

# **MSCI Emerging Markets Value Factor Select Index**

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## 1 Introduction

The MSCI Emerging Markets Value Factor Select Index (herein 'the Index') is designed to represent the performance of a strategy that seeks higher exposure to a value factor.

The Index selects securities from the MSCI EM (Emerging Markets) Index (herein, 'the Parent Index') with higher Value Score, while covering 30% of weight within each country in the Parent Index. Additionally, the capping is applied on constituent weights, country weights and sector weights to mitigate the concentration in the Index.

## **2 Index Construction Methodology**

The Index construction rules are defined in sections 2.1 to 2.5 below.

### **2.1 APPLICABLE UNIVERSE**

The Applicable Universe includes all the constituents of the Parent Index.

### **2.2 DEFINING THE VALUE SCORE**

The Value score for each security is calculated by combining the z-scores of three valuation descriptors, namely Forward Price to Earnings (Fwd P/E), Enterprise Value/Operating Cash Flows (EV/CFO) and Price to Book Value (P/B). The details of the calculation of the fundamental variables are provided in Appendix I.

#### **2.2.1 CALCULATING THE Z-SCORE**

The z-score for each of the three variables for each security is calculated using the mean and standard deviation of the inverse of the corresponding variable. The z-score for each individual variable is computed within the Parent Index. The variables used are as follows:

1. Fwd P/E, P/B, EV/CFO for all securities except for those classified in “Financials” or “Real Estate” Sector (Sector “40” and “60” of the Global Industry Classification Standard (GICS®)<sup>1</sup> respectively)
2. Fwd P/E, P/B for all securities classified in the “Financials” Sector
3. EV/CFO for all securities classified in the “Real Estate” Sector

#### **2.2.2 CALCULATING THE VALUE SCORE**

After calculating individual variable z-scores, a composite Value z-score for each security is computed by taking the weighted average of individual variable z-scores for each security. Each individual variable z-score is assigned an equal weight (e.g., 1/3 weight is assigned when 3 variables are used). Computation of the composite Value z-score also depends on the availability of fundamental variables as described in Appendix II.

A sector relative score is then derived from the composite Value z-score. It is arrived at by standardizing the composite Value z-score within each GICS® Sectors. The Value score is computed by winsorizing sector-relative score at +/- 3.

In case of missing Value score, the Value score is set at -3.

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<sup>1</sup> GICS is the global industry classification standard jointly developed by MSCI and S&P Global Market Intelligence.

## 2.3 DEFINING THE QUALITY SCORE

The Quality score for each security is calculated by combining z-scores of three winsorized fundamental variables, namely Return on Equity, Debt to Equity and Earnings Variability. The details of the calculation of the fundamental variables are provided in Appendix III.

### 2.3.1 WINSORIZING THE VARIABLE

As part of the standardization process, outlier fundamental variable values are winsorized to ensure that the average values used to standardize the variables are less affected by extreme values. To do this, for a given variable, the values for all securities are first ranked in ascending order within the Parent Index. Missing values are excluded from the ranking. Then, for securities that lie below the 5th percentile rank or above the 95th percentile rank, their value is set equal to the value of the 5th percentile ranked or 95th percentile ranked security, as applicable. This process is repeated for each of the three fundamental variables.

#### Example: Winsorization

For example, assume there are 200 securities ranked in ascending order of the variable value. The 5th percentile security is the 10th ranked security and the 95th percentile security is the 191st ranked security. For all the securities ranked from 1 through 9, their values become equal to the value of the 10th ranked security. Meanwhile, for all securities ranked from 192 through 200, their values become equal to the value of the 191st ranked security.

### 2.3.2 CALCULATING THE Z-SCORE

After winsorizing all the three variables within the Parent Index, the z-score for each of the three variables for each security can be calculated using the mean and standard deviation of the relevant variable within the Parent Index. Computing a z-score is a widely used method of standardizing a variable in order to combine it with other variables that may have a different unit of measurement or a different scale. Because it has a mean value of 0 and standard deviation of 1, the value of z-scores show how many standard deviation ( $\sigma$ ) a given value lies from the mean ( $\mu$ ).

The z-score is defined as follows for ROE (Return on Equity):

$$z = \frac{(x - \mu)}{\sigma}$$

A negative z-score is calculated to ensure that a security having higher Debt to Equity or higher Earnings Variability gets a lower respective z-score.

### 2.3.3 CALCULATING THE QUALITY SCORE

After standardizing each of the three variable values for each security, MSCI calculates a Quality score for each security.

