

# **S&P 500 Market Agility TCA Indices** *Methodology*

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# Introduction

## Index Objective

The S&P 500 Market Agility TCA Indices measure the performance of equity and fixed income component indices that each take long or short positions based on momentum and volatility indicators on a daily basis. The component indices include a transaction cost adjustment (TCA) and a risk control mechanism. The index weights the equity component index at 70% and the fixed income component index at 30%. One version of the index then applies an additional target 10% risk control mechanism.

## Component Indices

The equity and fixed income component indices are:

S&P 500 Market Agility TCA Index	Asset Class	Index
S&P 500 Market Agility TCA Index	Equity	S&P 500 Long/Short Risk Aware Daily Risk Control 10% TCA Index ER
S&P 500 Market Agility 10 TCA Index	Fixed Income	S&P U.S. Treasury Futures Long/Short Risk Aware Daily Risk Control 10% TCA Index ER

## 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	<a href="#">Equity Indices Policies &amp; Practices</a>
S&P Dow Jones Indices' Index Mathematics Methodology	<a href="#">Index Mathematics Methodology</a>
S&P Dow Jones Indices' Float Adjustment Methodology	<a href="#">Float Adjustment Methodology</a>
S&P Dow Jones Indices' Fixed Income Policies & Practices Methodology	<a href="#">Fixed Income Policies &amp; Practices</a>

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

## Equity Component Index Calculation

For each index calculation day<sup>1</sup>, the S&P 500 Long/Short Risk Aware Daily Risk Control 10% TCA Index ER calculates as follows:

$$Equity\ Index_t = Equity\ Index_{t-1} + Units_{t-1} * (SP_t - SP_{t-1}) - FC_t - TC_{t-1}$$

where:

$Equity\ Index_t$	= Equity Index level on day $t$
$Units_t$	= Units held of the S&P 500 (TR) on day $t$
$SP_t$	= Closing price of the S&P 500 (TR) on day $t$
$FC_t$	= Funding Cost on day $t$
$TC_t$	= Transaction Cost on day $t$

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

$$Units_t = Dir_{t-1} * W_t * \frac{Equity\ Index_{t-1}}{SP_{t-1}}$$

where:

$Dir_t$	= Exposure Direction on day $t$
$W_t$	= Target weight on day $t$

The Exposure Direction calculates as follows:

$$Dir_t = \begin{cases} -1 & \text{if } MomSig_t = -1 \text{ and } VolSig_t = -1 \\ 1 & \text{otherwise} \end{cases}$$

The Momentum Signal  $MomSig_t$  and Volatility Signal  $VolSig_t$  calculate as follows:

$$MomSig_t = \begin{cases} -1 & \text{if } SP_t < SP_{t-20} \\ 1 & \text{otherwise} \end{cases}$$
$$VolSig_t = \begin{cases} -1 & \text{if } RV_t > RV\ Avg_t + \sigma RV_t \\ 1 & \text{otherwise} \end{cases}$$

where:

$RV_t$	= Five-day rolling realized volatility
$RV\ Avg_t$	= 20-day rolling $RV_t$ average
$\sigma RV_t$	= Rolling 252 days $RV$ volatility

Realized Volatility (RV) calculates as follows:

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<sup>1</sup> The equity component index follows the S&P 500 calendar.

$$RV_t = \sqrt{\frac{1}{5} \sum_{k=1}^5 \left( \ln \frac{SP_{t-k+1}}{SP_{t-k}} \right)^2 * 252}$$

$RV Avg_t$  and  $\sigma RV_t$  calculate as follows:

$$RV Avg_t = \frac{1}{20} \sum_{k=0}^{19} RV_{t-k}$$

$$\sigma RV_t = \sqrt{\frac{1}{251} \sum_{k=0}^{251} \left( RV_{t-k} - \frac{1}{252} \sum_{i=0}^{251} RV_{t-i} \right)^2}$$

