

# **S&P Momentum Indices** *Methodology*

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# Introduction

## Index Objective and Highlights

The S&P Momentum Indices measure the performance of securities which were among the quintile or rank demonstrating the best realized performance during the specified measurement period.

Numerous academic and practitioners' research has shown that relative strength strategies that rank stocks based on their past returns predict relative performance over the next 3-12 months.

The S&P Momentum Indices are constructed from the constituents of the S&P Global BMI or other headline universe index (see *Index Construction*).

*For more information on the S&P Global BMI or other headline universe indices, please refer to the respective Index Methodology document at [www.spdji.com](http://www.spdji.com).*

## Index Family

The S&P Momentum Indices currently consist of the following:

- S&P Momentum Global LargeMidCap
- S&P Momentum Developed LargeMidCap
- S&P Momentum Developed Ex. U.S. LargeMidCap
- S&P Momentum Developed Ex. U.S. & South Korea LargeMidCap
- S&P Momentum Developed Ex. Japan LargeMidCap
- S&P Momentum Emerging LargeMidCap
- S&P Momentum Emerging Plus LargeMidCap
- S&P Momentum Europe LargeMidCap
- S&P Momentum Pan Asia LargeMidCap
- S&P Momentum Pan Asia Ex. Japan LargeMidCap
- S&P Momentum Japan LargeMidCap
- S&P Momentum United States LargeMidCap
- S&P Momentum South Africa
- S&P Short Term Momentum South Africa
- S&P 500 Momentum
- S&P Europe 350 Momentum
- S&P/ASX 200 Momentum
- S&P MidCap 400 Momentum
- S&P SmallCap 600 Momentum
- S&P China A-Share Short Term Momentum

The size-based S&P Momentum Indices follow the size classification of the S&P Global BMI.

## 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' Global Industry Classification Standard (GICS) Methodology	<a href="#">GICS 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

## Index Universe

The S&P Momentum Indices are constructed from the constituents of the S&P Global BMI or other headline benchmark indices as detailed below.

Index	Universe	Measurement Period (months)
S&P Momentum Global LargeMidCap	S&P Global LargeMidCap	12
S&P Momentum Developed LargeMidCap	S&P Developed LargeMidCap	12
S&P Momentum Developed Ex. U.S. LargeMidCap	S&P Developed Ex. U.S. LargeMidCap	12
S&P Momentum Developed Ex. U.S. & South Korea LargeMidCap	S&P Developed Ex. U.S. & South Korea LargeMidCap	12
S&P Momentum Developed Ex. Japan LargeMidCap	S&P Developed Ex. Japan LargeMidCap	12
S&P Momentum Emerging LargeMidCap	S&P Emerging LargeMidCap	12
S&P Momentum Emerging Plus LargeMidCap	S&P Emerging Plus LargeMidCap	12
S&P Momentum Europe LargeMidCap	S&P Europe LargeMidCap	12
S&P Momentum Pan Asia LargeMidCap	S&P Pan Asia LargeMidCap	12
S&P Momentum Pan Asia Ex. Japan LargeMidCap	S&P Pan Asia Ex. Japan LargeMidCap	12
S&P Momentum Japan LargeMidCap	S&P Japan LargeMidCap	12
S&P Momentum United States LargeMidCap	S&P United States LargeMidCap	12
S&P Momentum South Africa	S&P South Africa Composite	12
S&P Short Term Momentum South Africa	S&P South Africa Composite	6
S&P 500 Momentum	S&P 500	12
S&P Europe 350 Momentum	S&P Europe 350	12
S&P/ASX 200 Momentum	S&P/ASX 200	12
S&P MidCap 400 Momentum	S&P MidCap 400	12
S&P SmallCap 600 Momentum	S&P SmallCap 600	12
S&P China A-Share Short Term Momentum	S&P China A BMI + S&P China A Venture Enterprises Index	6

For a security to be eligible for consideration for the S&P Momentum Indices, it must be a member of the relevant index universe as of the rebalancing effective date.

