

**METHODOLOGY BOOK FOR:
-MSCI GLOBAL DIVERSIFIED
MEGATRENDS INDEX
-MSCI GLOBAL DIVERSIFIED
MEGATRENDS 5% DECREMENT
INDEX**

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1 Introduction

The MSCI Global Diversified Megatrends Index aims to represent the performance of a quarterly rebalanced portfolio of 50 stocks in the Developed Markets which are determined to have higher exposure to business activities such as Disruptive Technology, Efficient Energy, Smart Cities and Ageing Societies Opportunities. These stocks also exhibit higher Barra GEMLT Growth factor exposure. The MSCI Global Diversified Megatrends Index aims to achieve diversification with country, market cap and thematic exposure constraints.

The MSCI Global Diversified Megatrends 5% Index aims to represent the performance of the MSCI Global Diversified Megatrends Index, while applying a constant markdown ('synthetic dividend') of 5% per annum, as per the MSCI Decrement Indexes Methodology.

2 Index Construction

The MSCI Global Diversified Megatrends Index is constructed from the MSCI ACWI IMI Index (the “Parent Index”).

2.1 INITIAL ELIGIBLE UNIVERSE

An initial selection universe for the index is created by identifying securities that belong to any of the following four MSCI Thematic Indices¹:

MSCI ACWI IMI Disruptive Technology Index

MSCI ACWI IMI Efficient Energy Index

MSCI ACWI IMI Smart Cities Index

MSCI ACWI IMI Ageing Society Opportunities Index

From this initial selection Universe, an initial eligible universe is created by selecting all the securities that belong to MSCI World IMI Index.

2.2 ADDITIONAL SCREENS

2.2.1 LIQUIDITY SCREEN

The securities from the initial eligible universe above are subsequently screened for 6-month ADTV to be greater than USD 10 Million.

ADTV is defined as Average Daily Traded Volume and is calculated as:

$$ADTV_{6M} = \frac{ATV_{6M}^2}{252}$$

Where ATV_{6M} is annualized 6-month Average Traded Volume of the security.

¹ For further details about MSCI’s Thematic Indexes please refer to <https://www.msci.com/thematic-investing/megatrends>

² MSCI Index Calculation Methodology at <https://www.msci.com/index-methodology>

MSCI Global Investable Market Indexes Methodology at <https://www.msci.com/index-methodology>

2.3 SECURITY SELECTION

The remaining securities from above are subsequently filtered to include a single security per issuer. For issuers having multiple securities which are part of the eligible universe, the security with the highest 6-month ADTV is selected.

From the securities remaining post screenings, the selection is performed using the optimization process described under 2.4 and 2.5 wherein we target to select 50 securities.

2.4 WEIGHTING SCHEME

The weights of the securities are an outcome of the optimization process. The optimization relies on factor exposures for all the securities in the remaining universe and the factor covariance matrix of the relevant Barra Equity Model³. The optimization is performed using EUR as base currency. The optimization objective is to maximize risk adjusted portfolio alpha score (representative of the exposure to Barra GEMLT Growth factor⁴) where the portfolio alpha score equals to the weighted average of stock level alpha scores under various optimization constraints.

CALCULATION OF THE ALPHA SCORE

$$\alpha_{Port} = \sum w(i) * \alpha(i)$$

Where,

α_{Port} = Portfolio alpha score

$w(i)$ = Weight of security i in the portfolio

$\alpha(i)$ = Factor exposure of each security i to the target Barra Equity Model⁵ Growth factor

2.5 OPTIMIZATION CONSTRAINTS

The MSCI Global Diversified Megatrends Index is constructed using the Barra Open Optimizer in combination with the relevant Barra Equity Model. The optimization uses the above selected securities as the universe of eligible securities and the specified

³ Please Refer to Appendix I

⁴ Please refer to Appendix III

⁵ Please Refer to Appendix I



optimization objective and constraints to create the MSCI Global Diversified Megatrends Index.

The Barra Open Optimizer determines the optimal ⁶solution to achieve a relatively higher exposure to Growth factor by maximizing the exposure to the Growth factor less a penalty for the common factor and stock-specific risk characteristics of each potential constituent.