For each index calculation date, the target weight  $W_t$  calculates as follows:

$$W_t = \min \left( 1.5, \frac{VT}{SPVol_t} \right)$$

where:

- $VT_t$  = Volatility Target equal to 10%  
 $SPVol_t$  = Daily S&P 500 (TR) Index Volatility

For each index calculation date, the  $SPVol_t$  calculates as follows<sup>2</sup>:

$$SPVol_t = \frac{Vol1_t + Vol2_t}{2}$$

$$Vol1_t = \sqrt{\left( \ln \frac{SP Snap High_t}{SP Close Low_{t-1}} \right)^2 * 252}$$

$$Vol2_t = \sqrt{\left( \ln \frac{SP Snap Low_t}{SP Close High_{t-1}} \right)^2 * 252}$$

where:

- $SP Snap High_t$  = Highest level reached by the S&P 500 (TR) on day  $t$  between the market opening and until 30 minutes prior to the scheduled close (rounded to two decimal places)  
 $SP Snap Low_t$  = Lowest level reached by the S&P 500 (TR) on day  $t$  between the market opening and until 30 minutes prior to the scheduled close (rounded to two decimal places)  
 $SP Close Low_t$  = S&P 500 (TR) intraday low on day  $t$  (rounded to two decimal places)  
 $SP Close High_t$  = S&P 500 (TR) intraday high on day  $t$  (rounded to two decimal places)

The Funding Cost  $FC_t$  calculates as follows:

$$FC_t = Units_{t-1} * SP_{t-1} * \frac{FCR_{t-1}}{100} * DCFC_{t,t-1}$$

where:

<sup>2</sup> For further information on snap prices calculation, please see *Appendix A*.

$FCR_t$  = Funding Cost Rate on day  $t$ <sup>3</sup>

$DCFC_{t,t-1}$  = Number of calendar days between calculation day  $t-1$  (included) and calculation day  $t$  (excluded), divided by 360

The Transaction Cost  $TC_t$  calculates as:

$$TC_t = \text{abs}(Units_t - Units_{t-1}) * SP_t * TCR$$

where:

$TCR$  = Transaction cost rate equal to 0.01%

### Fixed Income Component Index Calculation

For each index calculation day<sup>4</sup>, the S&P U.S. Treasury Futures Long/Short Risk Aware Daily Risk Control 10% TCA Index ER calculates as follows:

$$FI Index_t = FI Index_{t-1} + \sum_{i=1}^2 Treasury Units_{t-1}^i * (Treasury Index_t^i - Treasury Index_{t-1}^i) - TC_{t-1}$$

where:

$FI Index_t$  = Fixed Income Index level on day  $t$

$Treasury Units_t^1$  = Units of S&P 10-Year U.S. Treasury Note Futures Excess Return Index on day  $t$

$Treasury Index_t^1$  = Closing price of the S&P 10-Year U.S. Treasury Note Futures Excess Return Index on day  $t$

$Treasury Units_t^2$  = Units of S&P 2-Year U.S. Treasury Note Futures Excess Return Index on day  $t$

$Treasury Index_t^2$  = Closing price of the S&P 2-Year U.S. Treasury Note Futures Excess Return Index on day  $t$

$TC_t$  = Transaction Cost on day  $t$

For each index calculation day, the  $Treasury Units_t^i$  calculates as follows:

$$Treasury Units_t^i = FI Dir_{t-1} * W_t^i * \frac{FI Index_{t-1}}{Treasury Index_{t-1}^i}$$

where:

$FI Dir_{t-1}$  = Fixed Income exposure direction on day  $t-1$ <sup>5</sup>

$W_t^1$  = Weight allocated to the S&P 10-Year U.S. Treasury Note Futures Excess Return Index on day  $t$

$W_t^2$  = Weight allocated to the S&P 2-Year U.S. Treasury Note Futures Excess Return Index on day  $t$

<sup>3</sup> On index calculation dates prior to 12/21/2021, the Funding Cost Rate is equal to USD 3 Month LIBOR. After this date, the Funding Cost Rate is the sum of 0.25% and the U.S. SOFR Secured Overnight Financing Rate, or any successor rate as determined in the future. For avoidance of doubt, the published value for the US 3 Month LIBOR or the U.S. SOFR Secured Overnight Financing Rate or any successor rate is considered to be a percentage value (e.g., if the published value is 3.00, then the Funding Cost Rate is 3.00%).

