

FAQ (Nikkei Stock Average)

Nikkei Inc.

(April 4, 2022 version)

<1.Basics>

1-1. I often see the Nikkei225 in the newspaper or TV programs. What is the Nikkei225?

Nikkei225 is the stock market index calculated and published by a Japanese newspaper publisher Nikkei Inc. The formal name of the index is the “Nikkei Stock Average”. It is comprised of the 225 highly liquid stocks of the Tokyo Stock Exchange Prime Market and the constituents are selected by considering the weights of the industrial sectors. In the long history of more than 70 years, the index has been widely followed as a barometer of the market or the state of the economy. It has been used for the popular financial products such as the index futures contracts or index funds. The Nikkei225 is the major index for the financial products for the Japanese equity market.

1-2. How did you choose the 225 stocks and why is it “225”?

Since the history of the index started in 1950, more than 70 years ago, precise record does not exist how such stocks were chosen at the beginning. However, it is said that the number of constituents turned out to be 225 when stocks were chosen by trading volume and the industry balance. There has not been a special meaning to the number “225”. Since the index is widely known as “Nikkei225” now, we decided to inherit this index as a “stock index of 225 constituents”.

1-3. What kind of stocks can be a constituent?

A constituent must be a domestic old share listed in the Tokyo Stock Exchange Prime Market. At the same time, it must be an ordinary share and ETF, REIT, preferred stock, or preferred security cannot be a constituent.

1-4. Is it always calculated with 225 stocks?

Basic rule is to calculate with the 225 stocks. However, in some cases as exemplified below, it may be calculated with less than 225 stocks. Divisor is adjusted every time the constituents are changed to maintain continuity.

An example is when a constituent is delisted due to the corporate restructuring and the newly formed parent company is listed in a short period, and such a parent company is selected as a new constituent.

1-5. When was the calculation started? Has it been calculated by Nikkei since then?

Daily calculation of the Nikkei225 started on September 7, 1950 (the index was calculated back to May 16, 1949 when the Tokyo Stock Exchange reopened after the war). At that time, the Tokyo Stock Exchange calculated and announced the index as “TSE adjusted average price”. Along with the Tokyo Stock Exchange started the “TOPIX” index, Nikkei group succeeded the calculation in 1970.

<2. Calculation methodology>

2-1. How often is the Nikkei225 calculated?

During the trading hours of the Tokyo Stock Exchange, the index is calculated every 5 seconds. The opening index for the day is at 09:00:05. 5 second interval is from July 18, 2017. From 1985, when intraday calculation started, to the end of 2009, the index was in every 1 minute. And from the beginning of 2010 to July 14, 2017, the index was calculated in every 15 seconds.

2-2. How do you calculate the Nikkei225?

① Prices of the constituents are adjusted by the Price Adjustment Factor (PAF), ② Such adjusted prices are summed and divided by the divisor. Third digit under the decimal is rounded to make the index have two digits under the decimal.

$$\begin{aligned} \text{Adjusted price of constituent A} &= \text{price of A} \times \text{PAF of A} \\ \text{Nikkei225} &= \text{Sum of Adjusted price of all of the constituents} / \text{Divisor} \end{aligned}$$

2-3. What is the “Price Adjustment Factor (PAF)”?

Price Adjustment Factor (PAF) is a number which adjusts price of the constituents. Each constituent stock price is adjusted by the PAF and the Nikkei 225 is calculated by dividing the summation of the adjusted prices by the divisor. PAF is used to adjust the level of the stock prices since October 2021, and before that the level of stock prices were adjusted by the "presumed par value" although the Japanese stocks did not have a “Par value” then. The par value system was abolished by the revision of the Commercial Law in October 2001. Even after the abolishment of the system, many of the stock prices had been formed based on the ex-par value such as 50, 500, or 50,000 yen. For example, stocks traded by 1 share (ex-par value tend to be 50,000 yen) and stocks traded by a lot of 100 or 1000 shares had different level of prices. It was not appropriate to use the price of such different levels as they are to calculate the index. For this reason, Nikkei used “presumed” par value which succeeds the ex-par value, and adjusted the prices of the constituent to the presumed par value of 50 yen since the revision of the Commercial Law in October 2001.

2-4. What is “change in Price Adjustment Factor (PAF)”?

Same as the treatment on "change in presumed par value" based on the announcement of “Measures to large scale reverse splits” on June 7, 2005, when a stock goes a large scale split or reverse split, PAF is changed to keep the price level in the index calculation unchanged in stead of adjusting the divisor in principle. For example, if

a stock goes 1 to 10 split and such a stock has a PAF of 1, the new PAF will be 10. The PAF is adjusted in proportion to the ratio of the split.

