S&P Dow Jones Indices

A Division of S&P Global

S&P Dynamic Multi-Asset Strategy Index
Methodology

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Introduction

Index Objective and Highlights

The S&P Dynamic Multi-Asset Strategy Index (SPDMAS) measures the performance of a strategy that follows pre-defined rules operating on both macroeconomic and valuation metrics (the Input Variables) to dynamically adjust weights to indices in several asset classes. At the beginning of each six-month rebalancing period, three separate decision signals are derived from the rules and used to assign one of 27 sub-index allocations for the next six-month period. The index reflects the impact of changes in the underlying macroeconomic and valuation variables on the shifts in sub-index allocations.

Each of the 27 sub-index allocations consists of a pre-defined mix (the Asset Class Mix) of five different markets: European equity, U.S. equity, European fixed-income, commodity-linked equity basket, and European Short-term Cash (the Asset Classes).

The S&P 500, the S&P Europe 350, four energy and materials sector indices, the S&P Eurozone Government Bond 5-7 Years Index[1], and the EONIA indices are used as proxies for performance calculations.

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' Float Adjustment Methodology	Float Adjustment 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
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 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.

[1] Historically the IBOXX Euro Eurozone Sovereign Total Return 5-7 Years Index was used as the fixed income component in the S&P Dynamic Multi-Asset Strategy Index. Beginning on February 25 2010, the S&P Eurozone Government Bond 5-7 Years Index is used in the index calculation.

Index Construction

Input Variables

For a list of defined terms used in this document, please refer to the Appendix.

All Input Variables are based on currently reported historical data. Beginning with the August 2006 rebalancing, S&P Dow Jones Indices uses the data available as of the close of business on the Reference Date (February 10thand August 10thof each year or, if such day is not a Scheduled Trading Day, the next following Scheduled Trading Day), and this data will not change, even if it is subsequently revised, as the strategy decisions have already been made based on the then available version of the data. Where applicable, comparisons between the U.S. and European economies will be made over the same time period, which may result in the application of data on a lagged basis to ensure that the data is applied on a consistent basis.

U.S. Input Variables are denominated in U.S. dollars, and European Input Variables are denominated in euros.

The individual Input Variables for each of the three major decision variables are as follows:

EQUITY

Gross Domestic Product (GDP)

U.S. GDP. GDP U.S. Chained 2005 dollars, YoY SA (Year-over year, seasonally adjusted).

These data are quoted in percent and calculated by the Bureau of Economic Analysis. The data series is available annually beginning 12/31/1930 and quarterly beginning 3/31/1948.

European GDP. Eurostat provides a quarterly series dating back to 3/31/1990. It is calculated by Eurostat and quoted in millions of euros. The European GDP is transformed to a year-over-year percent change.

Consumption

U.S. Consumer Consumption. U.S. Personal Consumption Expenditures, Current dollars, SAAR is used. This monthly data series is calculated by the Bureau of Economic Analysis and is available beginning January 1959.

European Consumer Consumption. Eurostat GDP, Current Prices, Eurozone Household Consumption Expenditure is used. This quarterly data series is calculated by Eurostat and begins on 3/31/1990.

Consumer Confidence

U.S. Consumer Confidence. Conference Board Consumer Confidence, SA (1985=100). This monthly series is calculated by the Conference Board.

European Consumer Confidence. European Commission Economic Sentiment Indicator (ESI), Eurozone, (2000=100). This monthly series is calculated by the European Commission and is available beginning 1/31/1985. However, in order to comply with new Eurostat data series, the base year of the ESI was changed in August 2003 from 1995 to 2000.

Price-to-Earnings Ratio (P/E)

U.S. P/E. S&P United States LargeMidCap (US Dollar).

European P/E. S&P Europe LargeMidCap (US Dollar).

Equity Return

U.S. Equity Return. The S&P 500.

European Equity Return. The S&P Europe 350.

The two equity indices used in this model are price return indices.

FIXED INCOME

European Gross Domestic Product (GDP)

Eurostat provides a quarterly series dating back to 3/31/1990. It is quoted in millions of euros and is calculated by Eurostat. The European GDP is transformed to a year-over-year percent change.

