

# **S&P LTVC Global Index** *Methodology*

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# Introduction

## Index Objective & Highlights

The S&P Long-Term Value Creation (LTVC) Global Index measures the performance of high ranking companies from the S&P Global LargeMidCap (the “Index Universe”), excluding China-A Shares, based on a combination of S&P Quality Score and SAM (part of S&P Global) Economic Dimension Score. The index consists of three vintages: the current year’s top 150 ranking stocks in addition to two prior vintages, with one vintage formed one year prior and the second vintage formed two years prior. Constituents within each vintage are weighted by the average of their Quality Score and Economic Dimension Score. The final index weight for each stock is the result of combining the weights of the three vintages, with each of these vintages given equal weight in the overall S&P LTVC Global Index.

*For more information on the S&P Global LargeMidCap, please refer to the S&P Global BMI, S&P IFCI Index Methodology, available at [www.spdji.com](http://www.spdji.com).*

*For more information on quality scores, please refer to Appendix A.*

*For more information on the SAM Economic Dimension Score, please refer to <https://www.spglobal.com/esg/csa/>.*

## 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.

# Eligibility Criteria and Index Construction

## Index Universe

The current vintage is constructed annually from the constituents of the S&P Global LargeMidCap Index, excluding China A-Shares.

## Eligibility Factors

Securities in the index universe must satisfy the following criteria, as of the reconstitution reference date, to be eligible for index inclusion:

- Have been a constituent of the universe index for at least the previous three years
- Have a three-month average daily value traded (ADVT) of at least US\$ 5 million in each of the prior three years.
- Have a SAM Economic Dimension Score
- Have a minimum three years of S&P Quality scores

## Constituent Selection

At each annual reconstitution the index selects the stocks in the index universe ranking in the top 50% of both their respective SAM Economic Dimension Score and three (or five depending on the available data) year average S&P Quality Score. *Refer to Appendix A for Quality score calculation details.*

Stocks meeting both criteria are then ranked by the Combined Score (*see Appendix B*) of the Economic Dimension Scores and the Quality scores. Annually, the top 150 ranking stocks are selected for each “vintage” in the index. Quality scores (for 5 years, with a minimum of 3 years) are computed for the eligible universe at each reconstitution. This does not affect weights of the existing vintages but only for the new vintage being added to the index.

## Vintage Selection Procedure

In order to reduce index turnover, implementation follows a rolling three-year vintage selection procedure:

- The index consists of the current year’s top 150 ranking stocks, in addition to two prior vintages: one vintage formed one year prior, and another vintage formed two years prior.
- If a stock is included in one of the two previous years’ vintages, but does not meet the eligibility criteria for the current year, the stock remains in the index but is not eligible for the new vintage.

Since each stock can be selected in any or all of the vintages, the overall index has an approximate count of 250-300 stocks.

## Constituent Weightings

The index weighting process combines the latest three vintages, assigning equal weight to each vintage within the overall index. Individual stock weights in the index therefore depend on whether they are present in one, two, or three of the vintages. Each constituent in a given vintage is weighted by Combined Score.

*For more information on weighting, including the Combined Score, please refer to Appendix B.*

# Index Maintenance

## Annual Reconstitution

The index is reconstituted annually, after the close of the last business day of April. The reconstitution reference date for fundamental data, and the composition reference date, is after the close of the last business day of March. Weights calculated as a result of the reference date data are implemented in the indices using closing prices as of eight business days prior to the reconstitution effective date. Since index shares are assigned based on prices prior to the reconstitution, the actual weight of each stock at the reconstitution will differ from these weights due to market movements.

**Semi-Annual Review.** In addition to the annual reconstitution, the index also undergoes a semi-annual review in October, where the Index Committee reviews the membership of components with substantially negative corporate governance related actions over the prior six months, as determined by the SAM Media and Stakeholder Analysis (MSA). Any index membership change in regards to these negative governance actions is effective after the close of the last business day of October, and is announced with five business days' notice.

## Additions and Deletions

**Additions.** Except for spin-offs, no additions are made to the index between the annual rebalancings. Spin-offs are added to all indices where the parent security is a constituent, at a zero price at the market close of the day before the ex-date (with no divisor adjustment). The spin-off is then removed after at least one day of regular way trading (with a divisor adjustment).

*For more information on the Treatment of Spin-offs please refer to the S&P Dow Jones Indices' Equity Policies & Practices Methodology.*

**Deletions.** If a stock is dropped from the index universe, it is also removed from the index simultaneously. Between rebalancings, a stock can be deleted from the index due to corporate events such as mergers, takeovers, delistings, suspensions, spin-offs/demergers, or bankruptcies.

A constituent flagged by the SAM Media and Stakeholder Analysis (MSA) may also be removed if the Index Committee determines that the company in question is no longer eligible for index inclusion.

## Controversies: Media and Stakeholder Analysis Overlay

SAM uses RepRisk, a leading provider of business intelligence on environmental, social, and governance risks, for daily filtering, screening, and analysis of controversies related to companies within the indices.

