

S&P Dow Jones Indices

A Division of S&P Global

S&P LTVC Global Index *Methodology*

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Introduction

Index Objective

The S&P Long-Term Value Creation (LTVC) Global Index is comprised of companies with at least a three year history of financial quality and which have favorable ranks derived from RobecoSam’s Economic Dimension Scores.

Companies that anticipate and manage current and future economic and governance opportunities and risks by focusing on long-term strategy, innovation and productivity are more likely to maintain a competitive advantage and thereby sustain stakeholder value. Companies that have demonstrated a sustained history of financial quality likewise have the capacity to generate future long-term value. To that end, the index has been constructed to identify companies having both of these characteristics – sustainability and quality – believed to indicate above average odds of long-term value creation.

S&P Dow Jones Indices partners with RobecoSAM, a specialist in sustainability investing, to provide investors with objective benchmarks for managing their sustainability investment portfolios. The index utilizes RobecomSAM’s Economic Dimension Scores in its ranking process. It also utilizes S&P Dow Jones Indices’ Quality scores for companies in the S&P Global LargeMidCap equity index. The Quality score is calculated based on three fundamental measures: return on equity, accruals ratio, and financial leverage ratio (see *Appendix A*). The index selects from stocks ranking in the top 50% percentile of both their respective RobecoSAM economic dimension score (current) and their S&P Quality score (averaged over the last 3-5 years).

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’ Global Industry Classification Standard (GICS) Methodology	GICS Methodology

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

Index Construction

Index Universe

The index is constructed annually from the constituents of the S&P Global LargeMidCap Index.

For a security to be eligible for consideration in the index, it must meet the following criteria on the rebalancing reference date:

- Be an existing member of the relevant index universe.
- Must have been a constituent of the universe index for at least the previous three years with at least US\$ 5 million (three-month average daily value traded) in each of those years.

For more information on eligibility for the S&P Global LargeMidCap Index please refer to the S&P Global BMI, S&P IFCI Index Methodology, available at www.spdji.com.

The RobecoSAM Corporate Sustainability Assessment (CSA) consists of an in-depth analysis featuring approximately 80-120 questions on economic, environmental and social factors relevant to a company's financial success, but under-researched in conventional financial analysis. The questionnaires are industry-specific and are based on the RobecoSAM classifications that follow the GICS classification. Based on major global sustainability challenges identified by RobecoSAM's analysts, general criteria relating to standard management practices and performance measures such as Corporate Governance, Human Capital Development and Risk & Crisis Management are defined and applied to all of the various industries. The general criteria account for approximately 40 - 50% of the assessment, depending on the industry.

At least 50% of the questionnaire covers industry-specific risks and opportunities that focus on economic, environmental and social challenges and trends that are particularly relevant to companies within that industry. This focus on industry-specific criteria reflects RobecoSAM's conviction that industry-specific sustainability opportunities and risks play a key role in a company's long-term success and allows RobecoSAM to compare companies against their own peers in order to identify sustainability leaders.¹

Constituent Selection

The index selects from stocks ranking in the top 50% of both their respective RobecoSAM Economic Dimension Scores and their three or five year average S&P Quality scores. A minimum of three years of Quality scores are required, but a stock with five years of historical data will use that history instead. The Quality score of each stock is derived from its return-on-equity, accruals ratio and financial leverage ratio. The Index selects from stocks ranking in the top 50% of these averaged S&P Quality scores. *Refer to Appendix A for Quality score calculation details.*

Stocks meeting both criteria of ranking in the top 50% of the Economic Dimension Scores and the top 50% of Quality scores (using the minimum 3-year historical average) are the "crossover" stocks. These 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 the Index as a "vintage". Quality scores (for 5 years, with a minimum of 3 years) are computed for the eligible universe at each rebalance. This does not affect weights of the existing vintages but only for the new vintage being added to the index.

¹ For more information on RobecoSAM's Economic Dimension Scoring, please refer to their Web site at www.sustainability-indices.com.