**Liquidity.** For S&P Momentum Indices with 12-month measurement periods, stocks must have traded at least 150 days during the period. Additionally, as of the rebalancing reference date, stocks must have a minimum three-month average daily value traded (ADVT) of US\$ 3 million for the following indices:

- S&P Momentum Developed Ex. U.S. & South Korea LargeMidCap
- S&P Momentum Emerging Plus LargeMidCap

For the S&P China A-Share Short Term Momentum Index, stocks must be listed at least four months before the rebalancing reference date and must have a minimum three-month ADVT of RMB 20 million (RMB 18 million for current constituents). Moreover, stocks must not be designated as Special Treatment (ST or \*ST) by the Shanghai or Shenzhen Stock Exchanges, and have a float market capitalization of at least RMB 1 billion (RMB 900 million for current constituents) as of the rebalancing reference date.

**Security Selection.** Securities are first ranked in descending order by momentum score into five quintiles. Securities with the highest scores (the 1<sup>st</sup> Quintile) are then selected for index inclusion.

For the S&P Momentum indices the number of companies selected is rounded to the nearest integer based on the size of the index universe.

For the S&P China A-Share Short Term Momentum, the top 100 securities with the highest momentum scores are selected.

In order to reduce turnover, a 20% buffer rule based on the winsorized z-score is applied to the security selection at each rebalancing.

To perform the selection, all securities ranked within the top 80% of the target stock count are automatically selected for the index. Next, any current constituents remaining within the top 120% of the target stock count are re-selected for the index, in order by rank, until the target stock count has been reached. Then, if the target stock count still has not been reached, any non-current constituents remaining and ranked from 80% to 100% of the target stock count are selected for inclusion until the target stock count is reached.

The momentum score of each stock is updated semi-annually at each rebalancing.

*Please refer to Appendix B for details of the momentum score computation.*

**Momentum Weights Computation.** For all S&P Momentum Indices, except the S&P/ASX 200 Momentum and S&P China A-Share Short Term Momentum, at a given rebalancing date all the securities eligible for inclusion in the S&P Momentum Indices are weighted by the product of their market capitalization in the eligible index universe and their momentum score, subject to security constraints. The maximum weight of each security is the lower of 9% and three times its market capitalization weight in the index.

For the S&P/ASX 200 Momentum and the S&P China A-Share Short Term Momentum, at a given rebalancing date, all the securities eligible for inclusion are weighted by the product of their market capitalization in the eligible index universe and the momentum score, subject to security and sector constraints. This is done using an optimization procedure that chooses final weights in such a way as to minimize the sum of the squared differences of capped weight and uncapped weight, divided by uncapped weight for each stock, subject to the following constraints: the maximum weight of each security is the lower of 5% and 20 times its market capitalization weight in the eligible index universe, the maximum weight of any given GICS sector is 40%. Each stock's weight is floored at 0.05%. Where the optimization procedure fails for a given period, the constraints are then relaxed in the following order: the maximum weight of the security, then the maximum weight of the sector.

**Float Adjustment.** Investable Weight Factors (IWFs), which define the available float for each stock, are reviewed annually. The float-adjusted shares are used in the calculation of each stock's momentum weight.

*Please refer to the S&P Dow Jones' Float Adjustment Methodology for a detailed description of float adjustment and Investable Weight Factor (IWF).*

S&P Dow Jones Indices believes turnover in index membership should be avoided when possible. At times a company may appear to temporarily violate one or more of the addition criteria. However, the addition criteria are for addition to an index, not for continued membership. As a result, an index constituent that appears to violate criteria for addition to that index will not be deleted unless ongoing conditions warrant an index change.

## **Multiple Share Classes**

All publicly listed multiple share class lines are eligible for index inclusion, subject to meeting the eligibility criteria. For more information regarding the treatment of multiple share classes, please refer to Approach A within the Multiple Share Classes section of the S&P Dow Jones Indices' Equity Indices Policies & Practices document.



