



# JANUS HENDERSON INDICES

Janus Henderson Equity Directionality Index Methodology  
January 2019

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## Introduction

This document describes the Janus Henderson Equity Directionality Index (JEDI) Methodology. The Index is designed to capture short-term reversion in US equity markets by adjusting exposure to SPY (SPDR S&P 500 ETF Trust) on a daily basis. The daily exposure to SPY is determined in accordance with the methodology described below.

The Index is designed to be investible: an investor holding the reference security associated with the Index at the same weights adjusted daily should realize returns similar to that of the Index.

The Index Inception Date is June 1<sup>st</sup>, 2018. All data prior to this date is pre-inception index performance (PIP).

The Index Calculation section below describes the Total Return (TR) version of JEDI. An Excess Return (ER) version is described in the section entitled, "Excess Return Index."

## Index Sponsor and Index Calculation Agent

The index sponsor is Janus Henderson Indices LLC (the "Index Sponsor"). As of the date of this Index Methodology, the Index Sponsor has appointed Solactive AG ("Solactive") as Index Calculation Agent to calculate and publish the Index in accordance with the Index Methodology. The Index Sponsor may, in its sole discretion and without notice, appoint an alternative Index Calculation Agent at any time which may be the Index Sponsor or one of its affiliates. The Index Sponsor's determination in respect of the Index shall be final.

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## Index Overview

The Index is a notional rules-based proprietary index sponsored by the Index Sponsor. The Reference Security is SPDR S&P 500 ETF Trust (Bloomberg Ticker: SPY). On each Index Business Day (defined below), the index looks at both the 1-day and 5-day returns of the Reference Security and potentially adjusts its allocation to the Reference Security the following day based on the observed performance and return thresholds (described below). The table below illustrates the target allocations. When both 1-day and 5-day returns are positive and exceed the return thresholds in magnitude, the index will adjust to have 50% exposure to SPY and another 50% in cash. When both 1-day and 5-day returns are negative and exceed the return thresholds in magnitude, the index will borrow cash and allocate 200% to SPY. Dividends are assumed to be reinvested.

Previous 1-day Return	Previous 5-day Return	Allocation
Negative	Negative	200%
Positive	Negative	150%
Negative	Positive	100%
Positive	Positive	50%

### Return Thresholds

The 1-day and 5-day return thresholds are 0.1% and 1%, respectively. The Index does not change its allocation unless both the 1-day and 5-day returns exceed their respective thresholds in magnitude. If they do not, the allocation percentage stays the same as the previous Index Business Day.

### Daily Resetting

Even if the target allocation in the above table does not change based on the 1-day and 5-day returns, the index resets its exposure on a daily basis to maintain the current target allocation.

### Transaction Cost

A 1bp transaction cost is assumed, which is applied only to the theoretical notional amount transacted on any given business day.

### Cash Return/Borrowing Rate

The Fed Funds rate (Bloomberg Ticker: FEDL01 Index) is used to calculate the borrowing cost and the cash return.

### Index Business Days

Index Business Days are defined as weekdays in which the New York Stock Exchange is open for trading and which no Index Disruption Event exists.

## Index Calculations

The Index Level on the Index Base Date, February 5<sup>th</sup>, 1993, shall be 1000.

Define:

$\alpha$  = 0.01% (Transaction Cost)

$r_t$  = borrow rate/cash return from t to t+1

$S_t$  = Closing price of Reference Security on Index Business Day t

$C_t$  = Cash position on Index Business Day t

$C'_t$  = Cash position on Index Business Day t before transaction

$E_t$  = Equity position on Index Business Day t

$E'_t$  = Equity position on Index Business Day t before transaction

$I_t$  = Index Level on Index Business Day t

$I'_t$  = Index Level on Index Business Day t before transaction

$R_t^1$  = 1 day return at the close on Index Business Day t,

$R_t^5$  = 5 day return at the close on Index Business Day t,

$L_t$  = Allocation to SPY at end of day on Index Business Day t,

$D_t$  = Dividend per share on ex-date equal to Index Business Day t (refer to Appendix for detailed definition),

Where

$$R_t^1 = \frac{S_t}{S_{t-1} - D_t} - 1$$

$$R_t^5 = (R_t^1 + 1) * (R_{t-1}^1 + 1) * (R_{t-2}^1 + 1) * (R_{t-3}^1 + 1) * (R_{t-4}^1 + 1) - 1$$

and

$$L_t = \begin{cases} 200\% & \text{if } R_t^1 \leq -0.001 \text{ and } R_t^5 \leq -0.01 \\ 150\% & \text{if } R_t^1 \geq 0.001 \text{ and } R_t^5 \leq -0.01 \\ 100\% & \text{if } R_t^1 \leq -0.001 \text{ and } R_t^5 \geq 0.01 \\ 50\% & \text{if } R_t^1 \geq 0.001 \text{ and } R_t^5 \geq 0.01 \\ L_{t-1} & \text{if } |R_t^1| < 0.001 \text{ or } |R_t^5| < 0.01 \end{cases}$$

For the Index Start Date, define the initial allocation to 100%:

$$E_0 = 100$$

$$C_0 = 0$$

$$I_0 = 100$$

Then on each Index Business Day t, before any transaction, we have:

$$E'_t = E_{t-1} * (1 + R_t^1)$$

and

$$C'_t = C_{t-1} * (1 + \frac{N}{360} * r_{t-1}),$$

where  $N$  = number of calendar days between Index Business Day t and Index Business Day t-1.

