

MSCI WORLD DIVERSIFIED MULTIPLE 3-FACTOR SELECT INDEX*

*using selected MSCI Business Involvement Screens

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1 INTRODUCTION

The MSCI World Diversified Multiple 3-Factor Select Index* is designed to represent the performance of a strategy that seeks higher exposure to three style factors - Value, Quality and Momentum - relative to other factors from the relevant Barra Equity Model¹ with controlled ex-ante risk. The index methodology targets high exposure to the above-mentioned three factors while maintaining market risk exposure similar to the underlying parent index (the “Parent Index”) while excluding the companies associated with controversial or nuclear weapons, or deriving revenues from tobacco.

¹ Please refer to Appendix 2 for further information on Barra Equity Models

2 MSCI ESG RESEARCH

The MSCI World Diversified Multiple 3-Factor Select Index* uses company research provided by MSCI ESG Research. In particular, the index uses the following MSCI ESG Research product: MSCI Business Involvement Screening Research.

For details on MSCI ESG Research's full suite of ESG products, please refer to:

http://www.msci.com/products/esg/about_msci_esg_research.html.

2.1 MSCI ESG BUSINESS INVOLVEMENT SCREENING RESEARCH

MSCI ESG Business Involvement Screening Research (BISR) aims to enable institutional investors to manage environmental, social and governance (ESG) standards and restrictions reliably and efficiently.

For more details on MSCI ESG Business Involvement Screening Research, please refer to

http://www.msci.com/resources/factsheets/MSCI_ESG_BISR.pdf.

3 CONSTRUCTING THE MSCI WORLD DIVERSIFIED MULTIPLE 3-FACTOR SELECT INDEX*

The MSCI World Diversified Multiple 3-Factor Select Index* is constructed by optimizing the underlying MSCI Parent Index using a Barra Equity Model to maximize the index-level exposure to the targeted style factors while maintaining market risk similar to the Parent Index.

The steps for constructing the MSCI World Diversified Multiple 3-Factor Select Index* are described below:

3.1 ELIGIBLE UNIVERSE

The eligible universe for MSCI World Diversified Multiple 3-Factor Select Index* includes all the constituents of the MSCI World Index (the 'Parent Index') excluding the securities based on the following criteria:

3.1.1 ESG EXCLUSIONS

The MSCI World Diversified Multiple 3-Factor Select Index* uses MSCI ESG Business Involvement Screening Research to identify companies that are involved in the following business activities. Companies that meet the business involvement exclusion criteria are excluded from the parent index.

- Controversial Weapons
- Nuclear Weapons
- Tobacco

Please refer to Appendix 5 for details on these criteria.

3.2 CONSTITUENT IDENTIFICATION

Selection of the constituents from the eligible universe is done by the process of optimization.

3.3 WEIGHTING SCHEME

The optimization objective is to maximize the alpha score (representative of the exposures to the set of target factors) under the "target risk" constraint where the risk target is equal to the ex-ante risk of the Parent Index at the time of rebalancing

3.3.1 CALCULATION OF THE ALPHA SCORE

The alpha score of the MSCI World Diversified Multiple 3-Factor Select Index* is defined as follows:

$$\alpha_i = 0.34 * F_{1,i} + 0.33 * F_{2,i} + 0.33 * F_{3,i}$$

Where,

$F_{j,i}$ = Factor exposure of each security i for each target factor j.

The factor exposures for the target factors are sourced as follows:

1. Value (F1): – Sector-relative score calculated using the security-level exposures to earnings-based, asset-based and whole-firm based valuation metrics from the relevant Barra Equity Model.
2. Quality (F2): – Sector-relative score calculated using the security-level exposures to all quality factors from the relevant Barra Equity Model.
3. Momentum (F3): – Factor exposure for each security taken from the Momentum factor exposure in the relevant Barra Equity Model.

Please refer to Appendix 3 for factor definitions of the above factors.

3.4 OPTIMIZATION CONSTRAINTS

At each Semi-Annual Index Review (SAIR), the following optimization constraints are employed, which aim to ensure investability while achieving total risk in line with that of the Parent Index.