# Index Maintenance

## Index Calculations

The indices are calculated using the divisor methodology used in all S&P Dow Jones Indices' equity indices. Index calculations include price, total and net return series.

The indices are calculated using S&P Dow Jones Indices' non-market capitalization weighted methodology. A non-market capitalization weighted index is one where index constituents have a user-defined index weight. Each stock's weight is based on its momentum score which can be capped as defined in *Index Construction*. Between semi-annual rebalancings, corporate actions generally have no effect on index weights. As stock prices move, the weights shift and the modified weights change.

*Please refer to S&P Dow Jones Indices' Index Mathematics Methodology for further details on the non-market capitalization methodology.*

Some index constituents use ADRs, GDRs or foreign ordinary shares if the common stock in their local market is illiquid. Pricing for these issues are based on the ADR, GDR or foreign ordinary share in the listing market's currency. All Chinese A-shares are excluded from the S&P Momentum Global, Emerging, Pan Asia and Pan Asia Ex-Japan LargeMidCap Indices. However, any non-domestic listed Chinese shares included in the Global, Emerging, Pan Asia and Pan Asia Ex-Japan Large MidCap Indices are eligible for inclusion in the S&P Momentum Global, Emerging, Pan Asia and Pan Asia Ex-Japan LargeMidCap Indices. Any changes to pricing sources are announced with as much notice as is reasonably possible.

## Rebalancing

All S&P Momentum Indices, except the S&P/ASX 200 Momentum and S&P China A-Share Short Term Momentum, are rebalanced semi-annually after the close on the third Friday of March and September. As part of the rebalancing process, constituent stock weights are updated. The rebalancing reference dates are the last business day of February and August, respectively. Weights calculated as a result of the reference date data are implemented in the indices using closing prices as of the rebalancing reference date.

The S&P/ASX 200 Momentum and S&P China A-Share Short Term Momentum are rebalanced semi-annually after the close on the third Friday of June and December. The rebalancing reference dates are the last business day of May and November, respectively. Weights calculated as a result of the reference date data are implemented in the index using closing prices as of the rebalancing reference date.

## Additions and Deletions

The majority of additions and deletions occur as part of the semi-annual index rebalancings. Since some of these indices do not have a fixed number of constituents, additions to and deletions from the index may not be the same number.

If a stock is deleted from a given index universe, it will be deleted from the corresponding S&P Momentum Index simultaneously.

**Spin-Offs.** The spun-off company is added to all the indices of which the parent is a constituent, at a zero price at the market close of the day before the ex-date (with no divisor adjustment). The spun-off company is removed after at least one day of regular way trading (with a divisor adjustment).

For further information, please refer to the *Treatment of Spin-offs in S&P Dow Jones Indices' Equity Indices Policies & Practices* document.

### Corporate Actions

Please refer to *S&P Dow Jones Indices' Equity Indices Policies & Practices* document.

### Currency, Currency Hedged, and Risk Control Indices

With the exception of the S&P Short Term Momentum South Africa and S&P China A-Share Short Term Momentum, the indices are calculated in U.S. dollars. Certain indices are also calculated in other currencies as follows:

Index	Additional Currency
S&P Momentum Developed Ex. Japan LargeMidCap	Japanese yen
S&P Momentum Europe LargeMidCap	Euros
S&P Momentum Japan LargeMidCap	Japanese yen
S&P Momentum South Africa	South African rand
S&P Europe 350 Momentum	Euros
S&P/ASX 200 Momentum	Australian dollar

The S&P Short Term Momentum South Africa is calculated in South African rand only. The S&P China A-Share Short Term Momentum is calculated in Chinese renminbi only.

WM/Reuters foreign exchange rates are taken daily at 04:00 PM London time and used in the calculation of the S&P Momentum Indices. These mid-market fixings are calculated by the WM Company based on Reuters' data and appear on Reuters pages WMRA.

Additional 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*.

