

(Reference Translation)

Index Calculation Guidebook

January 31, 2024
JPX Market Innovation & Research, Inc.

Published: January 31, 2024

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Contents

Record of change.....	3
Introduction.....	4
I. Index Calculation	4
1. Index Value	4
2. Formula.....	4
3. Stock Price Used for Calculation	7
4. Reviews of adjustment factors	7
II. Adjustments to Base Market Value, etc.	8
1. Events that Require Adjustment	8
2. Adjustment Method	12
III. Contact.....	15

Record of change

Date	Changes
2022/4/4	• Launch
2023/2/13	• Clarified annotation regarding changes in number of shares used for calculating market capitalization weight indices
2024/1/31	<ul style="list-style-type: none">• Added the share delivery where the share-delivery subsidiary is an unlisted company for changes in Number of Shares Used for Index Calculation• Clarification of the treatment of “Changes in Number of Shares Used for Index Calculation” if the adjustment date is significantly close to the date of the announcement in “Sho-ho” (TSE Notice)

Introduction

- JPX Market Innovation & Research, Inc. (hereinafter “JPXI”) calculates and publishes certain TSE indices (hereinafter “TOPIX, etc.”) in accordance with the methods described in this document. If an event not specified in this document occurs, or if JPXI determines that it is difficult to use the methods described in this document, JPXI may use an alternative method of index calculation as it deems appropriate.
- Copyright of this document is owned by JPXI, and any copies, reprints, and reproductions of this document in whole or in part are prohibited without the prior approval of JPXI. This document is prepared solely for the understanding of indices calculated and published by JPXI 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, JPXI undertakes no obligation to update any recipients of this document. JPXI shall accept no liability or responsibility for any loss or damage arising from errors, delays, or termination of the calculation or publication of TOPIX, etc., changes to its calculation or publication method, the use of TOPIX, etc. or all or any part of this document or other similar events.
- In this document, the number of beneficiary right units and investment units are referred to as shares and stocks for convenience, even in indices that include REITs and infrastructure funds.

I. Index Calculation

1. Index Value

Indices are denominated in points for market capitalization weighting, equal weighting, and non-market capitalization weighting (modified market cap weighting, etc.) and in JPY for stock price average, and are calculated to the second decimal place. (Values beyond the second decimal are rounded.)

2. Formula

1) Market capitalization weighting

$$\text{Index} = \frac{\text{Current market value}}{\text{Base market value}} \times \text{Base Point}$$

Current Market Value

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

Number of Shares Used for Index Calculation for Each Stock

$$= \text{Total Number of Listed Shares} \times \text{Free Float Weight (FFW)} \\ \times \text{cap- adjustment ratio}$$

- FFW are calculated in accordance with the Free Float Weight Calculation Methodology or each index guidebook.
- Cap-adjustment ratios are calculated in accordance with each index guidebook.
- 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.

2) Stock price average

$$\text{Index} = \frac{\text{Total Constituent Stock Price (Current Modified Market Value)}}{\text{Divisor}(*1)}$$

*1 The divisor is the base market value divided by the fixed value. A fixed value is set for each index for use in adjusting the level of the index value. The base market capitalization on the base date is the same as the total constituent stock price for the index (the current modified market value).

* Total Constituent Stock Price

$$= \sum (\text{Adjustment Factor for Each Constituent} \times 10,000 \\ \times \text{Stock Price Used for Calculation})$$

- Adjustment factor for each constituent = Theoretical weight \times Fixed value*2 \div Last stock price used for calculation on weighting base date

*2 The fixed value is 10 to the power of X (10^X). JPXI will determine the appropriate integer value for X each time based on the stock price level of the constituents.

- For information on non-periodic reviews of adjustment factors, refer to "4. Review of adjustment factors".
- Theoretical weight is calculated in accordance with each index guidebook.

3) Equal weighting

$$\text{Index} = \frac{\text{Current modified market value}}{\text{Base market value}} \times \text{Base Point}$$

Modified market value =

$\sum (\text{Adjustment factor for each constituent} \times 10,000 \times \text{Stock price used for calculation})$

- Adjustment factor for each constituent = Theoretical weight \times Fixed value* \div Last stock price used for calculation on weighting base date
*The fixed value is 10 to the power of X (10^X). JPXI will determine the appropriate integer value for X each time based on the stock price level of the constituents.
- For information on non-periodic reviews of adjustment factors, refer to "4. Reviews of adjustment factors".

