

S&P Dow Jones Indices

A Division of **S&P Global**

S&P Balanced Global Bond and Equity-Futures Index *Methodology*

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Introduction

Index Objective

The S&P Balanced Global Bond and Equity-Futures Index is a futures-based weighted return index that measures the performance of a multi-asset-class strategy with regional representation and a risk control overlay. Index weight is allocated to the component indices below on a monthly basis, with static proportions as defined in *Index Construction*, and a target volatility of 4%:

- S&P 500 Futures Dynamic Rebalancing Risk Control 4% Index (USD) ER
- S&P 10-Year U.S. Treasury Note Futures Excess Return Index
- S&P Euro-Bund Futures USD Hedged Index ER
- S&P 10-Year JGB Futures USD Hedged Index ER
- USD-Hedged NIKKEI 225 Futures Excess Return Index with 4% Risk Control
- USD-Hedged EURO STOXX 50 Futures Excess Return Index with 4% Risk Control

For information on the below sub-indices, please refer to their respective methodology documents, available at www.spdji.com:

- S&P 500 Futures Dynamic Rebalancing Risk Control 4% Index (USD) ER please refer to the *S&P Factor Indices Methodology*.
- S&P 10-Year U.S. Treasury Note Futures Excess Return Index please refer to the *S&P Global Bond Futures Index Series Methodology*.
- S&P Euro-Bund Futures USD Hedged Index ER and S&P 10-Year JGB Futures USD Hedged Index ER please refer to the *S&P Equity Futures and Currency Futures Indices Methodology*.

For information on the USD-Hedged NIKKEI 225 Futures Excess Return Index with 4% Risk Control and the USD-Hedged EURO STOXX 50 Futures Excess Return Index with 4% Risk Control please refer to *Appendix I*.

Supporting Documents

This methodology is meant to be read in conjunction with supporting documents providing greater detail with respect to the policies, procedures and calculations described herein. References throughout the methodology direct the reader to the relevant supporting document for further information on a specific topic. The list of the main supplemental documents for this methodology and the hyperlinks to those documents is as follows:

Supporting Document	URL
S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology	Equity Indices Policies & Practices
S&P Dow Jones Indices' Index Mathematics Methodology	Index Mathematics Methodology
S&P Dow Jones Indices' Fixed Income Policies & Practices Methodology	Fixed Income Policies & Practices
S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology	Index Mathematics Methodology

This methodology was created by S&P Dow Jones Indices to achieve the aforementioned objective of measuring the underlying interest of each index governed by this methodology document. Any changes to or deviations from this methodology are made in the sole judgment and discretion of S&P Dow Jones Indices so that the index continues to achieve its objective.

Index Construction

Approach

The index measures the performance of an allocation between the “Equity Component” and “Bond Component” with static proportions, defined in the table below, and a target volatility of 4%.

Calculation of the Risk Control Index

The index is comprised of both an “Equity Component” and a “Bond Component”, with a 4% dynamic rebalancing risk control.

For the risk control parameters of the index, please refer to Appendix I for more details.

For information on the calculation of a risk control index, please see the Dynamic Rebalancing Risk Control section of S&P Dow Jones Indices’ Index Mathematics Methodology.

Target Allocation Scheme for the Sub-Indices

The index allocates to the “Equity Component” and “Bond Component” with pre-determined proportions on a monthly basis. The weights reset after the close of the first business day of each calendar month. Each sub-index’s target proportions are as follows:

Index	Component	Target Component Weight	Risk Control Sub-Index	Ticker	Target Weight within Component
S&P Balanced Global Bond and Equity Futures Excess Return Index (Before 4% Risk Control)	Equity	100%	S&P 500 Futures Dynamic Rebalancing Risk Control 4% Index (USD) ER	SPXFPDRC	33.3%
			USD-Hedged NIKKEI 225 Futures Excess Return Index with 4% Risk Control		33.3%
			USD-Hedged EURO STOXX 50 Futures Excess Return Index with 4% Risk Control		33.3%
	Bond	100%	S&P 10-Year U.S. Treasury Note Futures Excess Return Index	SPUSTTP	33.3%
			S&P Euro-Bund Futures USD Hedged Index ER	SPEUBDUH	33.3%
			S&P 10-Year JGB Futures USD Hedged Index ER	SPJGBPUH	33.3%

On any business day t when the index is calculated, the index returns and index values are calculated using the following formulas:

$$IndexReturn_t = \sum_{i=1}^2 ComponentWeight_{i,t-1} \times ComponentReturn_{i,t}$$

$$IndexLevel_t = IndexLevel_{t-1} \times (1 + IndexReturn_t)$$

where:

$ComponentWeight_{i,t-1}$ is the weight of respective (Equity or Bond) component (i) as of time $t-1$.
 $ComponentReturn_{i,t}$ is the daily return of the respective (Equity or Bond) component (i) as of time t .