### Investable Weight Factor (IWF)

All issues in the S&P Momentum Indices are assigned a float factor, called an Investable Weight Factor (IWF). The IWF ranges between 0 and 1 and is an adjustment factor that accounts for the publicly available shares of a company.

Please refer to *S&P Dow Jones Indices' Float Adjustment Methodology* for details.

### Other Adjustments

In cases where there is no achievable market price for a stock being deleted, it can be removed at a zero or minimal price at the Index Committee's discretion, in recognition of the constraints faced by investors in trading bankrupt or suspended stocks.

## 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 Momentum Global LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum Developed LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum Developed Ex. U.S. LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum Developed Ex. U.S. & South Korea LargeMidCap	02/16/2016	12/30/1994	12/30/1994	100
S&P Momentum Developed Ex. Japan LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum Emerging LargeMidCap	11/18/2014	12/31/1997	12/31/1997	100
S&P Momentum Emerging Plus LargeMidCap	02/16/2016	12/31/1997	12/31/1997	100
S&P Momentum Europe LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum Pan Asia LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum Pan Asia Ex. Japan LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum Japan LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum United States LargeMidCap	11/18/2014	12/30/1994	12/30/1994	100
S&P Momentum South Africa	11/18/2014	09/19/2003	09/19/2003	100
S&P Short Term Momentum South Africa	03/24/2016	09/19/2003	09/19/2003	100
S&P 500 Momentum	11/18/2014	09/16/1994	09/16/1994	100
S&P Europe 350 Momentum	11/18/2014	03/16/2001	03/16/2001	100
S&P/ASX 200 Momentum	07/31/2017	06/16/2000	06/16/2000	100
S&P MidCap 400 Momentum	11/13/2017	09/20/1991	09/20/1991	100
S&P SmallCap 600 Momentum	01/04/2018	03/17/1995	03/17/1995	100
S&P China A-Share Short Term Momentum	07/11/2018	06/16/2006	06/16/2006	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 document.*

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

# Index Governance

## **Index Committee**

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

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 via ftp 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 document.*

## Pro-forma Files

In addition to the corporate events file (.SDE), S&P Dow Jones Indices provides constituent pro-forma files each time the indices rebalance. The pro-forma file is typically provided daily in advance of the rebalancing date and contains all constituents and their corresponding weights and index shares effective for the upcoming rebalancing. Since index shares are assigned based on prices prior to the rebalancing, the actual weight of each stock at the rebalancing differs from these weights due to market movements.

*Please visit [www.spdji.com](http://www.spdji.com) for a complete schedule of rebalancing timelines and pro-forma delivery times.*

## Holiday Schedule

Each S&P Momentum Index is calculated on all days when the index making up its index universe is also calculated.

*A complete holiday schedule for the year is available 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.

