

S&P Dow Jones Indices

A Division of **S&P Global**

S&P China A-Share Quality Value Index *Methodology*

October 2018

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Introduction

Index Objective and Highlights

The S&P China A-Share Quality Value Index is designed to measure the performance of 100 stocks with high quality scores and attractive valuations in the S&P China A BMI Domestic Index or the S&P China A Venture Enterprises Index. Constituents are weighted by the product of their float-adjusted market capitalization and quality score, subject to security and sector constraints. Quality scores are calculated based on companies' return on equity, accruals ratio and financial leverage ratio (see *Appendix A*). Value scores are calculated based on three fundamental measures: book value-to-price, earnings-to-price and sales-to-price (see *Appendix B*).

Two attribution indices are also constructed:

- **S&P China A-Share Quality Value – High Quality Index.** The index measures the performance of 200 stocks with high quality scores in the S&P China A BMI Domestic Index or the S&P China A Venture Enterprises Index. Constituents are weighted by the product of their float-adjusted market capitalization and quality score, subject to security and sector constraints.
- **S&P China A-Share Quality Value – High Value Index.** The index measures the performance of 100 stocks selected in the S&P China A-Share Quality Value – High Quality Index, but not included in the S&P China A-Share Quality Value Index. Constituents are weighted by the product of their float-adjusted market capitalization and quality score, subject to security and sector constraints.

For more information on the S&P China A BMI Domestic and S&P China A Venture Enterprises Indices, please refer to the S&P China Indices Methodology at www.spdji.com.

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 the index. 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

Index Eligibility

Index constituents are drawn from the S&P China A BMI Domestic and S&P China A Venture Enterprises indices.

For more information on the S&P China A BMI Domestic and S&P China A Venture Enterprise Indices please refer to the S&P Global BMI and S&P China Indices Methodology documents located on our Web site, www.spdji.com.

Eligibility Factors

Special Treatment. Stocks designated as Special Treatment (ST and *ST) by the Shanghai or Shenzhen Stock Exchanges are ineligible for index inclusion.

Market Capitalization. Stocks must have a minimum float-adjusted market capitalization (FMC) of CNY 1 billion (CNY 900 million for current constituents).

Liquidity. Stocks must have a minimum three-month average daily value traded (ADVT) of CNY 20 million (CNY 18 million for current constituents).

Index Construction

Constituent Selection

The selection of index constituents is done as follows:

Step 1: Stocks without both a quality and a value score available are excluded from the index. Then, the 200 stocks with the highest quality scores in the remaining eligible universe are selected, following the below process:

1. Stocks in the eligible universe with both quality and value scores are ranked based on quality score in descending order; those ranked within the top 160 are automatically chosen for the value screen.
2. All current index constituents ranked within the top 240 are then chosen, in order of their quality score, until the target count of 200 is reached.
3. If, at this point, 200 stocks have not been chosen, the remaining stocks are chosen based on their quality score.

Step 2: The 100 stocks with the highest value scores, of the 200 high-quality stocks selected in Step 1, are chosen, following the below process:

1. The 200 high-quality stocks are ranked based on value score in descending order, and those ranked within the top 80 are automatically chosen for index inclusion.
2. All current index constituents ranked within the top 120 are then chosen for index inclusion in order of their value score, until the target count of 100 is reached.
3. If, at this point, 100 stocks have not been chosen, the remaining stocks are chosen based on their value score.

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 may not be deleted unless ongoing conditions warrant an index change.

Attribution Indices

- **S&P China A-Share Quality Value – High Quality Index.** The 200 stocks selected in Step 1 form the index.
- **S&P China A-Share Quality Value – High Value Index.** The 100 stocks not selected in Step 2 from the 200 stocks selected in Step 1 form the index.

Please refer to Appendix A and Appendix B for quality and value score calculation details.

Weights Computation

At each rebalancing, constituents are weighted by 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 float-adjusted market capitalization weight in the eligible universe, the maximum weight of any given GICS sector is 40%. Each stock's weight is floored at 0.05%.

Before the weighting process begins, if the sum of the maximum stock weights is less than 100%, the 20 times multiplier is increased by 1 until the sum is brought up to more than 100%.

Where the weighting procedure fails for a given period, the constraints are then relaxed in the following order: the maximum weight of the security (first the fixed cap in increments of 1%, then the multiplier in increments of 1), then the maximum weight of the sector in increments of 1%.

Index Calculations

The index is calculated by means of the divisor methodology used for all S&P Dow Jones Indices' equity indices.