The composite Quality z-score is computed by averaging the z-scores of all the three fundamental descriptors as calculated in section 2.3.2. Computation of the composite Quality z-score also depends on the availability of fundamental variables as described in Appendix IV.

A sector-relative Quality score is then derived from the composite Quality z-score. It is arrived at by standardizing the composite Quality z-score within each GICS® Sectors. The Quality score is computed by winsorizing sector-relative Quality score at +/- 3.

In case of missing Quality score, the Quality score is set at -3.

## 2.4 SECURITY SELECTION

The securities in the Applicable Universe are ranked in descending order of Value Score and securities in the top 30% of the cumulative weight (calculated using the free float-adjusted market capitalization) within each country in the Parent Index (including the first security that results in exceeding the 30% country coverage weight threshold) are selected to construct the Index. In case the country coverage weight exceeds 40%, the last security added in the above step within that country is removed.

If two securities have the same Value score, then the security with higher weight in the Parent Index is selected first.

## 2.5 SECURITY WEIGHTING

### 2.5.1 DEFINING THE VALUE COVERAGE (VC) SCORE

The Value Coverage score (VC-Score) for each security is calculated as the corresponding cumulative weight within the Parent Index, when sorted by the Value score in descending order.

If two securities have the same Value score, then the security with higher free float-adjusted market capitalization is selected first in the calculation of cumulative weight.

### 2.5.2 DEFINING THE QUALITY COVERAGE (QC) SCORE

The Quality Coverage score (QC-Score) for each security is calculated as its cumulative weight (calculated using the free float-adjusted market capitalization) within the Value Universe, when sorted by the Quality score in descending order.

The Value Universe is defined as the securities with higher Value score that covers 30% of the weight within the Parent Index, including the first security that results in exceeding the 30% weight threshold.

If two securities have the same Quality score, then the security with higher free float-adjusted market capitalization is selected first in the calculation of cumulative weight.

In case of missing QC-Score, the QC-Score is set to 100%.

### 2.5.3 DEFINING THE TILT SCORE

The Tilt Score for the selected securities is defined as below:

	VC-Score ≤15% and QC-Score ≤50%	VC-Score >15% and QC-Score >50%	All Other Cases
Top 50% by weight <sup>2</sup>	1.25	0.75	1
Rest of the selected securities <sup>3</sup>	1.5	0.5	1

### 2.5.4 SECURITY WEIGHTING

The selected securities are weighted by the product of their market capitalization weight in the Parent Index and the Tilt Score. The weights are then normalized to sum up to 100%.

Additionally, capping is applied on constituent weights, country weights and sector weights, as described in Appendix V.

<sup>2</sup> The securities that cover the top 50% cumulative weight (calculated using the free float-adjusted market capitalization) of the selected securities (as per Section 2.4), including the first security that results in exceeding the 50% weight threshold.

<sup>3</sup> All the remaining selected securities (as per Section 2.4) not in 'Top 50% by weight'.

## **3 Maintaining the Index**

### **3.1 SEMI-ANNUAL INDEX REVIEWS**

The 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 Index Reviews of the MSCI Global Investable Market Indexes. Fundamental variables data as of the end of April and October are used respectively. The pro forma Index is in general announced nine business days before the effective date.

To reduce the Index turnover and enhance Index stability, Buffer Rule and Turnover Threshold are applied as described below.

#### **3.1.1 BUFFER RULE**

Buffers are applied to the 30% cumulative coverage target of each country weight in the Parent Index between cumulative coverage of 15% and 45%. Securities in the top 15% cumulative coverage, including the first security that results in exceeding the 15% cumulative coverage threshold will be added to the Index on a priority basis. The current constituents with cumulative coverage in the top 15% to 45%, including the first security that results in exceeding the 45% cumulative coverage threshold are then successively added until the coverage reaches 30%. If the coverage is still below 30% after this step, the remaining securities of that country from the Applicable Universe in the descending order of their Value score are added until the country weight in the Parent Index reaches 30% target.

#### **3.1.2 TURNOVER THRESHOLD**

The Index applies the Turnover Threshold after the capping step of Section 2.5.4. Any additions, deletions, and weight changes in range of +/-10bps, compared to the current Index constituents, will not be implemented in the pro forma Index constituents, and will be maintained at the current Index constituent weight<sup>4</sup>. The net excess weight resulting from the above adjustment is distributed proportionally to all the other pro forma Index constituents. Deletions from the Parent Index will be implemented simultaneously in the pro forma Index.