*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 Momentum Global LargeMidCap (USD)	Price Return	SPGLMUP	--
	Total Return	SPGLMUT	--
	Net Total Return	SPGLMUN	--
S&P Momentum Developed LargeMidCap (USD)	Price Return	SPDMUP	--
	Total Return	SPDMUT	--
	Net Total Return	SPDMUN	--
S&P Momentum Developed Ex. U.S. LargeMidCap (USD)	Price Return	SPDUSUP	--
	Total Return	SPDUSUT	--
	Net Total Return	SPDUSUN	--
S&P Momentum Developed Ex. U.S. & South Korea LargeMidCap (USD)	Price Return	SPDUKMUP	--
	Total Return	SPDUKMUT	--
	Net Total Return	SPDUKMUN	--
S&P Momentum Developed Ex. Japan LargeMidCap (USD)	Price Return	SPDJMUP	--
	Total Return	SPDJMUT	--
	Net Total Return	SPDJMUN	--
S&P Momentum Developed Ex. Japan LargeMidCap (JPY)	Price Return	SPDJMJP	--
	Total Return	SPDJMJT	--
	Net Total Return	SPDJMJN	--
S&P Momentum Emerging LargeMidCap (USD)	Price Return	SPEMMUP	--
	Total Return	SPEMMUT	--
	Net Total Return	SPEMMUN	--
S&P Momentum Emerging Plus LargeMidCap (USD)	Price Return	SPEMPMUP	--
	Total Return	SPEMPMUT	--
	Net Total Return	SPEMPMUN	--
S&P Momentum Europe LargeMidCap (USD)	Price Return	SPEUMUP	--
	Total Return	SPEUMUT	--
	Net Total Return	SPEUMUN	--
S&P Momentum Europe LargeMidCap (EUR)	Price Return	SPEUMEP	--
	Total Return	SPEUMET	--
	Net Total Return	SPEUMEN	--
S&P Momentum Pan Asia LargeMidCap (USD)	Price Return	SPPAMUP	--
	Total Return	SPPAMUT	--
	Net Total Return	SPPAMUN	--
S&P Momentum Pan Asia Ex. Japan LargeMidCap (USD)	Price Return	SPPAJMUP	--
	Total Return	SPPAJMUT	--
	Net Total Return	SPPAJMUN	--
S&P Momentum Japan LargeMidCap (USD)	Price Return	SPJMUP	--
	Total Return	SPJMUT	--
	Net Total Return	SPJMUN	--
S&P Momentum Japan LargeMidCap (JPY)	Price Return	SPJMJP	--
	Total Return	SPJMJT	--
	Net Total Return	SPJMJN	--

Index (Currency)	Return Type	Bloomberg	Reuters
S&P Momentum United States LargeMidCap (USD)	Price Return	SPUSMUP	--
	Total Return	SPUSMUT	--
	Net Total Return	SPUSMUN	--
S&P Momentum South Africa (USD)	Price Return	SPSAMUP	--
	Total Return	SPSAMUT	--
	Net Total Return	SPSAMUN	--
S&P Momentum South Africa (ZAR)	Price Return	SPSAMZP	--
	Total Return	SPSAMZT	--
	Net Total Return	SPSAMZN	--
S&P Short Term Momentum South Africa (ZAR)	Price Return	SPSASMZP	--
	Total Return	SPSASMZT	--
	Net Total Return	SPSASMZN	--
S&P 500 Momentum (USD)	Price Return	SP500MUP	--
	Total Return	SP500MUT	--
	Net Total Return	SP500MUN	--
S&P Europe 350 Momentum (USD)	Price Return	SP350MUP	--
	Total Return	SP350MUT	--
	Net Total Return	SP350MUN	--
S&P Europe 350 Momentum (EUR)	Price Return	SP350MEP	--
	Total Return	SP350MET	--
	Net Total Return	SP350MEN	--
S&P/ASX 200 Momentum (USD)	Price Return	SPASXMUP	--
	Total Return	SPASXMUT	--
	Net Total Return	SPASXMUN	--
S&P/ASX 200 Momentum (AUD)	Price Return	SPASXMAP	--
	Total Return	SPASXMAT	--
	Net Total Return	SPASXMAN	--
S&P MidCap 400 Momentum (USD)	Price Return	SPMMUP	--
	Total Return	SPMMUPT	--
	Net Total Return	--	--
S&P SmallCap 600 Momentum (USD)	Price Return	SP6MUP	.SP6MUP
	Total Return	SP6MUT	.SP6MUT
	Net Total Return	--	--
S&P China A-Share Short Term Momentum (CNY)	Price Return	SPCASMCP	--
	Total Return	SPCASMCT	--
	Net Total Return	SPCASM CN	--

## 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).



# Appendix A

## Momentum Value Calculation

Momentum value is calculated for each of the securities in the index universe on each of the rebalancing reference dates. The momentum value is determined as follows:

1. **S&P Momentum Indices.** The momentum value is computed as the 12-month price change, excluding the most recent month of the security in **local** currency. If 12 months of price history is not available, momentum value is calculated from nine months of price history. The effective rebalancing month is stated as month ( $M$ ).

