

MSCI FACTOR MIX A- SERIES INDEXES METHODOLOGY

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1 INTRODUCTION

The MSCI Factor Indexes (Risk Premia) are designed to represent the performance of long-term risk factors such as quality, value and momentum. The historical performance of these indexes exhibits cyclicity and has varied significantly over time. Portfolios and index-linked products that combine factors aim to create diversification benefits and may have reduced turnover due to potential crossing opportunities among the individual factors. The MSCI Factor Mix A-Series Indexes, described in this methodology book, represent one specific example of combining individual MSCI Factor Indexes in a single index. The same methodology can be applied to create combinations of any underlying MSCI Factor Indexes.

2 CONSTRUCTING THE MSCI FACTOR MIX A-SERIES INDEXES

2.1 DETERMINING THE COMPONENTS OF THE MSCI FACTOR MIX A-SERIES INDEXES

MSCI Factor Mix A-Series Indexes are constructed as the combination of three MSCI Factor Indexes (“Component Indexes”).

1. MSCI Quality Index
2. MSCI Value Weighted Index
3. MSCI Minimum Volatility Index

For certain Parent Indexes where it may not be possible to construct the MSCI Minimum Volatility Index due to the concentrated nature of the market, MSCI will replace the MSCI Minimum Volatility Index with the MSCI Risk Weighted Index in the construction of the MSCI Factor Mix A-Series Index. The list of Indexes, for which this treatment is applied, is available in Appendix I. The MSCI Factor Mix A-Series Indexes can be made available with component index MSCI Minimum Volatility Index having different optimization currencies.

Each Component Index in the MSCI Factor Mix A-Series Index is attributed equal weight (1/3) at each rebalancing.

2.2 DETERMINING THE CONSTITUENTS OF THE MSCI FACTOR MIX A-SERIES INDEXES

All constituents of each Component Index are included in the MSCI Factor Mix A-Series Index.

2.3 DETERMINING THE WEIGHTS OF THE CONSTITUENTS OF THE MSCI FACTOR MIX A-SERIES INDEXES

The weight of each security in the MSCI Factor Mix A-Series Index is determined based on:

- the security’s weight in each underlying Component Index;
- the weight of each underlying Component Index in the MSCI Factor Mix A-Series Index.

The weight can be calculated as follows:

$$W_{Sec_i}^{QM} = \sum_{C_j} W_{C_j}^{QM} \times W_{Sec_i}^{C_j}$$

Where:

- $W_{Sec_i}^{QM}$ is the weight of security Sec_i in the MSCI Factor Mix A-Series Index
- $W_{C_j}^{QM}$ is the target weight of the Component Index C_j in the MSCI Factor Mix A-Series Index
- $W_{Sec_i}^{C_j}$ is the weight of security Sec_i in the Component Index C_j

In addition, for the ongoing maintenance of the Factor Mix A-Series Index a Component Index Constraint Factor and a Full Market Cap Adjustment Factor is calculated for each Component Index and MSCI Factor Mix A-Series Index constituent respectively.

2.3.1 CALCULATION OF THE COMPONENT INDEX CONSTRAINT FACTOR

A Component Index Constraint Factor is calculated for each Component Index as follows:

$$CCF_{C_j}^{QM} = W_{C_j}^{QM} / \left(\frac{IndexMcap_{C_j}}{\sum_{C_j} IndexMcap_{C_j}} \right)$$

Where:

- $CCF_{C_j}^{QM}$ is the Component Index Constraint Factor of the Component Index C_j
- $IndexMcap_{C_j}$ is the index market capitalization of the Component Index C_j

2.3.2 CALCULATION OF THE SECURITY FULL MARKET CAP ADJUSTMENT FACTOR

The Full Market Cap Adjustment Factor for each security in the MSCI Factor Mix A-Series Index is then calculated as follows:

$$FMCAF_{Sec_i}^{QM} = \sum_{C_j} CCF_{C_j}^{QM} \times FMCAF_{Sec_i}^{C_j}$$

Where:

- $FMCAF_{Sec_i}^{QM}$ is the Full Market Cap Adjustment Factor of security Sec_i in the MSCI Factor Mix A-Series Index
- $FMCAF_{Sec_i}^{C_j}$ is the Full Market Cap Adjustment Factor of security Sec_i in the Component Index C_j

3 MAINTAINING THE MSCI FACTOR MIX A-SERIES INDEXES

3.1 SEMI-ANNUAL INDEX REVIEWS FOR THE MSCI FACTOR MIX A-SERIES INDEXES

The MSCI Factor Mix A-Series Indexes are rebalanced semi-annually, usually as of the close of the last business day of May and November, coinciding with the Semi-Annual Index Reviews of the MSCI Global Investable Market Indexes and of each Component Index.

The pro forma MSCI Factor Mix A-Series Indexes are announced nine business days before the effective date.

At each rebalancing of the MSCI Factor Mix A-Series Indexes the constituents and weights are determined as per Section 2, based on the underlying pro forma Component Indexes.