<sup>4</sup> The fixed income component index follows the S&P 10-Year U.S. Treasury Note Futures Excess Return Index calendar.

<sup>5</sup> If on  $t-1$  there is no available yield rate, meaning the fixed income exposure direction cannot be calculated, the index uses the last available fixed income exposure.

For each index calculation day, the fixed income exposure direction is either one or minus one depending on a yield momentum signal and a curve momentum signal:

$$FI Dir_t = \begin{cases} -1 & \text{if } YieldMom_t = -1 \text{ and } CurveMom_t = -1 \\ 1 & \text{otherwise} \end{cases}$$

The yield momentum signal ( $YieldMom_t$ ) calculates as follows:

$$YieldMom_t = \begin{cases} -1 & \text{if } \Delta YMA_t > \sigma \Delta YMA_t \\ 1 & \text{otherwise} \end{cases}$$

where:

$$\begin{aligned} YMA_t &= 100\text{-day moving average of the US 10y Treasury Yield on day } t^6 \\ \Delta YMA_t &= YMA_t \text{ minus } YMA_{t-5} \\ \sigma \Delta YMA_t &= 20\text{-day rolling standard deviation of } \Delta YMA_t \end{aligned}$$

$\Delta YMA_t$  and  $\sigma \Delta YMA_t$  calculate as follows:

$$\begin{aligned} YMA_t &= \frac{1}{100} * \sum_{i=0}^{99} Yield10Y_{t-i} \\ \Delta YMA_t &= YMA_t - YMA_{t-5} \\ \sigma \Delta YMA_t &= \sqrt{\frac{1}{19} \sum_{i=0}^{19} (\Delta YMA_{t-i} - \frac{1}{20} \sum_{k=0}^{19} \Delta YMA_{t-k})^2} \end{aligned}$$

The curve momentum signal ( $CurveMom_t$ ) calculates as follows:

$$CurveMom_t = \begin{cases} -1 & \text{if } \Delta CMA_t < -\sigma \Delta CMA_t \\ 1 & \text{otherwise} \end{cases}$$

where:

$$\begin{aligned} CMA_t &= 100\text{-day moving average of the US 10y Treasury Yield minus the US 2Y Treasury Yield} \\ \Delta CMA_t &= CMA_t \text{ minus } CMA_{t-5} \\ \sigma \Delta CMA_t &= 20\text{-day rolling standard deviation of } \Delta CMA_t \end{aligned}$$

The change in moving average and the standard deviation of the change in moving average calculate as follows:

$$\begin{aligned} CMA_t &= \frac{1}{100} * \sum_{i=0}^{99} Yield10Y_{t-i} - Yield2Y_{t-i} \\ \Delta CMA_t &= CMA_t - CMA_{t-5} \\ \sigma \Delta CMA_t &= \sqrt{\frac{1}{19} \sum_{i=0}^{19} (\Delta CMA_{t-i} - \frac{1}{20} \sum_{k=0}^{19} \Delta CMA_{t-k})^2} \end{aligned}$$

For each index calculation date, the target weights  $W_t^i$  calculate as follows:

<sup>6</sup> The 100 day moving average and rate availability calculate according to the S&P U.S. 10-Year U.S. Treasury Note Futures Index calendar.