- a. Momentum Value =  $\left( \frac{price_{M-2}}{price_{M-14}} \right) - 1$

- b. Or, Momentum Value =  $\left( \frac{price_{M-2}}{price_{M-11}} \right) - 1$  if 12 months of price history is not available.

**S&P Short Term Momentum Indices.** The momentum value is computed as the six-month price change, excluding the most recent month of the security in **local** currency. If six months of price history is not available, momentum value is calculated from three months of price history. The effective rebalancing month is stated as month ( $M$ ).

- a. Momentum Value =  $\left( \frac{price_{M-2}}{price_{M-8}} \right) - 1$

- b. Or, Momentum Value =  $\left( \frac{price_{M-2}}{price_{M-5}} \right) - 1$  if six months of price history is not available.

**NOTE 1:** For example, if the effective rebalancing date is on 03/24/2014, the reference date is 02/28/2014, and the momentum value will be calculated based on the prices from 01/31/2014 ( $price_{M-2}$ ) and 01/31/2013 ( $price_{M-14}$ ).

**NOTE 2:** If there is no price available on day  $M-2$  or day  $M-14$ , the price from the day prior will be used. If there is no price available on any of the ten days prior, the momentum value will be calculated using formula (b) above. If the same condition exists for formula (b), the stock is excluded from the S&P Momentum Indices.

**NOTE 3:** For a stock to be included in the S&P Momentum Indices with 12-month measurement periods, it must be trading for at least ten months prior to the rebalancing reference date.

2. The momentum value is further adjusted by the security's volatility to arrive at risk-adjusted momentum value.

$$\text{Risk-Adjusted Momentum Value} = \frac{\text{Momentum Value}_i}{\sigma_i}$$

where:

$\sigma$  = Standard deviation of daily price returns for the same date period used in Step 1 above.

# Appendix B

## Z-Score & Momentum Score Computation

**Z-Score Computation.** Computing a z-score is a widely adopted method of standardizing a variable. The z-score for risk-adjusted momentum value for each security is calculated using the mean and standard deviation of the relevant variable within each of the index universes.

The z-score is calculated as follows:

$$z_{\alpha} = \frac{(x_{\alpha} - \mu_{\alpha})}{\sigma_{\alpha}}$$

where:

$z_{\alpha}$  = Z-score for a given security

$x_{\alpha}$  = Observed value for a given security

$\mu_{\alpha}$  = Arithmetic mean of the variable in a given index universe, excluding any missing values

$\sigma_{\alpha}$  = Standard deviation of the variable in a given index universe

Winsorization reduces the impact of outliers on a data set by limiting them to a designated value or score. For the S&P Momentum Indices, the winsorized z-score of a security is capped at  $\pm 3$ .

**Momentum Score Computation.** Using the winsorized z-scores, a momentum score is computed for each of the securities. For a given security, if its winsorized z-score is above 0, then its momentum score will be the addition of 1 and the z-score. On the other hand, if its winsorized z-score is below 0, then its momentum score will be the result of the inverse of 1 subtracted by its z-score.

If  $Z > 0$ , Momentum Score =  $1 + Z$

If  $Z < 0$ , Momentum Score =  $(1 / (1 - Z))$

If  $Z = 0$ , Momentum Score = 1

# Appendix C

## Methodology Changes

Methodology changes since January 1, 2015 are as follows:

Change	Effective Date (After Close)	Previous	Methodology Updated
Corporate Actions:  Spin-offs	09/30/2015	Spin-offs are ineligible for inclusion in the indices. Any price adjustments that occur due to a spin-off are accompanied by a AWF increase on the parent stock in the index to neutralize the event.	Spin-offs are ineligible for inclusion in the indices. When the price of the spin-off is not known, the spun-off company is added to the index at a zero price. Once it trades, it is dropped from the index.  <i>For further information, please refer to the Treatment of Spin-offs in S&amp;P Dow Jones Indices' Equity Indices Policies &amp; Practices document.</i>

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