference execution.</li><li>- The reference prices for STQs will be distributed via the Market Information System.</li></ul> | <ul style="list-style-type: none"><li>- Currently, where the price changes within one minute beyond a price range that is twice the Special Quote renewal price interval from the reference execution price, a STQ is displayed. This operation will remain unchanged.</li><li>- Specifically, the reference prices will be distributed via FLEX Full and Full (WB) services.</li></ul> |

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| Item   | Description   | Remarks   |
|--|---|---|
| 2. Improvement of opportunities for executions at the afternoon closing auction                | - In order to facilitate execution of transactions under situations where trading needs are high at the afternoon closing auction (i.e., trading at the close of the afternoon session), the executable price range at the afternoon closing auction will be expanded to twice the renewal price interval of the Special Quote. | - This expansion will be applied to all issues for which Itayose will be employed at such afternoon closing auction.  |
| 3. Other   |   |   |
| (1) Addition of U.S. stocks to securities in lieu of security deposits for margin transactions | - U.S. stocks will be added to the securities in lieu of security deposits for margin transactions under the following conditions.  |   |
| a. Eligible securities   | - Foreign stocks, etc. listed on a financial instruments exchange in the U.S.   | - Foreign stocks, etc. mean foreign stocks, etc. referred to in Rule 28, Item 10 of the Brokerage Agreement Standards.<br>- A financial instruments exchange in the U.S. means securities exchanges registered with the U.S. Securities and Exchange Commission pursuant to Sec. 6 of the Securities Exchange Act of 1934 of the U.S. |
| b. Haircut ratio   | - The haircut ratio will be 60/100.   | - If the market value described below is that as of the current day, such ratio will be 70/100.   |
| c. Market value  | - The market value will be the last price at the aforementioned financial instruments exchange on the previous day, which is converted to Japanese yen at the foreign exchange rate as of the time designated by the trading participant.   |   |

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| Item   | Description  | Remarks   |
|--|--|---|
| (2) Foreign currency in lieu of Japanese currency        | <ul style="list-style-type: none"> <li>- U.S. currency (hereinafter "U.S. dollar(s)") will be allowed to be deposited for security deposit for margin transactions.</li> <li>- The value will be calculated by multiplying the haircut ratio prescribed by TSE and converting the result to Japanese yen at the foreign exchange rate as of the time designated by the trading participant.</li> <li>- The haircut ratio for U.S. dollars will be 95/100.</li> </ul> |   |
| (3) Revision of selection process of loan trading issues | <ul style="list-style-type: none"> <li>- The day of selecting a newly listed issue as a loan trading issue will be moved forward by five business days, meaning the sixth day (excluding non-business days) counting from the day on which the first execution price after listing is determined.</li> <li>- Requirements for the amount of net income and retained earnings will be removed from the criteria for selecting loan trading issues.</li> </ul>         | <ul style="list-style-type: none"> <li>- This does not apply to issues listed via another exchange and issues subject to technical listing.</li> <li>- Likewise, requirements for the amount of net income, etc. will be removed for REITs and infrastructure funds.</li> </ul> |
| (4) Revision of off-auction distribution                 | <ul style="list-style-type: none"> <li>- Currently, where an issuing company has disclosed a material fact, off-auction distribution cannot be conducted until ten business days elapse from such disclosure for the purpose of disseminating such fact to investors and other such purposes. However, given that now investors can obtain such information more swiftly and easily, the period will be shortened to five business days.</li> </ul>                  |   |

### III. Implementation schedule

These revisions will be implemented at the time of arrowhead upgrade scheduled for November 5, 2019.

However, (3) and (4) of "3. Other" will be implemented on April 1, 2019, while (1) and (2) thereof will be implemented on July 16, 2019.

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## Appendix

### - Improvement of Sequential Trade Quote (STQ) mechanism

In order to prevent sharp price fluctuations, where a transaction has been executed with a counter order(s) by Itayose after a STQ was displayed, the reference execution price and the STQ monitoring period (\*) will not be reset until the STQ monitoring period elapses.