$$W_t^1 = \begin{cases} \min\left(1.5, \frac{VT}{Vol_t^1}\right) & \text{if } FI Dir_{t-1} > 0 \\ 0 & \text{otherwise} \end{cases}$$

$$W_t^2 = \begin{cases} \min\left(3.0, \frac{VT}{Vol_t^2}\right) & \text{if } FI Dir_{t-1} < 0 \\ 0 & \text{otherwise} \end{cases}$$

where:

- $VT_t$  = Volatility Target equal to 10%
- $Vol_t^1$  = Daily volatility of the S&P 10-Year U.S. Treasury Note Futures Excess Return Index
- $Vol_t^2$  = Daily volatility of the S&P 2-Year U.S. Treasury Note Futures Excess Return Index

For each index calculation date, the  $Vol_t^i$  calculates as follows<sup>7</sup>:

$$Vol_t^i = \frac{Vol1_t^i + Vol2_t^i}{2}$$

$$Vol1_t^i = \sqrt{\left(\ln \frac{Snap High_t^i}{Close Low_{t-1}^i}\right)^2 * 252}$$

$$Vol2_t^i = \sqrt{\left(\ln \frac{Snap Low_t^i}{Close High_{t-1}^i}\right)^2 * 252}$$

- $Snap High_t^1$  = Highest price of the S&P 10-Year U.S. Treasury Note Futures Excess Return Index between 3:00 pm on calculation day  $t-1$  and until 30 minutes prior to the scheduled time for the daily settlement of the underlying futures on calculation day  $t$  (rounded to four decimal places)
- $Snap Low_t^1$  = Lowest price of the S&P 10-Year U.S. Treasury Note Futures Excess Return Index between 3:00 pm on calculation day  $t-1$  and until 30 minutes prior to the scheduled time for the daily settlement of the underlying futures on calculation day  $t$  (rounded to four decimal places)
- $Close High_t^1$  = Highest published price of the S&P 10-Year U.S. Treasury Note Futures Excess Return Index on day  $t$ , taking into account all the published prices in respect of such index, starting with (and including) the first published price following the official closing price of such index in respect of calculation day  $t-1$  and ending with (and including) the official close price of such index in respect of calculation day  $t$  (rounded to four decimal places)
- $Close Low_t^1$  = Lowest published price of the S&P 10-Year U.S. Treasury Note Futures Excess Return Index on day  $t$ , taking into account all the published prices in respect of such index, starting with (and including) the first published price following the official closing price of such index in respect of calculation day  $t-1$  and ending with (and including) the official close price of such index in respect of calculation day  $t$  (rounded to four decimal places)
- $Snap High_t^2$  = Highest price of the S&P 2-Year U.S. Treasury Note Futures Excess Return Index between 3:00 pm on calculation day  $t-1$  and until 30 minutes prior to the scheduled time for the daily settlement of the underlying futures on calculation day  $t$  (rounded to two decimal places)

<sup>7</sup> Current scheduled time for the daily settlement of the underlying futures is 15:00 EST. For further information on snap prices calculation, please see *Appendix A*.

$Snap Low_t^2$	= Lowest price of the S&P 2-Year U.S. Treasury Note Futures Excess Return Index between 3:00 pm on calculation day $t-1$ and until 30 minutes prior to the scheduled time for the daily settlement of the underlying futures on calculation day $t$ (rounded to two decimal places)
$Close High_t^2$	= Highest published price of the S&P 2-Year U.S. Treasury Note Futures Excess Return Index on day $t$ , taking into account all the published prices in respect of such index, starting with (and including) the first published price following the official closing price of such index in respect of calculation day $t-1$ and ending with (and including) the official close price of such index in respect of calculation day $t$ (rounded to two decimal places)
$Close Low_t^2$	= Lowest published price of the S&P 2-Year U.S. Treasury Note Futures Excess Return Index on day $t$ , taking into account all the published prices in respect of such index, starting with (and including) the first published price following the official closing price of such index in respect of calculation day $t-1$ and ending with (and including) the official close price of such index in respect of calculation day $t$ (rounded to two decimal places)

