

# **MSCI ENHANCED VALUE INDEXES METHODOLOGY**

**June 2017**

**CONTENTS**

- 1 Introduction.....3
- 2 Index Construction Methodology.....4
  - 2.1 Applicable Universe .....4
  - 2.2 Determination of Value Score.....4
    - 2.2.1 Calculating the z-score for each individual variable.....4
    - 2.2.2 Calculating the sector relative value z-score.....4
    - 2.2.3 Calculating the Final Value Score.....5
  - 2.3 Security Selection.....5
  - 2.4 Weighting Scheme .....5
- 3 Maintaining the Indexes .....6
  - 3.1 Semi-Annual Index Reviews.....6
    - 3.1.1 Security Selection Buffer .....6
    - 3.1.2 Turnover Buffer.....6
  - 3.2 Ongoing Event Related changes.....7
- Appendix I: Calculation of the Fundamental Variables .....9
- Appendix II: Value Z-Score Computation..... 10
- Appendix III: Rules to Determine Fixed Number of Securities at Initial Construction and in Ongoing Rebalancing..... 12
  - Algorithm to Determine Fixed Number of Securities at Initial Construction.... 12
  - Algorithm to reevaluate Fixed Number of Securities at Semi Annual Rebalancing..... 13

## 1 INTRODUCTION

The MSCI Enhanced Value Indexes are designed to represent the performance of companies that exhibit relatively higher value characteristics within the parent universe of securities.

MSCI categorizes the MSCI Enhanced Value 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 aim to represent the broad market beta, additional sources of systematic return associated with particular investment styles and strategies, such as value, momentum, volatility, etc. could be represented through alternatively weighted indexes.

## 2 INDEX CONSTRUCTION METHODOLOGY

### 2.1 APPLICABLE UNIVERSE

The applicable universe includes all the existing constituents of an underlying MSCI parent index (herein, a “Parent Index”). This approach aims to provide an opportunity set with sufficient liquidity and capacity. The relevant Parent Index would be any MSCI Regional or Country Index.

### 2.2 DETERMINATION OF 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).

#### 2.2.1 CALCULATING THE Z-SCORE FOR EACH INDIVIDUAL VARIABLE

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 MSCI 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®) 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.

The latest available data at the time of rebalancing is used for the individual value descriptors

#### 2.2.2 CALCULATING THE SECTOR RELATIVE VALUE Z-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).

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 sector. A sector relative score is winsorized at +/- 3.

### 2.2.3 CALCULATING THE FINAL VALUE SCORE

The Final Value Score is computed from sector relative z-score as follows:

$$Final\ Value\ Score = \begin{cases} 1 + Z_{rel}^i, & Z_{rel}^i \geq 0 \\ (1 - Z_{rel}^i)^{-1}, & Z_{rel}^i < 0 \end{cases}$$

Where  $Z_{rel}$  is the sector relative z-score determined in the previous step.

### 2.3 SECURITY SELECTION

The MSCI Enhanced Value Indexes are constructed with a fixed number of securities approach. All the existing constituents of the relevant Parent Index are ranked based on their Final Value Scores. If multiple securities have the same Final Value Scores, then the security having a higher weight in the Parent Index is given a higher rank. A fixed number of securities with the highest positive Final Value Scores are predetermined for every MSCI Enhanced Value Index at initial construction with an aim to attain a greater weight in the Value factor while maintaining sufficient index market capitalization and number of securities coverage. Rules for arriving at a fixed number of constituents at initial construction are explained in Appendix III. The fixed number for security selection determined at initial construction is evaluated at every Semi-Annual Index Review (SAIR). Rules for evaluating the fixed number of constituents at every SAIR are also explained in Appendix III

### 2.4 WEIGHTING SCHEME

The securities selected in the previous step are assigned weights in the proportion of market cap weight\* Final Value Score.

These weights are then updated to implement sector neutrality i.e. the weight of each sector in the MSCI Enhanced Value Index is equated with the weight of that sector in the Parent Index. This is done by normalizing the weights of the constituents within each sector to reflect the effective Parent Index sector weight.