\*A period of time from the reference execution to the time deemed appropriate by TSE (one minute)

(Note 1) The reference execution shall mean:

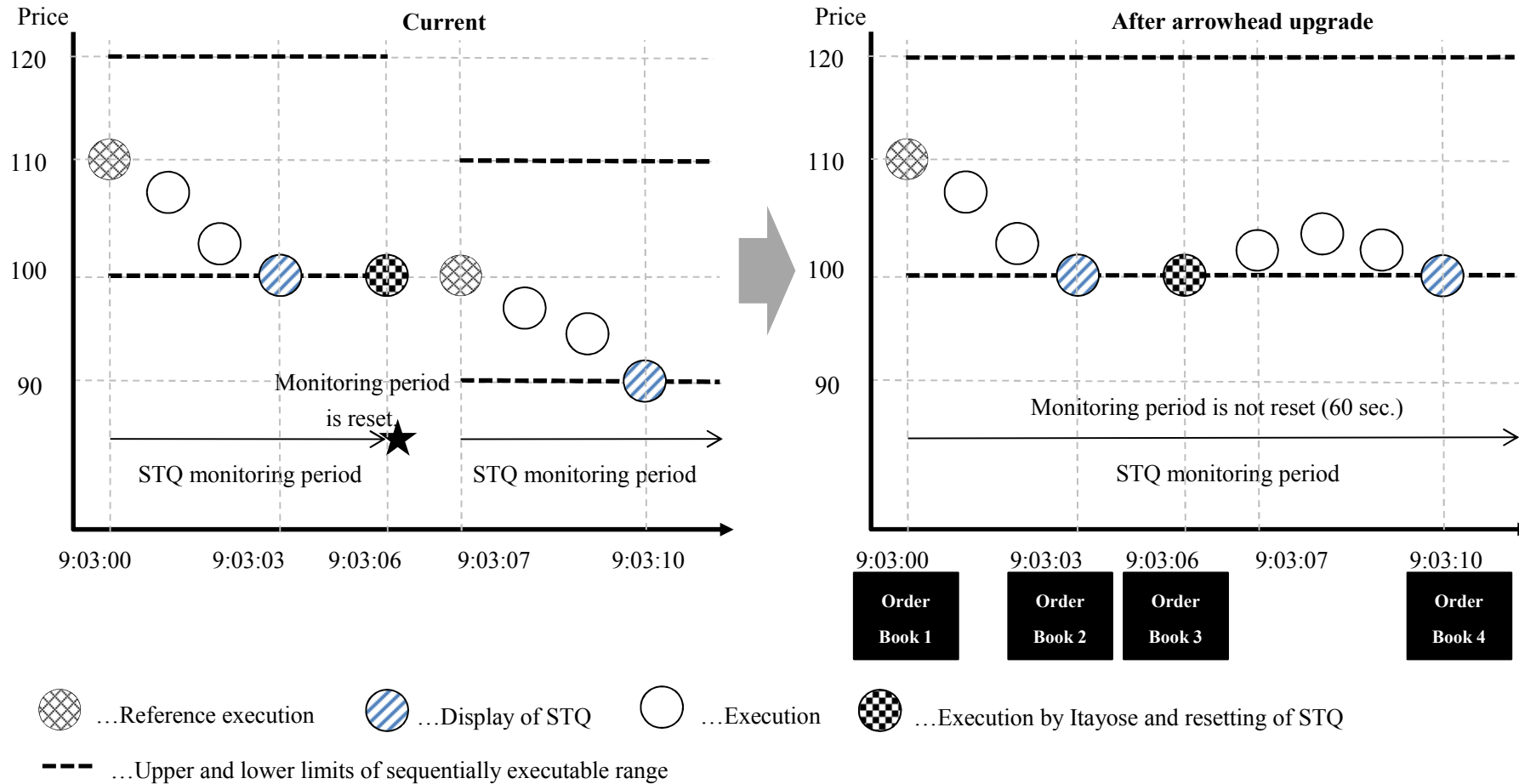
- The first execution by Zaraba continuous auction (hereafter "Zaraba") after the execution by Itayose
- The first execution by Zaraba after the STQ monitoring period

(Note 2) Under the current operation, where a transaction has been executed with a counter order(s) by Itayose after a STQ was displayed, the STQ will be removed and the reference execution price and STQ period will be reset.

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1. Diagrams of an execution with a counter order during display of STQ



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| Order Book 1              |  |               |  |  |  |
|---------------------------|--|---------------|--|--|--|
| Time                      |  | 9:03:00       |  |  |  |
| Execution price           |  | 110 and 106   |  |  |  |
| Last price                |  | 114 (Itayose) |  |  |  |
| Reference execution price |  | 110           |  |  |  |
| Reference execution time  |  | 9:03:00       |  |  |  |

|       |       |       |       |              |       |
|-------|-------|-------|-------|--------------|-------|
| Total |       | Total | Total | Market order | Total |
| 0     |       | 0     | 0     |              | 0     |
| 20    | OVER  | 0     | 0     | OVER         | 0     |
| 20    | 114   | 0     | 0     | 114          | 0     |
| 20    | # 110 | 10 10 | 0     | 110          | 0     |
| 20    | # 106 | 10 20 | 0     | 106          | 0     |
| 20    | 103   | 10 30 | 0     | 103          | 10 10 |
| 20 20 | 102   | 30    | 0     | 102          | 10    |
| 0     | 100   | 30    | 0     | 100          | 10    |
| 0     | 99    | 10 40 | 0     | 99           | 10 20 |
| 0     | 98    | 40    | 0     | 98           | 20    |
| 0     | UNDER | 40    | 0     | UNDER        | 20    |