The Transaction Cost  $TC_t$  calculates as follows:

$$TC_t = \sum_{i=1}^2 abs(Treasury Units_t^i - Treasury Units_{t-1}^i) \cdot Treasury Index_t^i \cdot TCR$$

where:

$$TCR = 0.015\%$$

### S&P 500 Market Agility TCA Index ER

The index rebalances on the last index calculation date of the month (Basket Rebalancing Date) and allocates 70% to the  $Equity Index_t$  and 30% to the  $FI Index_t$ .

$$MA Index_t = MA Index_{t-1} + Ret Equity Index_t + Ret FI Index_t - TC_{t-1}$$

where:

$MA Index_t$	= Market Agility Index level on day $t$
$Ret Equity Index_t$	= Daily return of the Equity Index on day $t$
$Ret FI Index_t$	= Daily return of the Fixed Income Index on day $t$
$TC_t$	= Transaction cost on day $t$

The component indices returns calculate as follows:

$$Ret Equity Index_t = Equity Index Units_{t-1} * (Equity Index_t - Equity Index_{t-1})$$

$$Ret FI Index_t = FI Index Units_{t-1} * (FI Index_t - FI Index_{t-1})$$

The target units of the Equity and Fixed Income indices calculate as follows:

$$Equity Index Units_t = \begin{cases} 0.7 * \frac{MA Index_{t-1}}{Equity Index_{t-1}} & \text{if } t \text{ is a Basket Rebalance Date} \\ Equity Index Units_{t-1} & \text{otherwise} \end{cases}$$

$$FI Index Units_t = \begin{cases} 0.3 * \frac{MA Index_{t-1}}{FI Index_{t-1}} & \text{if } t \text{ is a Basket Rebalance Date} \\ FI Index Units_{t-1} & \text{otherwise} \end{cases}$$

The Transaction Cost<sup>8</sup> of this index calculates as follows:

$$TC_t = TC \text{ Equity Index}_t + TC \text{ FI Index}_t$$

where:

$$TC \text{ Equity Index}_t = 0.01\% * abs(\text{Equity Index Units}_t - \text{Equity Index Units}_{t-1}) * \text{Equity Index}_t$$

$$TC \text{ FI Index}_t = 0.015\% * abs(\text{FI Index Units}_t - \text{FI Index Units}_{t-1}) * \text{FI Index}_t$$

### S&P 500 Market Agility 10 TCA 0.5% Decrement Index ER

The index calculates by applying a risk control framework with a 10% volatility target to the S&P 500 Market Agility TCA Index ER.

$$MA \text{ Index } 10_t = MA \text{ Index } 10_{t-1} + MA \text{ Index } 10 \text{ Units}_{t-1} * (MA \text{ Index}_t - MA \text{ Index}_{t-1}) - D_t$$

where:

$$MA \text{ Index } 10_t = \text{Market Agility Index level 10 on day } t$$

$$MA \text{ Index } 10 \text{ Units}_t = \text{Market Agility Index 10 units held on day } t$$

$$D_t = \text{Decrement fees on day } t$$

The  $MA \text{ Index } 10 \text{ Units}_t$  calculate as follows:

$$MA \text{ Index } 10 \text{ Units}_t = W_{t-1} * \left( \frac{\text{Market Agility Index } 10_{t-1}}{\text{Market Agility Index}_{t-1}} \right)$$

where:

$$W_t = \min \left( 1.5, \frac{VT}{MA \text{ Index Vol}_t} \right)$$

where:

$$VT = \text{Volatility Target equal to 10\%}$$

$$MA \text{ Index Vol}_t = \text{MA Index exponentially weighted volatility}$$

The  $MA \text{ Index Vol}_t$  calculates as follows:

$$MA \text{ Index Vol}_t = \max (Vol ST_t, Vol LT_t)$$

$$Vol ST_t = \sqrt{\text{Var } ST_t * 252}$$

$$Vol LT_t = \sqrt{\text{Var } LT_t * 252}$$

where:

$$\text{Var } ST_t = 0.94 \cdot \text{Var } ST_{t-1} + (1 - 0.94) \cdot \ln \left( \frac{MA \text{ Index}_t}{MA \text{ Index}_{t-1}} \right)^2$$

$$\text{Var } LT_t = 0.97 \cdot \text{Var } LT_{t-1} + (1 - 0.97) \cdot \ln \left( \frac{MA \text{ Index}_t}{MA \text{ Index}_{t-1}} \right)^2$$

The decrement fees calculate as follows:

$$D_t = MA \text{ Index } 10_{t-1} * DR * DCF_{t,t-1}$$

where:

<sup>8</sup> On the first index calculation date, the transaction cost is equal to zero.

$DR$  = Decrement rate equal to 0.50%

$DCFC_{t,t-1}$  = Calendar Day Count Fraction between day  $t$  and day  $t-1$

### **S&P 500 Market Agility 10 TCA 0.5% Decrement Index TR**

The S&P 500 Market Agility 10 TCA 0.5% Decrement Index TR calculates by adding the funding cost to the S&P 500 Market Agility 10 TCA 0.5% Decrement Index as follows:

$$TR Index_t = TR Index_{t-1} * \left[ 1 + \left( \frac{ER Index_t}{ER Index_{t-1}} - 1 \right) + \left( \frac{FCR_{t-1}}{100} * DCFC_{t,t-1} \right) \right]$$

where:

$TR Index_t$  = S&P 500 Market Agility 10 TCA 0.5% Decrement Index TR on day  $t$

$ER Index_t$  = S&P 500 Market Agility 10 TCA 0.5% Decrement Index ER on day  $t$

$FCR_t$  = Funding Cost Rate on day  $t^9$

$DCFC_{t,t-1}$  = Number of calendar days between calculation day  $t-1$  (included) and calculation day  $t$  (excluded), divided by 360

### **S&P 500 Market Agility 10 TCA Index ER**

The index calculates the same as the S&P 500 Market Agility 10 TCA 0.5% Decrement Index ER, but with a  $D_t$  of 0%.

### **S&P 500 Market Agility 10 TCA Index TR**

The S&P 500 Market Agility 10 TCA Index TR calculates by adding the funding cost to the S&P 500 Market Agility 10 TCA Index as follows:

$$TR Index_t = TR Index_{t-1} * \left[ 1 + \left( \frac{ER Index_t}{ER Index_{t-1}} - 1 \right) + \left( \frac{FCR_{t-1}}{100} * DCFC_{t,t-1} \right) \right]$$

where:

$TR Index_t$  = S&P 500 Market Agility 10 TCA Index TR on day  $t$

$ER Index_t$  = S&P 500 Market Agility 10 TCA Index ER on day  $t$

$FCR_t$  = Funding Cost Rate on day  $t^{10}$

$DCFC_{t,t-1}$  = Number of calendar days between calculation day  $t-1$  (included) and calculation day  $t$  (excluded), divided by 360

<sup>9</sup> On index calculation dates prior to 12/21/2021, the Funding Cost Rate is equal to the Federal Funds Rate. After this date, the Funding Cost Rate is U.S. SOFR Secured Overnight Financing Rate, or any successor rate as determined in the future.

<sup>10</sup> On index calculation dates prior to 12/21/2021, the Funding Cost Rate is equal to the Federal Funds Rate. After this date, the Funding Cost Rate is U.S. SOFR Secured Overnight Financing Rate, or any successor rate as determined in the future.

# Index Maintenance

## Rebalancing

The S&P 500 Long/Short Risk Aware Daily Risk Control 10% TCA Index ER, S&P 500 Long/Short Risk Aware Daily Risk Control 10% TCA Index TR, S&P U.S. Treasury Futures Long/Short Risk Aware Daily Risk Control 10% TCA Index ER, and the S&P 500 Market Agility 10 TCA Index ER rebalance daily, and leverage is evaluated daily at the close of each trading day, effective prior to the open of the next trading day.