4) Non-market capitalization weighting (modified market cap weighting, etc.)

$$\text{Index} = \frac{\text{Current modified market value}}{\text{Base market value}} \times \text{Base Point}$$

Modified market value =

$\sum (\text{Adjustment factor for each constituent} \times 10,000 \times \text{Stock price used for calculation})$

- Adjustment factor for each constituent = Theoretical weight \times Fixed value* \div Last stock price used for calculation on weighting base date
*The fixed value is 10 to the power of X (10^X). JPXI will determine the appropriate integer value for X each time based on the stock price level of the constituents.
- For information on non-periodic reviews of adjustment factors, refer to "4. Reviews of adjustment factors".
- Theoretical weight is calculated in accordance with each index guidebook.

3. Stock Price Used for Calculation

- The stock prices used for calculating TOPIX, etc. and for adjusting the indices' base market values and divisors are taken from price information from auction trading on Tokyo Stock Exchange (hereinafter "TSE") and are determined by the following order of priority:

(1) Special Quote Price or Sequential Trade Quote Price, (2) Contract Price, (3) Base Price for Index Calculation (determined in the following order: (i) Theoretical Ex-rights Price, (ii) Most Recent Special Quote Price or Sequential Trade Quote Price on or before the previous trading day, (iii) Most Recent Contract Price on or before the previous trading day.)

4. Reviews of adjustment factors

- Stock split
In the event that a stock split is conducted, the adjustment factor will be changed as follows, with the ex-rights date as the index adjustment date.
$$\text{New adjustment factor} = \text{Adjustment factor} \times \text{Split ratio}$$
- Capital increase through gratis allotment of subscription warrants
In the event that a capital increase through gratis allotment of subscription warrants is conducted, the adjustment factor will be changed as follows, with the ex-rights date as the index adjustment date.
$$\text{New adjustment factor} = \text{Adjustment factor} \times (1 + \text{Allotment ratio})$$
- Capital increase through allotment to shareholders
In the event that a capital increase through allotment to shareholders is conducted, the adjustment factor will be changed as follows, with the ex-rights date as the index adjustment date.
$$\text{New adjustment factor} = \text{Adjustment factor} \times (1 + \text{Allotment ratio})$$
- Reverse stock split
In the event that a reverse stock split is conducted, the adjustment factor will be changed as follows, with the ex-rights date as the index adjustment date.
$$\text{New adjustment factor} = \text{Adjustment factor} \div \text{Reverse split ratio}$$
- Merger
In a merger, if the surviving company and the non-surviving company are both constituents, the adjustment factor of the surviving issue is changed.

II. Adjustments to Base Market Value, etc.

Whenever the market value of the index changes due to an increase or decrease in constituents, capital increase, or similar events other than market fluctuations, the base market values and divisors for the index are adjusted as follows to maintain continuity.

1. Events that Require Adjustment

1) Inclusion or Removal of Constituents

Event Requiring Adjustment	Adjustment Date (*1)	Stock Price Used for Adjustment
Inclusion of constituents	Date of inclusion	Stock price at end of trading on business day before adjustment date (if the constituent is included from its new listing date, the base price)
Removal of constituents	Date of removal	Stock price at end of trading on business day before adjustment date (if the constituent is removed on or after its delisting date, stock price at end of trading on business day before delisting date (*2))

*1: Adjustments to the base market value are made after the end of trading on the business day before the adjustment date (i.e., before the market opens on the adjustment date). The same shall apply hereinafter.

*2: 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

Market capitalization weighting

Event Requiring Adjustment	Adjustment Date	Stock Price Used in Adjustment
Changes in free-float weight (FFW)	Date of change	Stock price at end of trading on business day before adjustment date
Public offering	Additional listing date (day after payment date) (*1)	Stock price at end of trading on business day before adjustment date

Event Requiring Adjustment		Adjustment Date	Stock Price Used in Adjustment
Third-party allotment		Five business days after additional listing date (which is two business days after payment date)	Stock price at end of trading on business day before adjustment date
Capital increase through allotment to shareholders		Ex-rights date	Payment price per share
Exercise of subscription warrants		Last business day of the month following exercise	Stock price at end of trading on business day before adjustment date
Conversion of preferred stock, etc.		Last business day of the month following conversion	Stock price at end of trading on business day before adjustment date
Cancellation of treasury stock		Last business day of the month following cancellation	Stock price at end of trading on business day before adjustment date
Merger/Stock swap	Situations in which a constituent of JPXI-calculated indices (*2) is the non-surviving company (mergers/stock swaps between two issues that are both constituents of an index calculated by JPXI)	Delisting date of the non-surviving company	Stock price at end of trading on business day before adjustment date
	Situations other than those described above (including the share delivery where the share delivery subsidiary is an unlisted company)	Listing change date (effective date)	Stock price at end of trading on business day before adjustment date
Sale of shares held by the Government of Japan (Nippon		Date determined by JPXI (*3)	Stock price at end of trading on business