European Inflation

Eurostat Eurozone MUICP, All Items, YoY, NSA (1996=100). MUICP stands for the Monetary Union Index of Consumer Prices. It is a monthly data series dating from 1/31/1991.

European Interest Rates

ECB Minimum Bid, Refinancing Rate, 1 Week. This daily series is calculated by the European Central Bank. It represents the ECB's main refinancing operations minimum bid rate. The data are available daily from 12/18/1998.

COMMODITIES

The S&P GSCI™ Excess Return.

The Index has daily closing prices from 12/31/1969. The source of the data is the S&P GSCI™ Index Series. The S&P GSCI™ Excess Return components are updated on a yearly basis. The S&P GSCI™ Excess Return index measures the uncollateralized return from rolling futures forwarded each month. As of January 31, 2010, the components and weights are Energy: 69.93%, Agriculture: 14.45%, Industrial Metal: 7.98%, Livestock: 4.52%, and Precious Metals: 3.12%.

Note: In order to nullify the effects of currency fluctuations on the underlying trends in the commodities market, S&P Dow Jones Indices uses the S&P GSCI™ US dollar series for making the commodities decision. However, S&P Dow Jones Indices uses a synthetic commodity-linked equity basket that consists of the energy and materials sector indices of both the S&P 500 and the S&P Euro 350, using returns that are denominated in euro for performance metrics.

Data Used

All returns (each, a Data Index) used for performance metrics are denominated in euros.

U.S. Equity
The S&P 500.

European Equity
The S&P Europe 350.

Commodity-linked Equity Basket
S&P 500 Energy Index
S&P 500 Materials Index
S&P EU 350 Energy Index
S&P EU 350 Materials Index.

From these four sector indices, we create a synthetic commodity-linked equity basket as follows: 25% S&P 500 Energy Index, 25% S&P EU 350 Energy Index, 25% S&P 500 Materials Index and 25% S&P EU 350 Materials Index.

The index is rebalanced to equal weighting at every semi-annual rebalancing date. As mentioned above, the indices are denominated in euros.

Fixed Income
S&P Eurozone Government Bond 5-7 Years Index.

Cash
EONIA (Euro Overnight Index Average) Total Return Index.

Allocation Decision

For the purposes of making allocation decisions, all Input Variables are in the native currency.

Individual Decisions
Equities, Fixed Income, and Commodities are evaluated separately based on their own dynamics. The model applies a set of decision rules to the transformed inputs (the Decision Variable) to come up with one of three possible outcomes (bullish, bearish or neutral) for each of the three decisions (the Decisions).

Equity Decision

Rationale Behind the Equity Decision Model
Robust economic growth (as measured by GDP) is interpreted as a reason to invest in the equity markets. Strong consumer expenditures and strong consumer confidence are also considered positive indicators for corporate profits and, consequentially, positive equity returns.

Momentum strategies, tempered by relative valuation levels, are used to gauge whether the market will continue its short-term behavior or if it is about to reverse course.

The model assumes that all 6 Equity Decision Variables are equally important.

The model divides the equity allocation equally between U.S. Equity and European Equity.

Noting the fact that macroeconomic data are often revised, S&P Dow Jones Indices uses such data for the calculations presented below on an as is basis; i.e., S&P Dow Jones Indices will use the latest available data and does not alter allocation decisions even though the data may be revised subsequently.

Calculations

Economic Data Variables reference the most recent data available as of the Rebalancing Date.

Market Data Variables reference the last Scheduled Trading Day of the preceding calendar month.

Using the Input Variables, S&P Dow Jones Indices performs intermediate calculations, before creating Equity Decision Variables, as follows:

Equity Intermediate Calculations

European G.D.P. Calculate the 12-month change using the following formula:

$$\left(\frac{EUGDP_t}{EUGDP_{t-12}}\right)-1,$$

where $EUGDP_t$ = European GDP at the Reference Date

U.S. GDP. Use as is.

