S&P Dow Jones Indices

A Division of S&P Global

S&P 500 Advantage 15% VT TCA Index

Methodology

April 2025

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Introduction

Index Objective and Highlights

The S&P 500 Advantage 15% VT TCA Index applies an intraday risk control mechanism to provide exposure to the S&P 500 while targeting a 15% volatility level. The index rebalances throughout the trading day based on volatility observed in seven intraday windows and estimates of future market movements derived from hypothetical option prices.

The index responds to changing market conditions during the day by adjusting equity exposure up or down and includes a transaction cost adjustment (TCA).

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

The S&P 500 Advantage 15% VT TCA Index (USD) ER is based in part on a methodology developed and licensed by BofA Securities, which includes an intraday rebalancing mechanism implemented through seven windows during the day.

Index Family and Parameters

Table 1

Index	Volatility Target (VolTarget)	Maximum Leverage (LevMax)	Leverage Change Floor (LevFloor)	Leverage Change Cap (LevCap)	Transaction Cost (tcost)
S&P 500 Advantage 15% VT TCA Index (USD) ER	15%	250%	25%	15%	0.02%

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 is designed 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 Calculations

For each index calculation day, the index calculates multiple times using intraday calculation windows. The closing level of the index is the index level calculated at the end of the last intraday calculation window.

$$\text{Index closing level } (\text{ICL}^{\text{t}}) = \text{Value of FCVHL}_{\text{h}}^{\text{t}} \text{ at end of last window } h \text{ on day } t$$

where:

$FCVHL_h^t$ = The intraday index level calculated at the end of calculation window *h* on day *t*

On the index initialization date, $FCVHL_{last}^t = 100$. For every subsequent calculation window, *h*,

$$FCVHL_h^t = FCVHL_{h-1}^t \times [1 + \text{participation}_{\text{h}-1}^{\text{t}} \times \left(\frac{\text{Eq}_{\text{h}}^{\text{t}}}{\text{Eq}_{\text{h}-1}^{\text{t}}} - 1\right) - \text{tcost} \times \text{abs}(\text{participation}_{\text{h}}^{\text{t}} - \text{participation}_{\text{h}-1}^{\text{t}})] \quad (1)$$

where:

$participation_h^t$ = The equity participation level calculated at the end of calculation window *h* on day *t*, as defined in (2a) and (2b)

Eq_h^t = The equity intraday level calculated at the end of calculation window *h*, as defined in (13)

$tcost$ = Transaction cost value, as defined in *Table 1*

On the index initialization date, the equity participation level calculates as:

$$participation_{last}^t = \min\left(LevMax, \frac{VolTarget}{EqVol_{last-1}^t}\right) \quad (2a)$$

For every subsequent calculation window, *h*,

$$participation_h^t = \max\left(participation_{h-1}^t - LevFloor, \min(TargetPar_h^t, participation_{h-1}^t + LevCap)\right) \quad (2b)$$

where:

$TargetPar_h^t$ = The target equity participation level calculated at the end of calculation window *h* on day *t*, as defined in (3)

$EqVol_{last-1}^t$ = The volatility of the equity intraday level calculated at the end of the penultimate calculation window on day *t*, as defined in (4a) and (4b)

$Vol\ Target$ = The target volatility level, as defined in *Table 1*

$LevMax$ = The maximum allowed leverage, as defined in *Table 1*

$LevFloor$ = The maximum amount by which the current participation value can be below the previous participation value, as defined in *Table 1*

$LevCap$ = The maximum amount by which the current participation value can be above the previous participation value, as defined in *Table 1*

The target equity participation level calculates as follows:

$$TargetPar_h^t = \min\left[LevMax, \left(\frac{Vol\,Target}{EqVol_{h-1}^t} \times \left(1 + rounding(ExpAdj_{h-1}^t)\right) \times VAF_h^t\right)\right] \quad (3)$$

where:

$ExpAdj_h^t$ = The exposure adjustment calculated at the end of calculation window *h* on day *t*, as defined in (9)