In cases where risks are presented, SAM releases an MSA which includes a range of issues such as economic crime and corruption, fraud, illegal commercial practices, human rights issues, labor disputes, workplace safety, catastrophic accidents, and environmental disasters.

The Index Committee will review constituents that have been flagged by SAM's MSA to evaluate the potential impact of controversial company activities on the composition of the indices.

*For more information on RepRisk, please refer to [www.reprisk.com](http://www.reprisk.com). This service is not considered a direct contribution to the index construction process.*

## Corporate Actions

For more information on Corporate Actions, please refer to S&P Dow Jones Indices' Equity Policies & Practices Methodology.

## Currency of Calculation and Additional Index Return Series

The index calculates in U.S. dollars.

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

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 [S&P DJI's All Indices by Methodology Report](#).

*For information on various index calculations, 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](http://www.spdji.com).*

## Base Date and History Availability

Index history availability, base date and base value are shown in the table below. Given the unique nature of the rebalancing process, at launch only one third of the index components were based on live data and the remaining were based on back-tested information. All index constituents are now based on live data.

Index	Launch Date	First Value Date	Base Date	Base Value
S&P LTVC Global Index	01/11/2016	04/30/2003	04/30/2003	100

# 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 Methodology.*

*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 S&P Dow Jones Indices' Factor Indices Index Committee maintains the index. All Committee members are full-time professional members of S&P Dow Jones Indices' staff. The Committee meets regularly.

The Index Committee is responsible for monitoring overall policy guidelines and index methodologies, as well as additions to and deletions from these indices and treatment of corporate actions. It is the sole responsibility of the Committee to decide on all matters relating to methodology, maintenance, constituent selection in accordance with the index rules and index procedures. The Committee makes decisions based on all publicly available information and discussions are kept confidential to avoid any unnecessary impact on market trading.

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

## 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 to all clients. Any unusual treatment of a corporate action or short notice of an event may be communicated via email to clients. All methodology changes are posted to the S&P Dow Jones Indices' Web site and announced via email to all clients.

*For more information, please refer to the Announcements section of S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.*

## Pro-forma Files

In addition to the corporate events file (.SDE), S&P Dow Jones Indices provides constituent pro-forma files each time the index rebalances. 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.

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

## Holiday Schedule

The index is calculated on all days of the year except when all exchanges where the index constituents are traded are officially closed.

*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 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](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 versions of the below indices that may exist are also covered by this document. Please refer to [S&P DJI's All Indices by Methodology Report](#) for a complete list of indices covered by this document.

Index	Return Type	Bloomberg	RIC
S&P LTVC Global Index	Price Return	SPLTVCUP	.SPLTVCUP
	Total Return	SPLTVCUT	.SPLTVCUT
	Net Total Return	SPLTVCUN	.SPLTVCUN

## 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](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 – Quality Score Computation

## Fundamental Ratios Calculation

The first step to determine the overall Quality score is to calculate, as of the rebalancing reference date, the three fundamental ratios below for each security in the index universe. They are defined as follows:

- **Return on Equity (ROE).** This is calculated as a company's trailing 12-month earnings per share divided by its latest book value per share (BVPS).

$$\text{ROE} = \frac{EPS}{BVPS}$$

- **Accruals Ratio.** This is computed using the change of a company's net operating assets over the last year divided by its average net operating assets over the last two years:

$$\text{Accruals Ratio} = \frac{(NOA_t - NOA_{t-1})}{((NOA_t + NOA_{t-1}))/2}$$

- **Financial Leverage Ratio.** This is calculated as a company's latest total debt divided by its book value.

$$\text{Leverage} = \frac{\text{Total Debt}}{(BVPS \times \text{Common Shares outstanding})}$$

**Outlier Handling and Winsorization.** Outlier fundamental ratios are winsorized to ensure that the average values used to calculate the overall quality score are less distorted by extreme values.

- **Return on Equity and Accruals Ratio.** For a given fundamental variable, the values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable. If the underlying data points for a given stock's ROE are both negative, leading to a positive ROE, its ROE value will be excluded and the stock will be assigned an ROE Z-score set as equal to the ROE Z-score value of the 2.5 percentile ranked security.
- **Financial Leverage Ratio.** The values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable. If the underlying data point for a given stock's BVPS is negative, leading to a negative Leverage, its Leverage value will be excluded and the stock will be assigned a Leverage Z-score set as equal to the Leverage Z-score value of the 2.5 percentile ranked security.

# Appendix B – Score Computations and Security Weighting

## Quality Score

**Z-score Computation.** Computing a z-score is a widely adopted method of standardizing a variable in order to combine it with other variables that may have a different scale or unit of measurement. After winsorizing raw scores as in Appendix A, the z-score for each of the three ratios for each security is calculated using the mean and standard deviation of the relevant variable.

