# **S&P Dow Jones** Indices

A Division of S&P Global

# S&P 500 Buffered Indices Methodology

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## Introduction

### Index Objective and Highlights

The S&P 500 Buffered Indices measure the performance of a strategy that targets fixed downside protection while allowing for upside participation up to a variable level on an annual basis. The index combines a long position in the "delta one" equity component (S&P 500 or S&P 500 TR) with three S&P 500 (SPX) monthly option positions of a one-year term, i.e., a long at-the-money (ATM) put option, a short out-of-the-money (OTM) put option, and a short OTM call option.

All option positions are initiated once a year on the third Friday of the month ("roll day") corresponding to the relevant series (March, June, September, December) and are held to maturity. The combination of put positions offer downside protection up to a predefined level of 10% and the net cost offsets by writing a variable OTM call option on the roll day.

### **Index Family**

The index family includes the following:

Index	Equity Component
S&P 500 10% Buffered Index March Series (USD) TR	S&P 500 TR
S&P 500 10% Buffered Index March Series (USD) PR	S&P 500
S&P 500 10% Buffered Index June Series (USD) TR	S&P 500 TR
S&P 500 10% Buffered Index June Series (USD) PR	S&P 500
S&P 500 10% Buffered Index September Series (USD) TR	S&P 500 TR
S&P 500 10% Buffered Index September Series (USD) PR	S&P 500
S&P 500 10% Buffered Index December Series (USD) TR	S&P 500 TR
S&P 500 10% Buffered Index December Series (USD) PR	S&P 500

### **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
S&P Dow Jones Indices' Options Indices Policies and Practices Methodology	Options Indices Policies & Practices 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**

### **Index Calculation**

On any business day t, the index is long the equity component and the ATM put and short the OTM put and the OTM call. The index level calculates as follows:

$$Index_t = max(0, Equity_t + PutATM_t - PutOTM_t - CallOTM_t)$$

The option positions use mid-price and share-equivalent quantities as follows:

$$\begin{aligned} PutATM_t &= Num_{PutATM,t} * Mid_{PutATM,t} \\ PutOTM_t &= Num_{PutOTM,t} * Mid_{PutOTM,t} \\ CallOTM_t &= Num_{CallOTM,t} * Mid_{CallOTM,t} \end{aligned}$$

### If t is a Roll Day

Strikes for the put and call options are determined based on the TWAP of S&P 500 (SPX) levels as follows:

 $K_{PutATM,t}$  = The nearest strike that is  $\leq SPX_t^{twap}$ 

 $K_{PutOTM,t}$  = The nearest strike that is  $\leq 0.9*SPX_t^{twap}$ . To prevent the buffer from being too wide, if the eligible strike is  $\leq 0.88*SPX_t^{twap}$ , then the index selects the nearest strike to  $> 0.9*SPX_t^{twap}$ 

 $K_{CallOTM,t}$  = OTM strike (i.e.,  $\geq SPX_t^{twap}$ ) with a TWAP bid price closest to the target bid<sup>1,2</sup> and exceeding it if possible:

where:

$$Bid_{target} = \max(0, Ask_{PutATM,t}^{twap} - Bid_{PutOTM,t}^{twap} - Div_t)$$

 $Div_t$  = Indicated annual dividend of the S&P 500 index<sup>3</sup>

The index selects the highest strike if more than one is found to satisfy the above conditions.

If  $Ask_{PutATM,t}^{twap} < (Bid_{PutOTM,t}^{twap} + Div_t)$ , the target bid price is zero, so the index selects the highest available strike.

The number of options (share-equivalent) calculate for full coverage, based on t-1 level of the index, as follows:

$$Num_{PutATM,t} = \frac{Index_{t-1}}{SPX_t^{twap}}$$

<sup>&</sup>lt;sup>1</sup> For the duration of the back test and for the September 2024 roll date, the target bid calculates using end-of-day prices of the put options, i.e.,  $Bid_{target} = \max(0, Ask_{PutATM,t} - Bid_{PutoTM,t} - Div_t)$ .

<sup>&</sup>lt;sup>2</sup> When selecting the OTM call strike ( $K_{CalloTM,t}$ ) on the roll date, the index uses the indicated dividend from the preceding monthend. The indicated dividend data is delivered to clients by the third business day of the following month.