### **3.2 ONGOING EVENT RELATED CHANGES**

The general treatment of corporate events in the 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

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<sup>4</sup> The turnover buffer may, on occasion, result in the retention of constituents with small absolute weights (less than 10 bps) for more than one Index Review.



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 Index, the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the Index.

The following section briefly describes the treatment of common corporate events within the Index.

No new securities will be added (except where noted below) to the Index between Index Reviews. Parent Index deletions will be reflected simultaneously in the Index.

**EVENT TYPE**

**EVENT DETAILS**

**New additions to the Parent Index**

A new security added to the Parent Index (such as IPO and other early inclusion) 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/latest/CE>.

## Appendix I: Calculation of the Value Fundamental Variables

Fundamental Variable	Calculation Details
Enterprise Value (EV)	Market capitalization at fiscal yearend date + Preferred Stock + Minority Interest + Total Debt - Cash and cash equivalents
Cash Flow from Operations (CFO)	Net cash receipts and disbursements resulting from the operations of the company

For more details on the fundamental data, please refer to the MSCI Fundamental Data Methodology (<https://www.msci.com/index-methodology>).

## Appendix II: Value Z-Score Computation

If the value for variable EV/CFO is missing for any security, it is substituted by the value of ratio price-to-cash earnings (P/CE) for that security. Similarly, if the value for variable Fwd P/E is missing for any security, it is substituted by the value of trailing price-to-earnings (P/E) for that security. After the substitution, the composite Value z-score is computed as mentioned in the table below:

Case	Detail	Action
<u>Case 1</u>	Security does not belong to “Financials” or “Real Estate” sector and all variables are available	Composite Value z-score = $(1/3)*z1 + (1/3)*z2 + (1/3)*z3$
<u>Case 2</u>	Security does not belong to “Financials” or “Real Estate” sector and one variable (e.g., z3) is missing	Composite Value z-score = $(1/3)*z1 + (1/3)*z2$
<u>Case 3</u>	Security does not belong to “Financials” or “Real Estate” sector and two variables (e.g., z2 & z3) are missing	Composite Value z-score = $(1/3)*z1$
<u>Case 4</u>	Security belongs to “Financials” sector and all variables are available	Composite Value z-score = $0.5*z1 + 0.5*z2$
<u>Case 5</u>	Security belongs to “Financials” sector and one variable (e.g., z2) is missing	Composite Value z-score = $0.5*z1$
<u>Case 6</u>	Security belongs to “Real Estate” sector	Composite Value z-score = z1
<u>Case 7</u>	All three variables are missing (for securities not belonging to “Financials” or “Real Estate” sector)	Composite Value z-score = NULL

Case	Detail	Action
	Both variables are missing (for securities belonging to “Financials” sector)  EV/CFO is missing (for securities belonging to “Real Estate” sector)	

The z1, z2 & z3 represent the individual variable z-scores.

## Appendix III: Calculation of the Quality Fundamental Variables

Fundamental Variable	Calculation Details
<b>Return on Equity (ROE)</b>	<p>(ROE) is calculated using the trailing 12-month earnings per share figure and latest book value per share</p> $ROE = \frac{\text{Trailing 12 month earnings per share}}{\text{Latest Book Value Per Share}}$
<b>Debt to Equity(D/E)</b>	<p>Debt to Equity is calculated using the latest fiscal year Total Debt and Book Value</p> $D/E = \frac{\text{Total Debt}}{\text{Book Value}}$
<b>Earnings Variability</b>	<p>Earnings Variability is defined as the standard deviation of y-o-y earnings per share growth over the last five fiscal years</p>

For more details on the fundamental data, please refer to the MSCI Fundamental Data Methodology (<https://www.msci.com/index-methodology>).