The final security level inclusion factor is determined as the ratio of the final security level weight and the security level pro forma market capitalization weight in the relevant Parent Index.

### 3 MAINTAINING THE INDEXES

#### 3.1 SEMI-ANNUAL INDEX REVIEWS

The MSCI Enhanced Value 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. Fundamental variables as of the end of April and October are used respectively. This approach aims to capture timely updates to the Value characteristics of the companies and coincide with the rebalancing frequency of the relevant Parent Index. The pro forma MSCI Enhanced Value Indexes are in general announced nine business days before the effective date.

**Buffer Rules:**

To reduce Index turnover and enhance index stability, buffer rules are applied as follows:

##### 3.1.1 SECURITY SELECTION BUFFER

A security selection buffer of 50% is applied during the on-going index review.

For example, the MSCI World Enhanced Value Index targets 400 securities and the buffers are applied between rank 201 and 600. The securities in the Parent Index with a value score rank at or above 200 will be added to the MSCI World Enhanced Value Index on a priority basis. The existing constituents that have a value score rank between 201 and 600 are then successively added until the number of securities in the MSCI World Enhanced Value Index reaches 400. If the number of securities is below 400 after this step, the remaining securities in the Parent Index with the highest value score rank are added until the number of securities in the MSCI World Enhanced Value Index reaches 400.

##### 3.1.2 TURNOVER BUFFER

A turnover buffer of 50% is applied during the on-going index review.

For example, if the on-going rebalancing results in changing the weight of a security from x% to y%, then the effective change in weight will be:

$$\text{Effective pro forma constituent weight} = x + (y-x)/2$$

The turnover buffer is not applied on deletions.

### 3.2 ONGOING EVENT RELATED CHANGES

The general treatment of corporate events in the MSCI Enhanced Value 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 Enhanced Value Index, the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the MSCI Enhanced Value Index.

The following section briefly describes the treatment of common corporate events within the MSCI Enhanced Value 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: CALCULATION OF THE FUNDAMENTAL VARIABLES

This appendix specifies the fundamental variables for the MSCI Enhanced Value Indexes

