

MSCI USA Quality GARP Select Index

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Contents	1	Introduction	4
	2	Index Construction Methodology	5
	2.1	Applicable Universe	5
	2.2	Defining the Growth Score	5
	2.2.1	Winsorizing the Variable.....	5
	2.2.2	Calculating the Z-Score	5
	2.2.3	Calculating the Growth Score	6
	2.3	Defining the Value Score	7
	2.3.1	Calculating the Z-Score	7
	2.3.2	Calculating the Value Score	7
	2.4	Defining the Quality Score.....	8
	2.4.1	Winsorizing the Variable.....	8
	2.4.2	Calculating the Z-Score	8
	2.4.3	Calculating the Quality Score.....	8
	2.5	Security Selection	9
	2.6	Security Weighting.....	9
	2.6.1	Defining the Value Coverage (VC) Score.....	9
	2.6.2	Defining the Quality Coverage (QC) Score	9
	2.6.3	Defining the Tilt Score	10
	2.6.4	Security Weighting.....	10
	3	Maintaining the Index.....	11
	3.1	Quarterly Index Reviews	11
	3.1.1	Buffer Rule.....	11
	3.2	Ongoing Event Related Changes	11
		Appendix I: Winsorizing the Variable and Calculating the Z Score.....	14

Winsorizing the Variable..... 14

Calculating the Z-Score 14

Appendix II: Calculation of Weighted Mean and Standard
Deviation..... 15

Appendix III: Value Z-Score Computation..... 16

Appendix IV: Quality Z-Score Computation 18

Appendix V: The Capping Methodology 19

Appendix VI: Methodology Set..... 21

1 Introduction

The MSCI USA Quality GARP Select Index (herein, 'the Index') is designed to represent the performance of a strategy that seeks higher exposure to a growth factor.

The Index¹ selects securities from the MSCI USA Index (herein, 'the Parent Index') with higher Growth score, while covering 50% of weight in the Parent Index. The selected securities are weighted by the product of their market capitalization weight in the Parent Index and the Tilt Score. The Tilt Score is derived from free float-adjusted market capitalization, Quality score and Value score. Additionally, the capping is applied on constituent weights and sector weights to mitigate the concentration in the Index.

¹ The Index is governed by a set of methodology and policy documents ("Methodology Set"), including the present index methodology document. Please refer to Appendix VI for more details.

2 Index Construction Methodology

The Index construction rules are defined in sections 2.1 to 2.6 below.

2.1 APPLICABLE UNIVERSE

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

2.2 DEFINING THE GROWTH SCORE

The Growth score for each security is defined using the following five variables:

- Long-term forward earnings per share (EPS) growth rate (LT fwd EPS G)
- Short-term forward EPS growth rate (ST fwd EPS G)
- Current Internal Growth Rate (g)
- Long-term historical EPS growth trend (LT his EPS G)
- Long-term historical sales per share (SPS) growth trend (LT his SPS G)

The details of the calculation of the fundamental variables are provided in the MSCI Fundamental Data Methodology book, available at <https://www.msci.com/index-methodology>.

2.2.1 WINSORIZING THE VARIABLE

All the five variables are winsorized within the Parent Index. The details of the calculation of the winsorization are provided in the Appendix I.

2.2.2 CALCULATING THE Z-SCORE

After winsorizing all the five variables within the Parent Index, the z-score for each of the five variables for each security can be calculated using the free float-adjusted market capitalization weighted mean and standard deviation of the relevant variable within the Parent Index. The z-score is defined as follows:

$$Z = \frac{(x - \mu_{mcap-weighted})}{\sigma_{mcap-weighted}}$$

Where:

- x is the winsorized variable value for a given security

- μ is the free float-adjusted market capitalization weighted mean using winsorized variables in the Parent Index
- σ is the free float-adjusted market capitalization weighted standard deviation using winsorized variables in the Parent Index

The details of the calculation of the weighted mean and the standard deviation are provided in Appendix II.

2.2.3 CALCULATING THE GROWTH SCORE

After standardizing each of the five variable values for each security, MSCI calculates a Growth score for each security.

The Growth score is calculated as follows:

$$\text{Growth Score} = \frac{1}{6} (2 * Z_{LT \text{ fwd EPS } G} + Z_{ST \text{ fwd EPS } G} + Z_g + Z_{LT \text{ his EPS } G} + Z_{LT \text{ his SPS } G})$$

When computing the Growth score, missing variable z-scores are excluded from the calculation.

