MSCI GROWTH TARGET INDEXES METHODOLOGY

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Contents

1   Introduction

The MSCI Growth Target Indexes are designed to represent the performance of a strategy that seeks higher exposure to the Growth style factor - relative to other factors from the relevant Barra Equity Model[1] with constrained ex-ante risk. In other words, the index methodology aims an increased exposure to the Growth factor while exhibiting lower or equal ex-ante total risk to the underlying parent index.

MSCI categorizes the MSCI Growth Target Indexes as part of the family of MSCI Factor Indexes, which are designed to reflect the systematic elements of particular investment styles or strategies. While capitalization weighted indexes represent the broad market beta, investors increasingly recognize that there are additional sources of systematic return associated with particular investment styles and strategies, such as value, momentum, volatility, quality etc. that could be represented through alternatively weighted indexes. The Growth factor is an addition to other systematic factors such as Size, Value and Low Volatility and may provide diversification to a factor portfolio or a standalone single factor strategy.

The MSCI Growth Target Indexes methodology aims to maximize exposure to the Growth factor while controlling active exposure to the other non-target factors and maintaining total risk less than or equal to ex ante risk of the underlying parent index at the time of rebalancing.

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[1] Please refer to Appendix II and Appendix IV

2   Index Construction Methodology

The applicable universe includes all the existing constituents of an underlying MSCI parent index (herein, the "Parent Index"). The relevant Parent Index could be any MSCI Regional or Country Standard, Mid Cap, Small Cap or Investable Market Index (IMI).

The MSCI Growth Target indexes are constructed by optimization from an underlying Parent Index using a Barra Equity Model to maximize the index-level exposure to the Growth factor while constraining other non-target factors and maintaining total risk equal to or less than the ex-ante risk of the Parent Index.

The steps for constructing the MSCI Growth Target Indexes are described in the following sections.

2.1   APPLICABLE UNIVERSE

All the securities from the Parent Index become part of the applicable universe. The optimization relies on the factor exposures for all the securities in the Parent Index and the factor covariance matrix of the relevant Barra Equity Model. The optimization is performed using a base currency. The default currency is the US Dollar.

2.2   CONSTITUENT IDENTIFICATION

Identification of the constituents from the applicable universe is done by the process of optimization.

2.3   WEIGHTING SCHEME

The optimization objective is to maximize the alpha score (representative of the exposure to the Growth factor) under constraints on the active exposure to the non-target factors and the constraint on "target risk" where the target risk is less than or equal to the ex-ante risk of the Parent Index at the time of rebalancing.

2.3.1   CALCULATION OF THE ALPHA SCORE

$$\alpha_i = F_{G,i}$$

Where,

$F_{G,i}$ = Growth factor exposure of each security i.

The factor exposure for the Growth factor is sourced as follows:

1. Growth – Factor exposure for each security taken from the relevant Barra Equity Model. The factor definition is given in Appendix III.

2.4   OPTIMIZATION CONSTRAINTS

At each Semi-Annual Index Review (SAIR), the following optimization constraints are employed, which aim to ensure investability while achieving total risk in line with that of the Parent Index.

- 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.

- The sector weights of the Index will not deviate more than +/-5% from the sector weights of the Parent Index.

- For countries with weight greater than 2.5% in the Parent Index, the weight in the MSCI Growth Target Index will not deviate more than +/-5% from the country weight in the Parent Index.

- For countries with weight less than 2.5% in the Parent Index, the weight in the MSCI Growth Target Index will be capped at 3 times their weight in the Parent Index.

- The one-way turnover of the MSCI Growth Target Index is constrained to a maximum of 20% at each index review.

- The exposure of the Index to non-target Barra style factors relative to the Parent Index will be constrained as below:

   o   Exposure to Book-to-Price, Earnings Yield, Long-Term reversal, Dividend Yield, Momentum, Profitability, Earnings Quality, Investment Quality and Mid-Capitalization factors will be constrained to be within the range of 0 to 0.25 standard deviations relative to the Parent Index.

   o   Exposure to Beta, Residual Volatility, Earnings Variability, Leverage and Size factors will be constrained to be within the range of -0.25 to 0 standard deviations relative to the Parent Index.

   o   Exposure to Liquidity factor will be constrained to be within the range of -0.25 to 0.25 standard deviations relative to the Parent Index.

2.5   DETERMINING THE OPTIMIZED INDEX

The MSCI Growth Target Indexes are constructed using the Barra Open Optimizer in combination with the relevant Barra Equity Model. The optimization uses the Parent Index as the universe of eligible securities and the specified optimization objective and constraints to determine the MSCI Growth Target Indexes. The Barra Open Optimizer determines the optimal solution, i.e. the set of securities with the highest

possible alpha score with "target risk" equal to or less than the ex-ante risk of the Parent Index at the time of rebalancing.

3   Maintaining the Index

3.1   SEMI-ANNUAL INDEX REVIEWS

The MSCI Growth Target Indexes are 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 MSCI Growth Target Indexes are 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 Growth Target Indexes 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.

During the quarterly index reviews of the Parent Indexes (February and August), the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the MSCI Growth Target Index.

The following section briefly describes the treatment of common corporate events within the MSCI Growth Target Indexes.

No new securities will be added (except where noted below) to the Index between Index Reviews. 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 I: Handling Infeasible Optimizations

During the Semi-Annual Index Review, if there is no optimal solution that satisfies all the optimization constraints defined in Section 2.4, the following constraints will be relaxed, until an optimal solution is found in the given order:

1) Relax the turnover constraint in steps of 2% up to a maximum of 30%

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

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

Where wm_i = Maximum Active weight multiple

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

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

Appendix II: 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.

Appendix III: Target Factor Definition Summary

The style factor targeted in the MSCI Growth Target Indexes is the Growth factor which is described using factor score from the current release of the MSCI Barra Global Equity Model for Long-Term Investors (GEMLTL). The model data will be used from previous end-of-month, prior to the rebalancing date. Following is the definition of the Growth factor currently used in the Index. For more detailed information on individual factors in GEMLTL, please refer to https://www.msci.com/portfolio-management/

Growth:

The Growth factor adopts the definition from the relevant Barra Equity Factor Model (currently GEMLT). Based on the definition from the current GEMLT model, the factor score for each security is based on earnings growth-based and sales growth-based valuation metrics - captured by the following three descriptors: Analyst-Predicted Long-Term Earnings Growth (EGRLF), Earnings Per Share Growth Rate (EGRO) and Sales Per Share Growth Rate (SGRO).

$$Growth_i = 0.7 * EGRLF_i + 0.1 * EGRO_i + 0.2 * SGRO_i$$

Appendix IV: Barra Equity Model Used in The Optimization

The MSCI Growth Target Indexes currently use an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMLTL).

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