

**S&P 500 Low Volatility  
Target Beta Indices  
*Methodology***

January 2018

# Table of Contents

Introduction	2
<b>Index Objective</b>	<b>2</b>
<b>Supporting Documents</b>	<b>2</b>
Index Construction	3
<b>Approaches</b>	<b>3</b>
<b>Index Calculations</b>	<b>3</b>
Index Maintenance	4
<b>Rebalancing</b>	<b>4</b>
<b>Currency, Currency Hedged, and Risk Control Indices</b>	<b>4</b>
<b>Exchange Rate</b>	<b>4</b>
<b>Base Dates and History Availability</b>	<b>4</b>
Index Governance	5
<b>Index Committee</b>	<b>5</b>
Index Policy	6
<b>Announcements</b>	<b>6</b>
<b>Holiday Schedule</b>	<b>6</b>
<b>Rebalancing</b>	<b>6</b>
<b>Unexpected Exchange Closures</b>	<b>6</b>
<b>Recalculation Policy</b>	<b>6</b>
<b>Real-Time Calculation</b>	<b>6</b>
<b>Contact Information</b>	<b>6</b>
Index Dissemination	7
<b>Tickers</b>	<b>7</b>
<b>FTP</b>	<b>7</b>
<b>Web site</b>	<b>7</b>
Disclaimer	8

# Introduction

## Index Objective

The S&P 500 Low Volatility Target Beta Indices are indices of indices that measure the performance of a strategy that effectively leverages its allocation to the S&P 500 Low Volatility Index, within a range from 1.2X to 2.0X, in order to target realized beta of 1 with respect to the S&P 500. The beta used in the calculations is the slope of the regression line of the S&P 500 Low Volatility Index's trailing 252 trading day daily price returns versus the daily price returns of the S&P 500 over the same period.

*For information on the S&P 500 Low Volatility Index, please refer to the S&P Low Volatility Index Methodology available at [www.spdji.com](http://www.spdji.com).*

*For information on the S&P 500, please refer to the S&P U.S. Indices Methodology available at [www.spdji.com](http://www.spdji.com).*

## 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>

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

## Approaches

The methodology employs a beta-driven weighting scheme.

At each rebalancing, the beta of the S&P 500 Low Volatility Price Return Index with respect to the S&P 500 Price Return Index is determined. The beta used in the calculations is the slope of the regression line of the S&P 500 Low Volatility Index's trailing 252 trading day daily price returns versus the daily price returns of the S&P 500 over the same period, both measured in U.S. dollars.

At each rebalancing, the weight,  $w$ , for the S&P 500 Low Volatility Index is set proportional to its beta as follows:

$$w = \frac{1}{\text{Beta}}$$

The weight is then capped at 2.0 and floored at 1.2.

The difference in the weight determined during the current rebalancing and the weight determined during the immediately preceding rebalancing is capped at 0.25.

## Index Calculations

The return of the S&P 500 Low Volatility Target Beta Index consists of two components:

1. The return on the position in the S&P 500 Low Volatility Index.
2. The interest cost (the interest rate applied is based on the one-month U.S. dollar LIBOR rate, using a 360 day year).

The formula for calculating the S&P 500 Low Volatility Target Beta Index is as follows:

$$\text{Target Beta Index } (t) = \text{Target Beta Index } (rb) \times \left\{ 1 + [w_{ref} * \left( \frac{UIL(t)}{UIL(rb)} - 1 \right) + (1 - w_{ref}) * \left( \text{Rate}(rb) \times \frac{D(rb,t)}{360} \right)] \right\}$$

where:

$UIL$  = The underlying S&P 500 Low Volatility Index level.

$t$  = The close of business of the current trading date.

$rb$  = The close of business of the last effective rebalancing date.

$w$  = The weight or final exposure of the equity return. This is calculated at each rebalancing and held constant until the next rebalancing.

$ref$  = The close of business of the reference date prior to the last effective rebalancing date.

$Rate$  = the one-month U.S. dollar LIBOR rate.

$D$  = The number of calendar days between  $t$  (included) and  $rb$  (excluded).

# Index Maintenance

## Rebalancing

The indices are rebalanced after the close of the first trading day of each month. The rebalancing reference date is after the close of the seventh to last trading day of the prior month.

## Currency, Currency Hedged, and Risk Control Indices

The indices are calculated in U.S. dollars and euros. Euro hedged versions of the indices are also calculated.

Currency, currency hedged, and risk control versions of the indices may be available. For a list of available currency, currency hedged, and risk control indices, please contact Client Services at [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

*For more information on currency, currency hedged, and risk control indices, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.*

## Exchange Rate

Real-time spot Forex rates, as supplied by Reuters, are used for ongoing index calculation of real-time indices.

WM/Reuters foreign exchange rates are taken daily at 4:00 PM London Time and used in the end-of-day calculation of the indices. These mid-market fixings are calculated by The WM Company based on Reuters data and appear on Reuters pages WMRA.