For instance, if the long-term forward EPS growth rate variable is missing:

$$\text{Growth Score} = \frac{1}{4} (Z_{ST \text{ fwd EPS } G} + Z_g + Z_{LT \text{ his EPS } G} + Z_{LT \text{ his SPS } G})$$

The long-term historical SPS growth trend is not used to specify growth characteristics for securities classified in the Banks (4010) and Financial Services (4020) industry groups, other than securities classified in the Multi-Sector Holdings (40201030), Financial Exchanges & Data (40203040) sub-industries and Transaction & Payment Processing Services (40201060), under the Global Industry Classification Standard (GICS®)². In this case, only five variables are averaged, rather than replacing the sales growth trend with a zero value.

For a Financial company:

$$\text{Growth Score} = \frac{1}{5} (2 * Z_{LT \text{ fwd EPS } G} + Z_{ST \text{ fwd EPS } G} + Z_g + Z_{LT \text{ his EPS } G})$$

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

² GICS is the global industry classification standard jointly developed by MSCI and S&P Global Market Intelligence.

2.3 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 MSCI Fundamental Data Methodology book, available at <https://www.msci.com/index-methodology>.

2.3.1 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®) 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 details of the calculation of the z-score are provided in the Appendix I.

2.3.2 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 III.

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.

2.4 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 MSCI Fundamental Data Methodology book, available at <https://www.msci.com/index-methodology>.

2.4.1 WINSORIZING THE VARIABLE

All the three variables are winsorized within the Parent Index. The details of the calculation of the winsorization are provided in the Appendix I.

2.4.2 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 is calculated using the mean and standard deviation of the relevant variable within the Parent Index.

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.

The details of the calculation of the z-score are provided in the Appendix I.

2.4.3 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 2.4.2.

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.

2.5 SECURITY SELECTION

The securities in the Applicable Universe are ranked in descending order of Growth score and securities in the top 50% of the cumulative weight (calculated using the free float-adjusted market capitalization) in the Parent Index (including the first security that results in exceeding the 50% country coverage weight threshold) are selected to construct the Index.

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

2.6 SECURITY WEIGHTING

2.6.1 DEFINING THE VALUE COVERAGE (VC) SCORE

The Value Coverage score (VC-Score) for each security is calculated as its cumulative weight (calculated using the free float-adjusted market capitalization) of all the selected securities (as per Section 2.5) within each sector, 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.

2.6.2 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) of all the selected securities (as per Section 2.5) within each sector, when sorted by the Quality score in descending order.

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.

2.6.3 DEFINING THE TILT SCORE

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

		VC Score \leq 50%	VC Score $>$ 50%
Top 50% by weight ³	QC Score \leq 25%	3.5	1.75
	QC Score $>$ 25% and QC Score \leq 50%	2.5	1.25
	QC Score $>$ 50% and QC Score \leq 75%	1.5	0.75
	QC Score $>$ 75%	0.5	0.25
Rest of the selected securities ⁴	QC Score \leq 25%	7.0	3.5
	QC Score $>$ 25% and QC Score \leq 50%	5.0	2.5
	QC Score $>$ 50% and QC Score \leq 75%	3.0	1.5
	QC Score $>$ 75%	1.0	0.5

2.6.4 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 and sector weights, as described in Appendix V.

³ The securities that cover the top 50% cumulative weight (calculated using the free float-adjusted market capitalization) of the selected securities (as per Section 2.5), including the first security that results in exceeding the 50% weight threshold.

⁴ All the remaining selected securities (as per Section 2.5) not in 'Top 50% by weight'.

3 Maintaining the Index

3.1 QUARTERLY INDEX REVIEWS

The Index is rebalanced on a quarterly basis to coincide with the February, May, August, and November Index Reviews of the MSCI Global Investable Market Indexes. Fundamental variables data as of the end of January, April, July, 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 are applied as described below.

3.1.1 BUFFER RULE

Buffers are applied to the 50% cumulative coverage target of the Parent Index between cumulative coverage of 35% and 65%. Securities in the top 35% cumulative coverage, including the first security that results in exceeding the 35% cumulative coverage threshold will be added to the Index on a priority basis. The current constituents with cumulative coverage in the top 35% to 65%, including the first security that results in exceeding the 65% cumulative coverage threshold are then successively added until the coverage reaches 50%. If the coverage is still below 50% after this step, the remaining securities from the Applicable Universe in the descending order of their Growth score are added until the cumulative coverage reaches 50% target.

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 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: Winsorizing the Variable and Calculating the Z Score

WINSORIZING THE VARIABLE

As part of the standardization process, outlier 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 by ascending order within the Parent Index. Missing values are excluded from the ranking. Then, for values that lie in the bottom 5th percentile rank or in the top 95th percentile rank, their value is set equal to the value of the 5th percentile ranked or 95th percentile ranked security, as applicable.

