

MSCI CHINA A CUSTOM QUALITY VALUE 100 INDEX METHODOLOGY

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1 INTRODUCTION

The MSCI China A Custom Quality Value 100 Index is a factor index that uses optimization in its index construction. The Index is designed to represent the performance of a strategy that seeks higher exposure to Quality and Value style factors from a selection of lower volatility securities from the MSCI China A Onshore Index.

2 CONSTRUCTING THE MSCI CHINA A CUSTOM QUALITY VALUE 100 INDEX

The MSCI China A Custom Quality Value 100 Index is constructed by applying the following steps to the MSCI China A Onshore Index (herein, the “Parent Index”) at initial construction and subsequent Index Reviews:

- Applying the Volatility Screening
- Constituent Identification
- Weighting Scheme

2.1 APPLYING THE VOLATILITY SCREENING

Constituents of the Parent Index are ranked in ascending order of their volatility¹. The top 80%, by number of securities, form the eligible universe for the MSCI China A Custom Quality Value 100 Index.

2.2 CONSTITUENT IDENTIFICATION

The constituent selection for the MSCI China A Custom Quality Value 100 Index is done by the process of optimization on the securities selected after the Volatility Screening step.

2.3 WEIGHTING SCHEME

The optimization objective of the MSCI China A Custom Quality Value 100 Index is to maximize the alpha score (representative of the exposures to the set of target factors).

2.3.1 CALCULATION OF THE ALPHA SCORE

The alpha score of the Index is defined as follows:

$$\alpha_i = 0.50 * F_{1,i} + 0.50 * F_{2,i}$$

Where,

$F_{j,i}$ = Factor exposure of each security i for each of the target factors.

The factor exposures for the target factors are sourced as follows:

¹ The volatility of each security is computed in accordance with the MSCI Risk Weighted Indexes Methodology. The methodology book for is available at: <https://www.msci.com/index-methodology>

1. Value (F1): Sector-relative score calculated using the security-level exposures to earnings-based, asset-based and whole-firm based valuation metrics from the relevant Barra Equity Model.
2. Quality (F2): Sector-relative score calculated using the security-level exposures to all quality factors from the relevant Barra Equity Model.

Please refer to Appendix 3 for factor definitions of the above factors.

2.3.2 OPTIMIZATION CONSTRAINTS

At each Semi-Annual Index Review (SAIR), the following optimization constraints are employed, which aim to ensure investability:

- The maximum weight of an index constituent will be restricted to the lower of (the weight of the security in the Parent Index + 2%) or 10 times the weight of the security in the Parent Index. The minimum weight of an index constituent will be restricted to the higher of the (weight of the security in the Parent Index - 2%) or 0.
- Exposure of the Index to non-target Barra style factors will be restricted as below:

Factor Name	Lower Bound Value	Upper Bound Value
Beta	Unconstrained	0.00
Growth	-0.10	Unconstrained
Liquidity	-0.25	+0.25
Mid-Capitalization	-0.25	+0.25
Momentum	-0.25	+0.25
Residual Volatility	Unconstrained	0.00
Size	-0.25	+0.25

- The sector weights of the Index will not deviate more than +/-5% from the sector weights of the Parent Index. Financials however, will have a lower bound of -2% and an unconstrained upper bound.
- The one-way turnover of the Index is constrained to a maximum of 20% at each index review.
- The number of stocks in the final index will be constrained to 100.
- The minimum weight of any security in the index will be capped at 0.2%.

2.3.3 DETERMINING THE OPTIMIZED INDEX

The MSCI China A Custom Quality Value 100 Index is constructed using the Barra Open Optimizer in combination with the relevant Barra Equity Model². The optimization uses the securities selected after the Volatility Screening step as the universe of eligible securities and the specified optimization objective and constraints to determine the Index. The Barra Open Optimizer determines the index constituent weight, i.e. the set of securities with the highest possible alpha score, with no explicit constraint on the ex-ante risk of the index at the time of the rebalancing.

² Please refer to Appendix 2

3 MAINTAINING THE MSCI CHINA A CUSTOM QUALITY VALUE 100 INDEX

3.1 SEMI-ANNUAL INDEX REVIEWS

The MSCI China A Custom Quality Value 100 Index is rebalanced on a semi-annual basis, usually as of the close of the last business day of May and November, coinciding with the May and November Semi-Annual Index Reviews (SAIRs) of the MSCI Global Investable Market Indexes. Barra Equity Model data as of the end of April and October are used respectively. This approach aims to capture timely updates to the risk characteristics of the companies and coincide with the rebalancing frequency of the relevant Parent Index. The pro forma Index is in general announced nine business days before the effective date.

