MSCI VALUE WEIGHTED INDEXES METHODOLOGY

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1   INTRODUCTION

The MSCI Value Weighted Indexes are constructed from an underlying MSCI Investable Market Index. The MSCI Value Weighted Indexes add a value tilt to a MSCI Investable Market Index by reweighting all the constituents of the underlying parent index towards stocks with low valuation ratios. The derived MSCI Value Weighted Index is constructed by reweighting all the constituents of the parent MSCI Investable Market Index. There is no security selection based on fundamental data. The weights of the derived MSCI Value Weighted Index are determined using accounting data such as sales, book value, earnings and cash earnings.

MSCI categorizes the MSCI Value Weighted Indexes as Systematic Indexes, which reflect the systematic elements of particular investment styles or strategies. While capitalization weighted indexes capture 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, etc. that could be captured through alternatively weighted indexes.

The historical performance of portfolios that emphasize securities with low valuation ratios has been studied extensively in the academic finance literature. Many studies have reported that value portfolios have historically outperformed standard benchmark indexes over long time periods. Several theories have been proposed to explain the historical outperformance of value portfolios. Some researchers have argued that value represents a source of systematic risk, therefore portfolios tilted towards value earn a premium in compensation for bearing higher systematic risk. Other researchers have argued that behavioral reasons influence the investment decision making process, leading to imprecision and bias in the pricing of securities that can be exploited systematically by tilting the portfolio towards value stocks. The MSCI Value Weighted Indexes are transparent tools that could be used by investors as a basis to gain exposure to what they perceive as a value risk premium or to capture what they perceive as mispricing of value stocks in a passive, objective, and cost effective manner.

The main potential benefits of the MSCI Value Weighted Indexes include:

- Simple and transparent value tilt methodology

- Low tracking error relative to the MSCI Parent Index

- Historically reasonably high trading liquidity and investment capacity

- Historically moderate index turnover

The main potential applications of the MSCI Value Weighted Indexes include:

- Strategic asset allocation: equity market exposure with a value tilt

- Tactical asset allocation: express view on value factor performance

- Portfolio diversification: combine with other style and strategy betas

- Investment research: tools to study the characteristics of value strategies

- Performance analysis: performance benchmarks for active value portfolios

2 INDEX CONSTRUCTION METHODOLOGY

2.1 APPLICABLE UNIVERSE:

The applicable universe includes all the existing constituents of MSCI ACWI IMI Index.

2.2 REWEIGHTING INDEX CONSTITUENTS:

The MSCI Value Weighted indexes are rebalanced at a regional level for the calculation of the security level inclusion factors. The resulting indexes are then broken down further to construct regional and country sub-indexes. The details of the regions are discussed in Appendix I.

All the existing constituents of the MSCI Parent Index are reweighted by their value weights. The value weights are derived from the respective security level fundamental accounting variables -- namely, sales, earnings, cash earnings and book value. The details of the re-weighting scheme are discussed in sections 2.3 and 2.4.

2.3 DETERMINATION OF SINGLE VARIABLE WEIGHTS

For a given rebalancing effective date, the security level fundamental accounting data available as of close of the previous end of month is used in the construction of the MSCI Value Weighted indexes.

2.3.1 BOOK VALUE WEIGHT:

The security level book value weight is computed as the ratio of the free float adjusted book value to the cumulative sum of the positive free float adjusted book value of all constituent securities in the MSCI Parent Index. The security level book value used in the above calculation is the latest reported book value. In case the book value is negative, the book value weight is set to 0. In case the book value is missing for a security, then the book value weight is set to the pro forma market capitalization weight.

2.3.2 SALES VALUE WEIGHT:

The average value of sales for each security is obtained from the previous three reported fiscal year end sales values. The security level sales value weight is computed as the ratio of the free float adjusted average sales value to the cumulative sum of the positive free float adjusted average sales values of all the constituent securities in the MSCI Parent Index. In case the average sales value is negative, the sales value weight is set to 0.

2.3.3 EARNINGS VALUE WEIGHT:

The average value of earnings for each security is obtained from the previous three reported fiscal year- end earnings values. The security level earnings value weight is computed as the ratio of the free float adjusted average earnings value to the cumulative sum of the positive free float adjusted average earnings values of all the constituent securities in the MSCI Parent Index. In case the average earnings value is negative, the earnings value weight is set to 0.

2.3.4 CASH EARNINGS VALUE WEIGHT:

The average value of cash earnings for each security is obtained from the previous three reported fiscal year end cash earnings values. The security level cash earnings value weight is computed as the ratio of the free float adjusted average cash earnings value to the cumulative sum of the positive free float adjusted average cash earnings values of all the constituent securities in the MSCI Parent Index. In case the average cash earnings value is negative, the cash earnings value weight is set to 0.

