

(Reference Translation)

# TSE Index Guidebook (Market Sector Indices)

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Tokyo Stock Exchange, Inc.

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### Record of Changes

DATE	Changes
2013/8/14	* Adjustment rule for “Right Offering” is added
2013/8/21	* Methodology for Net Total Return Index is added
2014/6/2	*Change for the Inclusion or Removal of Constituents (Corporate Consolidation, etc.)
2015/11/11	*Addition of description on “Japan Post Holdings Co., Ltd.” to in the number of shares used for Index Calculation and shares held by the Japanese government
2018/7/23	*Clarification of the treatment of “Rights Offering” and “Gratis Allotment of Shares”

## **Introduction**

- Tokyo Stock Exchange, Inc. (TSE) calculates and publishes the Tokyo Stock Price Index (TOPIX), Tokyo Stock Exchange Second Section Index, Tokyo Stock Exchange Mothers Index, JASDAQ Index, JASDAQ Index (Standard) and JASDAQ Index (Growth) (“TSE-calculated indices” hereafter) in accordance with the methods described in this document. If an event not specified in this document occurs, or if TSE determines that it is difficult to use the methods described in this document, TSE may use an alternative method of index calculation as it deems appropriate.
- Copyright of this document is owned by TSE and any copies, reprints and reproductions of this document in whole or in part are prohibited without the prior approval of TSE. This document is prepared solely for the understanding of indices calculated and published by TSE, and is not to be construed as a solicitation for trading any securities or related financial instruments. Information expressed in this document is subject to change without notice and in those cases TSE undertakes no obligation to update any recipients of this document. TSE shall accept no liability or responsibility for any loss or damage arising from errors, delays, or termination of the calculation or publication of TSE-calculated indices, changes to its calculation or publication method, the use of TSE-calculated indices or all or any part of this document or other similar events.
- TSE calculates both price and total return versions of all indices described in this guidebook except for JASDAQ Index, JASDAQ Index (Standard) and JASDAQ Index (Growth), for which only the price index is calculated.

## **I. Outline of Stock Price Indices**

- TSE-calculated indices are composed of the common stocks of all issues listed on each respective market, although the timing of additions and exclusions differ from that of the listing system (please refer to part III below).
- Securities such as subscription warrants, preferred stock, and equity contribution securities are not included in calculation.
- The base date and base value for each index is as below:

Index	Market	Base Date	Base Value
TOPIX (Tokyo Price Index)	TSE 1st Section	January 4, 1968	100
TSE 2nd Section	TSE 2nd Section	January 4, 1968	100
TSE Mothers Index	Mothers	September 12, 2003	1,000
JASDAQ Index	JASDAQ	October 28, 1991	100
JASDAQ Index (Standard)	JASDAQ (Standard)	October 8, 2010	100
JASDAQ Index (Growth)	JASDAQ (Growth)	October 8, 2010	100
Ex-TOPIX	TSE 1st Section	January 4, 1968	100

## II. Index Calculation

### 1. Outline

- TSE-calculated indices are calculated using free-float adjusted market capitalization weighting. Each index is denominated in points and is calculated to the second decimal place (values beyond the second decimal are rounded).

### 2. Formula

$$\text{Index} = \frac{\text{CMV}}{\text{BMV}} \times \text{Base Point}$$

CMV = Current market value (free-float adjusted)

BMV = Base market value (free-float adjusted)

$$\text{Current Market Value} = \sum (\text{Number of Shares for Each Constituent} \times \text{Stock Price for Each Constituent})$$

### 3. Stock Price Used for Calculation

- The stock prices used for calculating TSE-calculated Indices are determined by the following order of priority:

(1) Special Quote or Sequential Trade Quote, (2) Contact Price, (3) Base Price for Index Calculation when neither (1) or (2) are available (determined in the following order: (1) Theoretical Ex-rights Price, (2) Most Recent Special Quote or Sequential Trade Quote on or before the previous trading day, (3) Most Recent Contract Price before the previous trading day.)