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

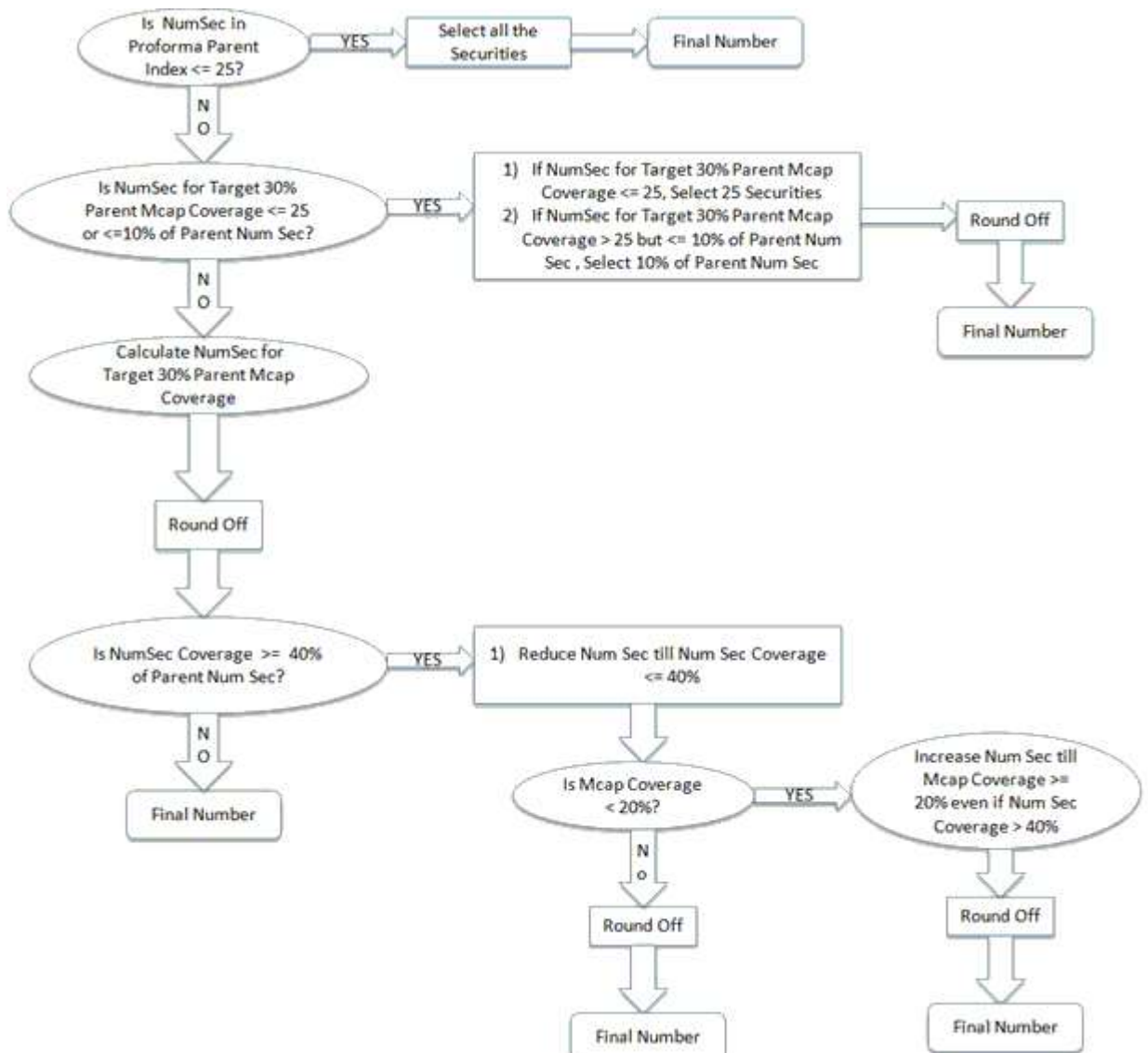
	belonging to "Real Estate" sector)	
--	------------------------------------	--

The  $z_1$ ,  $z_2$  &  $z_3$  represent the individual variable z-scores.

## APPENDIX III: RULES TO DETERMINE FIXED NUMBER OF SECURITIES AT INITIAL CONSTRUCTION AND IN ONGOING REBALANCING

### ALGORITHM TO DETERMINE FIXED NUMBER OF SECURITIES AT INITIAL CONSTRUCTION

Rank the securities in the proforma parent universe in the descending order of final value score