When a stock is split / reverse split in a large scale, adjusting the index by the divisor change may have negative impact on the nature of the index or its continuity, PAF is changed so that the price of such a stock does not change before and after the incident.

2-5. Where can I find the Price Adjustment Factor (PAF) of the constituents?

In the Index Information page of the Nikkei Stock Average on this site, there is a list of the PAFs as a CSV file.

2-6. What is the divisor and when is it changed?

Arithmetic average of the stock prices can be found by dividing the sum of prices (numerator) by the number of such prices (denominator). This average is, however, not continuous if a stock is split or reverse split, or the constituents are changed. To warrant the continuity in these “non market price change” (price change not due to supply and demand in the market) events, the denominator (divisor) is adjusted to cancel the change in the numerator. Also note that in large scale split or reverse split, Price Adjustment Factor (PAF) may be changed in stead of the divisor. See No.2-5 above.

For example, think about an adjusted average of three stocks, A, B, and C. The PAF of them are 1, and the prices are A=400yen, B=500yen, and C=900yen. Sum of prices is 1800yen and the original divisor is 3, which yields the index at 600yen. Now, if A is deleted and D (stock price 1000yen, PAF is 1) is added, the sum of prices of B,C,D is 2400yen and if the denominator stays at 3, the index will be 800yen. This change of the index (from 1800 to 2400) is due to the change in the constituents and not due to the price changes in the market. It is wrong to see that the market went up by observing this index. In this case, the ratio of the sum of prices before and after the constituent change is multiplied by the original divisor to have the new divisor, i.e. $3 \times 2400/1800 = 4$. Using this new divisor, the index is $2400 / 4 = 600$, which is the same as before the constituent change.

2-7. Where can I find the divisor? Do you have past divisors?

Divisor is shown on the “Close-up Nikkei Stock Average” of the morning edition of the Nihon Keizai Shimbun (a Japanese newspaper). The divisor there is the one used on the previous day. You may also find it in the top page of this site and information vendor terminals such as QUICK. The current divisor could be found

in the “[Nikkei 225 page](#)” and also the historical divisors on a specific date since September 30, 2004 can be found in the “[Daily Summary](#)” page on this site.

2-8. What is the “magnification” shown on the newspaper, Nihon Keizai Shimbun?

The Magnification of the Nikkei225 is the ratio of the Nikkei225 to the arithmetic average of the 225 constituent (adjusted) prices. In other words, it shows how much the change in the Nikkei225 is powered by 1 yen change in the arithmetic average.

2-9. The Nikkei225 I calculated is different from the one on the paper?

Prices used in the calculation are selected in the order of 1.Special Quote or sequential trade quote 2.Traded price 3.Base price.

To translate this priority into the closing index, Traded price (2) is the closing price, and this is used in many cases. However, if a stock closes by special quote, such special quote is used even when there is a traded price during the day. In many cases, such special quote is not shown on the newspaper or other media. This is a typical reason why your calculation is different from the official figure.

< 3. Constituent change >

3-1. When are the constituents changed?

Constituents may be changed by a “Periodic Review” conducted once a year by Nikkei and by an “Extraordinary Replacement” where a vacancy created by delisting of a constituent is filled by a new constituent.

3-2. What is the “Periodic Review”?

By choosing market representative constituents, Nikkei225 maintains its continuity and nature of index. Once a year this “market representativeness” is examined and necessary changes are made to the index. This is the “Periodic Review”.

3-3. What are the “Sectors”?

To take changes in the industry structure into the index, balance of the industrial sectors are considered in the periodic review by adding new constituents to the sector where shortage exists and deleting from the sectors where overage exists. Sectors are groups of the Nikkei industry classification (36 industries). Currently, they are “Technology”, “Financials”, “Consumer Goods”, “Materials”, “Capital Goods/Others”, and “Transportation and Utilities”.

3-4. When and how is the Periodic Review conducted?

The Periodic Review is conducted once a year in autumn. The results of the review are announced before implementation. In principle, the changes are implemented in early October. The maximum number of the constituents reshuffled is 3 since October 2021. There are cases that no constituent is changed as a result. In periodic review, the liquidity of each stock and the sector balance are examined. Considering the balance of the sectors, those stocks with higher liquidity are added and lower liquidity are deleted.

3-5. When is the result of the periodic review announced?

There is no fixed schedule of announcement. In principle, the changes are implemented in early October and the announcements tend to be made in early September. For example, however, in 2011, there were several corporate restructuring events in August and September, and the announcement was made in early August. The periodic review also corresponded to the events in August and September. Basically, time is taken between the announcement and implementation to ensure the information is well acknowledged by the users.