## Appendix IV: Quality Z-Score Computation

Computation of the Composite Quality z-score also depends on the availability of fundamental variables as described below:

Case	Detail	Action
Case 1	ROE is missing	If ROE is missing, Composite Quality z-score is not calculated
Case 2	Debt to Equity is missing, but other two variables are available	Composite Quality z-score is calculated using ROE and Earnings Variability z-scores
Case 3	Earnings Variability is missing, but other two variables are available	Composite Quality z-score is calculated using ROE & Debt to Equity z-scores
Case 4	Debt to Equity and Earnings Variability are missing but ROE is available	Composite Quality z-score is not calculated
Case 5	All three variables are missing	Composite Quality z-score is not calculated

## Appendix V: The Capping Methodology

### A. Parameters for Capping

- The maximum weight of an Index constituent at an issuer level will be restricted to 5%. The maximum weight of an Index constituent will be restricted to 20 times the weight of security in the Parent Index.
- Among the countries that do not use IFRS<sup>®</sup> Accounting Standards of reporting (herein, 'the non-IFRS<sup>5</sup> countries'), the countries with weight greater than 2.5% in the Parent Index, the maximum country weight in the Index will not deviate more than +/-2.5% from the country weight in the Parent Index.
- Among the countries that use IFRS<sup>®</sup> Accounting Standards of reporting (herein, 'the IFRS countries'), the countries with weight greater than 2.5% in the Parent Index, the maximum country weight in the Index will not deviate more than +/-5% from the country weight in the Parent Index.
- Among the non-IFRS countries, countries with weight less than 2.5% in the Parent Index, the maximum country weight in the Index will be capped at lower of ((+2.5% from the country weight in the Parent Index) and 3 times their weight in the Parent Index).
- Among the IFRS countries, countries with weight less than 2.5% in the Parent Index, the maximum country weight in the Index will be capped at 3 times their weight in the Parent Index.
- The maximum GICS<sup>®</sup> sector weights in the Index will be 1.05 times the sector weights in the Parent Index. The minimum GICS<sup>®</sup> sector weights will be 0.95 times the sector weights in the Parent Index. If no securities are selected from any particular GICS<sup>®</sup> sector of the Parent Index during rebalancing, the above GICS<sup>®</sup> sector weights constraint will be applied after the proforma weight of that GICS<sup>®</sup> sector in the Parent Index is re-distributed amongst remaining sectors of the Index.

### B. Initial Relaxation Parameters

- For each country, if the aggregated upper bound weight of all the issuers within that country is lower than their country lower bound weight constraint, then the lower bound weight of that country is relaxed to the aggregated upper bound weight value of all the issuers within that country.

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<sup>5</sup> For details about the countries which use IFRS Accounting Standards of reporting, please refer to: <https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/>. The country list is determined as per 'IFRS Standards required for domestic companies'. The country list will be reviewed annually once with cut-off date of October end. The updated country list will be used for November Index Review and same list will be used for subsequent Index Review.



- For each sector, if the aggregated upper bound weight of all the issuers within that sector is lower than their sector lower bound weight constraint, then the lower bound weight of that sector is relaxed to the aggregated upper bound weight value of all the issuers within that sector.

**C. The Capping Methodology**

The Capping methodology is iteratively applied with the following steps:

- Find the most violating constraint from all the given constraints (sector minimum bound, sector maximum bound, country minimum bound, country maximum bound and issuer maximum bound).
- For each group (for example, Energy sector) within all the constraints, the deviation ratio is calculated based on:
  - ratio of current value (for example, issuer 'A' weight in the Index) to upper bound (for example, issuer 'A' upper bound value), in case of upper bound constraint.
  - ratio of lower bound value (for example, Energy sector lower bound value) to current value (for example, Energy sector weight in the Index), in case of lower bound constraint.

The most violating constraint is the maximum of all the deviation ratios.

- The most violating constraint is adjusted first to the respective bound value.
- The excess weight (difference of current value to the respective bound value) is distributed proportionally to all the other constituents.
- The iterative capping stops when the most violating constraint ratio (rounded off to 5 decimals) is less than or equal to 1 or it has reached the maximum iteration count. In case of maximum iteration count, the capping steps will return the solution found till this maximum iteration step.
- If the most violating constraint ratio value for each group (for example, Energy sector in sector minimum bound) is repeated in more than 10 iterations, the capping methodology applies relaxation steps.

**D. Relaxation Steps**

The following conditions are alternatively relaxed until the most violating constraint ratio (rounded off to 5 decimals) is less than or equal to 1 or it has met the maximum iteration criteria of 2000 steps:

- Relax the minimum weight for countries in steps of -1% up to a maximum of 5 iterations.



- Relax the minimum sector weights in multiples of 0.95x (for example, from step of 0.95x to 0.9025x), up to a maximum of 5 iterations.
- Relax the maximum weight for countries in steps of 1% up to a maximum of 5 iterations.

At each step of relaxation, if the most violating constraint ratio value for each group is repeated more than 10 times, the next step of relaxation is initiated.

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