2.4 DETERMINATION OF FINAL SECURITY LEVEL VALUE WEIGHTS

The final security level value weight is derived as an average of the four single variable value weights, namely Book Value weight, Sales Value weight, Earnings Value weight and Cash Earnings Value weight, as determined in section 2.3. In the event of all fundamental variables being unavailable for a security, the security level final value weight is set to the pro forma market capitalization weight. The calculation of the final security level value weight in the event of missing one or more single variable weights for a given security is discussed in detail in Appendix II.

The final security level inclusion factor (IF) is computed as the ratio of the final security level value weight and security level pro forma market capitalization weight in the MSCI Parent Index.

2.5 DETERMINATION OF FINAL SECURITY LEVEL VALUE WEIGHTS IN MSCI COUNTRY / REGIONAL INDEXES

The final security level value weights in the respective MSCI Country / Regional Indexes is determined by applying the security level inclusion factor (IF) derived in section 2.4 on the corresponding market cap weights in the MSCI Country / Regional indexes and renormalizing them accordingly.

3 MAINTAINING MSCI VALUE WEIGHTED INDEXES

3.1 SEMI-ANNUAL INDEX REVIEWS

The MSCI Value Weighted 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 Review of the MSCI Investable Market Indexes . The pro forma MSCI Value Weighted 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 Value Weighted 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.

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

The following section briefly describes the treatment of common corporate events within the MSCI Value Weighted 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: REGIONAL INDEXES

MSCI defines the following six regional reference value weighted indexes which are constructed from the respective regional parent indexes using the methodology as described in this document. Any other country/regional sub-indexes are then derived from the reference indexes as described below:

	MSCI Regional Value Weighted Index	MSCI Parent index	Derived Indexes
1	MSCI AC Asia Pacific IMI Value Weighted Index	MSCI AC Asia Pacific IMI Index	Any Asian regional/country index
2	MSCI Europe & Middle East IMI Value Weighted Index	MSCI Europe & Middle East IMI Index	Any Europe regional/country index
3	MSCI EM EMEA IMI Value Weighted Index	MSCI EM EMEA IMI Index	Any EMEA regional/country index
4	MSCI AC Americas IMI Value Weighted Index	MSCI AC Americas IMI Index	Developed and Emerging Americas
5	MSCI AC Asia Pacific & Europe & Middle East IMI Value Weighted Index	MSCI AC Asia Pacific & Europe & Middle East IMI Index	Any index that combines countries included in 1 with countries included in 2 (e.g., EAFE)
6	MSCI ACWI IMI Value Weighted Index	MSCI ACWI IMI	Any index that combines countries included in 1,2,3 and/or 4 (e.g., World, World ex USA)

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APPENDIX II: DETERMINATION OF FINAL SECURITY LEVEL VALUE WEIGHT, IN THE EVENT OF MISSING SECURITY LEVEL FUNDAMENTAL DATA

In case one or more of the security level fundamental data (namely book value, sales, earnings and cash earnings) are unavailable, the final security level value weight is computed using a sequential approach as mentioned below.

1. If book value weight is missing for a security, the pro forma market cap weight is set as its book value weight. The book value weights of the remaining securities are renormalized accordingly.

2. If the earnings weight is missing, the book value weight is set as the earnings weight. The earnings value weights of the remaining securities are renormalized accordingly.

3. If sales weight is missing, then the average of the book value weight and the earnings weight is computed and set as the sales weight. The sales value weights of the remaining securities are renormalized accordingly.

4. If cash earnings is missing, then the average of the book value weight, earnings weight and sales weight determined from steps 1, 2 and 3 is set to the cash earnings weight. The cash earnings value weights of the remaining securities are renormalized accordingly.

5. The final security level value weight is the average of the four single variable weights determined in the previous steps.

If the final security weight is zero, from step 5 above (as the security level book value is negative and the other values of earnings, sales and cash earnings are either negative or missing), then the final security level weight is set as one-fourth of its market cap weight and the weights of other securities in the index are renormalized accordingly.

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The following sections have been modified since August 2012:

- Appendix III in the previous version of the methodology book describing the Corporate Events treatment has been deleted. The details on the Corporate Events treatment are now included in Section 3.2.

The following sections have been modified since June 2017:

- Introduction and Appendix II: Formatting changes.

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Our line of products and services includes indexes, analytical models, data, real estate benchmarks and ESG research.

MSCI serves 98 of the top 100 largest money managers, according to the most recent P&I ranking.

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