#### 4. Number of Shares Used for Index Calculation

- The number of shares used for index calculation is determined by multiplying the total number of listed shares by the free-float weight (FFW) ratio.

$$\begin{aligned} &\text{Number of Shares Used for Index Calculation for Each Stock} \\ &= \text{Total Number of Listed Shares} \times \text{FFW Ratio} \end{aligned}$$

- In general, the “total number of listed shares” in the above formula is equal to the number of listed shares, but in some cases these numbers are different due to corporate actions such as stock splits. For example, in a stock split, the number of listed shares changes on the listing change date, which comes after the effective date. On the other hand, the total number of listed shares used in index calculation (before FFW adjustment) changes on the ex-rights date, leading to a brief period in which the two numbers are different.
- Also, the total number of listed shares used in index calculation (before FFW adjustment) is generally equal to the number of issued shares, but in the case of Nippon Telegraph and Telephone Corporation, Japan Tobacco, Inc., and Japan Post Holdings Co., Ltd., the government of Japan holds some issued shares that have not been listed, leading these two numbers to be different.
- Please refer to the appendix for information on calculating FFW ratio. Ex-TOPIX, JASDAQ Index, JASDAQ Index (Standard) and JASDAQ Index (Growth) do not apply free-float weighting.

### III. Adjustments to Base Market Value

- Whenever the market value of the index changes due to an increase or decrease in

constituent issues, capital raising, or similar events other than market fluctuations, the base market values for TSE-calculated indices are adjusted as follows to maintain continuity.

## 1. Events that Require Adjustment

### 1) Inclusion or Removal of Constituents

#### ① TOPIX, Ex-TOPIX

	Event Requiring Adjustment		Adjustment Date*6	Stock Price Used for Adjustment
	New Listings	New listings on 1st section (direct listing, listing via other exchange)	Last business day of the month following listing	Stock price at the end of trading on the business day before adjustment date
		New listing of a newly formed company resulting from a corporate consolidation, etc.*1 that results in a TOPIX or Ex-TOPIX constituent being delisted and the new company being included in TOPIX.	New listing date*2	Base price
	Inclusion	Change in listed section/market to 1st section from 2nd section, Mothers or JASDAQ markets	Last business day of the month following designation to new section/market*3	Stock price at the end of trading on the business day before adjustment date
Removal	Delistings	New listing of a newly formed company resulting from a corporate consolidation, etc. (*1) that results in a TOPIX or Ex-TOPIX constituent being delisted and the new company being included in TOPIX.	Listing date of the newly formed company (normally three business days following delisting date)	Stock price at the end of trading on the business day before delisting date*4

	Event Requiring Adjustment	Adjustment Date*6	Stock Price Used for Adjustment
	Delistings other than those stated above (e.g. mergers/acquisitions between two TOPIX constituents with surviving company remaining as a TOPIX constituent, etc.)	Delisting date	Stock price at the end of trading on the business day before adjustment date
	Designation as Securities to be Delisted	Four business days after designation*5	Stock price at the end of trading on the business day before adjustment date
	Section/market change from 1st section to 2nd section or JASDAQ	Date of change	Stock price at the end of trading on the business day before adjustment date

\*: If the ratio of the free-float adjusted market capitalization of a newly listed company on the TSE 1st Section to the adjusted market value of TOPIX reaches or exceeds 1% on any day during the five business days counting from the initial listing date, the company is included into the indices in several phases (The second and subsequent installments will take place on the last business day two months following the previous installment.)

\*: For issues newly listing on the 1st section (other than companies formed through consolidation, etc.) or switching from the Mothers market to the 1st section, if the date of inclusion in the TOPIX index falls within a “when-issued transaction” period, the issue will be included in TOPIX on the last business day of the month following the end of the when-issued transaction period.

Note: Stock splits with an allotment date (base date) on or after January 4, 2006 do not have a when-issued transaction period. When-issued transactions may continue to take place for third-party allotments according to the circumstances.

\*1: Consolidation, acquisition, merger or split (personnel split).

\*2: Next business day when the new listing date falls on a holiday.

\*3: Issue is counted amongst constituents from the designation date, but for technical purposes FFW will be set to 0.00 and the number of shares used for index calculation will be 0 from the designation



date until the adjustment date in order to essentially push back the date that the issue is reflected in the calculation of TOPIX. For Ex-TOPIX, FFW is set to 1.00 and the issue is reflected in index calculation from the designation date.

\*4: The stock price at the end of trading on the business day before the delisting date is used to calculate the index for the period from the delisting date to the removal date.

\*5: Next business day when the designation date falls on a holiday.