- The maximum weight of an index constituent will be restricted to the lower of (the weight of the security in the Parent Index + 2%) or 10 times the weight of the security in the Parent Index. The minimum weight of an index constituent will be restricted to the higher of the (weight of the security in the Parent Index - 2%) or 0.
- Exposure of the MSCI World Diversified Multiple 3-Factor Select Index* to non-target Barra style factors such as size, volatility, growth and liquidity will be restricted to +/-0.25 standard deviations relative to the Parent Index.
- The sector weights of the MSCI World Diversified Multiple 3-Factor Select Index* will not deviate more than +/-5% from the sector weights of the Parent Index.
- For countries with weight greater than 2.5% in the Parent Index, the weight in the MSCI World Diversified Multiple 3-Factor Select Index* will not deviate more than +/-5% from the country weight in the Parent Index. For countries with weight less than 2.5% in the Parent Index, the weight in the MSCI World Diversified Multiple 3-Factor Select Index* will be capped at 3 times their weight in the Parent Index.

- The one-way turnover of the MSCI World Diversified Multiple 3-Factor Select Index* is constrained to a maximum of 20% at each Index Review.

3.5 DETERMINING THE OPTIMIZED INDEX

The MSCI World Diversified Multiple 3-Factor Select Index* is constructed using the Barra Open Optimizer in combination with the relevant Barra Equity Model. The optimization uses the Parent Index as the universe of eligible securities and the specified optimization objective and constraints to determine the MSCI World Diversified Multiple 3-Factor Select Index*. The Barra Open Optimizer determines the optimal solution, i.e. the set of securities with the highest possible alpha score with “target risk” equal to the ex-ante risk of the Parent Index at the time of rebalancing, using an estimated security covariance matrix under the applicable investment constraints.

4 MAINTAINING THE MSCI WORLD DIVERSIFIED MULTIPLE 3-FACTOR SELECT INDEX*

4.1 SEMI-ANNUAL INDEX REVIEWS

The MSCI World Diversified Multiple 3-Factor Select Index* is reviewed on a semi-annual basis usually as of the close of the last business day of April and October. Barra Equity Model data as of the end of March and September are used respectively. The pro forma Index is, in general, announced nine business days before the effective date.

4.2 ONGOING EVENT RELATED CHANGES

The general treatment of corporate events in the MSCI World Diversified Multiple 3-Factor Select 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 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 Diversified Multiple 3-Factor Select Index, the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the MSCI World Diversified Multiple 3-Factor Select Index*.

The following section briefly describes the treatment of common corporate events within the MSCI World Diversified Multiple 3-Factor Select Index*.

No new securities will be added (except where noted below) to the Indexes 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 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: www.msci.com/index-methodology

APPENDIX 1: HANDLING INFEASIBLE OPTIMIZATION

During a Semi-Annual Index Review, in the event that there is no optimal solution that satisfies all the optimization constraints defined in Section 2.5, the following constraints will be relaxed, until an optimal solution is found:

- Relax the maximum active weight constraint in multiples of 1.25 up to a maximum of 5 iterations based upon the following formula

$$w_{i+1} = 1.25 * w_i \text{ for } i = 0 - 4$$

Where w_i = Maximum Active weight constraint

- Relax the maximum weight multiple in steps of 2 up to a maximum of 5 iterations based upon the following formula

$$wm_{i+1} = 2 + wm_i \text{ for } i = 0 - 4$$

Where wm_i = Maximum Active weight multiple

- The maximum active weight constraint and the maximum weight multiple are alternately relaxed until a feasible solution is achieved.

In the event that no optimal solution is found after the above constraints have been relaxed over all 5 iterations, the MSCI World Diversified Multiple 3-Factor Select Index* will not be rebalanced for that Semi-Annual Index Review.

APPENDIX 2: NEW RELEASE OF BARRA® EQUITY MODEL OR BARRA® OPTIMIZER

A major new release of the relevant Barra Equity Model or Barra Optimizer may replace the former version within a suitable timeframe.