Vintage Selection Procedure and Weighting. In order to reduce portfolio turnover, and as appropriate for a long-term investment thesis, implementation follows a rolling three-year vintage selection procedure:

1. The current portfolio consists of the current year's top 150 ranking stocks in addition to two prior vintages with one vintage formed from last year 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 will remain in the index but not be eligible for the new vintage. The weighting process combines the latest three vintage portfolios, assigning the portfolios equal weight within the overall LTVC index. Individual stock weights in the index portfolio therefore depend on whether they have appeared in three, two or one of the vintages included. Additional details on the index weighting can be found in Appendix B - Score Computations and Security Weighting.
2. In subsequent years, the top 150 Combined Score stocks are identified and a new vintage formed with weights within that vintage in proportion to the stocks' Combined Scores for that year. The newly selected vintage is added to the portfolio, replacing the oldest vintage formed three years prior. The weighting of the index portfolio then follows the same weighting process in step 1.

Between rebalancing dates, the weights of the portfolio stocks float with their relative market price movements.

Given duplication of the selected stocks from year to year, the result is an approximate 250-300 stock portfolio. 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 current criteria for addition to that index will not be deleted unless replaced by the above vintage process, or ongoing conditions are deemed by S&P Dow Jones Indices Committee to warrant an index change.

Multiple Share Classes

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.

Dually Listed Companies

Some companies may have more than one listing in the universe index. In this index, each company is represented once by the most liquid listing.

Index Maintenance

Rebalancing

The index is reconstituted annually, after the close of the last business day of April. The rebalancing reference date for fundamental data and the composition reference date is after the close of the last business day of March. The pricing reference date for components displayed during pro-forma announcement period is eight business days prior to the rebalancing effective date.

In addition to the annual reconstitution, the index also undergoes a semi-annual review in October where the committee reviews the membership of components with substantially negative corporate governance related actions in the prior six months. Any index membership changes in regards to these negative governance actions will be effective after the close of the last business day of October and announced with five business days' notice.

Additions and Deletions

Except for spin-offs, no additions are made to the index between the annual rebalancings.

Corporate Actions

Corporate action treatment within the index follows from the general treatment for Global Equity indices with the exception of spin-offs, as detailed below. In cases where there is an extraordinary corporate governance event related to an existing constituent for which RobecoSAM has issued an MSA, the membership of that stock in the index is reviewed either at the annual reconstitution or at the semi-annual review.

Spin-Offs

As a general policy, a spin-off security is 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). If a spin-off security is determined to be ineligible to remain in the index, it will be removed after at least one day of regular way trading (with a divisor adjustment).

Spin-offs are ineligible to remain in the S&P LTVC Global Index.

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

Other Adjustments

In cases where there is no achievable market price for a stock being deleted, it may 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 stock.

Currency, Currency Hedged, and Risk Control Indices

The index is calculated 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.

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.

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

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, it should be noted that only up to one third of the index components are based on live data and the remaining are based on back-tested information. At the third rebalance post-launch, the entire constituent list will be 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 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 S&P Dow Jones Indices' Global Benchmarks 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 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.

All methodology changes are posted to the S&P Dow Jones Indices' Web site and announced via email to all clients. The latest available version is posted on our Web site, www.spdji.com.

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 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. Since index shares are assigned based on prices prior to the rebalancing, the actual weight of each stock at the rebalancing will differ from these weights due to market movements.

Please visit 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.

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

Index levels are available through S&P Dow Jones Indices' Web site at www.spdji.com, major quote vendors (see codes below), numerous investment-oriented Web sites, and various print and electronic media.

Tickers

The table below lists headline indices covered by this document. All 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	Return Type	Bloomberg	Reuters
S&P LTVC Global Index	Price Return	SPLTVCUP	.SPLTVCUP
	Total Return	SPLTVCUT	.SPLTVCUT
	Net Total Return	SPLTVCUN	.SPLTVCUN

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.

Web site

For further information, please refer to S&P Dow Jones Indices' Web site at 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_{α} = Z-score for a variable for a given security

x_{α} = Winsorized value for a variable for a given security

μ_{α} = Arithmetic mean of the winsorized variable, excluding any missing values

σ_{α} = 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

Economic Dimension (ED) Score

ED Score Computation. The ED scores are provided by RobecoSAM and range from zero to 100. These scores are standardized by computing z-scores using the formula stated previously.

The final ED Score for weighting purposes of the included securities is computed as follows:

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

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

If $Z = 0$, ED 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 portfolio, 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 portfolio 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 vintage portfolios, with each of these portfolios given equal weight in the overall S&P LTVC Global Index portfolio.

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)	Methodology	
		Previous	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.

Change	Effective Date (After Close)	Previous	Methodology Updated
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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