<sup>&</sup>lt;sup>3</sup> Indicated Annual Dividend is a forward-looking number and calculates by multiplying the latest dividend paid per share by the number of dividend payments per year. For more information on S&P DJI End-of-Month Fundamental Data, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.

$$Num_{PutOTM,t} = \frac{Index_{t-1}}{SPX_t^{twap}}$$
 $Num_{CallOTM,t} = \frac{Index_{t-1}}{SPX_t^{twap}}$ 

New options expiring on the next roll day (one year in the future) are bought or sold at the end of day (EOD). There are no option positions between AM expiry and EOD on a roll day.

The equity position adjusts for payouts from the expiring options and the net cost of the new options, as follows:

$$\begin{split} Equity_t &= Equity_{t-1} \frac{IDX_t}{IDX_{t-1}} \\ &+ Num_{PutATM,t-1} \max \big(0, K_{PutATM,t-1} - SET_t \big) - Num_{PutATM,t} * Ask_{PutATM,t} \\ &- Num_{PutOTM,t-1} \max \big(0, K_{PutOTM,t-1} - SET_t \big) + Num_{PutOTM,t} * Bid_{PutOTM,t} \\ &- Num_{CallOTM,t-1} \max \big(0, SET_t - K_{CallOTM,t-1} \big) + Num_{CallOTM,t} * Bid_{CallOTM,t} \end{split}$$

where:

 $IDX_t$  = Level of the equity component  $SET_t$  = Settlement price of SPX on day t

### If t is not a Roll Day

The number of options stay the same:

$$Num_{PutATM,t} = Num_{PutATM,t-1}$$
  
 $Num_{PutOTM,t} = Num_{PutOTM,t-1}$   
 $Num_{CallOTM,t} = Num_{CallOTM,t-1}$ 

The equity position calculates as follows:

$$Equity_t = Equity_{t-1} \frac{IDX_t}{IDX_{t-1}}$$

### **Pricing**

Options prices are provided via vendor feed after market close.

For further information on pricing, please refer to S&P Dow Jones Indices' Options Indices Policies & Practices Methodology.

### **Currency of Calculation and Additional Index Return Series**

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 <a href="mailto:S&P DJI Methodology">S&P DJI Methodology</a> & Regulatory Status Database.

For information on the calculation of different types of indices, 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 <a href="https://www.spglobal.com/spdji/">www.spglobal.com/spdji/</a>.

### **Base Date and History Availability**

The index history availability, base date, and base value are shown in the table below.

Index	Launch Date	First Value Date	Base Date	Base Value
S&P 500 10% Buffered Index March Series (USD) TR	09/06/2024	03/15/2018	03/15/2018	100
S&P 500 10% Buffered Index March Series (USD) PR	09/06/2024	03/15/2018	03/15/2018	100
S&P 500 10% Buffered Index June Series (USD) TR	09/06/2024	06/16/2011	06/16/2011	100
S&P 500 10% Buffered Index June Series (USD) PR	09/06/2024	06/16/2011	06/16/2011	100
S&P 500 10% Buffered Index September Series (USD) TR	09/06/2024	09/20/2018	09/20/2018	100
S&P 500 10% Buffered Index September Series (USD) PR	09/06/2024	09/20/2018	09/20/2018	100
S&P 500 10% Buffered Index December Series (USD) TR	09/06/2024	12/15/2011	12/15/2011	100
S&P 500 10% Buffered Index December Series (USD) PR	09/06/2024	12/15/2011	12/15/2011	100

### **Index Maintenance**

### **Market Disruptions**

The TWAP calculation windows on a regular trading day are:

TWAP Window for Strike Selection	Start Time	<b>End Time</b>	Time Zone
Regular trading day	14:00:00	14:10:00	New York Time
Scheduled early market closure day	11:00:00	11:10:00	New York Time

If there is a market disruption during the designated TWAP window, then the TWAP calculates over the first 10-minute window following resumption of activity on the same day (rounded to the nearest 10-minute boundary).

**Regular Trading Day.** If a disruption occurs on a regular trading day, the index attempts to use 14:10-14:20 ET, 14:20-14:30 ET, 14:30-14:40 ET, 14:40-14:50 ET, or 14:50-15:00 ET.

If none of these windows can be used -i.e., if the disruption extends past 14:50 ET - the index postpones the roll to the next business day.

**Early Market Close Day.** If a disruption occurs on an early market close day, the index attempts to use 11:10-11:20 ET, 11:20-11:30 ET, 11:30-11:40 ET, 11:40-11:50 ET, or 11:50-12:00 ET.

If none of these windows can be used -i.e., if the disruption extends past 11:50 ET - the index postpones the roll to the next business day.