European and U.S. Consumer Consumption. Calculate the 3-month change using the following formula:

$$\left(\frac{CCN_t}{CCN_{t-3}}\right)-1,$$

where CCN_t = the relevant Consumer Consumption at Reference Date

European and U.S. Consumer Confidence. Calculate the 6-month change using the following formula:

$$\left(\frac{CCF_t}{CCF_{t-6}}\right)-1,$$

where CCF_t = the relevant Consumer Confidence at Reference Date

European and U.S. P/E Valuation. Calculate the ratio of current level to that of the average level over the last 7-months in accordance with the following formula:

$$\left(\frac{P/E_t}{1/7*(P/E_t+P/E_{t-1}+P/E_{t-2}+P/E_{t-3}+P/E_{t-4}+P/E_{t-5}+P/E_{t-6})}\right)$$

where P/E_t = the relevant P/E at the Reference Date

European and U.S. Equity Return.

S&P 500*:* Calculate the 3-month return using the following formula:

$$\left(\frac{SP500_t}{SP500_{t-3}}\right)-1,$$

where $SP500_t$ = the S&P 500 Price Return Index at the Reference Date

Calculate the 6-month return using the following formula:

$$\left(\frac{SP500_t}{SP500_{t-6}}\right)-1,$$

where $SP500_t$ = the S&P 500 Price Return Index at the Reference Date

***S&P Euro 350**:* Calculate the 3-month return using the following formula:

$$\left(\frac{SPE350_t}{SPE350_{t-3}}\right)-1,$$

where $SPE350_t$ = the S&P Europe 350 Price Return Index at the Reference Date

Calculate the 6-month return using the following formula:

$$\left(\frac{SPE350_t}{SPE350_{t-6}}\right)-1,$$

where $SPE350_t$ = the S&P Europe 350 Price Return Index at the Reference Date

Create Equity Decision Variables

GDP Decision Variable. Select the smaller of the European GDP or the U.S. GDP to be the GDP Decision Variable.

Consumer Consumption Decision Variable. Select the smaller of the European Consumer Consumption 3-month change or the U.S. Consumer Consumption 3-month change as the Consumer Consumption Decision Variable.

Consumer Confidence Decision Variable. Select the smaller of the European Consumer Confidence 6-month change or the U.S. Consumer Confidence 6-month change as the Consumer Confidence Decision Variable.

P/E Valuation Decision Variable. Select the higher of the ratio of current level to the 7-month moving average of the European or the U.S. P/E Valuations to be the P/E Valuation Decision Variable.

3-Month Equity Return Decision Variable. Select the smaller of the 3-month return of the S&P 500 or the S&P Euro 350 as the 3-Month Equity Return Decision Variable.

6-Month Equity Return Decision Variable: Select the smaller of the 6-month return of the S&P 500 or the S&P Euro 350 as the 6-Month Equity Return Decision Variable.

Designate Upper and Lower Thresholds of the Decision Variables

Decision Variable	Upper Threshold	Lower Threshold
GDP	3.5%	1.25%
Consumer Consumption	1.2%	0.9%
Consumer Confidence	5%	-5%
P/E Valuation	1.05	0.95
3-Month Equity Return	3.5%	0%
Six-Month Equity Return	5%	1%

Scoring System for Equity Decision Variables

For the GDP, Consumer Consumption, Consumer Confidence, 3-Month Equity Return, and 6-Month Equity Return Decision Variables:

Decision Variable	Outlook	Score
Greater than or equal to the Upper Threshold	bullish	+1
Less than or equal to the Lower Threshold	bearish	-1
Between the Upper and Lower Thresholds	neutral	0

For the P/E Valuation Decision Variable:

Decision Variable	Outlook	Score
Greater than or equal to the Upper Threshold	bearish	-1
Less than or equal to the Lower Threshold	bullish	+1
Between the Upper and Lower Thresholds	neutral	0

All the scores are then added together to give a total score for the Equity Decision Variables.

Decision Rule for the Equity Decision

Score Totals	Equity Decision
Greater than or equal to 4	bullish
Between the -4 and 4	neutral
Less than or equal to -4	bearish

Fixed Income Decision

Rationale Behind the Fixed Income Model

An improving economy, accelerating inflation, and rate hikes generally make fixed income investments less attractive. In contrast, a weakening economy, a stable inflation outlook and interest rate cuts by the central bank tend to buoy bond prices. The model assumes that these three Decision Variables are equally important.

S&P Dow Jones Indices looks only at European fixed income in this model and, thus, only considers European GDP, European inflation, and European interest rates. All of these data series are denominated in euros.

Calculations

Economic Data Variables reference the most recent data available as of the Rebalancing Date.

