

**Realized
Volatility Indices
*Methodology***

January 2023

Table of Contents

Introduction	2
Index Objective	2
Index Family	2
Supporting Documents	3
Index Construction	4
Realized Volatility Indices	4
Index Governance	5
Index Committee	5
Index Policy	6
Announcements	6
Holiday Schedule	6
Rebalancing	6
Unexpected Exchange Closures	6
Recalculation Policy	6
Contact Information	6
Index Dissemination	7
Index Data	7
Web site	7
Disclaimer	8
Performance Disclosure/Back-Tested Data	8
Intellectual Property Notices/Disclaimer	9

Introduction

Index Objective

The Realized Volatility Indices measure the annualized standard deviation in the daily price return of an underlying index over a given period.

The indices are available for one, three, six, and 12-month lookback periods. The lookback periods are calculated using a set number of trading days, as detailed in *Index Construction*.

Index Family

The Realized Volatility Indices consist of the following:

Index	Underlying Index
<i>U.S. Realized Volatility Indices:</i>	
S&P 500 1-Month Realized Volatility Index	S&P 500
S&P 500 3-Month Realized Volatility Index	
S&P 500 6-Month Realized Volatility Index	
S&P 500 12-Month Realized Volatility Index	
S&P MidCap 400 1-Month Realized Volatility Index	S&P MidCap 400
S&P MidCap 400 3-Month Realized Volatility Index	
S&P MidCap 400 6-Month Realized Volatility Index	
S&P MidCap 400 12-Month Realized Volatility Index	
S&P SmallCap 600 1-Month Realized Volatility Index	S&P SmallCap 600
S&P SmallCap 600 3-Month Realized Volatility Index	
S&P SmallCap 600 6-Month Realized Volatility Index	
S&P SmallCap 600 12-Month Realized Volatility Index	
S&P Composite 1500 1-Month Realized Volatility Index	S&P Composite 1500
S&P Composite 1500 3-Month Realized Volatility Index	
S&P Composite 1500 6-Month Realized Volatility Index	
S&P Composite 1500 12-Month Realized Volatility Index	
<i>Global Realized Volatility Indices:</i>	
S&P Emerging BMI 1-Month Realized Volatility Index	S&P Emerging BMI
S&P Emerging BMI 3-Month Realized Volatility Index	
S&P Emerging BMI 6-Month Realized Volatility Index	
S&P Emerging BMI 12-Month Realized Volatility Index	
S&P Global 1200 1-Month Realized Volatility Index	S&P Global 1200
S&P Global 1200 3-Month Realized Volatility Index	
S&P Global 1200 6-Month Realized Volatility Index	
S&P Global 1200 12-Month Realized Volatility Index	
S&P China 500 1-Month Realized Volatility Index	S&P China 500
S&P China 500 3-Month Realized Volatility Index	
S&P China 500 6-Month Realized Volatility Index	
S&P China 500 12-Month Realized Volatility Index	

For a complete list of Realized Volatility Indices with their respective launch dates and underlying indices, please refer to [S&P DJI's All Indices by Methodology Report](#).

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' Commodities Indices Policies & Practices Methodology	Commodities 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.

Index Construction

Realized Volatility Indices

On any business day, t , each index calculates the standard deviation of daily returns of its underlying index in the lookback period, assuming a zero mean. The indices are calculated and published daily.

Index values are calculated as follows:

$$RV_t = \sqrt{\frac{252 * \sum_{i=0}^{N-1} \left(\ln \left(\frac{PX_{t-i}}{PX_{t-i-1}} \right) \right)^2}{N}} \times 100$$

where:

- RV_t = Realized Volatility level on day t .
- PX_t = The price return index level of the underlying index on day t .
- N = Number of trading days in the lookback period.

Index	Number of Trading Days (M)
One Month Realized Volatility Index	21
Three Month Realized Volatility Index	63
Six Month Realized Volatility Index	126
Twelve Month Realized Volatility Index	252

Index Governance

Index Committee

The indices are maintained by an Index Committee. All Committee members are full-time professional members of S&P Dow Jones Indices' staff. The Committee meets regularly.

The Committee monitors overall policy guidelines and methodology and may revise index policy covering rules for including other asset classes, currencies or other matters.

It is the sole responsibility of the Index Committee to decide on all matters relating to methodology, maintenance and index procedures. The Index Committee makes decisions based on publicly available information and discussions are kept confidential to avoid any unnecessary impact on market trading.

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 document and/or Commodities Indices Policies & Practices Methodology.

Index Policy

Announcements

All methodology changes are posted to S&P Dow Jones Indices' Web site and announced via email to all clients. The latest available methodology is posted on the Web site at www.spglobal.com/spdji/.

For more information on S&P Dow Jones Indices' announcements, please refer to the Announcement Policy.

Holiday Schedule

Each index is calculated daily throughout the calendar year when its underlying index is calculated.

A complete holiday schedule for the year is available 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.

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/.

Index Data

Additional daily index level data is 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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