Instantaneously

An execution has occurred at JPY 114 by Itayose.  
A sell order at JPY 102 (20 units) will be matched with buy orders at JPY 110 and JPY 106.

Executions will occur instantaneously at JPY 110 and JPY 106.  
As JPY 110 is the first execution price by Zaraba, the reference price for STQ will be JPY 110.

| Order Book 2              |  |         |  |  |  |
|---------------------------|--|---------|--|--|--|
| Time                      |  | 9:03:03 |  |  |  |
| Execution price           |  | 103     |  |  |  |
| Last price                |  | 106     |  |  |  |
| Reference execution price |  | 110     |  |  |  |
| Reference execution time  |  | 9:03:00 |  |  |  |

|       |       |       |       |              |       |
|-------|-------|-------|-------|--------------|-------|
| Total |       | Total | Total | Market order | Total |
| 0     |       | 0     | 0     |              | 0     |
| 20    | OVER  | 0     | 10    | OVER         | 0     |
| 20    | 114   | 0     | 10    | 114          | 0     |
| 20    | 110   | 0     | 10    | 110          | 0     |
| 20    | 106   | 0     | 10    | 106          | 0     |
| 20    | # 103 | 10 10 | 10    | 103          | 0     |
| 20    | 102   | 10    | 10    | 102          | 0     |
| 20    | 100   | 10    | 10    | 100          | 0     |
| 20    | 99    | 10 20 | 10    | 99           | 10 10 |
| 20 20 | 98    | 20    | 10 10 | 98           | 10    |
| 0     | UNDER | 20    | 0     | UNDER        | 10    |

Instantaneously

A sell order at JPY 98 (20 units) will be matched with buy orders at JPY 103 and JPY 99.

An execution will occur instantaneously at JPY 103.  
As order matching at JPY 99 will be beyond the lower limit of STQ price range, a STQ will be displayed at JPY 100, which is such lower limit.

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| Order Book 3              |               |
|---------------------------|---------------|
| Time                      | 9:03:06       |
| Execution price           | 100 (Itayose) |
| Last price                | 103           |
| Reference execution price | 110           |
| Reference execution time  | 9:03:00       |

| Total |             | Total | Total |             | Total |
|-------|-------------|-------|-------|-------------|-------|
| 0     | Marketorder | 0     | 0     | Marketorder | 0     |
| 10    | OVER        | 0     | 0     | OVER        | 0     |
| 10    | 114         | 0     | 0     | 114         | 0     |
| 10    | 110         | 0     | 0     | 110         | 0     |
| 10    | 106         | 0     | 0     | 106         | 0     |
| 10    | 103         | 0     | 0     | 103         | 0     |
| 10    | 102         | 10    | 0     | 102         | 0     |
| 10    | U 100 #     | 10    | 0     | 100         | 0     |
| 10    | 99          | 10    | 0     | 99          | 10    |
| 10    | 10 98       | 20    | 0     | 98          | 10    |
| 0     | UNDER       | 20    | 0     | UNDER       | 10    |

Instantaneously

Due to a buy order at JPY 102, the matching price by Itayose will be JPY 100, which corresponds to the Special Quote (JPY 100).

An execution will occur instantaneously at JPY 100, and the STQ will be removed.  
Currently, this execution resets the reference price for STQ. However, under the new operation, such execution will not reset the reference price.

| Order Book 4              |               |
|---------------------------|---------------|
| Time                      | 9:03:10       |
| Execution price           | —             |
| Last price                | 100 (Itayose) |
| Reference execution price | 110           |
| Reference execution time  | 9:03:00       |

| Total |             | Total | Total |             | Total |
|-------|-------------|-------|-------|-------------|-------|
| 0     | Marketorder | 0     | 0     | Marketorder | 0     |
| 10    | OVER        | 0     | 10    | OVER        | 0     |
| 10    | 114         | 0     | 10    | 114         | 0     |
| 10    | 110         | 0     | 10    | 110         | 0     |
| 10    | 106         | 0     | 10    | 106         | 0     |
| 10    | 103         | 0     | 10    | 103         | 0     |
| 10    | 102         | 0     | 10    | 102         | 0     |
| 10    | 100         | 0     | 10    | 100         | 0     |
| 10    | # 99        | 10    | 10    | 99          | 10    |
| 10    | 10 98       | 10    | 10    | 98          | 10    |
| 0     | UNDER       | 10    | 0     | UNDER       | 10    |




Instantaneously

A sell order at JPY 98 (10 units) will be matched with a buy order at JPY 99.