$EqVol_h^t$ = The volatility of the equity intraday level calculated at the end of calculation window *h* on day *t*, as defined in (4b)

VAF_h^t = The volatility adjustment factor calculated at the end of calculation window *h* on day *t*, as defined in (6)

$rounding()$ = A function that rounds the value to two decimal places

On the index initialization date, the volatility of the equity intraday level calculates for the past 160 trading windows as:

$$EqVol_{last-1}^t = \sqrt{\frac{252 \times NbW}{159} \sum_{past\ 160} \left[\ln\left(\frac{Eq_h^t}{Eq_{h-1}^t}\right)^2\right]} \quad (4a)$$

For every subsequent calculation window, *h*,

$$EqVol_h^t = \max\left(EqVol_{h,short}^t, EqVol_{h,long}^t\right) \quad (4b)$$

$$EqVol_{h,short}^t = \sqrt{0.94 \times \left(EqVol_{h-1,short}^t\right)^2 + (1 - 0.94) \times 252 \times NbW \times \ln\left(\frac{Eq_h^t}{Eq_{h-1}^t}\right)^2} \quad (5a)$$

$$EqVol_{h,long}^t = \sqrt{0.97 \times \left(EqVol_{h-1,long}^t\right)^2 + (1 - 0.97) \times 252 \times NbW \times \ln\left(\frac{Eq_h^t}{Eq_{h-1}^t}\right)^2} \quad (5b)$$

On the index initialization date, the volatility adjustment factor is set to $VAF_{last}^t = 1$. For the next 120 index calculation days, $VAF_h^t = 1$ for all calculation windows *h*. Subsequently, the volatility adjustment factor calculates as follows:

$$VAF_h^t = \min(Intraday\ 21d\ VAF_h^t, Daily\ 120d\ VAF^t) \quad (6)$$

$$Intraday\ 21d\ VAF_h^t = \min\left(1.2, \max\left[0.8, \frac{VolTarget}{Intraday\ 21d\ Vol_{h-1}^t} \times \sqrt{\max\left(0{,}1 + \left(1 - \left[\frac{Intraday\ 21d\ Vol_{h-1}^t}{Vol\ Target}\right]^2\right)\right)}\right]\right) \quad (7a)$$

$$Daily\ 120d\ VAF^t = \min\left(1.2, \max\left[0.8, \frac{VolTarget}{Daily\ 120d\ Vol^{t-1}} \times \sqrt{\max\left(0{,}1 + \left(1 - \left[\frac{Daily\ 120d\ Vol^{t-1}}{Vol\ Target}\right]^2\right)\right)}\right]\right) \quad (7b)$$

$$Intraday\ 21d\ Vol_{h-1}^t = \sqrt{252 \times \mathrm{NbW}} \times \mathrm{stdev}\left(\text{past } 21 \times \mathrm{NbW} \text{ values of } \mathrm{Return}(\mathrm{FCVHL}_{h-1}^t)\right) \quad (8a)$$

$$Daily\ 120d\ Vol^{t-1} = \sqrt{252} \times \mathrm{stdev}\left(\text{past } 120 \text{ values of } \mathrm{Return}(\mathrm{ICL}^{t-1})\right) \quad (8b)$$

where:

$Return(FCVHL_h^t)$ = The intraday return of intraday index level from calculation window *h-1* to calculation window *h*

$Return(ICL^t)$ = The daily return of the index closing level from day *t-1* to day *t*

$stdev()$ = A function that calculates standard deviation using the *"n-1"* method

NbW = The number of windows per day, which is set to 7

The target participation level of the index adjusts based on a set of hypothetical options based on the equity intraday level, Eq_h^t. The index is not linked to the actual value of any options; no options are traded by the index and the options are not index components. On each index calculation day *t*, the index calculates the delta of one call option and one put option with strikes as defined below, using the last value of the equity intraday level for the previous day, Eq_{last}^{t-1}. The delta of the hypothetical intraday option strangle at the end of calculation window *h* on day *t* calculates as follows:

$$ExpAdj_h^t = \begin{cases} 0 & \text{if calculation window } h \text{ is the last two windows of the day} \\ CallDelta_h^t + PutDelta_h^t & \text{otherwise} \end{cases} \quad (9)$$