ComponentReturn and ComponentWeight are determined by the following formulas:

$$SubIndexWeight_{j,t} = \begin{cases} SubIndexWeight_{j,t-1} \times \frac{ComponentLevel_{t-1}}{ComponentLevel_t} \times \frac{SubIndexLevel_{j,t}}{SubIndexLevel_{j,t-1}} & \text{if } t \text{ is not a rebalance date} \\ TargetWeightWithinComponent_j \times \frac{ComponentLevel_{t-1}}{ComponentLevel_t} \times \frac{SubIndexLevel_{j,t}}{SubIndexLevel_{j,t-1}} & \text{otherwise} \end{cases}$$

$$ComponentReturn_{i,t} = \sum_{j=1}^3 SubIndexWeight_{j,t-1} \times SubIndexReturn_{j,t}$$

$$ComponentLevel_{i,t} = ComponentLevel_{i,t-1} \times (1 + ComponentReturn_{i,t})$$

$$ComponentWeight_{i,t} = \begin{cases} ComponentWeight_{i,t-1} \times \frac{IndexLevel_{t-1}}{IndexLevel_t} \times \frac{ComponentLevel_{i,t}}{ComponentLevel_{i,t-1}} & \text{if } t \text{ is not a rebalance date} \\ TargetComponentWeight_i \times \frac{IndexLevel_{t-1}}{IndexLevel_t} \times \frac{ComponentLevel_{i,t}}{ComponentLevel_{i,t-1}} & \text{otherwise} \end{cases}$$

where:

- $SubIndexWeight_{j,t}$ = the weight of respective sub-index(j) as of time t .
- $SubIndexReturn_{j,t}$ = the daily return of respective sub-index(j) as of time t .
- $SubIndexLevel_{j,t}$ = the daily level of the respective sub-index(j) as of time t .
- $ComponentWeight_{i,t}$ = the weight of respective component(i) as of time t .
- $ComponentReturn_{i,t}$ = the daily return of respective component(i) as of time t .
- $ComponentLevel_{i,t}$ = the daily level of the respective component(i) as of time t .

Calculation of Risk Control Sub-Indices

The three dynamic rebalanced risk-control sub-indices of the “Equity Component” are constructed by respective underlying indices in table below:

Risk Control Sub-Index	Risk Control Sub-Index Ticker	Underlying Index	Underlying Index Ticker
S&P 500 Futures Dynamic Rebalancing Risk Control 4% Index (USD) ER		S&P 500 Futures Excess Return Index	SPXFP
USD-Hedged NIKKEI 225 Futures Excess Return Index with 4% Risk Control	–	USD-Hedged NIKKEI 225 Futures Excess Return Index	–
USD-Hedged EURO STOXX 50 Futures Excess Return Index with 4% Risk Control	–	USD-Hedged EURO STOXX 50 Futures Excess Return Index	–

For the risk control parameters of the S&P 500 Futures Dynamic Rebalancing Risk Control 4% Index (USD) ER, please see the S&P Dow Jones Risk Control Indices Parameters document.

For the risk control parameters of the USD-Hedged NIKKEI 225 Futures Excess Return Index with 4% Risk Control and USD-Hedged EURO STOXX 50 Futures Excess Return Index with 4% Risk Control, please refer to the *Appendix* for more details.

For information on the calculation of the risk control index, please see the Dynamic Rebalancing Risk Control section of S&P Dow Jones Indices’ S&P Index Mathematics Methodology.

Calculation of Currency Hedged Sub-indices

To hedge currency risk, the USD versions of the following sub-indices are constructed:

Currency Hedged Sub-Index	Currency Hedged Sub-Index Ticker	Underlying Index	Underlying Index Ticker
USD-Hedged NIKKEI 225 Futures Excess Return Index	–	NIKKEI 225 Futures Excess Return Index	–
USD-Hedged EURO STOXX 50 Futures Excess Return Index	–	EURO STOXX 50 Futures Excess Return Index	–
S&P Euro-Bund Futures USD Hedged Index ER		S&P Euro-Bund Futures Excess Return Index	SPEUBDP
S&P 10-Year JGB Futures USD Hedged Index ER		S&P 10-Year JGB Futures Excess Return Index	SPJGBER

The USD hedged indices calculate on a daily principle-hedged basis. The calculation is as follows:

$$IndexCurrReturn(USD)_t = \left(\frac{IndexValue(LOC)_t}{IndexValue(LOC)_{t-1}} - 1 \right) \times \left(\frac{ExchangeRate(USD/LOC)_t}{ExchangeRate(USD/LOC)_{t-1}} \right)$$

$$IndexValue(USD)_t = IndexValue(USD)_{t-1} * (1 + IndexCurrReturns(USD)_t)$$

where:

$ExchangeRate(USD/LOC)_t$ = USD per local currency at time t^1

$IndexValue(LOC)_t$ = the index level in local currency at time t

Construction of Futures Indices

The NIKKEI 225 Futures Index and EURO STOXX 50 Futures Index sub-indices² are constructed from the respective nearest quarterly month futures contract. These indices apply a one-day rolling period. The roll date is effective prior to open of the third business day prior to the expiration of the futures contract. The table below lists the contracts, corresponding exchanges, and index base dates.