3.2 ONGOING EVENT RELATED CHANGES

The general treatment of corporate events in the MSCI China A Custom Quality Value 100 Index aims to minimize turnover outside of Index Reviews. The methodology aims to appropriately represent an investor’s participation in an event based on relevant deal terms and pre-event weighting of the index constituents that are involved. Further, changes in index market capitalization that occur as a result of corporate event implementation will be offset by a corresponding change in the Variable Weighting Factor (VWF) of the constituent. There will be no additions to the Index in between Index Reviews.

Additionally, if the frequency of Index Reviews in the Parent Index is greater than the frequency of Index Reviews in the MSCI China A Custom Quality Value 100 Index, the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the MSCI China A Custom Quality Value 100 Index.

The following section briefly describes the treatment of common corporate events within the MSCI China A Custom Quality Value 100 Index.

No new securities will be added (except where noted below) to the Index between Index Reviews. For cases where additions are noted below, securities will be added to the index only if added to the parent index. Parent Index deletions will be reflected simultaneously.

EVENT TYPE

EVENT DETAILS

New additions to the Parent Index

A new security added to the parent index (such as IPO and other early inclusions) will not be added to the index.

Spin-Offs

All securities created as a result of the spin-off of an existing Index constituent will be added to the Index at the time of event implementation. Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Merger/Acquisition

For Mergers and Acquisitions, the acquirer's post event weight will account for the proportionate amount of shares involved in deal consideration, while cash proceeds will be invested across the Index.

If an existing Index constituent is acquired by a non-Index constituent, the existing constituent will be deleted from the Index and the acquiring non-constituent will not be added to the Index.

Changes in Security Characteristics

A security will continue to be an Index constituent if there are changes in characteristics (country, sector, size segment, etc.) Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Further detail and illustration regarding specific treatment of corporate events relevant to this Index can be found in the MSCI Corporate Events Methodology book under the sections detailing the treatment of events in Capped Weighted and Non-Market Capitalization Weighted indexes.

The MSCI Corporate Events methodology book is available at:
<https://www.msci.com/index-methodology>

APPENDIX 1: HANDLING INFEASIBLE OPTIMIZATIONS

During the Semi-Annual Index Review, in the event that there is no optimal solution that satisfies all the optimization constraints defined in Section 2.3.2, the following constraints will be relaxed, until an optimal solution is found:

- Relax the maximum active weight constraint in multiples of 1.25 up to a maximum of 5 iterations based upon the following formula

$$w_{i+1} = 1.25 * w_i \text{ for } i = 0 - 4$$

Where w_i = Maximum Active weight constraint

- Relax the maximum weight multiple in steps of 2 up to a maximum of 5 iterations based upon the following formula

$$wm_{i+1} = 2 + wm_i \text{ for } i = 0 - 4$$

Where wm_i = Maximum Active weight multiple

- The maximum active weight constraint and the maximum weight multiple are alternately relaxed until a feasible solution is achieved.

In the event that no optimal solution is found after the above constraints have been relaxed over all 5 iterations, the Index will not be rebalanced for that Semi-Annual Index Review.

APPENDIX 2: NEW RELEASE OF BARRA[®] EQUITY MODEL OR BARRA[®] OPTIMIZER

A major new release of the relevant Barra Equity Model or Barra Optimizer may replace the former version within a suitable timeframe. At launch, the MSCI China A Custom Quality Value 100 Index would use the Barra GEMLT Equity model for optimization.

APPENDIX 3: TARGET FACTOR DEFINITION SUMMARY

The style factor groups targeted in the MSCI China A Custom Quality Value 100 Index are Value and Quality. These factor groups are described using individual factor scores from the current release of the MSCI Barra Global Equity Model for Long-Term Investors (GEMTL). The precise choice of component factors used to represent each broad factor group is governed by the current model used for the optimization, which may change with a new release of the Barra Equity Model.

Value:

The value score for each security is currently based on earnings-based, asset-based and whole firm based valuation metrics - currently captured by the following two factors, Book-to-Price and Earnings Yield, from the relevant Barra Equity Model (currently GEMTL). A sector-relative score is derived from the combined score by standardizing the latter within each sector and winsorizing at +/- 3.

$$\text{Value}_i = (0.3333) * \text{BtoP}_i + (0.6667) * \text{EarningsYield}_i$$

Quality:

The quality score for each security is currently based on all quality factors, Profitability, Investment Quality, Earnings Quality, Leverage and Earnings Variability, from the relevant Barra Equity Model (currently GEMTL). A sector-relative score is derived from the combined score by standardizing the latter within each sector and winsorizing at +/- 3.

$$\text{Quality}_i = (0.2) * \text{Profitability}_i + (0.2) * \text{Investment Quality}_i + (0.2) * \text{Earnings Quality}_i + (-1) * (0.2) * \text{Earnings Variability}_i + (-1) * (0.2) * \text{Leverage}_i$$

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