Event Requiring Adjustment	Adjustment Date	Stock Price Used in Adjustment
Telegraph, Telephone and Japan Tobacco and Japan Post Holdings only)		day before adjustment date
Rights offering (limited to cases where the allotted subscription warrant securities are listed) (*4)	Ex-rights date	Payment price per share
Demerger (absorption-type)	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 an increase (or decrease) in the number of shares used for index calculation such as a stock split, reverse stock split, or gratis allotment of shares (limited to cases where treasury stock is allotted), etc., no adjustment is made to the base value.

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

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

*3: Generally the delivery date

*4: Capital increase through gratis allotment of subscription warrants (namely, rights offering) corresponds to an increase in shares by the number of shares calculated by multiplying the number of listed shares used for index calculation as of the last day with rights by the number of subscription warrants allotted per share. When the subscription warrants securities allocated are not listed, they are 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 stock splits, or share allotments to shareholders, etc. is different than the final number of shares determined after the effective date; or revisions have been made by listed companies after data has been reflected in index calculation ; or, in the case of shares held by the Government of Japan being sold, when the

determination of the number of shares is announced in “Sho-ho” (TSE Notice) after the date of the additional listing.

- *6: If the adjustment date is significantly close to the date of the announcement in “Sho-ho” (TSE Notice), as a general rule the event requiring adjustment will be reflected as an “other adjustment” at a later date.

3) Changes in adjustment factors

Stock price average, equal weighting, non-market capitalization weighting

Event Requiring Adjustment	Adjustment Date	Stock Price Used for Adjustment
Capital increase through allotment to shareholders	Ex-rights date	Payment price per share
Rights offering (limited to cases where the allotted subscription warrants are listed)	Ex-rights date	Payment price per share
Change of adjustment factor	Date of change	Stock price on business day before adjustment date

- *: Divisors and base market values are not adjusted in cases where stock prices are adjusted because of an increase (or decrease) in the adjustment factor, such as a stock split or reverse stock split, since the modified market value and total constituent stock price remain unchanged.

4) Data Source

- Information on the reasons for adjustments of base market value, etc., details on the adjustments, adjustment dates and other data are 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.)
- Even if the previously announced “Sho-ho” (TSE Notice) that resulted in an index adjustment is revised based on the issuer’s report, 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)

A) Adjustment Method

- Base market value will be adjusted according to the formula below in order to maintain the continuity of the index. Market value in the calculation formula should be read as current market value, total constituent stock price, and current modified market value according to the calculation formula. In addition, base market value in the calculation formula should be read as a divisor according to the calculation formula.

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

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

Therefore,

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

B) Adjustment Example

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

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

- 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 JPY 2,000, the adjustment amount is 100 million shares x JPY 2,000 = ¥200 billion. The new base market value, therefore, is:

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

- As illustrated below, if there is no price change in any constituent, the value for index

today is the same as the previous day: 2,000 points. Thus, continuity in the index is maintained through adjustments to base market value even if the market value of constituents changes due to public offerings, etc.

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

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: A) adjustment using estimated dividends and B) minor adjustments made to reflect differences in estimated dividend and dividend amount announced in the earnings report, etc.

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 × Stock Price Used for Adjustment

B) Minor Adjustment Made to Reflect Difference Between Estimated Dividend and Dividend Announced in the Earnings Report, etc.

- 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 or the notice of dividends of surplus (hereinafter “earnings report, etc.”) are different. Specifically, the total dividend adjustment amount is calculated and the base market value adjustments are made on the last business day of the month in which the dividend is announced in the earnings report, etc. (hereinafter “publication date”; if the publication date is one business day before the last business day of the month or the last business day of the month, adjustments will be as a general rule, made on the last business day of the next month).

$\text{New Base Market Value} = \frac{\text{Old Base Market Value} \times (\text{Previous Business Day Market Value} - \text{Total Dividend Adjustment} \pm \text{Adjustment Amount})}{\text{Previous Business Day Market Value}}$
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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 Report, etc. - 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

- 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 is withholding tax rate for listing shares (except for the local tax) at the adjustment date.

III. Contact

JPX Market Innovation & Research, Inc.

Index Business Department

Email: index@jpx.co.jp