Although orders can be matched at JPY 99, such price is beyond the lower limit of the STQ price range. As such, an STQ will be displayed at JPY 100, which is such lower limit.

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|   |                |   |  |
|---|----------------|---|--|
| # | Matching price |  | Last execution price                         |
| ✓ | New order      |  | Reference price for STQ                      |
| U | Sell STQ       |  | Lower limit of sequentially executable range |

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## 2. Abolishment of operation to deter renewal of Special Quote for a certain period of time before the closing of sessions

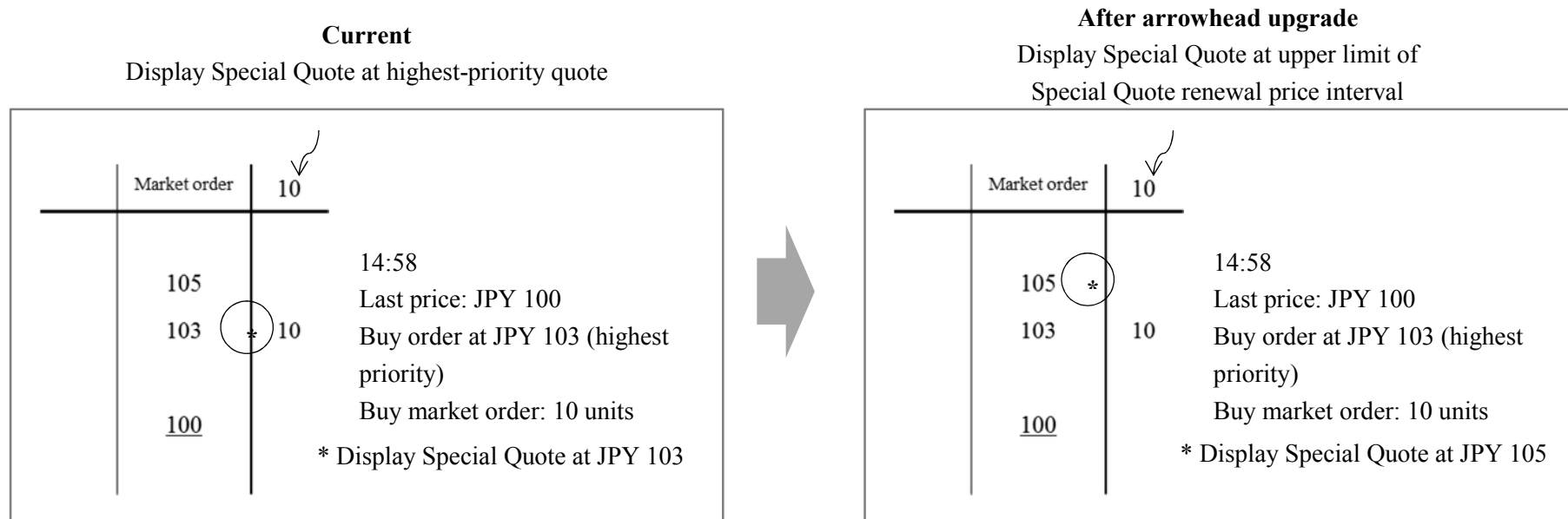
A Special Quote operation has been in place for the last three minutes before the close of the morning and afternoon sessions as indicated below.

- If a Special Quote is displayed at three minutes before the close of the session, such Special Quote will not be renewed.
- If the order book satisfies the condition for displaying a Special Quote within three minutes before the close of the session, a Special Quote will be displayed as follows.

For example, in the case of a buy Special Quote,

- if there is no buy order between the reference price (the last price) and the Special Quote price, a Special Quote will be displayed at "the reference price".
- If there are buy orders between the reference price (the last price) and the Special Quote price, a Special Quote will be displayed at "the price of the highest-priority buy order".

However, in connection with the improvement of the STQ mechanism, such operation will be abolished.



In this case, if there is no order at JPY 103, the Special Quote will be displayed at JPY 100.

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