The Index Level before transaction is a sum of equity position and cash position before transaction:

$$I'_t = E'_t + C'_t$$

The equity position at the end of the day (post-transactions) will reflect the leverage to the index:

$$E_t = L_t * I_t$$

Hence, the transaction cost is:

$$TC_t = |E_t - E'_t| * \alpha$$

and the post-transactions cash position at the end of the day t is:

$$C_t = I_t - E_t$$

The Index Level on each Index Business Day t is:

$$I_t = I'_t - TC_t = I'_t - |E_t - E'_t| * \alpha = I'_t - |L_t * I_t - E'_t| * \alpha$$

Therefore,

$$I_t = \begin{cases} \frac{I'_t + \alpha * E'_t}{1 + \alpha * L_t} & \text{if } E_t \geq E'_t \\ \frac{I'_t - \alpha * E'_t}{1 - \alpha * L_t} & \text{if } E_t < E'_t \end{cases}$$

## Intra-Day Index Calculation

The value of the Index can be calculated intra-day by applying the then current adjusted market price of the Reference Security (i.e. SPY) as if it were the end of day price and following the end-of-day calculations described above.

## Excess Return Index

The Excess Return version of the Index realizes the daily return of the Total Return Index versus the risk-free rate (Fed Funds). Define:

$I_{ER_t}$  = JEDI Excess Return Index Level on Index Business Day t

Then,

$$I_{ER_t} = I_{ER_{t-1}} * \left( \frac{I_t}{I_{t-1}} - \frac{N}{360} * r_{t-1} \right)$$

## Index Maintenance

### Index Base Date Level

The Index has a level of 1000 on the Index Base Date, and on each Index Business Day thereafter the Index Level is equal to the Index Level at the beginning of the period times one plus the Index Return (R) for the period.

### Corporate Actions

The Index Committee, as described further below, will be solely responsible for the determination and calculation of any adjustments to the price of any instrument underlying an Index and of any related determinations and calculations with respect to any corporate action and its determinations and calculations will be conclusive absent manifest error.

Complex corporate actions: should any corporate action exist which the Index Committee deems requires a price adjustment, it will be solely responsible for determining the method and timing for any necessary price adjustments. In the case of simultaneous corporate actions, the Index Committee will determine the application of the above price adjustments which is the most accurate reflection of the impact of the corporate actions.

For most routine corporate actions the Index Committee delegates the implementation of standard corporate action procedures as outlined in this document to the Index Calculation Agent.

## Index Policy

### Announcements

Announcements regarding changes to the index will be made publicly available prior to the effective date of the change. All announcements will be published on the Index website: <https://indices.janushenderson.com/indices>.

### Holiday Schedule

The Index will be calculated on days when (a) the New York Stock Exchange is open for trading and (b) the primary exchange for the reference security is open for trading. (Please see the Appendix.)

### Force Majeure

Calculation of an Index may not be possible or feasible under certain events or circumstances, including, without limitation, market disruptions, a systems failure, natural or man-made disaster, act of God, armed conflict, act of terrorism, riot or labor disruption or any similar intervening circumstance, that is beyond the reasonable control of the Index Sponsor and that the Index Calculation Agent and/or the Index Sponsor determines affects an Index or underlying markets. Upon the occurrence of any such force majeure event, the Index Sponsor may, in its discretion, elect one (or more) of the following options:

- Make such determinations and/or adjustments to the terms of the Index as it considers appropriate to determine any closing level on any such appropriate Index Business Day; and/or
- Defer publication of the information relating to an Index until the next Index Business Day on which it determines that no force majeure event exists; and/or
- Permanently cancel the publication of the information relating to an Index.

The Index Sponsor employs the methodology described above and its application of the methodology shall be conclusive and binding.

### Market Disruption

“Disrupted Day” shall mean, in respect of a Share, any Scheduled Trading Day for such Share on which any of the events set out below occurs:

- (a) any relevant Exchange or any relevant Related Exchange fails to open for trading during its regular trading session; or
- (b) the occurrence or existence at any time during the one hour period which ends at the relevant Valuation Time of any suspension of or limitation imposed (whether by reason of movements in price exceeding permitted limits or otherwise) on the trading on (i) any relevant Exchange of such Share; or (ii) any relevant Related Exchange of futures contracts or options contracts relating to such Share; or
- (c) the occurrence or existence at any time during the one hour period which ends at the relevant Valuation Time of any other event (other than an event described in Sub-paragraph (d) or Sub-paragraph (e) of this definition) which disrupts or impairs the ability of market participants in general (i) (on any relevant Exchange) to effect transactions in or to obtain market values for such Share; or (ii) (on any relevant Related Exchange) to effect transactions in or to obtain market values for any futures contracts or options contracts relating to such Share; or