Market Data Variables reference the last Scheduled Trading Day of the preceding calendar month

Using the Input Variables, S&P Dow Jones Indices performs intermediate calculations, before creating Equity Decision Variables, as follows:

Fixed Income Intermediate calculations

European G.D.P. Calculate the 12-month change using the following formula:

$$\left(\frac{EUGDP_t}{EUGDP_{t-12}} \right) - 1,$$

where $EUGDP_t$ = European GDP at the Reference Date

European Inflation. Use as is.

European Interest Rates: Calculate the one-month change using the following formula:

$$EIRRD_t - EIRRD_{t-1},$$

where $EIRRD_t$ = European Interest Rate at the Reference Date

Create Fixed Income Decision Variables

European GDP Decision Variable. Use the 12-month change in European GDP as the European GDP Decision Variable

European Inflation Decision Variable. Use as is.

European Interest Rates Decision Variable. Use the one-month change in the Interest Rates as the Interest Rates Decision Variable.

Designate Upper and Lower Thresholds of the Decision Variables:

Decision Variable	Upper Threshold	Lower Threshold
European GDP	3.5%	2.0%
European Inflation	2.25%	1.5%
European Interest Rate	0.25%	-0.25%

Scoring System for Fixed Income Decision Variables

Decision Variable	Outlook	Score
Greater than or equal to the Upper Threshold	bearish	-1
Less than or equal to the Lower Threshold	bullish	+1
Between the Upper and Lower Thresholds	neutral	0

All the scores are then added together to give a total score for the Fixed Income Decision Variables.

Decision Rule for the Fixed Income Decision

Score Totals	Equity Decision
Greater than or equal to 1	bullish
Between the -1 and 1	neutral
Less than or equal to -1	bearish

Commodities Decision

Rationale Behind the Commodities Decision Model
Technical indicators are a major factor in the commodities market, outside of market fundamentals such as supply and demand. Tracking the 3-month, 6-month, and 9-month returns give a sense of the overall direction of the market and its potential turning points.

Calculations

Market Data Variables reference the last Scheduled Trading Day of the preceding calendar month.

Using the Input Variables, S&P Dow Jones Indices performs intermediate calculations, before we create Commodities Decision Variables, as follows:

Commodities Intermediate Calculations

S&P GSCI™ Excess Return Index

Calculate the 3-month return using the following formula:

$$\left(\frac{SPGCSI_t}{SPGSCI_{t-3}}\right)-1,$$

where: $SPGSCI_t$ = the S&P GSCI Excess Return Index at the Reference Date

Calculate the 6-month return using the following formula:

$$\left(\frac{SPGCSI_t}{SPGSCI_{t-6}}\right)-1,$$

where $SPGSCI_t$ = the S&P GSCI Excess Return Index at the Reference Date

Calculate the 9-month return using the following formula:

$$\left(\frac{SPGCSI_t}{SPGSCI_{t-9}}\right)-1,$$

where $SPGSCI_t$ = the S&P GSCI Excess Return Index at the Reference Date

Create Commodities Decision Variables

3-month S&P GSCI™ Excess Return Decision Variable. Use the 3-month return of the S&P GSCI™ Excess Return Index as the 3-Month S&P GSCI™ Decision Variable.

6-month S&P GSCI™ Excess Return Decision Variable. Use the 6-month return of the S&P GSCI™ Excess Return Index as the 6-Month S&P GSCI™ Decision Variable.

9-month S&P GSCI™ Excess Return Decision Variable. Use the 9-month return of the S&P GSCI™ Excess Return Index as the 9-Month S&P GSCI™ Decision Variable.

