

S&P 500 IQ Indices *Methodology*

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Introduction

Index Objective and Highlights

The S&P 500 IQ Index aims to provide exposure to the S&P 500 (the “Underlying Index”) while applying an intraday volatility control mechanism. The index rebalances once daily using a time-weighted average price (TWAP) as defined in *Index Maintenance*.

For information on the S&P 500, please refer to the S&P U.S. Indices Methodology document, available at www.spglobal.com/spdji/.

Index Family

The index family includes the following:

Index	Volatility Target ¹	Decrement Factor
S&P 500 IQ Index (USD) ER	15%	0% p.a.
S&P 500 IQ 0.5% Decrement Index (USD) ER	15%	0.50% p.a.

Supporting Documents

This methodology is meant to be read in conjunction with supporting documents providing greater detail with respect to the policies, procedures and calculations described herein. References throughout the methodology direct the reader to the relevant supporting document for further information on a specific topic. The list of the main supplemental documents for this methodology and the hyperlinks to those documents is as follows:

Supporting Document	URL
S&P Dow Jones Indices’ Equity Indices Policies & Practices Methodology	Equity Indices Policies & Practices
S&P Dow Jones Indices’ Index Mathematics Methodology	Index Mathematics Methodology

This methodology was created by S&P Dow Jones Indices to achieve the aforementioned objective of measuring the underlying interest of each index governed by this methodology document. Any changes to or deviations from this methodology are made in the sole judgment and discretion of S&P Dow Jones Indices so that the index continues to achieve its objective.

¹ The target volatilities which determine index exposure are based on an exponentially decaying calculation using one intraday point. The actual index realized volatility may deviate from the target volatilities.

Index Construction

For each index calculation day, the index calculates as follows:

$$Index_t = Index_{t-1} + n_{t-1} \left[SPTR_t - SPTR_{t-1} \times \left(1 + FedFunds_{t-1} \times \frac{Act(t-1, t)}{360} \right) \right]$$

where:

- $Index_t$ = The closing level of the Index for day t
- $SPTR_t$ = The closing level of the Underlying Index (S&P 500 Total Return Index) for day t
- n_t = Number of units held of the Underlying Index for day t
- $FedFunds_t$ = The Federal Funds rate for day t
- $Act(t-1, t)$ = The actual number of days between the previous trading day and day t

For each index calculation day, the number of units held of the Underlying Index calculates as follows:

$$n_t = w_t \times \frac{Index_{t-1}}{SPTR_{t,i}}$$

where:

- $SPTR_{t,i}$ = The TWAP level of the Underlying Index for the intraday observation window i
- w_t = The calculated target weight of the Index for day t

For each index calculation day, the target weight of the Index calculates as follows:

$$w_t = \min \left(200\%, VAF_{t-1} \times \frac{VolatilityTarget}{Volatility_t} \right)$$

where:

- VAF_t = The volatility adjustment factor for day t
- $Volatility_t$ = The estimated volatility for the Underlying Index for day t
- $VolatilityTarget$ = The volatility target for the index (15%)

For each index calculation day, the volatility estimate calculates as follows:

$$Volatility_t = \sqrt{\max(Variance_t^{LT}, Variance_t^{ST})}$$

where:

- $Variance_t^{LT}$ = The estimated long-term variance for the Underlying Index for day t
- $Variance_t^{ST}$ = The estimated short-term variance for the Underlying Index for day t

For each index calculation day, the long-term and short-term variance estimates calculate as follows:

$$Variance_t^{LT} = \lambda_L \times Variance_{t-1}^{LT} + (1 - \lambda_L) \times 1.07^2 \times \left(\frac{SPTR_{t,i}}{SPTR_{t-1}} - 1 \right)^2 \times 252$$

$$Variance_t^{ST} = \lambda_S \times Variance_{t-1}^{ST} + (1 - \lambda_S) \times 1.07^2 \times \left(\frac{SPTR_{t,i}}{SPTR_{t-1}} - 1 \right)^2 \times 252$$

where:

λ_L = The long-term decay factor for the variance calculation equal to 0.95

λ_S = The short-term decay factor for the variance calculation equal to 0.8

The initial values are set to:

$$Variance_0^{LT} = 0.0225$$

$$Variance_0^{ST} = 0.0225$$

For each index calculation day, the volatility adjustment factor calculates as:

$$VAF_t = \frac{Volatility\ Target}{\sqrt{IndexVariance_t}}$$

where:

$IndexVariance_t$ = The calculated variance estimate for the index for day t

For each index calculation day, the index variance estimate calculates as follows:

$$IndexVariance_t = \lambda_{VAF} \times IndexVariance_{t-1} + (1 - \lambda_{VAF}) \times \left(\frac{Index_t}{Index_{t-1}} - 1 \right)^2 \times 252$$

where:

λ_{VAF} = The decay factor for the volatility adjustment factor equal to 0.99

The initial values are set to:

$$VAF_0 = 1$$

$$IndexVariance_0 = 0.0225$$

Index Maintenance

Rebalancing

The index rebalances once daily, using two data points: one for calculation of the signal and one for execution of the rebalancing. The following are the periods for the rebalance:

Intraday TWAP Observation Period	Rebalance Price
TWAP of 3:25 to 3:30PM ET	Closing price of the Underlying Index

At each signal observation period, the TWAP calculates and the index calculation follows from that price. The rebalance price is the closing price for the Underlying Index.

On scheduled partial trading days, the Intraday TWAP Observation Period is 12:25 to 12:30PM ET and the rebalance price is the closing price on the partial day.

Currency of Calculation and Additional Index Return Series

The indices calculate in U.S. dollars.

In addition to the indices detailed in this methodology, additional return series versions of the indices may be available, including, but not limited to: currency, currency hedged, decrement, fair value, inverse, leveraged, and risk control versions. For a list of available indices, please refer to the [S&P DJI Methodology & Regulatory Status Database](#).

For information on index calculation, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.

For the inputs necessary to calculate certain types of indices, including decrement, dynamic hedged, fair value, and risk control indices, please refer to the Parameters documents available at www.spglobal.com/spdji/.

Base Date and History Availability

The index history availability, base dates, and base values are shown in the table below.

Index	Launch Date	First Value Date	Base Date	Base Value
S&P 500 IQ Index (USD) ER	07/12/2023	09/24/2009	09/24/2009	100
S&P 500 IQ 0.5% Decrement Index (USD) ER	07/12/2023	09/24/2009	09/24/2009	100

Index Governance

Index Committee

An S&P Dow Jones Indices' Index Committee maintains the index. All committee members are full-time professional members of S&P Dow Jones Indices' staff. The Index Committee meets regularly. At each meeting, the Committee reviews pending corporate actions that may affect index constituents, statistics comparing the composition of the indices to the market, companies that are being considered as candidates for addition to the indices, and any significant market events. In addition, the Index Committee may revise index policy covering rules for selecting companies, treatment of dividends, share counts or other matters.

S&P Dow Jones Indices considers information about changes to its indices and related matters to be potentially market moving and material. Therefore, all Index Committee discussions are confidential.

S&P Dow Jones Indices' Index Committees reserve the right to make exceptions when applying the methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews the methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. In certain instances, S&P Dow Jones Indices may publish a consultation inviting comments from external parties.

For information on Quality Assurance and Internal Reviews of Methodology, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

Index Policy

Announcements

All index constituents are evaluated daily for data needed to calculate index levels and returns. All events affecting the daily index calculation are typically announced in advance via the Index Corporate Events report (.SDE), delivered daily to all clients. Any unusual treatment of a corporate action or short notice of an event may be communicated via email to clients.

For more information, please refer to the Announcements section of S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

Pro-forma Files

In addition to the corporate events file (.SDE), S&P Dow Jones Indices provides constituent pro-forma files each time the index rebalances. The pro-forma file is typically provided daily in advance of the rebalancing date and contains all constituents and their corresponding weights and index shares effective for the upcoming rebalancing. Since index shares are assigned based on prices prior to the rebalancing, the actual weight of each stock at the rebalancing differs from these weights due to market movements.

Please visit www.spglobal.com/spdji/ for a complete schedule of rebalancing timelines and pro-forma delivery times.

Holiday Schedule

The index calculates daily, throughout the calendar year, when the U.S. equity markets are open.

A complete holiday schedule for the year is available on S&P Dow Jones Indices' Web site at www.spglobal.com/spdji/.

Rebalancing

The Index Committee may change the date of a given rebalancing for reasons including market holidays occurring on or around the scheduled rebalancing date. Any such change will be announced with proper advance notice where possible.