For more information on the calculation of the equity futures excess return, please refer to the *S&P Equity Futures and Currency Futures Indices Methodology* available at www.spdji.com.

Index	Underlying Futures Contract	Symbol	Exchange	Base Date	First Value Date
NIKKEI 225 Futures Excess Return Index	Nikkei 225 Futures	NY	OSE	01/31/1995	01/31/1995
EURO STOXX 50 Futures Excess Return Index	EURO STOXX 50 Futures	VG	Eurex	07/31/1998	07/31/1998

¹ WMCO 4PM London Time.

² These sub-indices are internal indices, so are not publicly available, and are not disseminated.

Index Maintenance

Rebalancing

The index rebalances monthly, effective after the market close of the first business day of each month. The sub-indices rebalance in accordance with S&P Dow Jones Indices' Dynamic Rebalancing Risk Control Indices Methodology.

For more information on Dynamic Rebalancing, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.

Currency of Calculation and Additional Index Return Series

The index is calculated 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: 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.spdji.com.

Base Date and History Availability

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

Index ³	Launch Date	First Value Date	Base Date	Base Value
S&P Balanced Global Bond and Equity Futures Index	01/23/2020	03/31/2000	03/31/2000	100

³ Dates and base values are the same for related index versions (i.e. those based on the component equity price return index and total return index or those based on excess return and non-excess return).

Index Governance

Index Committee

An S&P Dow Jones Indices' Index Committee maintains the indices. All committee members are full-time professional members of S&P Dow Jones Indices' staff. The Committee meets regularly. At each meeting, the Committees may revise index policy covering rules for including other assets or asset classes, changes to target weight allocations, currencies, the timing of rebalancing, or other matters.

S&P Dow Jones Indices' considers information about changes to its indices and related matters to be potentially market moving and material. Therefore, all Index Committee discussions are confidential.

S&P Dow Jones Indices' Index Committees reserve the right to make exceptions when applying the methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews the methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. In certain instances, S&P Dow Jones Indices may publish a consultation inviting comments from external parties.

For information on Quality Assurance and Internal Reviews of Methodology, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

Index Policy

Holiday Schedule

The index calculates on all common business days of the underlying indices. The underlying indices' holiday schedules are as follows:

- USD-Hedged NIKKEI 225 Futures Excess Return Index with 4% Risk Control follows the JPX holiday schedule.
- USD-Hedged EURO STOXX 50 Futures Excess Return Index with 4% Risk Control follows EUREX Exchange holiday schedule.
- S&P 500 Futures Dynamic Rebalancing Risk Control 4% Index (USD) ER follows the holiday schedule of its underlying index.⁴
- Bond Component sub-indices follow the holiday schedule of the respective underlying indices.⁵

A complete holiday schedule for the year is available at 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 is 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.

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 questions regarding an index, please contact: index_services@spglobal.com.

⁴ Please refer to the S&P Factor Indices Methodology, available at www.spdji.com.

⁵ Please refer to the S&P Global Bond Futures Index Series Methodology, available at www.spdji.com.

Index Dissemination

Index levels are available through S&P Dow Jones Indices' Web site at 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 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	Bloomberg
S&P Balanced Global Bond and Equity Futures Index	SPBGBEF

Index Data

Daily index level data is available via subscription.

For product information, please contact S&P Dow Jones Indices, www.spdji.com/contact-us.

Web site

For further information, please refer to S&P Dow Jones Indices' Web site at www.spdji.com.

Appendix I

The S&P Dynamic Rebalancing Risk Control Indices utilize the underlying risk indices provided in the table below, plus an overlying mathematical algorithm designed to control the level of risk of the underlying index by establishing a specific volatility target and dynamically adjusting the exposure to the S&P index based on its historical volatility. Mandatory end of month rebalancing does not apply for the S&P Balanced Global Bond and Equity Futures Index and its sub-indices.

Index Name	Underlying Risk Index	Risk Control Level	Maximum Leverage	Interest Rate	Volatility Calculation	Return Frequency for Volatility	Lag to Rebalancing Date	Decay Factor Short-Term Volatility	Decay Factor Long-Term Volatility	Threshold for Rebalancing
S&P 500 Futures Dynamic Rebalancing Risk Control 4% Index (USD) ER	S&P 500 Futures Excess Return Index	4%	100%	0%	Average	Daily	1	20 days	40 days	5%
USD-Hedged NIKKEI 225 Futures Excess Return Index with 4% Risk Control	USD-Hedged NIKKEI 225 Futures Excess Return Index	4%	100%	0%	Average	Daily	1	20 days	40 days	5%
USD-Hedged EURO STOXX 50 Futures Excess Return Index with 4% Risk Control	USD-Hedged EURO STOXX 50 Futures Excess Return Index	4%	100%	0%	Average	Daily	1	20 days	40 days	5%

Disclaimer

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