②TSE 2nd Section Index, TSE Mothers Index, JASDAQ Index, JASDAQ Index (Standard), JASDAQ Index (Growth) (“TSE 2nd Section Index etc.” hereafter )

	Event Requiring Adjustment		Adjustment Date	Stock Price Used for Adjustment
Inclusion	New Listings	New listings on 2nd section, Mothers, or JASDAQ (direct listing, listing via other exchange)	Last business day of the month following listing	Stock price at the end of trading on the business day before adjustment date
		New listing of a newly formed company resulting from a corporate consolidation, etc. that results in a 2nd section, Mothers, or JASDAQ constituent being delisted and the new company being included in TSE 2nd Section Index etc. which used to include the delisted company.	New listing date*1	Base price
	Change in listed section/market to 2nd Section from 1st Section, Mothers or JASDAQ markets (TSE 2nd Section Index only)		Date of change	Stock price at the end of trading on the business day before adjustment date
	Change in listed market from 1st Section, 2nd Section or Mothers market to JASDAQ market (JASDAQ		Last business day of the month following date of change	Stock price at the end of trading on the business day before

	Event Requiring Adjustment		Adjustment Date	Stock Price Used for Adjustment
	Index, JASDAQ Index (Standard), JASDAQ Index (Growth) only)			adjustment date
	Change in listed market from JASDAQ market to Mothers market (TSE Mothers Index only)		Last business day of the month following date of change	Stock price at the end of trading on the business day before adjustment date
	Change in listed market to JASDAQ (Standard or Growth)		Date of change	Stock price at the end of trading on the business day before adjustment date
Removal	Delistings	New listing of a newly formed company resulting from a corporate consolidation, etc. (*1) that results in a TSE 2nd Section Index etc. constituent being delisted and the new company being included in TSE 2nd Section Index etc. which used to include the delisted company.	Listing date of the newly formed company (normally three business days following delisting date)	Stock price at the end of trading on the business day before delisting date <sup>3</sup>
		Delistings other than those stated above (e.g. mergers/acquisitions between two constituents listed on the same market, non-surviving companies resulting from a merger/acquisition, etc.)	Delisting date	Stock price at the end of trading on the business day before adjustment date
	Designation as Securities to be Delisted		Four business days after designation*2	Stock price at the end of trading on the business day before adjustment date
	Change in listed section/market from 2nd Section to 1st section, JASDAQ		Date of change	Stock price at the end of trading on the

	Event Requiring Adjustment	Adjustment Date	Stock Price Used for Adjustment
	(TSE 2nd Section Index only)		business day before adjustment date
	Change in listed market from Mothers to 1st Section, 2nd Section or JASDAQ (TSE Mothers Index only)	Date of change	Stock price at the end of trading on the business day before adjustment date
	Change in listed market from JASDAQ to 1st Section, 2nd Section or Mothers (JASDAQ Index, JASDAQ Index (Standard), JASDAQ Index (Growth) only)	Date of change	Stock price at the end of trading on the business day before adjustment date

\*1: Next business day when the new listing date falls on a holiday.

\*2: Next business day when the designation date falls on a holiday.

\*3: The stock price at the end of trading on the business day before the delisting date is used to calculate the index for the period from the delisting date to the removal date.

## 2) Changes in Number of Shares Used for Index Calculation

Event Requiring Adjustment	Adjustment Date*6	Stock Price Used in Adjustment
Changes in free-float weight (FFW)	Date of Change	Stock price at the end of trading on the business day before adjustment date
Public offering	Additional listing date (day after payment date)*1	Stock price at the end of trading on the business day before adjustment date
Third-party allotment	Five business days after additional listing date (two business days after payment date)	Stock price at the end of trading on the business day before adjustment date

Event Requiring Adjustment		Adjustment Date*6	Stock Price Used in Adjustment
Issues to shareholders with payment		Ex-rights date	Payment price per share
Exercise of subscription warrants		Last business day of the month following exercise	Stock price at the end of trading on the business day before adjustment date
Conversion of preferred stock, etc.		Last business day of the month following conversion	Stock price at the end of trading on the business day before adjustment date
Cancellation of treasury stock		Last business day of the month following cancellation	Stock price at the end of trading on the business day before adjustment date
Merger/Acquisition	Situations in which a constituent of TSE-calculated indices*2 is the non-surviving entity (mergers/acquisitions between two issues that are both constituents of an index calculated by the TSE)	Delisting date of the non-surviving entity	Stock price at the end of trading on the business day before adjustment date
	Situations other than those described above	Listing change date (effective date)	Stock price at the end of trading on the business day before adjustment date
Sale of shares held by the Japanese government (Nippon Telegraph, Telephone and Japan Tobacco and Japan Post Holdings only)		Date determined by TSE*3	Stock price at the end of trading on the business day before adjustment date