At each quarterly rebalance, the following optimization constraints are applied which aim to ensure investability while achieving relatively higher risk adjusted growth factor exposure:

⁶ For subsequent steps in the event Barra Open Optimizer is unable to find an optimal solution, please refer to Appendix II

No.	Parameter	Constraint
1	Number of Constituents	50
2	Maximum weight of a single security	4%
3	Minimum weight of a single security	0.50%
4	Maximum Exposure to each of the 4 themes: Disruptive Technology, Efficient Energy, Smart Cities and Ageing Societies Opportunities.	40%
5	Minimum Exposure to each of the 4 themes: Disruptive Technology, Efficient Energy, Smart Cities and Ageing Societies Opportunities.	10%
6	Maximum Exposure to Large Cap stocks ⁷	60%
7	Maximum Exposure to Mid Cap ⁸ stocks	30%
8	Maximum Exposure to Small Cap ⁹ stocks	10%
9	Security Weight as a Multiple of its weight in the Parent Index	10000
5	Maximum Weight to each country	60%
6	One Way Turnover	100%
7	The portfolio risk currency	EUR
8	Specific Risk Aversion	0.0015
9	Common Factor Risk Aversion	0.015

⁷ Please Refer to Appendix IV

⁸ Please Refer to Appendix IV

⁹ Please Refer to Appendix IV

2.6 APPLYING THE MSCI DECREMENT INDEXES METHODOLOGY

The MSCI Decrement Indexes Methodology¹⁰ is applied on the MSCI Global Diversified Megatrends Index to construct the MSCI Global Diversified Megatrends 5% Decrement Index.

The parameters for the application of the decrement methodology in the above indexes are noted in Appendix V.

¹⁰Please refer to the MSCI Decrement Indexes methodology at www.msci.com/index-methodology

3 Maintenance of the Index

3.1 QUARTERLY INDEX REVIEWS

The MSCI Global Diversified Megatrends Index is reviewed on a quarterly basis, coinciding with the May and November Semi-Annual Index Reviews and the February and August Quarterly Index Reviews of the Parent Index.

The pro forma Index is typically announced nine business days before the effective date.

3.2 ONGOING EVENT RELATED CHANGES

The following section briefly describes the treatment of common corporate events within MSCI Global Diversified Megatrends 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 Index

A new security added to the Parent Index (such as IPO and other early inclusions) will not be added to the MSCI Global Diversified Megatrends 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 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-MSCI 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: New Release of BARRA® EQUITY MODEL or BARRA® OPTIMIZER

The methodology presently uses MSCI Barra Global Equity Model for Long-Term Investors (“GEMTL”) for the optimization. A new release of the relevant Barra Equity Model or Barra Optimizer may replace the former version within a suitable timeframe.

APPENDIX II: Handling Infeasible Optimizations

During the quarterly Index review, in the event that there is no optimal solution that satisfies all the optimization constraints defined in Section 2.5, the thematic and market cap constraints are relaxed automatically by setting both thematic exposure and market cap exposure as a Soft Constraint in the Barra Optimizer, to find an optimal solution.

In the event that there is no optimal solution after the above constraints have been relaxed, the MSCI Global Diversified Megatrends Index will not be rebalanced for that Index review.

APPENDIX III: Definition of Barra GEMLT Growth Factor

The Growth factor is described using MSCI's Barra Global Equity Model for Long-Term Investors (GEMLT). 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.

Growth

Definition = $0.7 \cdot \text{EGRLF} + 0.1 \cdot \text{EGRO} + 0.2 \cdot \text{SGRO}$

Where

EGRLF = Analyst-Predicted Earnings Long-term Growth

Long-term (3-5 years) earnings growth forecasted by analysts.

EGRO = Earnings per Share Growth Rate

Annual reported earnings per share are regressed against time over the past five fiscal years. The slope coefficient is then divided by the average annual earnings per share.

SGRO = Sales per Share Growth Rate

Annual reported sales per share are regressed against time over the past five fiscal years. The slope coefficient is then divided by the average annual sales per share.

APPENDIX IV: Definition of Small, Mid and Large cap

At each quarterly rebalance, constituents are categorized into Small, Mid and Large cap stocks based on following free float market capitalization parameters:

Sr.No.	Category	Free float Market Capitalisation
1	Large Cap	Greater than USD 10 Billion
2	Mid Cap	Greater than or Equal to USD 3 Billion and Less than or Equal to USD 10 Billion
3	Small Cap	Less than USD 3 Billion

APPENDIX V: Parameters used for the MSCI Global Diversified Megatrends 5% Decrement Index

The following parameters are used for the calculation of MSCI Global Diversified Megatrends 5% Decrement Index

Sr.No.	Methodology Parameters	MSCI Global Diversified Megatrends 5% Decrement Index
1	Currency of Calculation	EUR
2	Parent Index	MSCI Global Diversified Megatrends Index
3	Return Variant of the Parent Index	Net Total Return
4	Decrement Type	Fixed Percentage
5	Decrement Application	Geometric
6	Decrement Value	5%
7	Day-count Convention	Act / 365
8	Index Floor	0
9	Decrement Frequency	Daily

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