Designate Upper and Lower Thresholds for the Decision Variables:

Decision Variable	Upper Threshold	Lower Threshold
3-month S&P GSCI™ Excess Return	0%	0%
6-month S&P GSCI™ Excess Return	0%	0%
6-month S&P GSCI™ Excess Return	0%	0%

Scoring System for Commodities Decision Variables

The two-part rule, listed below, is evaluated in sequence, i.e., if (a) is true, then (b) is bypassed, and if (a) is not true, then (b) is executed.

a. If the 6-month S&P GSCI™ Excess Return Decision Variable is greater than or equal to 30%, and the 9-month S&P GSCI™ Excess Return Decision Variable is at least twice as large as the 6-month S&P GSCI™ Excess Return Decision Variable, the Commodities Decision Variable is bearish, and is given a score of -1.

b. If both the 3-month S&P GSCI™ Excess Return Decision Variable and the 6-month S&P GSCI™ Excess Return Decision Variable are greater than their Upper Thresholds, the Commodities Decision Variable is bullish and is given a score of +1. If both the 3 Month S&P GSCI™ Excess Return Decision Variable and the 6-Month S&P GSCI™ Excess Return Decision Variable are

less than their Lower Thresholds, the Commodities Decision Variable is bearish and is given a score of -1. Otherwise, the Commodities Decision Variable is neutral and is given a score of 0.

Decision Rule for the Commodities Decision

Score Totals	Equity Decision
Greater than or equal to 1	bullish
Between the -1 and 1	neutral
Less than or equal to -1	bearish

Combining the Individual Decisions

For each Decision, there are three possible outcomes: bullish, neutral or bearish. Hence, the theoretical number of different combinations of these three decision outcomes is 27. Such combinations are displayed as different nodes of a decision tree, as follows:

The decision tree:

Decision Node	Equity Decision	Commodity Decision	Fixed Income Decision
A	bearish	bearish	bearish
B	bearish	bearish	neutral
C	bearish	bearish	bullish
D	bearish	neutral	bearish
E	bearish	neutral	neutral
F	bearish	neutral	bullish
G	bearish	bullish	bearish
H	bearish	bullish	neutral
I	bearish	bullish	bullish
J	neutral	bearish	bearish
K	neutral	bearish	neutral
L	neutral	bearish	bullish
M	neutral	neutral	bearish
N	neutral	neutral	neutral
O	neutral	neutral	bullish
P	neutral	bullish	bearish
Q	neutral	bullish	neutral
R	neutral	bullish	bullish
S	bullish	bearish	bearish
T	bullish	bearish	neutral
U	bullish	bearish	bullish
V	bullish	neutral	bearish
W	bullish	neutral	neutral
X	bullish	neutral	bullish
Y	bullish	bullish	bearish
Z	bullish	bullish	neutral
AA	bullish	bullish	bullish

Each theoretical outcome is matched with a pre-designed Asset Class Mix. The key to selecting the appropriate asset allocation strategy is based on the bearish/neutral/bullish signals of each of the three Decisions.

Asset Allocation Strategies

Asset Allocation Strategy #	Equity Decision	Commodity Decision	Fixed Income Decision
1	underweight	underweight	underweight
2	underweight	neutral	underweight
3	underweight	overweight	underweight
4	neutral	underweight	underweight
5	neutral	neutral	underweight
6	neutral	overweight	underweight
7	overweight	underweight	underweight
8	overweight	neutral	underweight
9	overweight	overweight	underweight
10	underweight	underweight	neutral
11	underweight	neutral	neutral
12	underweight	overweight	neutral
13	neutral	underweight	neutral
14	neutral	neutral	neutral
15	neutral	overweight	neutral
16	overweight	underweight	neutral
17	overweight	neutral	neutral
18	overweight	overweight	neutral
19	underweight	underweight	overweight
20	underweight	neutral	overweight
21	underweight	overweight	overweight
22	neutral	underweight	overweight
23	neutral	neutral	overweight
24	neutral	overweight	overweight
25	overweight	underweight	overweight
26	overweight	neutral	overweight
27	overweight	overweight	overweight

As previously defined, the Asset Classes are represented by the following index series, all of which are denominated in euros:

- Equity
  - Europe: S&P Euro 350
  - US: S&P 500
- Commodities – a synthetic commodity-linked equity basket
- Fixed Income – S&P Eurozone Government Bond 5-7 Years Index
- Cash – EONIA Total Return Index