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

Index Maintenance

Rebalancing

The index is rebalanced semi-annually after the close on the third Friday of June and December. The fundamental data reference date is five weeks prior to the rebalancing date. As part of the rebalancing process, constituent stock weights are updated. 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 indices using closing prices as of the Wednesday prior to the second Friday of June and December.

Additions and Deletions

Additions are made to the index only during the semi-annual rebalancing, except for spin-offs as detailed below. Constituents removed from an underlying universe index are also removed from the 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.

Initial Public Offerings (IPOs). IPO additions to the index take place at the semi-annual rebalancings. To be considered eligible for index inclusion, an IPO must first be a constituent of the respective index universe.

Corporate Actions

For more information, please refer to *S&P Dow Jones Indices' Equity Indices Policies & Practices* document.

Currency, Currency Hedged, and Risk Control Indices

The index is calculated in Chinese renminbi.

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.

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 date and base value are shown in the table below.

Index	Launch Date	First Value Date	Base Date	Base Value
S&P China A-Share Quality Value Index	09/29/2017	06/16/2006	06/16/2006	1000
S&P China A-Share Quality Value – High Quality Index	06/01/2018	06/16/2006	06/16/2006	1000
S&P China A-Share Quality Value – High Value Index	06/01/2018	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 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 index is maintained by the Asia 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 may review pending corporate actions that may affect index constituents, statistics comparing the composition of the index to the market, companies that are being considered as candidates for addition to the 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 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 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 differs 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 days when at least one of the underlying exchanges of the index is open.

A complete holiday schedule for the year is available at www.spdji.com.

Rebalancing

The Index Committee may change the date of a given rebalancing for reasons including market holidays occurring on or around the scheduled rebalancing date. Any such change 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 more 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
S&P China A-Share Quality Value Index (CNY)	Price Return	SPCQVCP
	Total Return	SPCQVCT

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 A – Quality Score

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:

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

- **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:

$$\text{Accruals Ratio} = \frac{(\text{NOA}_t - \text{NOA}_{t-1})}{((\text{NOA}_t + \text{NOA}_{t-1}))/2}$$

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

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

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.

Z-score & Quality Score Computation

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 all the three fundamental ratios, the z-score for each of the three ratios for each security is calculated using the mean and standard deviation of the relevant variable within the index universe.

- **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 given security.

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

μ_{α} = Arithmetic mean of the winsorized variable in a given index universe, excluding any missing values.

σ_{α} = Standard deviation of the winsorized variable in a given index universe.

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 a given average z-score, the values for all securities are first ranked in ascending order. Then, for securities that lie above 4 or below -4, their value is set as equal to 4 or -4, whichever is applicable.

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

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

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

If average Z = 0, Quality Score = 1

Appendix B – Value Score

Fundamental Ratios Calculation

The first step to determine the overall value 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:

- **Book Value-to-Price Ratio.** This is calculated as a company's latest book value per share divided by its price:

$$\text{Book Value-to-Price} = \frac{BVPS}{P}$$

- **Earnings-to-Price Ratio.** This is calculated as a company's trailing 12-month earnings per share divided by its price:

$$\text{Earnings-to-Price} = \frac{EPS}{P}$$

- **Sales-to-Price Ratio.** This is calculated as a company's trailing 12-month sales per share divided by its price:

$$\text{Sales-to-Price} = \frac{SPS}{P}$$

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

Z-score & Value Score Computation

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 all the three fundamental ratios, the z-score for each of the three ratios for each security is calculated using the mean and standard deviation of the relevant variable within the index universe.

The z-score is calculated as follows:

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

where:

z_{α} = Z-score for a given security.

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

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

σ_{α} = Standard deviation of the winsorized variable in the index universe.

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 average values used to calculate the overall value score are less distorted by extreme values. To do this, for a given average z-score, the values for all securities are first ranked in ascending order. Then, for securities that lie above 4 or below -4, their value is set as equal to 4 or -4, whichever is applicable.

Value Score Computation. Using the winsorized average z-scores for the three value factors, a value score is computed for each of the securities. For a given security, if its winsorized average z-score is above 0, then its value score will be the addition of 1 and the average z-score. On the other hand, if its winsorized average score is below 0, then its value score will be the result of the reciprocal of 1 subtracted by its average z-score.

If average $Z > 0$, Value Score = $1 + Z$

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

If average $Z = 0$, Value Score = 1

Appendix C – Methodology Changes

Methodology changes since September 29, 2017 are as follows:

Change	Effective Date (After Close)	Previous	Methodology Updated
Eligibility of Special Treatment Stocks	15-Dec-2017	--	Stocks designated as Special Treatment (ST and *ST) by the Shanghai or Shenzhen Stock Exchanges are ineligible for index inclusion.

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