**NumSec:** Number of securities

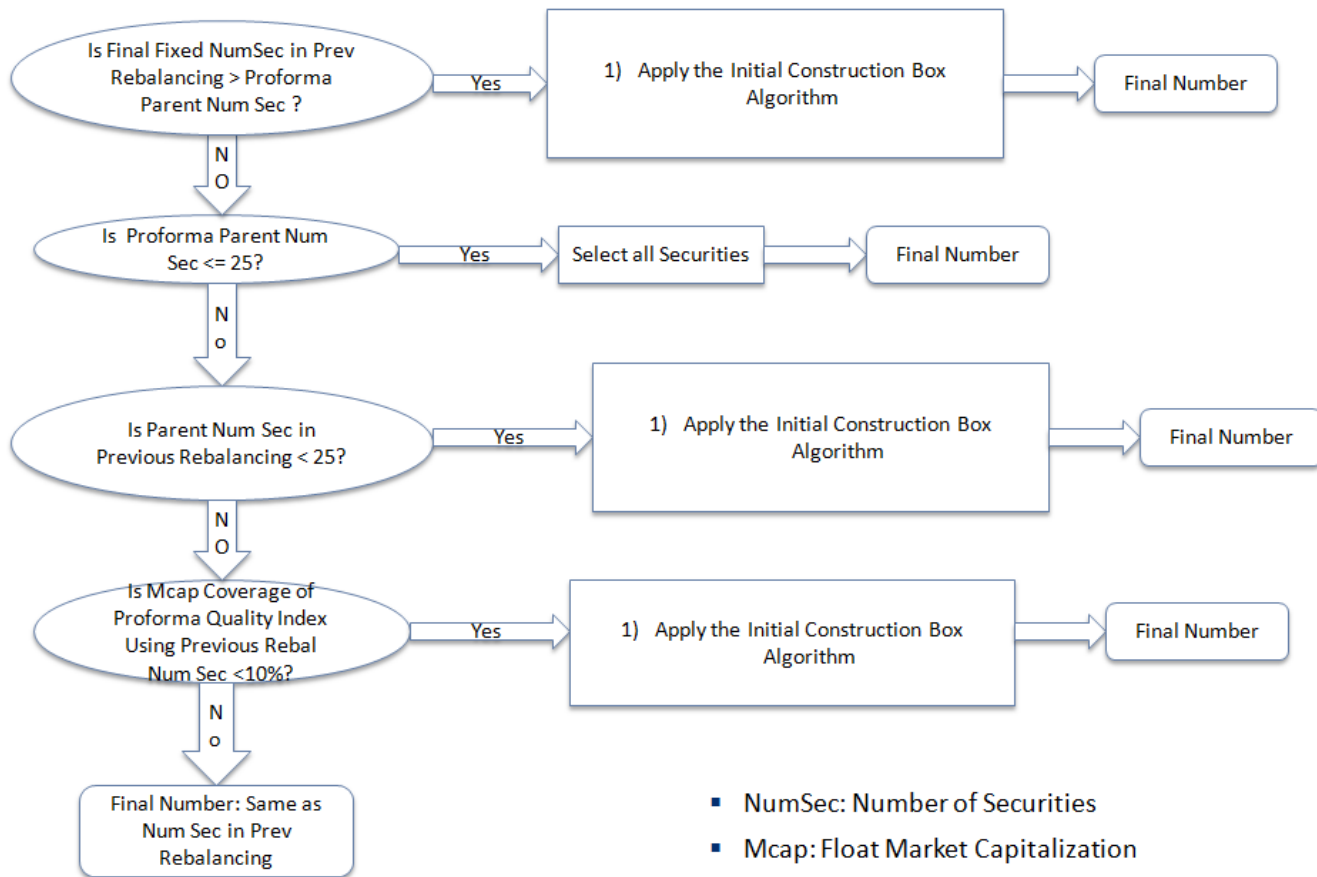
**Mcap:** Float market capitalization

**Rounding Off Rules:**

**Upward rounding off** is done depending on NumSec Obtained in the Previous Box Step

- If NumSec in Previous Step < 100, Nearest Rounding = 10 Securities
- If NumSec in Previous Step >= 100 but < 300, Nearest Rounding = 25 Securities
- If NumSec in Previous Step >= 300, Nearest Rounding = 50 Securities

**ALGORITHM TO REEVALUATE FIXED NUMBER OF SECURITIES AT SEMI ANNUAL REBALANCING**



**The following sections have been modified since May 2015:**

- Added a description for calculation of value score for the “Real Estate” sector in Section 2.2.1.
- Updated the table to reflect the calculation of value score for the “Real Estate” sector in Appendix II.

**The following sections have been modified since August 2016:**

- Appendix IV 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.



## CONTACT US

clientservice@msci.com

### AMERICAS

Americas	1 888 588 4567 *
Atlanta	+ 1 404 551 3212
Boston	+ 1 617 532 0920
Chicago	+ 1 312 675 0545
Monterrey	+ 52 81 1253 4020
New York	+ 1 212 804 3901
San Francisco	+ 1 415 836 8800
Sao Paulo	+ 55 11 3706 1360
Toronto	+ 1 416 628 1007

### EUROPE, MIDDLE EAST & AFRICA

Cape Town	+ 27 21 673 0100
Frankfurt	+ 49 69 133 859 00
Geneva	+ 41 22 817 9777
London	+ 44 20 7618 2222
Milan	+ 39 02 5849 0415
Paris	0800 91 59 17 *