Asset Class Mix

Asset Allocation Strategy Number	European Equity	U.S. Equity	Commodity-linked Equity Basket	Fixed Income	Cash
1	12.5	12.5	3.0	36.750	35.250
2	12.5	12.5	12.0	32.250	30.750
3	12.5	12.5	18.0	27.750	29.250
4	25.0	25.0	3.0	25.500	21.50
5	25.0	25.0	12.0	21.000	17.000
6	25.0	25.0	18.0	16.500	15.500
7	37.5	37.5	3.0	14.250	7.750
8	37.5	37.5	12.0	9.750	3.250
9	37.5	37.5	18.0	5.250	1.750
10	12.5	12.5	3.0	42.875	29.125
11	12.5	12.5	12.0	37.625	25.375
12	12.5	12.5	18.0	32.375	24.625
13	25.0	25.0	3.0	29.750	17.250
14	25.0	25.0	12.0	24.500	13.500
15	25.0	25.0	18.0	19.250	12.750
16	37.5	37.5	3.0	16.625	5.375
17	37.5	37.5	12.0	11.375	1.625
18	37.5	37.5	18.0	6.125	0.875
19	12.5	12.5	3.0	49.000	23.000
20	12.5	12.5	12.0	43.000	20.000
21	12.5	12.5	18.0	37.000	20.000
22	25.0	25.0	3.0	34.000	13.000
23	25.0	25.0	12.0	28.000	10.000
24	25.0	25.0	18.0	22.000	10.000
25	37.5	37.5	3.0	19.000	3.000
26	37.5	37.5	12.0	13.000	0.000
27	37.5	37.5	18.0	7.000	0.000

The Asset Class Mix of each of the asset allocation strategies reflects the nature of the decision outcomes.

Guideline for Construction

In general, S&P Dow Jones Indices is developing a set of asset allocation decisions that dynamically change as macroeconomic and market conditions change. However, there is a simultaneous goal to minimize downside risk when the outlook is bearish or neutral. Thus, the baseline allocations for Equity and Commodity exposures are as follows:

- Equity: 75% (Bullish), 60% (Neutral), and 45% (Bearish)
- Commodity-linked equity basket: 18% (Bullish), 12% (Neutral), and 6% (Bearish)
- Fixed Income: 100% - the Sum of the above allocations

S&P Dow Jones Indices, then, applies the risk minimization guideline to the initial Equity and Commodity exposures by defensively moving some of the initial allocations into Cash, as follows:

- **Equity** – The equity investment shall always be weighted equally between Europe and the U.S. Total equity exposure can either be 75% (Overweight), 50% (Neutral) or 25% (Underweight). Thus, we reduce the initial equity allocations as follows:
    - Allocate 20% to cash, if the Equity outlook is bearish, or

- Allocate 10% to cash if the Equity outlook is neutral

- **Commodities** - Total commodities exposure, as represented by a synthetic commodity-linked equity basket, can either be 18% (Overweight), 12% (Neutral) or 3% (Underweight). Thus, we reduce the initial Commodity allocations as follows:
  - Allocate 3% to cash, if the Commodities outlook is bearish
- **Fixed Income** - The combined fixed income and cash allocation is equal to 100% minus the sum of the Equity and Commodities allocations. In addition, allocate a portion of the Fixed Income allocation to Cash as follows:
  - One-fourth of the initial Fixed Income allocation if the Fixed Income outlook is bearish, or
  - One-eighth of the initial Fixed Income allocation if the Fixed Income outlook is neutral.
- **Cash** – The sum of all cash allocations determined from each of the Equity, Commodities, and Fixed Income Decisions above.

Calculation Algorithm

The daily calculation of the SPDMAS on any Scheduled Trading Day, *t*, within the relevant five-day Asset Allocation Period is as follows:

$$SPDMAS_t = SPDMAS_{Last\ Rebalancing\ Date}\ x \sum_{i=1}^{5} \left(Weight^i\ x \frac{Data\ Index\ Level_t^i}{Data\ Index\ Level^i_{Last\ Rebalancing\ Date}} \right)$$

where:

Data Index Level$^i_{\text{Last Rebalancing Date}}$ means the Data Index Level of the relevant Data Index, *i,* on the Last Rebalancing Date;

Data Index Level^i_t means the Data Index Level of the relevant Data Index, *i,* on the relevant Scheduled Trading Day, *t*;

Last Rebalancing Date means, in relation to the relevant Scheduled Trading Day$_t$, the business day immediately preceding the new First Rebalancing Date within the five-day Asset Allocation Period;

SPDMAS$_{\text{Last Rebalancing Date}}$ means the official closing level of the SPDMAS at the Last Rebalancing Date; and

Weight^i means the weighting of the relevant Asset Class^i as determined for the relevant Asset Allocation Period.