If there is a market disruption that prevents strike selection on the roll day, the equity position is updated to account for the price change and the net payout from the expiring options, as follows:

$$\begin{split} Equity_t &= Equity_{t-1} \frac{IDX_t}{IDX_{t-1}} \\ &+ Num_{PutATM,t-1} \max \left(0, K_{PutATM,t-1} - SET_t\right) \\ &- Num_{PutOTM,t-1} \max \left(0, K_{PutOTM,t-1} - SET_t\right) \\ &- Num_{CallOTM,t-1} \max \left(0, SET_t - K_{CallOTM,t-1}\right) \end{split}$$

Since there is no option position at the end of the disrupted day, the index level matches the value of the equity position:

$$Index_t = max(0, Equity_t)$$

On the next business day, when the roll occurs, the net cash from the new options transactions reinvests into the equity component, and the index level calculates as usual:

$$\begin{split} Equity_t &= Equity_{t-1} \frac{IDX_t}{IDX_{t-1}} \\ &- Num_{PutATM,t} * Ask_{PutATM,t} \\ &+ Num_{PutOTM,t} * Bid_{PutOTM,t} \\ &+ Num_{CallOTM,t} * Bid_{CallOTM,t} \end{split}$$

$$Index_t &= max(0, Equity_t + PutATM_t - PutOTM_t - CallOTM_t)$$

# **Index Governance**

### **Index Committee**

An 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 Index Committee reviews any significant market events. In addition, the Index Committee may revise index policy for timing of rebalancing 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 and/or Options Indices Policies & Practices Methodology.

# **Index Policy**

### **Announcements**

Announcements of the daily index values are made after the market close each day.

### **Holiday Schedule**

Each index is calculated daily when the underlying equity index is calculated.

A complete holiday schedule for the year is available at www.spglobal.com/spdji/.

### **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 and Options Indices Policies & Practices Methodology for the underlying indices, respectively.

For information on Calculations and Pricing Disruptions, Expert Judgment and Data Hierarchy, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices and Options Indices Policies & Practices Methodology documents for the underlying indices, respectively.

### **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 <a href="www.spglobal.com/spdji/">www.spglobal.com/spdji/</a>, 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 <u>S&P DJI Methodology & Regulatory Status</u> <u>Database</u> for a complete list of indices covered by this document.

Index	Bloomberg	RIC
S&P 500 10% Buffered Index March Series (USD) TR	SPBT103	.SPBT103
S&P 500 10% Buffered Index March Series (USD) PR	SPBP103	.SPBP103
S&P 500 10% Buffered Index June Series (USD) TR	SPBT106	.SPBT106
S&P 500 10% Buffered Index June Series (USD) PR	SPBP106	.SPBP106
S&P 500 10% Buffered Index September Series (USD) TR	SPBT109	.SPBT109
S&P 500 10% Buffered Index September Series (USD) PR	SPBP109	.SPBP109
S&P 500 10% Buffered Index December Series (USD) TR	SPBT1012	.SPBT1012
S&P 500 10% Buffered Index December Series (USD) PR	SPBP1012	.SPBP1012

### **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/.

# Appendix I

### **ESG Disclosures**

EXPLANATION OF HOW ENVIRONMENTAL, SOCIAL & GOVERNANCE (ESG) FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY <sup>4</sup>		
1.	Name of the benchmark administrator.	S&P Dow Jones Indices LLC.
2.	Underlying asset class of the ESG benchmark. <sup>5</sup>	N/A
3.	Name of the S&P Dow Jones Indices benchmark or family of benchmarks.	S&P DJI Options Indices Benchmark Statement
4.	Do any of the indices maintained by this methodology take into account ESG factors?	No
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<sup>&</sup>lt;sup>4</sup> The information contained in this Appendix is intended to meet the requirements of the European Union Commission Delegated Regulation (EU) 2020/1817 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards the minimum content of the explanation of how environmental, social and governance factors are reflected in the benchmark methodology and the retained EU law in the UK [The Benchmarks (amendment and Transitional Provision) (EU Exit) Regulations 20191.

<sup>&</sup>lt;sup>5</sup> The 'underlying assets' are defined in European Union Commission Delegated Regulation (EU) 2020/1816 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards the explanation in the benchmark statement of how environmental, social and governance factors are reflected in each benchmark provided and published.

## 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 by 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. Also, the treatment of corporate actions in back-tested performance may differ from treatment for live indices due to limitations in replicating index management decisions. 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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