Unexpected Exchange Closures

For information on Unexpected Exchange Closures, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

Recalculation Policy

For information on the recalculation policy, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

Real-Time Calculation

Real-time, intra-day, index calculations are executed for some versions of the index, whenever the index's primary exchanges are open. Real-time indices are not restated.

For information on Calculations and Pricing Disruptions, Expert Judgment and Data Hierarchy, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

Contact Information

For questions regarding an index, please contact: index_services@spglobal.com.

Index Dissemination

Index levels are available through S&P Dow Jones Indices' Web site at www.spglobal.com/spdji/, major quote vendors (see codes below), numerous investment-oriented Web sites, and various print and electronic media.

Tickers

The table below lists headline indices covered by this document. All versions of the below indices that may exist are also covered by this document. Please refer to the [S&P DJI Methodology & Regulatory Status Database](#) for a complete list of indices covered by this document.

Index	Bloomberg	RIC
S&P 500 IQ Index (USD) ER	SPFEVCI	.SPFEVCI
S&P 500 IQ 0.5% Decrement Index (USD) ER	SPFEVCID	.SPFEVCID

Index Data

Daily constituent and index level data are available via subscription.

For product information, please contact S&P Dow Jones Indices, www.spglobal.com/spdji/en/contact-us.

Web Site

For further information, please refer to S&P Dow Jones Indices' Web site at www.spglobal.com/spdji/.

Disclaimer

Performance Disclosure/Back-Tested Data

Where applicable, S&P Dow Jones Indices and its index-related affiliates (“S&P DJI”) defines various dates to assist our clients in providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the index is set to a fixed value for calculation purposes. The Launch Date designates the date when the values of an index are first considered live: index values provided for any date or time period prior to the index’s Launch Date are considered back-tested. S&P DJI defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company’s public website or its data feed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed “Date of introduction”) is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index’s public release date.

Please refer to the methodology for the Index for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Information presented prior to an index’s launch date is hypothetical back-tested performance, not actual performance, and is based on the index methodology in effect on the launch date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. In addition, forks have not been factored into the back-test data with respect to the S&P Cryptocurrency Indices. For the S&P Cryptocurrency Top 5 & 10 Equal Weight Indices, the custody element of the methodology was not considered; the back-test history is based on the index constituents that meet the custody element as of the Launch Date. Back-tested performance reflects application of an index methodology and selection of index constituents with the benefit of hindsight and knowledge of factors that may have positively affected its performance, cannot account for all financial risk that may affect results and may be considered to reflect survivor/look ahead bias. Actual returns may differ significantly from, and be lower than, back-tested returns. Past performance is not an indication or guarantee of future results.

Typically, when S&P DJI creates back-tested index data, S&P DJI uses actual historical constituent-level data (e.g., historical price, market capitalization, and corporate action data) in its calculations. As ESG investing is still in early stages of development, certain datapoints used to calculate certain ESG indices may not be available for the entire desired period of back-tested history. The same data availability issue could be true for other indices as well. In cases when actual data is not available for all relevant historical periods, S&P DJI may employ a process of using “Backward Data Assumption” (or pulling back) of ESG data for the calculation of back-tested historical performance. “Backward Data Assumption” is a process that applies the earliest actual live data point available for an index constituent company to all prior historical instances in the index performance. For example, Backward Data Assumption inherently assumes that companies currently not involved in a specific business activity (also known as “product involvement”) were never involved historically and similarly also assumes that companies currently involved in a specific business activity were involved historically too. The Backward Data Assumption allows the hypothetical back-test to be extended over more historical years than would be feasible using only actual data. For more information on “Backward Data Assumption” please refer to the FAQ. The methodology and factsheets of any index that employs backward assumption in the back-tested history will explicitly state so. The methodology will include an Appendix with a table setting forth the specific

data points and relevant time period for which backward projected data was used. Index returns shown do not represent the results of actual trading of investable assets/securities. S&P DJI maintains the index and calculates the index levels and performance shown or discussed but does not manage any assets.

Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US \$100,000 investment for a 12-month period (or US \$10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US \$1,650), the net return would be 8.35% (or US \$8,350) for the year. Over a three-year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US \$5,375, and a cumulative net return of 27.2% (or US \$27,200).

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