The S&P 500 Market Agility TCA Index ER rebalances monthly to re-allocate component weights into a 70/30 ratio between equity and fixed income. Component units and weights calculate and reallocate based on the returns calculated at the end of each month for each of the components.

## Currency of Calculation and Additional Index Return Series

The indices calculate in U.S. dollars.

WMR foreign exchange rates are taken daily at 4:00 PM London Time and used in the calculation of the indices. These mid-market fixings are calculated by WMR based on LSEG data and appear on LSEG pages.

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 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 [www.spglobal.com/spdji/](http://www.spglobal.com/spdji/).*

## Corporate Actions

For information on Corporate Actions, please refer to the Market Capitalization Weighted Indices section of *S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology*.

## Base Dates and History Availability

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 Market Agility TCA Index ER	02/23/2024	03/29/2011	03/29/2011	1000
S&P 500 Market Agility 10 TCA Index ER	02/23/2024	06/23/2011	06/23/2011	1000
S&P 500 Market Agility 10 TCA Index TR	06/07/2024	06/23/2011	06/23/2011	1000
S&P 500 Market Agility 10 TCA 0.5% Decrement Index ER	02/23/2024	06/23/2011	06/23/2011	1000
S&P 500 Market Agility 10 TCA 0.5% Decrement Index TR	06/07/2024	06/23/2011	06/23/2011	1000
S&P 500 Long/Short Risk Aware Daily Risk Control 10% TCA Index (USD) ER	02/23/2024	06/23/2011	06/23/2011	1000
S&P U.S. Treasury Futures Long/Short Risk Aware Daily Risk Control 10% TCA Index (USD) ER	02/23/2024	03/29/2011	03/29/2011	1000

# Index Data

## Calculation Return Types

S&P Dow Jones Indices calculates multiple return types which vary based on the treatment of regular cash dividends. The classification of regular cash dividends is determined by S&P Dow Jones Indices.

- Price Return (PR) versions are calculated without adjustments for regular cash dividends.
- Gross Total Return (TR) versions reinvest regular cash dividends at the close on the ex-date without consideration for withholding taxes.
- Net Total Return (NTR) versions, if available, reinvest regular cash dividends at the close on the ex-date after the deduction of applicable withholding taxes.

In the event there are no regular cash dividends on the ex-date, the daily performance of all three indices will be identical.

For a complete list of indices available, please refer to the daily index levels file (“.SDL”).

*For more information on the classification of regular versus special cash dividends as well as the tax rates used in the calculation of net return, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.*

*For more information on the calculation of return types, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.*

# Index Governance

## **Index Committee**

An S&P Dow Jones Indices Index Committee maintains the indices. The Index Committee meets regularly. All committee members are full-time professional members of S&P Dow Jones Indices' staff. At each meeting, the Index 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 an index, 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.*

## Holiday Schedule

The S&P 500 Long/Short Risk Aware Daily Risk Control 10% TCA Index ER, S&P 500 Long/Short Risk Aware Daily Risk Control 10% TCA Index TR, and the S&P 500 Market Agility 10 TCA Index ER calculate when the U.S. equity markets are open. The S&P U.S. Treasury Futures Long/Short Risk Aware Daily Risk Control 10% TCA Index ER follows the S&P 10-Year U.S. Treasury Note Futures Excess Return Index calendar.