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.

CALCULATING THE Z-SCORE

The z-score for the 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 (σ) a given value lies from the mean (μ).

The z-score is defined as follows:

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

Appendix II: Calculation of Weighted Mean and Standard Deviation

This appendix explains the calculation of the weighted mean and Standard deviation used in the determination of the z-score.

The calculation involves the following three steps:

- First, the variable values are winsorized using the 5th and 95th percentile cut-off.
- Second, the winsorized per share values are used to compute the weighted mean.
- Third, the weighted standard deviation is computed.

The weighted mean is the market capitalization weighted average of the variable and is computed as follows:

$$\mu_{\text{variable}} = \sum_i \left[\left(\frac{\text{Shares}_i \times P_i \times FIF_i}{\sum_i \text{Shares}_i \times P_i \times FIF_i} \right) \times \text{Variable}_i^{\text{winsorized}} \right]$$

The weighted standard deviation is computed as follows:

$$\sigma_{\text{variable}} = \sqrt{\sum_i \left(\frac{\text{Shares}_i \times P_i \times FIF_i}{\sum_i \text{Shares}_i \times P_i \times FIF_i} \right) \times \left(\text{Variable}_i^{\text{winsorized}} - \mu_{\text{variable}} \right)^2}$$

Please note that only securities with non-missing variables are included in the weighted mean and standard deviation.

Appendix III: 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 = $0.5*z1$

Case	Detail	Action
<u>Case 6</u>	Security belongs to “Real Estate” sector	Composite Value z-score = z1
<u>Case 7</u>	<p>All three variables are missing (for securities not belonging to “Financials” or “Real Estate” sector)</p> <p>Both variables are missing (for securities belonging to “Financials” sector)</p> <p>EV/CFO is missing (for securities belonging to “Real Estate” sector)</p>	Composite Value z-score =NULL

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

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 sector weights of the Index will not deviate more than +/- 5% from the sector weights of the selected securities (as per Section 2.5) portfolio weights⁵ at the time of rebalancing.

B. Initial Relaxation Parameters

- 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 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.

⁵ Selected securities portfolio weights are calculated in proportion to its free float adjusted market capitalization of the selected securities (as per Section 2.5). The weights are normalized to sum to 100%.

- 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 sector weights in steps of -1% up to a maximum of 5 iterations.
- Relax the maximum issuer weights in steps of 1% up to a maximum of 5 iterations.
- Relax the maximum sector weights 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.

Appendix VI: Methodology Set

The indexes are governed by a set of methodology and policy documents (“Methodology Set”), including the present index methodology document as mentioned below:

- Description of methodology set – <https://www.msci.com/index/methodology/latest/ReadMe>
- MSCI Corporate Events Methodology – <https://www.msci.com/index/methodology/latest/CE>
- MSCI Fundamental Data Methodology – <https://www.msci.com/index/methodology/latest/FundData>
- MSCI Index Calculation Methodology – <https://www.msci.com/index/methodology/latest/IndexCalc>
- MSCI Index Glossary of Terms – <https://www.msci.com/index/methodology/latest/IndexGlossary>
- MSCI Index Policies – <https://www.msci.com/index/methodology/latest/IndexPolicy>
- MSCI Global Industry Classification Standard (GICS) Methodology – <https://www.msci.com/index/methodology/latest/GICS>
- MSCI Global Investable Market Indexes Methodology – <https://www.msci.com/index/methodology/latest/GIMI>

The Methodology Set for the Indexes can also be accessed from MSCI’s webpage <https://www.msci.com/index/methodology> in the section ‘Search Methodology by Index Name or Index Code’.

Contact us

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AMERICAS

United States	+ 1 888 588 4567 *
Canada	+ 1 416 687 6270
Brazil	+ 55 11 4040 7830
Mexico	+ 52 81 1253 4020

EUROPE, MIDDLE EAST & AFRICA

South Africa	+ 27 21 673 0103
Germany	+ 49 69 133 859 00
Switzerland	+ 41 22 817 9777
United Kingdom	+ 44 20 7618 2222
Italy	+ 39 02 5849 0415
France	+ 33 17 6769 810

ASIA PACIFIC

China	+ 86 21 61326611
Hong Kong	+ 852 2844 9333
India	+ 91 22 6784 9160
Malaysia	1800818185 *
South Korea	+ 82 70 4769 4231
Singapore	+ 65 67011177
Australia	+ 612 9033 9333
Taiwan	008 0112 7513 *
Thailand	0018 0015 6207 7181 *
Japan	+ 81 3 4579 0333

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