- (d) the closure on any Exchange Business Day of any relevant Exchange prior to its Scheduled Closing Time (unless such earlier closing time is announced by such Exchange at least one hour prior to the earlier of (i) the actual closing time for the regular trading session on such Exchange on such Exchange Business Day; and (ii) the deadline for the submission of orders to be entered into such Exchange system for execution at the relevant Valuation Time on such Exchange Business Day); or
- (e) the closure on any Exchange Business Day of any relevant Related Exchange in respect of futures contracts or options contracts relating to such Share prior to its Scheduled Closing Time (unless such earlier closing time is announced by such Related Exchange at least one hour prior to the earlier of (i) the actual closing time for the regular trading session on such Related Exchange on such Exchange Business Day; and (ii) the deadline for the submission of orders to be entered into such Related Exchange system for execution at the Valuation Time on such Exchange Business Day).

## Index Committee

The Index Committee is responsible for reviewing the design, composition, and calculation of the Indices, the development of new indices, and to determine changes, if any, to the Index Methodology (including rules for selecting companies, share counts or other matters), and the treatment of corporate actions.

Decisions made by the Index Committee include all matters related to Index Policy and Maintenance. The Index Committee meets periodically to review market conditions and Index performance, or on an as-needed basis to address major market developments.

The Index Committee reserves the right to exercise its discretion in making decisions with respect to any Index Policy or action. Index Committee internal procedures and discussions are confidential.

## Index Dissemination

### Index Ticker

The Index is disseminated by the Consolidated Tape Association (CTA) at the close of the U.S. trading day. The official closing Index Level is published on the Index Business Day at approximately 6:30 p.m. Eastern Time and are made available on <https://indices.janushenderson.com/indices>.

### FTP

Daily Index Level information is available via FTP. Please contact [indexgroup@janushenderson.com](mailto:indexgroup@janushenderson.com) for subscription information.

## Contact Information

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## Appendix I: Reference Security Adjustments

### Dividends

“Dividend”, in respect of the reference security, includes any regular dividend and special dividend (in the form of a cash dividend) declared by the issuer of the reference security for which the Ex Dividend Date falls on any day after the Index Base Date.

On Index Business Day  $t$ , if it is also an Ex Dividend Date (or there is an Ex Dividend Date between Index Business Day  $t-1$  and Index Business Day  $t$ ), the 1-day return  $R_t^1$  and 5-day return  $R_t^5$  shall follow the below calculation:

$$R_t^1 = \frac{S_t}{S_{t-1} - D_t} - 1$$

$$R_t^5 = (R_t^1 + 1) * (R_{t-1}^1 + 1) * (R_{t-2}^1 + 1) * (R_{t-3}^1 + 1) * (R_{t-4}^1 + 1) - 1$$

Note that  $D_t$  is the total amount that’s gone ex on Index Business Day  $t$ . For example, if the reference security pays out amount  $D_{t,1}$  for regular cash dividend and amount  $D_{t,2}$  for special cash dividend and they both go ex on  $t$ , then  $D_t = D_{t,1} + D_{t,2}$ . In general:

$$D_t = \sum_i D_{t,i}$$

### Capital Gain Distribution

When the reference entity pays out a capital gain distribution, it is treated the same way as dividends as described above.

### Stock Split Adjustments

“Stock Split” means, in respect of the Reference Security, a stock split or reverse stock split of the stock, for which the Ex-Date falls on any day after the Index Base Date.

On Index Business Day  $t$ , if the issuer of the Reference Security declares a Stock Split, the Index Calculation Agent shall adjust the calculation of the 1-day return in accordance with the formula set out below.

$$R_t^1 = \frac{S_t}{S_{t-1}/SR_t} - 1$$

Where  $SR_t$  is the Split Ratio of the Stock Split whose Ex-Date falls on Index Business Date  $t$ , i.e.  $SR = 2$  (Stock Split 2 for 1) and  $SR = 0.5$  (Stock Split 1 for 2).

### Delisting of Reference Security

If the Reference Security is no longer listed, the Index Sponsor may at its sole discretion choose to suspend the calculation, publication and dissemination of the Index and the Index Level, select a replacement Reference Security, discontinue or cancel the Index.

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## Appendix II: Reference Underlying

Index	Reference Underlying
Janus Henderson Equity Directionality Index	SPDR S&P 500 ETF Trust (Bloomberg: SPY Equity)

## Appendix III: Holiday Schedule

### NYSE Holiday Schedule

2019	2020	2021
January 1	January 1	January 1
January 21	January 20	January 18
February 18	February 17	February 15
April 19	April 10	April 2
May 27	May 25	May 31
July 4	July 3	July 5
September 2	September 7	September 6
November 28	November 26	November 25
December 25	December 25	December 24