Event Requiring Adjustment	Adjustment Date*6	Stock Price Used in Adjustment
Rights offering (limited to case where the allotted subscription warrant securities are listed) *4	Ex-rights date	Payment price per share
Company split (merged split)	Listing change date (effective date)	Stock price at the end of trading on the business day before adjustment date
Other adjustments*5	Last business day of the month in which the information appears in “Sho-ho” (TSE Notice) or the last business day of the following month	Stock price at the end of trading on the business day before adjustment date

\*: Since market value does not change when there is a stock price revision made due to a stock split, gratis allotment of shares (limited to case where the allotted treasury stock), reverse split, etc., no adjustment is made to the base value.

\*1: Next business day when the change (addition) date falls on a holiday (same applies below)

\*2: Constituents of TSE-calculated indices include domestic common shares, domestic preferred equity contribution securities, domestic participating classified stocks, foreign stocks with exclusive listing on the TSE and REITs.

\*3: Generally the delivery date

\*4: The number of shares for Rights offering used for calculating indices will correspond to the number of shares to be allocated to shareholders. The case where the allotted subscription warrant securities are not listed is treated as “Exercise of subscription warrants”.

\*5: For example, situations in which an issuer of convertible bonds or other securities conducts a stock split; the number of shares calculated based on ratios for stock splits, reverse splits, paid-in allotment to shareholders, right offering, etc. is different than the final number of shares determined after the effective date; or revisions made by listed companies after data has been reflected in index calculation.

### 3) Data Source

- Information on the reason for base market value adjustments, details on the adjustment, the adjustment date and other data is available through the “Sho-ho” (TSE Notice) published daily by TSE based on reports, etc. made by listed companies. (Please refer to the appendix for information on calculating FFW.)

- If a listed company revises the contents of a previously published report that resulted in an index adjustment, retroactive index adjustments will NOT be made based on the revised contents.

## 2. Adjustment Method

### 1) Indices that do not reflect dividends (i.e. price indices)

#### ① Adjustment Method

- Base market value will be adjusted according to the formula below in order to maintain the continuity of the index:

$$\frac{\text{Previous Business Day Market Value}}{\text{Pre - Adjustment Base Market Value}} = \frac{(\text{Previous Business Day Market Value} \pm \text{Adjustment Amount})}{\text{New Base Market Value (After Adjustment)}}$$

\*Adjustment Amount = Increase (Decrease) in Number of Shares Used for Index Calculation X Stock Price Used for Adjustment

Therefore,

$$\text{New Base Market Value} = \frac{\text{Old Base Market Value} \times (\text{Previous Business Day Market Value} \pm \text{Adjustment Amount})}{\text{Previous Business Day Market Value}}$$

#### ② Adjustment Example

- If, for example, the old base market value is 20 trillion yen and the previous day's market value is 400 trillion yen, TOPIX on the previous day will be:

$$\text{Previous Day TOPIX} = \text{¥}400 \text{ tn} \div \text{¥}20 \text{ tn} \times 100 = 2,000.00$$

- Now, suppose that Stock A increases the number of listed shares used for index calculation by 100 million shares due to a public offering. If the closing price of the stock on the previous day was ¥2,000, the adjustment amount is 100 million shares x ¥2,000 = ¥200 billion. The new base market value, therefore, is:

$$\text{New Base Market Value} = \text{¥20 tln} \times (\text{¥400 tn} + \text{¥200 bn}) \div \text{¥400 tn} = \text{¥20.01 tn}$$

- As illustrated below, if there is no price change in any constituent, the value for TOPIX today is the same as the previous day: 2000 points. Thus, continuity in the index is maintained though adjustments to base market value even if the market value of constituents changes due to public offerings, etc.

$$(\text{¥400 tn} + \text{¥200 bn}) \div \text{¥20.01 tn} = 2,000 \text{ points}$$

## 2) Total Return Index

- Dividends used in calculating the Total Return Index are gross (i.e. before tax)
- Since the dividend amount for the current period is not fixed as of the ex-dividend date, adjustments made to reflect dividends in the base market value are made in two stages: 1) adjustment using estimated dividends and 2) minor adjustments made to reflect differences in estimated dividends and the dividend amount announced in the earnings report.