To calculate the delta of the call and put option, first define:

$$d1(Spot, Strike, ITTE, Volatility) = \frac{\ln\left(\frac{Spot}{Strike}\right) + 0.5 \times (Volatility)^2 \times ITTE}{Volatility \times \sqrt{ITTE}} \quad (10)$$

Then, with $N(x)$ denoting the standard normal cumulative distribution function:

$$\begin{aligned} CallDelta_h^t &= \mathrm{N}[\mathrm{d1}(\mathrm{Eq}_{\mathrm{h}}^{\mathrm{t}}, \mathrm{CallStrike}^{\mathrm{t}}, \mathrm{ITTE}_{\mathrm{h+1}}^{\mathrm{t}}, \mathrm{EqVol}_{\mathrm{last}}^{\mathrm{t-1}})] \\ PutDelta_h^t &= \mathrm{N}[\mathrm{d1}(\mathrm{Eq}_{\mathrm{h}}^{\mathrm{t}}, \mathrm{PutStrike}^{\mathrm{t}}, \mathrm{ITTE}_{\mathrm{h+1}}^{\mathrm{t}}, \mathrm{EqVol}_{\mathrm{last}}^{\mathrm{t-1}})] - 1 \end{aligned} \quad (11)$$

$$\begin{aligned} CallStrike^t &= 1.015 \times Eq_{last}^{t-1} \\ PutStrike^t &= 0.985 \times Eq_{last}^{t-1} \\ ITTE_h^t &= \frac{\text{number of minutes from end-time of window } h \text{ to end of trading day } t}{60 \times 24 \times 252} \end{aligned} \quad (12)$$

where:

$EqVol_{last}^{t-1}$ = The volatility of the equity intraday level calculated at the end of the last calculation window of day *t-1*, as defined in (4a) and (4b)

The equity intraday index level, Eq_h^t, calculates as follows:

$$Eq_h^t = \begin{cases} 100 & \text{if day } t \text{ and window } h \text{ represent 160 trading windows before index initialization} \\ Eq_{last}^{t-1} \times \left(\frac{EqPx_{h,60s}^t}{SPTR^{t-1}} - F_{t-1} \times \frac{Act(t-1,t)}{360}\right) & \text{if window } h \text{ is the first window of day } t \\ Eq_{h-1}^t \times \left(\frac{SPTR^t}{EqPx_{h-1,60s}^t}\right) & \text{if window } h \text{ is the last window of day } t \\ Eq_{h-1}^t \times \left(\frac{EqPx_{h,60s}^t}{EqPx_{h-1,60s}^t}\right) & \text{otherwise} \end{cases} \quad (13)$$

$$F_t = \text{Int Rate}_t + \max\left[0, \left(\left(1 - \frac{Fut_{last}^t}{EqPx_{last,60s}^t} \cdot \frac{EqPx_{last,60s}^{t-20}}{Fut_{last}^{t-20}}\right) \times \frac{360}{ACT(t-20,t)} - \text{Int Rate}_t\right)\right] \quad (14)$$

where:

$EqPx_{h,60s}^t$ = $TWAP$(S&P 500 Total Return Index Level, $t, StartTime_h, EndTime_h, 60s$)

Fut_{last}^t = Value of the rolling futures index at the end of the final window on date t

$SPTR^t$ = The closing level of the S&P 500 Total Return Index on date t

$ACT(t-20,t)$ = The number of calendar days between date $t-20$ and date t

Int Rate_t = Effective Federal Funds Rate on date t

The rolling futures index, Fut_h^t, calculates as follows:

$$Fut_h^t = \begin{cases} 100 & \text{if day } t \text{ and window } h \text{ represents 160 trading windows before index initialization} \\ \frac{FutPx_{h,60s}^t}{FutPx_{h-1,60s}^t} \times Fut_{h-1}^t & \text{if day } t \text{ is not a futures contract roll day} \\ \frac{FutPx_{h,60s}^t}{FutPx_{h-1,60s}^t} \times Fut_{h-1}^t & \text{if day } t \text{ is a futures contract roll day and window } h \text{ is before the second last window of the day} \\ \left(\frac{FutPx_{h,60s}^t}{FutPx_{h-1,60s}^t} - tcost\right) \times Fut_{h-1}^t & \text{if day } t \text{ is a futures contract roll day and window } h \text{ is the second last window of the day} \\ \frac{NewFutPx_{h,60s}^t}{NewFutPx_{h-1,60s}^t} \times Fut_{h-1}^t & \text{if day } t \text{ is a futures contract roll day and window } h \text{ is the last window of the day} \end{cases} \quad (15)$$

where:

$$FutPx_{h,60s}^t = TWAP(\text{E-mini S\&P 500 Futures Current Contract mid-price}, t, StartTime_h, EndTime_h, 60s)$$
$$NewFutPx_{h,60s}^t = TWAP(\text{E-mini S\&P 500 Futures Next Contract mid-price}, t, StartTime_h, EndTime_h, 60s)$$

The roll day for the futures contract is the calculation day four business days before the future expiry date. For example, if the September futures contract expires on 09/16/2022, the roll date is 09/12/2022, and starting from the last calculation window on 09/12/2022, the rolling futures index value calculates using the December futures contract.

For more information on TWAP calculation, please refer to Appendix A.

Index Maintenance

Rebalancing

The index rebalances intraday at the end of each TWAP calculation window. Certain market events impact the calculation timing, as defined below:

- For any trading day scheduled as an early market closure day, the index only calculates those TWAP calculation windows occurring when the market is open.
- On a scheduled early market closure day, the final window starts and ends five minutes later than for non-early market closure days.
- On any trading day which is a day the futures contract roll over, the second-to-last TWAP calculation window starts 30 minutes earlier and ends 20 minutes later.
- For any unscheduled full-day market closure, an intraday closure prior to the end of the last TWAP observation window, or other disruption event affecting TWAP calculation, the rebalancing occurs on the next business day when all necessary data is available.

Intraday index calculations are executed whenever the index's primary exchanges are open. If an issue arises during calculation, the index is restated, based on feasibility assessment by the index committee for every reported intraday index level period following the issue.

For further information on the impact of unavailable pricing on the TWAP calculation, please refer to the Pricing Types section of S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology.

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

Currency of Calculation and Additional Index Return Series

The index calculates 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 the following: 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.[1]

Index	Launch Date	First Value Date	Base Date	Base Value
S&P 500 Advantage 15% VT TCA Index (USD) ER	01/31/2025	12/31/2004	12/31/2004	100

[1] For history prior to 10/23/2009, due to unavailability of tick data for the S&P 500 Total Return Index, the index calculated using only the S&P 500 E-mini futures. For a detailed description of the historical calculation, please refer to *Appendix B.*

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

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' Commodity Indices Policies & Practices Methodology.

Recalculation Policy

Intraday index calculations are executed for some index versions whenever the index's primary exchanges are open. In case an issue arises during calculation and the Index Committee determines that the index should be restated, then based on feasibility assessment by the index committee, every reported intraday index level period is restated following the issue.

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	BBG	RIC
S&P 500 Advantage 15% VT TCA Index (USD) ER	SPADV15E	.SPADV15E

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 A

TWAP Calculation

Given an intraday time window defined by a window start time and a window end time, and a set number of fixed intervals throughout the trading day, to calculate an asset's TWAP first group the tick level pricing data as follows:

- The time window is defined as beginning at (and including) the start time and ending at (and excluding) the end time.
- The time window is then split into *k* intervals depending on the provided interval length parameter.
    - For example, assuming a time window start time of 8:30:00 and an end time of 8:45:00, with the *interval* = 60 seconds, there will be *k = 15*, where *k* = the number of 60-second intervals starting at each minute from 8:30 to 8:44.
    - For the same start and end time, if the *interval* = one second, there will be *k = 900* one-second intervals starting at each second from 8:30:00 to 8:44:59.
- To determine the asset price for each interval:
    - If the asset is a futures contract, use the last quoted bid price and the last quoted ask price of the asset in that interval. If either bid price or ask price is unavailable, use the last quoted trade price in that interval.
    - If the asset is an index, use the last available index level in that interval.