### ASIA PACIFIC

China North	10800 852 1032 *
China South	10800 152 1032 *
Hong Kong	+ 852 2844 9333
Mumbai	+ 91 22 6784 9160
Seoul	00798 8521 3392 *
Singapore	800 852 3749 *
Sydney	+ 61 2 9033 9333
Taipei	008 0112 7513 *
Tokyo	+ 81 3 5290 1555

\* = toll free

### ABOUT MSCI

For more than 40 years, MSCI's research-based indexes and analytics have helped the world's leading investors build and manage better portfolios. Clients rely on our offerings for deeper insights into the drivers of performance and risk in their portfolios, broad asset class coverage and innovative research.

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.

For more information, visit us at [www.msci.com](http://www.msci.com).

## NOTICE AND DISCLAIMER

- This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the “Information”) is the property of MSCI Inc. or its subsidiaries (collectively, “MSCI”), or MSCI’s licensors, direct or indirect suppliers or any third party involved in making or compiling any Information (collectively, with MSCI, the “Information Providers”) and is provided for informational purposes only. The Information may not be modified, reverse-engineered, reproduced or disseminated in whole or in part without prior written permission from MSCI.
- The Information may not be used to create derivative works or to verify or correct other data or information. For example (but without limitation), the Information may not be used to create indexes, databases, risk models, analytics, software, or in connection with the issuing, offering, sponsoring, managing or marketing of any securities, portfolios, financial products or other investment vehicles utilizing or based on, linked to, tracking or otherwise derived from the Information or any other MSCI data, information, products or services.
- The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.
- Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall any Information Provider have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.
- Information containing any historical information, data or analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. Past performance does not guarantee future results.
- The Information should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. All Information is impersonal and not tailored to the needs of any person, entity or group of persons.
- None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), any security, financial product or other investment vehicle or any trading strategy.
- It is not possible to invest directly in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI does not issue, sponsor, endorse, market, offer, review or otherwise express any opinion regarding any fund, ETF, derivative or other security, investment, financial product or trading strategy that is based on, linked to or seeks to provide an investment return related to the performance of any MSCI index (collectively, “Index Linked Investments”). MSCI makes no assurance that any Index Linked Investments will accurately track index performance or provide positive investment returns. MSCI Inc. is not an investment adviser or fiduciary and MSCI makes no representation regarding the advisability of investing in any Index Linked Investments.
- Index returns do not represent the results of actual trading of investible assets/securities. MSCI maintains and calculates indexes, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the index or Index Linked Investments. The imposition of these fees and charges would cause the performance of an Index Linked Investment to be different than the MSCI index performance.
- The Information may contain back tested data. Back-tested performance is not actual performance, but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.
- Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Accordingly, constituents in MSCI equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. Inclusion of a security within an MSCI index is not a recommendation by MSCI to buy, sell, or hold such security, nor is it considered to be investment advice.
- Data and information produced by various affiliates of MSCI Inc., including MSCI ESG Research LLC and Barra LLC, may be used in calculating certain MSCI indexes. More information can be found in the relevant index methodologies on [www.msci.com](http://www.msci.com).
- MSCI receives compensation in connection with licensing its indexes to third parties. MSCI Inc.’s revenue includes fees based on assets in Index Linked Investments. Information can be found in MSCI Inc.’s company filings on the Investor Relations section of [www.msci.com](http://www.msci.com).
- MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc. Except with respect to any applicable products or services from MSCI ESG Research, neither MSCI nor any of its products or services recommends, endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies and MSCI’s products or services are not intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such. Issuers mentioned or included in any MSCI ESG Research materials may include MSCI Inc., clients of MSCI or suppliers to MSCI, and may also purchase research or other products or services from MSCI ESG Research. MSCI ESG Research materials, including materials utilized in any MSCI ESG Indexes or other products, have not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body.
- Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, IPD, FEA, InvestorForce, and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and Standard & Poor’s. “Global Industry Classification Standard (GICS)” is a service mark of MSCI and Standard & Poor’s.