### A) Adjustments Using Estimated Dividends

- The total dividend amount for all constituents is calculated on ex-dividend dates using estimated dividends, and base market value is adjusted as above. In principle, the estimated dividend amount used is as follows:
  1. Dividend amount for the current period as announced in timely disclosure documents, if available
  2. Dividend amount for the previous period if the dividend for the current period is not fixed (e.g. the dividend is not announced in disclosure documents as (1) above, or the amount is not determined, etc.)
- The base market value adjustment method is basically as described in the previous section, except an adjustment is made to reflect dividends as follows:

$$\text{New Base Market Value} = \frac{\text{Old Base Market Value} \times (\text{Previous Business Day Market Value} - \text{Total Dividends} \pm \text{Adjustment Amount})}{\text{Previous Business Day Market Value}}$$

- \* Dividends Per Constituent = Number of Shares Used for Index Calculation on Business Day Before Ex-Dividend Date × Estimated Dividend Per Share
- \* Total Dividends = Sum of Dividends for All Constituents
- \* Adjustment Amount = Increase (Decrease) in Number of Shares Used for Index Calculation X Stock Price Used for Adjustment

B) Minor Adjustment Made to Reflect Difference Between Estimated and Actual Dividends

- Minor adjustments are made with respect to those constituents for which the estimated dividend used on the ex-dividend date and the dividend announced in the earnings report are different. Specifically, the total dividend adjustment amount is calculated on the 7th day of the 3rd month after the ex-dividend date (or the previous business day if the 7th day falls on a holiday), and the base market value is adjusted by that amount. (For example, for companies that announce earnings in March, the adjustment is made on June 7th.)
- Data used to calculate the adjustment amount is the information available as of three business days before the adjustment date. However, if a dividend adjustment is announced outside of this timeframe and the TSE deems that the adjustment will have a significant impact on the index value, an additional minor adjustment will be made.

$\text{New Base Market Value} = \frac{\text{Old Base Market Value} \times (\text{Previous Business Day Market Value} - \text{Total Dividend Adjustment} \pm \text{Adjustment Amount})}{\text{Previous Business Day Market Value}}$
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- \* Adjusted Dividend Per Constituent = Number of Shares Used for Index Calculation on Business Day Before Ex-Dividend Date × (Dividend Announced in Earnings Digest Summary - Estimated Dividend Per Share)
- \* Total Adjusted Dividends = Sum of Adjusted Dividends for All Constituents
- \* Adjustment Amount = Increase (Decrease) in Number of Shares Used for Index Calculation X Stock Price Used for Adjustment



### **3) Net Total Return Index**

- In addition to the Total Return Index explained above, the TSE also calculates the TOPIX Net Total Return Index which reflects the tax rate applied to constituent stock dividends.
- The base market value adjustment to reflect the dividend amount is made at the same time as (2). But when calculating the base market value, the "total dividend amount" and the "total dividend minor adjustment amount" shall each be multiplied by (1 minus the dividend tax rate).
- The tax rate used in calculating the TOPIX Net Total Return Index is withholding tax rate for listing shares (except for the local tax) at the adjustment date.

## **IV. Other**

### **1. Publication/Dissemination of Index Data**

#### **1) Index Values**

- Includes TSE-calculated Indices.
- TOPIX and other price index values are disseminated in real-time through the Market Information System to securities companies, news media, and other institutions all over the country. The TOPIX price index is disseminated every second, and other indices are disseminated every 15 seconds.
- The TOPIX Total Return Index is calculated daily at market close.

#### **2) Basic information**

- Basic information relating to TSE-calculated Indices (base market value, number of shares for each constituent, etc.) is provided for a fee through the Tokyo Market Information service

### **2. Licensing**

- TSE reserves all calculation, publication and other rights pertaining to TSE-calculated Indices. As such, commercial use of such indices in the composition and/or sale of financial products such as funds or linked bonds (including using the index as the basis for options, swaps, warrants, or other OTC derivatives) or provision of index data requires a license from TSE.

### **3. Contact**

Information Services

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