3.2 ONGOING EVENT RELATED CHANGES

The maintenance of the MSCI Factor Mix A-Series Indexes follows the maintenance of the Component Indexes. The Component Index Constraint Factor remains constant between Index Reviews. The Full Market Cap Adjustment Factor of each constituent is recalculated every day as per section 2.3.2. It remains constant between Index Reviews, except for changes in the Full Market Adjustment Factors applied to the security in the underlying Component Indexes, as per the maintenance methodology of the Component Index. Any change in number of shares applied in the MSCI Global Investable Market Indexes due to corporate events is also reflected in the MSCI Factor Mix A-Series Indexes.

Any security added to a Component Index is added simultaneously to the MSCI Factor Mix A-Series Index. The addition is included with the Component Index Constraint Factors determined at the previous Index Review for the relevant components. The Full Market Cap Adjustment Factor is then determined as per section 2.3.2.

Any security deleted from all Component Indexes is simultaneously deleted from the MSCI Factor Mix A-Series Index. Deletions from only some of the Component Indexes result in a change in the Full Market Cap Adjustment Factor as per section 2.3.2.

3.3 DAILY TOTAL RETURN INDEXES

Daily Total Return (DTR) Indexes for the MSCI Factor Mix A-Series Indexes are calculated based on the MSCI DTR Index Methodology. In particular, dividends from constituents of an MSCI Factor Mix A-Series Index are reinvested in the whole Index (as opposed to being reinvested only in the particular Component Indexes to which the constituent belongs).

APPENDIX I: LIST OF MSCI FACTOR MIX A-SERIES INDEXES CONSTRUCTED USING MSCI RISK WEIGHTED INDEX INSTEAD OF THE MSCI MINIMUM VOLATILITY INDEX

1. MSCI Hong Kong Factor Mix A-Series Index
2. MSCI Italy Factor Mix A-Series Index
3. MSCI Mexico Factor Mix A-Series Index
4. MSCI Netherlands Factor Mix A-Series Index
5. MSCI Spain Factor Mix A-Series Index
6. MSCI Switzerland Factor Mix A-Series Index
7. MSCI Sweden Factor Mix A-Series Index
8. MSCI Indonesia Factor Mix A-Series Index
9. MSCI Malaysia Factor Mix A-Series Index
10. MSCI Philippines Factor Mix A-Series Index
11. MSCI Russia Factor Mix A-Series Index
12. MSCI Singapore Factor Mix A-Series Index
13. MSCI Thailand Factor Mix A-Series Index
14. MSCI Turkey Factor Mix A-Series Index

APPENDIX II: MSCI QUALITY MIX (E-SERIES) INDEXES

MSCI Quality Mix (E-Series) Indexes are constructed and maintained in accordance with MSCI Factor Mix A-Series Indexes methodology, as described in earlier sections, with the change that MSCI Value Weighted Indexes are replaced by MSCI Enhanced Value Indexes.

MSCI Quality Mix (E-Series) Indexes are constructed as the combination of following three MSCI Factor Indexes:

1. MSCI Quality Index
2. MSCI Enhanced Value Index
3. MSCI Minimum Volatility Index

For certain Parent Indexes where it may not be possible to construct the MSCI Minimum Volatility Index due to the concentrated nature of the market, MSCI will replace the MSCI Minimum Volatility Index with the MSCI Risk Weighted Index in the construction of the MSCI Quality Mix (E-Series) Index. The list of Indexes, for which this treatment is currently applied, is available in Appendix III. The MSCI Quality Mix (E-Series) Indexes can be made available with component index MSCI Minimum Volatility Index having different optimization currencies.

Each Component Index in the MSCI Quality Mix (E-Series) Index is attributed equal weight (1/3) at each rebalancing.

**APPENDIX III: LIST OF MSCI QUALITY MIX (E-SERIES) INDEXES
CONSTRUCTED USING MSCI RISK WEIGHTED INDEX INSTEAD OF THE
MSCI MINIMUM VOLATILITY INDEX**

1. MSCI Hong Kong Quality Mix (E-Series) Index

The following sections have been modified since March 2014:

2.1 Determining the Components of the MSCI Quality Mix Indexes

- Clarification of MSCI Quality Mix Indexes construction rules

Appendix I. Existing MSCI Quality Mix Indexes

- Deletion

Appendix I. (New) List of MSCI Quality Mix Indexes constructed using MSCI Risk Weighted Index instead of the MSCI Minimum Volatility Index

- Updates to list of Indexes

The following sections have been modified since August 2014:

Appendix I. List of MSCI Quality Mix Indexes constructed using MSCI Risk Weighted Index instead of the MSCI Minimum Volatility Index

- Updates to list of Indexes

The following sections have been modified since December 2015:

Appendix II: MSCI Quality Mix (E-Series) Indexes

- Construction methodology

The following sections have been modified since April 2016:

Updated the name of the methodology from MSCI Quality Mix Indexes to MSCI Factor Mix A-Series Indexes

The following sections have been modified since September 2016:

Appendix II: MSCI Quality Mix (E-Series) Indexes

- Clarification on construction methodology

Appendix III: List of MSCI Quality Mix (E-Series) Indexes constructed using MSCI Risk Weighted Index instead of the MSCI Minimum Volatility Index

- Updates to list of Indexes

The following sections have been modified since September 2017:

Appendix I: List of MSCI Factor Mix A-Series Indexes constructed using MSCI Risk Weighted Index instead of the MSCI Minimum Volatility Index

- Updates to list of Indexes.

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