If the asset is a futures contract, then:

$$Asset\ Price_{h,k}^{t} = \begin{cases} \dfrac{bid\ px_{h,k}^{t} + ask\ px_{h,k}^{t}}{2} & \text{if both } bid\ px_{h,k}^{t} \text{ and } ask\ px_{h,k}^{t} \text{ exist} \\ last\ px_{h,k}^{t} & \text{if either } bid\ px_{h,k}^{t} \text{ or } ask\ px_{h,k}^{t} \text{ is } N/A \\ N/A & \text{otherwise} \end{cases}$$

If the asset is an index, then:

$$Asset\ Price_{h,k}^{t} = \begin{cases} Index\ Level_{h,k}^{t} & if Index\ Level_{h,k}^{t}\ exists \\ N/A & otherwise \end{cases}$$

where:

$bid\ px_{h,k}^{t}$ = The last quoted bid price in interval *k* of window *h* on day *t*

$ask\ px_{h,k}^{t}$ = The last quoted ask price in interval *k* of window *h* on day *t*

$last\ px_{h,k}^{t}$ = The last quoted trade price in interval *k* of window *h* on day *t*

$Index\ Level_{h,k}^{t}$ = The last available index level in interval *k* of window *h* on day *t*

The TWAP for the asset calculates as:

$$TWAP(Asset, t, StartTime_{h}, EndTime_{h}, interval) = \frac{\sum_{k}\left(\delta_{h,k}^{t} \times Asset\ Price_{h,k}^{t}\right)}{\sum_{k}\delta_{h,k}^{t}}$$

where:

$$\delta_{h,k}^{t} = \begin{cases} 1 & \text{if } Asset\ Price_{h,k}^{t} \text{ exists} \\ 0 & \text{otherwise} \end{cases}$$

TWAP Windows

For a scheduled full trading day that is not a futures contract roll day, the TWAP window timings are:

Window ID	Start Time	End Time
1	09:45:00	09:55:00
2	10:45:00	10:55:00
3	11:45:00	11:55:00
4	12:45:00	12:55:00
5	13:45:00	13:55:00
6	14:45:00	14:55:00
7	15:50:00	16:00:00

For a scheduled partial trading day that is not a futures contract roll day, the TWAP window timings are:

Window ID	Start Time	End Time
1	09:45:00	09:55:00
2	10:45:00	10:55:00
3	11:45:00	11:55:00
4	12:50:00	13:00:00

If a scheduled full trading day is also a futures contract roll day, the TWAP timings for Window 6 are altered as follows:

Window ID	Start Time	End Time
6	14:15:00	15:15:00

If a scheduled partial trading day is also a futures contract roll day, the TWAP timings for Window 3 are altered as follows:

Window ID	Start Time	End Time
3	11:15:00	12:15:00

All window times mentioned above are New York Time.

Appendix B

Historical Back-Test Rule Deviations

For history prior to 09/24/2009, the S&P 500 Total Return Index's historical tick data is unavailable. As a minimum of 20 TWAP days are required to calculate the financing fee, prior to 10/23/2009 the index was constructed by setting the equity intraday index level, Eq_h^t, equal to the rolling futures index, Fut_h^t.

The S&P 500 Total Return Index also lacked historical tick data on the following dates: 11/23/2010, 11/24/2010, 06/03/2013 – 06/06/2013, and 09/30/2016. Tick data was also missing for the third window of 10/02/2012 and for the second window of 05/30/2024.

At the end of all windows on the missing dates, at the end of the third and fourth windows of 10/02/2012, and at the end of the second and third windows of 05/30/2024, the equity intraday index level, Eq_h^t, calculated as follows:

$$Eq_h^t = Eq_{h-1}^t \times \left(\frac{Fut_h^t}{Fut_{h-1}^t}\right)$$

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.

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