## 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 Low Volatility Target Beta Index (USD)	11/16/2015	12/02/1991	02/01/2001	100
S&P 500 Low Volatility Target Beta Index TR (USD)	11/16/2015	12/02/1991	02/01/2001	100
S&P 500 Low Volatility Target Beta Index NTR (USD)	11/16/2015	12/02/2002	12/02/2002	100
S&P 500 Low Volatility Target Beta Index (EUR)	11/16/2015	12/02/1991	02/01/2001	100
S&P 500 Low Volatility Target Beta Index TR (EUR)	11/16/2015	12/02/1991	02/01/2001	100
S&P 500 Low Volatility Target Beta Index NTR (EUR)	11/16/2015	12/02/2002	12/02/2002	100
S&P 500 Low Volatility Target Beta Index (EUR) Hedged	11/30/2015	12/01/2003	12/01/2003	100
S&P 500 Low Volatility Target Beta Index TR (EUR) Hedged	11/30/2015	12/01/2003	12/01/2003	100
S&P 500 Low Volatility Target Beta Index NTR (EUR) Hedged	11/30/2015	12/01/2003	12/01/2003	100

# Index Governance

## Index Committee

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

# Index Policy

## **Announcements**

Rebalancing announcements are made at the close of five trading days prior to the rebalancing effective open date.

## **Holiday Schedule**

The indices are calculated daily, throughout the calendar year. The only days an index is not calculated are on days when all exchanges where an index's constituents are listed are officially closed.

*A complete holiday schedule for the year is available on the S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com).*

## **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 document.

## **Recalculation Policy**

For information on the recalculation policy, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices document.

## **Real-Time Calculation**

Real-time, intra-day, index calculations are executed for certain indices whenever any of their primary exchanges are open. 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 document.*

## **Contact Information**

For questions regarding an index, please contact: [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

# Index Dissemination

Index levels are available through S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com), 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 currency, currency hedged, risk control, and return type versions of the below indices that may exist are also covered by this document. Please contact [index\\_services@spglobal.com](mailto:index_services@spglobal.com) for a complete list of indices covered by this document.

Index (Currency)	Return Type	Bloomberg	Reuters
S&P 500 Low Volatility Target Beta Index (USD)	Price Return	SPXLTBUP	.SPXLTBUP
	Total Return	SPXLTBUT	.SPXLTBUT
	Net Total Return	SPXLTBUN	.SPXLTBUN
S&P 500 Low Volatility Target Beta Index (EUR)	Price Return	SPXLTBEP	.SPXLTBEP
	Total Return	SPXLTBET	.SPXLTBET
	Net Total Return	SPXLTBEN	.SPXLTBEN
S&P 500 Low Volatility Target Beta Index (EUR) Hedged	Price Return	SPXLBHEP	--
	Total Return	SPXLBHET	--
	Net Total Return	SPXLBHEN	--

## FTP

Daily constituent and index level data are available via FTP subscription.

For product information, please contact S&P Dow Jones Indices, [www.spdji.com/contact-us](http://www.spdji.com/contact-us).

## Web site

For further information, please refer to S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com).

# Disclaimer

Copyright © 2018 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. STANDARD & POOR'S, S&P, SPDR, S&P 500, S&P EUROPE 350, S&P 100, S&P 1000, S&P COMPOSITE 1500, S&P MIDCAP 400, S&P SMALLCAP 600, GIVI, GLOBAL TITANS, S&P RISK CONTROL INDICES, S&P GLOBAL THEMATIC INDICES, S&P TARGET DATE INDICES, S&P TARGET RISK INDICES, DIVIDEND ARISTOCRATS, STARS, GICS, HOUSINGVIEWS, INDEX ALERT, INDEXOLOGY, MARKET ATTRIBUTES, PRACTICE ESSENTIALS, S&P HEALTHCARE MONITOR, SPICE, and SPIVA are registered trademarks of Standard & Poor's Financial Services LLC, a division of S&P Global ("S&P"). DOW JONES, DJ, DJIA and DOW JONES INDUSTRIAL AVERAGE are registered trademarks of Dow Jones Trademark Holdings LLC ("Dow Jones"). These trademarks together with others have been licensed to S&P Dow Jones Indices LLC. Redistribution, reproduction and/or photocopying in whole or in part are prohibited without written permission. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, Dow Jones, S&P or their respective affiliates (collectively "S&P Dow Jones Indices") do not have the necessary licenses. All information provided by S&P Dow Jones Indices is impersonal and not tailored to the needs of any person, entity or group of persons. S&P Dow Jones Indices receives compensation in connection with licensing its indices to third parties. Past performance of an index is not a guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index is available through investable instruments based on that index. S&P Dow Jones Indices does not sponsor, endorse, sell, promote or manage any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any index. S&P Dow Jones Indices makes no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC is not an investment advisor, and S&P Dow Jones Indices makes no representation regarding the advisability of investing in any such investment fund or other investment vehicle. A decision to invest in any such investment fund or other investment vehicle should not be made in reliance on any of the statements set forth in this document. Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks associated with investing in such funds, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other investment product or vehicle. S&P Dow Jones Indices LLC is not a tax advisor. A tax advisor should be consulted to evaluate the impact of any tax-exempt securities on portfolios and the tax consequences of making any particular investment decision. Inclusion of a security within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security, nor is it considered to be investment advice.

These materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. No content contained in these materials (including index data, ratings, credit-related analyses and data, research, valuations, model, software or other application or output therefrom) or any part thereof ("Content") may be modified, reverse-engineered, reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of S&P Dow Jones Indices. The Content shall not be used for any unlawful or unauthorized purposes. S&P Dow Jones Indices and its third-party data providers and licensors (collectively "S&P Dow Jones Indices Parties") do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Dow Jones Indices Parties are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. S&P DOW JONES INDICES PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY

**SOFTWARE OR HARDWARE CONFIGURATION.** In no event shall S&P Dow Jones Indices Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

S&P Global keeps certain activities of its various divisions and business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain divisions and business units of S&P Global may have information that is not available to other business units. S&P Global has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

In addition, S&P Dow Jones Indices provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities or services they may recommend, rate, include in model portfolios, evaluate or otherwise address.