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

Index Maintenance

Frequency

The Index is rebalanced twice a year, in February and August. The Asset Class Mix is updated with all Input Variables available as of the relevant rebalancing Reference Date – February 10 and August 10, respectively. The Input Variables used are 'as is' and do not undergo any future revisions, even if the relevant reporting agencies revise the data at future dates.

Rebalancing

The rebalancing takes place during a five-day Rebalancing Period. The rebalancing period begins five business days after the respective rebalancing reference date.

On each Rebalancing Date during the relevant Rebalancing Period, one-fifth of the change in the Asset Class Mix, as determined at the Reference Date takes effect, if any such change exists.

With respect to a Reference Date, the new Asset Class Mix will take full effect on the Final Rebalancing Date immediately following such Reference Date, typically 10 business days following the respective Reference Date.

The calculation of the SPDMAS on a Scheduled Trading Day, *t*, being a Rebalancing Date is as follows:

1. With respect to the First Rebalancing Date$_{k=1}$, being the Rebalancing Period Commencement Date

$$SPDMAS_t = SPDMAS_{Last\ \ Rebalancing\ Date}\ x \sum_{i=1}^{5}\left(Weight^i\ x \frac{Data\ Index\ Level_t^i}{Data\ Index\ Level_{Last\ \ Rebalancing\ Date}^i} \right)$$

Where:

Data Index Level$^i_{\text{Last Rebalancing Date}}$ means the Data Index Level of the relevant Data Index, *i,* on the Last Rebalancing Date;

Data Index Level^i_t means the Data Index Level of the relevant Data Index, *i,* on the relevant Scheduled Trading Day, *t*;

Last Rebalancing Date means, in relation to the relevant Scheduled Trading Day$_t$, the business day immediately preceding the new First Rebalancing Date within the five-day Asset Allocation Period;

SPDMAS$_{\text{Last Rebalancing Date}}$ means the official closing level of the SPDMAS on the Last Rebalancing Date; and

Weight^i means the weighting of the relevant Asset Class^i as determined for the preceding Asset Allocation Period.

2. For the second thru sixth Rebalancing Dates$_k$ (k=2,3,4,5,6)

$$SPDMAS_t = SPDMAS_{t-1}\ x \sum_{i=1}^{5}\left(Weight_k^i\ x \frac{Data\ Index\ Level_t^i}{Data\ Index\ Level_{t-1}^i} \right)$$

where:

Data Index Level$^{i}_{\text{Last Rebalancing Date}}$ means the Data Index Level of the relevant Data Index, *i,* on the Last Rebalancing Date;

Data Index Level$^{i}_{t}$ means the Data Index Level of the relevant Data Index, *i,* on the relevant Scheduled Trading Day, *t*;

Data Index Level$^{i}_{t-1}$ means the Data Index Level of the relevant Data Index, *i,* on the relevant Scheduled Trading Day, *t*-1;

Data Index Level$^{i}_{k=1}$ means the Data Index Level of the relevant Data Index, *i,* on the First Rebalancing Date;

Effective Weight^{i} means a percentage of such Asset Class^{i} as determined by the following formula:

$$Effective\,Weight^{i} = Weight^{i} * \frac{\frac{Data\ Index\ Level^{i}_{k=1}}{Data\ Index\ Level^{i}_{Last\ Rebalancing\ Date}}}{\frac{SPDMAS_{k=1}}{SPDMAS_{Last\ Rebalancing\ Date}}}$$

where:

Last Rebalancing Date means, in relation to the relevant Scheduled Trading Day$_t$, the business day immediately preceding the new First Rebalancing Date within the five-day Asset Allocation Period;

SPDMAS$_{k=1}$ means the official closing level of the SPDMAS on the First Rebalancing Date;

SPDMAS$_{\text{Last Rebalancing Date}}$ means the official closing level of the SPDMAS on the Last Rebalancing Date;

SPDMAS$_{t-1}$ means the official closing level of the SPDMAS on the relevant Scheduled Trading Day, *t-1*;

Weight$^{i}_{k}$ means, in relation to the relevant Rebalancing Date$_k$, the weighting of the relevant Asset Class^{i}, as linearly interpolated between the Effective Weight^{i} of such Asset Class^{i}, compiled on the First Rebalancing Date (k=1), and the Weight^{i} of such Asset Class^{i} derived on the respective Reference Date for the following Asset Allocation Period;

Weight^{i} means the weighting of the relevant Asset Class^{i} as determined for the prior Asset Allocation Period.