3-6. When will the extraordinary replacement happen?

It happens when a constituent is delisted or moved to other market than the Prime of the Tokyo Stock Exchange. Such deletion may be due to bankruptcy, corporate restructuring (creating joint parent company, merger, etc). In addition, a constituent is deleted when it is designated as a “Securities to be delisted” (Seiri-Meigara) by the exchange before actually delisted. The replacement stock is added promptly by the extraordinary replacement procedure.

A constituent designated as “a security under supervision” remains to be a constituent at the time of designation. However, Nikkei may replace such a constituent with a pre-announcement when it is highly inappropriate to keep the stock as a constituent, e.g. probability of delisting is extremely high.

3-7. How do you choose the replacement stock in extraordinary replacement?

In principle, it is chosen by the liquidity in the same sector. However, the new constituents may be chosen in other rational reasons. For example, when the new joint parent company is created and listed shortly after the delisting of the constituent, such new parent company may be chosen as a successor. Or, when a multiple corporate restructuring happens in a short period, periodic review process may be applied.

3-8. What happens if a constituent is designated as “a stock under supervision”?

A constituent designated as “a security under supervision” remains to be a constituent at the time of designation. However, Nikkei may replace such a constituent with pre-announcement period (approximately 2 weeks) when it is highly inappropriate to keep the stock as a constituent, e.g. probability of delisting is extremely high as a result of successful TOB.

3-9. When are the extraordinary replacement announced and implemented?

When the date of the event is known beforehand, such as delisting due to corporate restructuring or transfer to the second section, such deletion date will be the implementation day and the names of deletions and additions will be preannounced. For the sudden designation as a stock to be delisted triggered by the filing for bankruptcy, for example, basic rule is to replace such constituent after 5 business days of designation.

In case that a constituent designated as a stock under supervision is deemed as highly inappropriate and will be deleted, the announcement will be made approximately two

weeks before its effective date. Even if such a constituent is designated as a stock to be delisted before the pre-announced effective date, the pre-announced effective date survives.

3-10. Have the rules of the constituents change been changed?

Body of the current rules have been in place since April 2000. In the past, only when a constituent was deleted due to bankruptcy or restructuring, new constituent with high liquidity was added. Since October 1991, concept of the periodic review was implemented. The rules of the 1991 was to delete low liquidity constituents and add high liquidity stocks only and did not incorporate the ideas to add highly liquid stocks actively or balance the sector weights. Since April 2000, there have been some amendments such as limiting the maximum number of constituents reshuffled in the periodic review to 3.

3-11. Were there any change in “Constituents Selection Rules” after the equity market merger of TSE and OSE as of July 16th, 2013?

Although there was no amendment in “Constituents Selection Rules”, Nikkei has announced a change in the treatment of “Liquidity” data in the process of the constituent selection after the equity market integration, i.e. “Treatment for the constituent selection of Nikkei Stock Average corresponding to the market consolidation” dated June 27th 2013. Basically, in all of the issues listed on TSE 1st Section after the merger, (1)TSE/OSE 1st Sections cross-listed issues which had been more actively traded at OSE before the merger, or (2)OSE 1st Section solely-listed issues before the merger will be assessed for the “Liquidity” measure based on the trading information from the OSE, e.g. “trading value” before the merger in the assessment period.

< 4. Others >

4-1. What is the TOPIX index?

TOPIX is another stock market index for the Tokyo Stock Exchange (TSE) calculated by JPX Market Innovation & Research. It is mainly comprised of the stocks listed in TSE Prime Market and calculated by market value weighted index.

4-2. How is the Nikkei225 different from the TOPIX?

The Nikkei225 is an index of 225 selected stocks from the Tokyo Stock Exchange Prime Market and calculated by price weighted method. The TOPIX is calculated mainly with the stocks in the Tokyo Stock Exchange Prime Market using the market value weighted method.

Since the Nikkei225 is price weighted, it tends to be influenced by high-price stocks such as high-tech. TOPIX, on the other hand, is influenced by the stocks with large market value such as financials. Although the constituents and the calculation method are different, they show high correlation. Please refer to the appropriate pages of the Japan Exchange Group website for the detail of the TOPIX.

4-3. Is the Nikkei225 calculation method same as the DJIA ?

Most of the stock index is classified, in terms of the method, into two categories. One is the price average like the Nikkei225 and the other is market value ratio such as the TOPIX. The Nikkei225 and the DJIA are both in the category of the “price average” and adjusted where divisor (denominator) is adjusted in the price changes due to stock splits, reverse splits, or constituent change, in other words, due to the non-market price changes.

4-4. What are “TSE Dow” or “Nikkei Dow”?