APPENDIX 3: TARGET FACTOR DEFINITION SUMMARY

The style factor groups targeted in the MSCI World Diversified Multiple 3-Factor Select Index* are Value, Quality and Momentum. These factor groups are described using individual factor scores from the current release of the MSCI Barra Global Equity Model for Long-Term Investors (GEMTL). 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. The model data will be used from previous end-of-month, prior to the rebalancing date. Following are the definitions of factor groups currently used in the Index. For more detailed information on individual factors in GEMTL, please refer to <https://www.msci.com/portfolio-management>

Value: The value score for each security is currently based on earnings-based, asset-based and whole firm-based valuation metrics - currently captured by the following two factors, Book to-Price and Earnings Yield, from the relevant Barra Equity Model. A sector-relative score is derived from the combined score by standardizing the latter within each sector and winsorizing at +/- 3.

$$Value_i = (0.33) * BtoP_i + (0.67) * EarningsYield_i$$

Quality: The quality score for each security is currently based on all quality factors, Profitability, Investment Quality, Earnings Quality, Leverage and Earnings Variability, from the relevant Barra Equity Model (currently GEMTL). A sector-relative score is derived from the combined score by standardizing the latter within each sector and winsorizing at +/- 3.

$$Quality_i = (0.2) * Profitability_i + (0.2) * Investment\ Quality_i + (0.2) * Earnings\ Quality_i + (-1) * (0.2) * Earnings\ Variability_i + (-1) * (0.2) * Leverage_i$$

Momentum: The momentum score for each security is same as the Momentum factor score taken from the relevant Barra Equity Model.

APPENDIX 4: MSCI BARRA EQUITY MODEL USED IN THE OPTIMIZATION

The MSCI World Diversified Multiple 3-Factor Select Index* since inception, made use of the MSCI Barra Global Equity Model – Long Horizon (GEM2L) within the optimization setup. However, starting from the May 2018 Semi-Annual Index Review, the index construction currently uses an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMTL).

To facilitate this transition, the MSCI World Diversified Multiple 3-Factor Select Index* was not rebalanced as of the close of the last business day of April but was instead rebalanced as of the close of the last business day of May, coinciding with the May 2018 Semi-Annual Index Review (SAIR) of the MSCI Global Investable Market Indexes.

APPENDIX 5: ESG EXCLUSION CRITERIA

Companies which meet the following criteria are excluded from the MSCI World Diversified Multiple 3-Factor Select Index*:

Controversial Weapons

- All companies that manufacture cluster munitions whole weapons systems, components, or delivery platforms
- All companies the manufacture components that were developed or are significantly modified for exclusive use in cluster munitions
- All companies that manufacture components that were developed or are significantly modified or exclusive use in anti-personnel landmines
- All companies that manufacture landmines whole systems or components
- All companies that manufacture key biological and chemical weapons components
- All companies that manufacture biological and chemical weapons, including weapons that use pathogens such as viruses, bacteria, and disease-causing biological agents, toxins, or chemical substances that have toxic properties to kill, injure, or incapacitate.

Nuclear Weapons

- All companies that manufacture components that were developed or are significantly modified for exclusive use in nuclear weapons (warheads and missiles), including companies with contracts to operate/manage government-owned facilities that manufacture components for nuclear warheads and missiles, such as fissile materials, non-nuclear components, explosives, triggers and detonators, etc. are also excluded.
- All companies that manufacture nuclear warheads and/or whole nuclear missiles, including assembly and integration of warhead and missile body as well as companies with contracts to operate/manage government-owned facilities that manufacture nuclear warheads and missiles
- All companies that provide auxiliary services related to nuclear weapons, such as repairing and maintaining nuclear weapons, providing overhaul and upgrade services (including engineering), stockpiling and stewardship, R&D work, testing and simulations, etc., including companies with contracts to operate/manage government-owned facilities that conduct R&D, testing, simulations, and other essential sciences on nuclear weapons

Tobacco

- All companies that derive 10% or more of their total revenue from tobacco-related business activities

The following sections have been modified since March 2019:

Section 2: Added details of ESG Research used in index construction

Section 3:

- Update to the ESG exclusion criteria from a client defined exclusion list to MSCI ESG Research driven exclusion criteria.

Appendix 5: ESG Exclusion Criteria

- Added Appendix 5 with the detailed description of the ESG Exclusion Criteria

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