If any Rebalancing Date coincides with a Market Disruption, in relation to a Data Index (the Affected Data Index), then the Rebalancing Date for all the Data Indices shall be the first succeeding Scheduled Trading Day that is not a Disrupted Day for any Data Index.

For information on market disruptions, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices document.

Index Governance

The indices are maintained by an Index Committee. 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 document.

Index Policy

Announcements

For more information on S&P Dow Jones Indices' announcements, please refer to the Announcement Policy.

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.

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.

Index Dissemination

SPDMAS values are disseminated daily, both in euros and in U.S. dollars, on any Scheduled Trading Day, if any Data Indices representing at least 80% of the relevant Asset Class Mix are available on such day.

Price Return Values in U.S. dollars and euros are disseminated on a daily basis on S&P Dow Jones Indices' Web site at http://www.spdji.com and through third-party data vendors.

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 for a complete list of indices covered by this document.

Index	Bloomberg
S&P Dynamic Multi-Asset Strategy Index (Price Return) in euros	SPDMAS
S&P Dynamic Multi-Asset Strategy Index (Price Return) in U.S. dollars	SPDMASUS

Index Data

Daily constituent and index level data are 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

Defined Terms

Asset Allocation Period means each period beginning, but excluding, the prior period's Final Rebalancing Date up-to-and-including the following Rebalancing Period Commencement Date. Effectively, it is the time period that includes all days except the five-day Rebalancing Period;

Data Index means each of the S&P Dow Jones Indices and the EONIA Total Return Index (together, the Data Indices);

Economic Data Variables means the following Input Variables -- European and U.S. GDP, European and U.S. Consumer Consumption, European and U.S. Consumer Confidence, European Inflation, and European and U.S. P/E ratios.

Final Rebalancing Date means the last Scheduled Trading Day in each Rebalancing Period;

Index Sponsor means:

(i) With respect to each S&P Data Index, S&P Dow Jones Indices; and

(ii) With respect to the EONIA Total Return Index, the ECB;

Input Variable means each individual Input Variable listed in the Input Variables section;

Input Variable Level means, in relation to any Reference Date and any Input Variable, the level of such Input Variable on such Reference Rate, as determined by S&P Dow Jones Indices;

Market Data Variables means the following Input Variables – the S&P 500, the S&P Euro 350, European Interest Rates, and the S&P GSCI™ Excess Return Index

Rebalancing Date means each Scheduled Trading Day in any Rebalancing Period;

Rebalancing Period means the period of six Scheduled Trading Days beginning with and including each Rebalancing Period Commencement Date;

Rebalancing Period Commencement Date means, in relation to each Reference Date, the day which is the fifth Scheduled Trading Day immediately following such Reference Date;

Reference Date means February and August 10th of each year, or, if such day is not a Scheduled Trading Day, the next following Scheduled Trading Day;

Related Exchange means, in relation to each S&P Data Index, each exchange or quotation system where trading has a material impact (as determined by S&P Dow Jones Indices) on the overall market for futures and options contracts relating to such S&P Data Index;

S&P Data Index means each of the S&P 500, the S&P Europe 350, the S&P 500 Energy, the S&P 500 Materials, the S&P EU 350 Energy and the S&P EU 350 Materials Indices (together, the S&P Data Indices).

Scheduled Trading Day means a day in which:

(i) With respect to each S&P Data Index: (a) S&P Dow Jones Indices publishes the level of the relevant Index; and (b) the relevant Related Exchange is open for trading during its regular trading session, notwithstanding the relevant Exchange or Related Exchange closing prior to its Scheduled Closing Time;

(ii) With respect to the EONIA Total Return Index: a TARGET Settlement Day;

TARGET Settlement Day means a day on which the TARGET (Trans-European Automated Real-time Gross settlement Express Transfer system) is open.

Disclaimer

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.

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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.