*A complete holiday schedule for the year is available on the S&P Dow Jones Indices' Web site at [www.spglobal.com/spdji/](http://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 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 any questions regarding an index, please contact: [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

# Index Dissemination

## 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	Return Type	BBG	RIC
S&P 500 Market Agility TCA Index (USD) ER	Excess Return	SPMKTA	.SPMKTA
S&P 500 Market Agility 10 TCA Index (USD) ER	Excess Return	SPMKTC	.SPMKTC
S&P 500 Market Agility 10 TCA Index (USD) TR	Total Return	SPMKTCTR	.SPMKTCTR
S&P 500 Market Agility 10 TCA 0.5% Decrement Index (USD) ER	Excess Return	SPMKTD	.SPMKTD
S&P 500 Market Agility 10 TCA 0.5% Decrement Index (USD) TR	Total Return	SPMKTDTR	.SPMKTDTR
S&P 500 Long/Short Risk Aware Daily Risk Control 10% TCA Index (USD) ER	Excess Return	SPXLSR	.SPXLSR
S&P U.S. Treasury Futures Long/Short Risk Aware Daily Risk Control 10% TCA Index (USD) ER	Excess Return	SPTFLSR	.SPTFLSR

## 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](http://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/](http://www.spglobal.com/spdji/).

# Appendix A

## Snap Prices Calculation

For the equity index, the Snap Prices calculate as follows:

- *SP Snap High/Low<sub>t</sub>*
  - For any index calculation date before 01/03/2023, the SP Snap High/Low is equal to the highest/lowest level reached by the S&P 500 (TR) Index on day  $t$  (rounded to two decimal places).
  - For any index calculation date after 01/03/2023, the SP Snap High/Low is equal to the highest/lowest level reached by the S&P 500 (TR) Index on day  $t$  between the market opening and until 30 minutes prior to the scheduled close (rounded to two decimal places). On partial trading days, the price calculates from the opening time until 30 minutes prior to the exchange closing time. On disrupted trading days, if the market is available to trade at the close, then the index follows the standard convention and only considers the available prices until the cutoff time. Full-day disruptions are treated like holidays.

For the fixed income index, the Snap Prices calculate as follows:

- *Snap High<sub>t</sub><sup>i</sup>/Low<sub>t</sub><sup>i</sup>*
  - For any index calculation date before 01/03/2023, the *Snap High<sub>t</sub><sup>1</sup>/Low<sub>t</sub><sup>1</sup>* is equal to the highest/lowest published price of the S&P 10-Year U.S. Treasury Note Futures Excess Return Index on day  $t$ , taking into account all the published prices with respect to the index, starting with (and including) the first published price following the official closing price of the index with respect to calculation day  $t-1$  and ending with (and including) the official closing price of the index with respect to calculation day  $t$  (rounded to four decimal places).
  - For any index calculation date after 01/03/2023, the *Snap High<sub>t</sub><sup>1</sup>/Low<sub>t</sub><sup>1</sup>* is equal to the highest/lowest price of the S&P 10-Year U.S. Treasury Note Futures Excess Return Index between 3:00 pm on calculation day  $t-1$  and until 30 minutes prior to the scheduled time for the daily settlement of the underlying futures on calculation day  $t$  (rounded to four decimal places).
  - For any index calculation date before 01/03/2023, the *Snap High<sub>t</sub><sup>2</sup>/Low<sub>t</sub><sup>2</sup>* is equal to the highest/lowest published price of the S&P 2-Year U.S. Treasury Note Futures Excess Return Index on day  $t$ , taking into account all the published prices with respect to the index, starting with (and including) the first published price following the official closing price of the index with respect to calculation day  $t-1$  and ending with (and including) the official closing price of the index with respect to calculation day  $t$  (rounded to two decimal places).
  - For any index calculation date after 01/03/2023, the *Snap High<sub>t</sub><sup>2</sup>/Low<sub>t</sub><sup>2</sup>* is equal to the highest/lowest price of the S&P 2-Year U.S. Treasury Note Futures Excess Return Index between 3:00 pm on calculation day  $t-1$  and until 30 minutes prior to the scheduled time for the daily settlement of the underlying futures on calculation day  $t$  (rounded to two decimal places).

# 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.

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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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