- **Return on Equity.** The z-score is calculated as follows:

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

- **Accruals and Financial Leverage Ratios.** The z-score is calculated as follows:

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

where:

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

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

$\mu_{\alpha}$  = Arithmetic mean of the winsorized variable, excluding any missing values

$\sigma_{\alpha}$  = Standard deviation of the winsorized variable, excluding missing values

**Average Z-score Computation.** For each security, the average z-score is computed by taking a simple average of the three scores. Where there is a missing value, the average z-score is computed by taking a simple average of the remaining two scores. A security must have at least one z-score for it to be included in the index.

**Outlier Handling and Winsorization.** Outlier average z-scores are winsorized to ensure that the overall Quality scores are less distorted by extreme values. To do this, for all securities with average z-scores that lie above 4 or below -4, their value is set as equal to 4 or -4, whichever is applicable.

**3-5 year Average Quality Z-score Computation.** For each security, the 3-5 year average Quality z-score is computed by taking a simple average of the winsorized average z-scores over the previous 3 to 5 years, depending on availability.

**Quality Score Computation.** Using the 3-5 year average Quality z-scores, the final Quality Score for weighting purposes of the included securities is computed as follows:

If average Z > 0, Quality Score = 1 + Z

If average Z < 0, Quality Score = 1 / (1 - Z)

If average Z = 0, Quality Score = 1

## **Combined Score and Security Weighting**

**Combined Score Computation.** The current year Combined Score for a stock is calculated by taking a simple average of its final Quality Score and ED Score as defined above. The Combined Scores are then ranked in descending order. The top 150 stocks from this ranked list are selected for inclusion as a new vintage in the S&P LTVC Global Index, with individual stock weights within that vintage determined by a stock's Combined Score in proportion to the sum of all the Combined Scores in that year's vintage.

The final step entails weighting the stocks in the S&P LTVC Global Index at the rebalancing date, recognizing all stocks included in any of the current and prior two years' vintages. The stock weights from the prior two years' vintages are adjusted due to market price movements. Companies removed from the LTVC index between rebalances will also be removed from the prior two years' vintages for weighting purposes. The final index weight for each stock is the result of combining the weights of the three most recent vintages, with each of these vintages given equal weight in the overall S&P LTVC Global Index.

Between rebalancings, stock weights in the index will move with relative daily market price movements.

## Appendix C – Methodology Changes

Methodology changes since January 1, 2016 are as follows:

Change	Effective Date (After Close)	Previous	Methodology Updated
Index Construction: Multiple Shares Classes	04/01/2017	Some companies may have more than one share class line in the universe index. In the S&P LTVC Global Index, each company is represented once by the most liquid share line, which is generally the company's primary listing.	Each company is represented once by the Designated Listing. For more information regarding the treatment of multiple share classes, please refer to Approach B within the Multiple Share Classes section of the S&P Dow Jones Indices' Equity Indices Policies & Practices document.
Outlier Handling and Winsorization: Return on Equity and Accruals Ratio	04/01/2017	For a given fundamental variable, the values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable. If the underlying data points for a given stock's ROE are both negative, leading to a positive ROE, its value will be set as equal to the value of the 2.5 percentile ranked security.	For a given fundamental variable, the values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable. If the underlying data points for a given stock's ROE are both negative, leading to a positive ROE, its ROE value will be excluded and the stock will be assigned an ROE Z-score set as equal to the ROE Z-score value of the 2.5 percentile ranked security.
Outlier Handling and Winsorization: Financial Leverage Ratio	04/01/2017	The values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable.	The values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable. If the underlying data point for a given stock's BVPS is negative, leading to a negative Leverage, its Leverage value will be excluded and the stock will be assigned a Leverage Z-score set as equal to the Leverage Z-score value of the 2.5 percentile ranked security.
Outlier Handling and Winsorization: Return on Equity and Accruals Ratio	06/01/2016	For securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable.	For a given fundamental variable, the values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable. If the underlying data points for a given stock's ROE are both negative, leading to a positive ROE, its value will be set as equal to the value of the 2.5 percentile ranked security.

<b>Change</b>	<b>Effective Date (After Close)</b>	<b>Previous</b>	<b>Methodology Updated</b>
Outlier Handling and Winsorization:  Financial Leverage Ratio	06/01/2016	For securities that lie above the 97.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked security. For securities that lie below 0, their value is excluded.	The values for all securities are first ranked in ascending order. Then, for securities that lie above the 97.5 percentile rank or below the 2.5 percentile rank, their value is set as equal to the value of the 97.5 percentile ranked or the 2.5 percentile ranked security, whichever is applicable.
Index Construction:  Multiple Shares Classes	05/01/2016	--	Some companies may have more than one share class line in the universe index. In the S&P LTVC Global Index, each company is represented once by the most liquid share line, which is generally the company's primary listing.
Index Construction:  Dually Listed Companies	05/01/2016	--	Some companies may have more than one listing in the universe index. In the S&P LTVC Global Index, each company is represented once by the most liquid listing.



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