“TSE Dow” and “Nikkei Dow” are the former names of the Nikkei225. From May 1975 to May 1985, Nikkei was licensed to use the “Dow” name from the Dow Jones & Co. and the Nikkei225 was called the “Nikkei Dow”. Some media used the “TSE (Tokyo Stock Exchange) Dow” which is remembered by some people.

4-5. How do I know the past index values?

You may find the information in this site. In the “[Historical Data \(Nikkei 225\)](#)” page of “Archives”, you may find daily, monthly, and annual indices. In daily format, by

specifying the year and month, daily indices in such month are displayed.

4-6. Can I find the past record (rise and fall)?

You may find it in this site. In the “[Records in Nikkei 225](#)” pages of “Archives”, there are top 20 of Rise Rate (Fall Rate), Rise Width (Fall Width), Continuous Rise (Continuous Fall) since the start of the index can be displayed.

<5. Licensing >

5-1. Where are the Nikkei225 futures and options traded?

Currently, the Nikkei225 futures and options are listed and traded in the Osaka Exchange (Japan), Chicago Mercantile Exchange (US), SGX (Singapore), and B3(Brazil). Although there are US Dollar denominated contracts in CME and SGX, trading is more active in Japanese Yen denominated futures contracts in each exchange. For options, Osaka is the most active market. Please refer to the website of each exchange for the detail of the trading volume.

5-2. Where are the Nikkei225 ETFs traded?

In Japan, there are nine in Tokyo. Overseas, some in Europe such as Germany, China, Taiwan and South Korea etc.

5-3. What is the approximate size of the Nikkei225 index funds?

Although depending on the market level and the inflows/outflows, the approximate size as of June 2020 is 14 trillion yen of ETFs and 1.4 trillion yen of index funds.

5-4. Do I need a permission to issue a financial product related to the Nikkei225?

Yes, you need to enter into a license agreement with Nikkei Inc. to create and market financial products which is linked or referenced to the Nikkei225. This is the same for all the Nikkei indices, including the Nikkei225. Please contact [here](#) for more detail.

5-5. I would like to use the Nikkei225 on the website. What do I need to do?

When you provide the Nikkei225 to third parties, free or priced, you need a license agreement or a memorandum with Nikkei Inc. There are different procedures for “Real time index distribution”, “Delayed index distribution (minimum 20 minutes)”, and “Closing index or index updated several times a day”. Please contact [here](#) for more detail.

5-6. What do I have to do if I would like to use the index in publications or TV program?

In principle, so long as the index is used temporally (not in regular publications or programs), you may use the index without filling a memorandum with Nikkei Inc. so long as the “Nikkei Stock Average” or “Nikkei225” names are used and copyright

notice is properly shown. Please contact [here](#) for detail.

5-7. I am managing index linked financial products. Where can I find the necessary data?

This site provides “Index Data Service” (e.g. prices and weights of the component and long-term historical data) and “Alert Mail”(deliver crucial news, e.g. an announcement of changes in the components) at fees. Please see [here](#) for detail.

In addition, if you need to systematically process such information, Digital Media Bureau of Nikkei, the database service section, provides the data via transmission under NEEDS brandname.

5-8. Can I find the historical index value such as the Nikkei225 since the very first day of calculation?

For the Nikkei225, you can find it in the “Archives” page of this site in principle. For other Nikkei indexes, please refer to each index page or the Download Centers of “Indexes” page. There are 3-year daily data and 10-year monthly data. In the “Data Service” page which needs to subscribe, you may obtain all the historical data including retroactive data (except for Nikkei Stock Average; Nikkei Stock Average could obtain from the beginning of 1970) at once.

5-9. Can I find the constituents and the stock prices in the past?

Some historical constituent level information is available in the “Data Service” page of this site. We also carry the list of changes in the Nikkei225 constituents from 1970 (PDF file) at the “Related Information” in the Index Information page of the Nikkei225. For more specific data, such as the constituents on a specified day or during some period, we may create and send you the data at fees. Please contact [here](#) for more detail.

5-10. How is the Nikkei Stock Average administered?

Nikkei indexes, including the Nikkei Stock Average, is administered in accordance with the index management policies of Nikkei. Nikkei also complies with the “Principles for Financial Benchmarks” of the International Organization of Securities Commissions (IOSCO) and make its report of compliance audited by a third party available on the Governance page of this site. Nikkei is a recognized third country benchmark administrator under EU Benchmark Regulation.

5-11. What should I do when I have questions regarding the Nikkei indexes?

Please send your queries from the “Contact” form at the bottom of the pages on this site. Although we try to reply as soon as possible, please note that it may take some time in certain circumstances.