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# INDEX GUIDELINE

Solactive Global Factor Series [GFS]

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## INTRODUCTION

This document (the "**GUIDELINE**") is to be used as a guideline with regard to the composition, calculation and maintenance of the SOLACTIVE GLOBAL FACTOR SERIES INDICES (the "**INDICES**" and individually the "**INDEX**"). Any amendments to the rules made to the GUIDELINE are approved by the OVERSIGHT COMMITTEE specified in Section 5.5. The INDICES are owned, calculated, administered and published by Solactive AG ("**SOLACTIVE**") assuming the role as administrator (the "**INDEX ADMINISTRATOR**") under the Regulation (EU) 2016/1011 (the "**BENCHMARK REGULATION**" or "**BMR**"). The name "Solactive" is trademarked.

*The text uses defined terms which are formatted with "SMALL CAPS". Such Terms shall have the meaning assigned to them as specified in Section 6 (Definitions).*

The **GUIDELINE** and the policies and methodology documents referenced herein contain the underlying principles and rules regarding the structure and operation of the **INDICES**. **SOLACTIVE** does not offer any explicit or tacit guarantee or assurance, neither pertaining to the results from the use of the **INDICES** nor the level of the **INDICES** at any certain point in time nor in any other respect. **SOLACTIVE** strives to the best of its ability to ensure the correctness of the calculation. There is no obligation for **SOLACTIVE** – irrespective of possible obligations to issuers – to advise third parties, including investors and/or financial intermediaries, of any errors in the **INDICES**. The publication of the **INDICES** by **SOLACTIVE** does not constitute a recommendation for capital investment and does not contain any assurance or opinion of **SOLACTIVE** regarding a possible investment in a financial instrument based on these **INDICES**.



# 1. INDEX SPECIFICATIONS

## 1.1. SCOPE OF THE INDEX

Category	Description
Asset Class	Equity
Strategy	The INDICES aim to provide exposure to a range of equity risk factors for various segments of the global stock market.
Regional Allocation	Global Markets
Rebalancing Frequency	Semi-annually

## 1.2. IDENTIFIERS AND PUBLICATION

Details on the individual INDICES (identifiers, currencies and return versions) of the Solactive Global Factor Series are contained in the list of published GFS INDICES available on the SOLACTIVE website: [https://solactive.com/downloads/Solactive\\_GFS\\_List\\_of\\_Published\\_Indices.pdf](https://solactive.com/downloads/Solactive_GFS_List_of_Published_Indices.pdf).

The INDICES are published on the website of the INDEX ADMINISTRATOR ([www.solactive.com](http://www.solactive.com)) and are, in addition, available via the price marketing services of Boerse Stuttgart GmbH and may be distributed to all of its affiliated vendors. Each vendor decides on an individual basis as to whether it will distribute or display the INDICES via its information systems.

Any publication in relation to the INDICES (e.g. notices, amendments to the GUIDELINE) will be available at the website of the INDEX ADMINISTRATOR: <https://www.solactive.com/news/announcements/>.

## 1.3. INITIAL LEVEL OF THE INDEX

The initial level of the INDICES on the START DATE, is 1000. Historical values from the LIVE DATE, will be recorded in accordance with Article 8 of the BMR. Levels of the INDICES published for a period prior to the LIVE DATE have been back-tested. The START DATE and LIVE DATE of each INDEX is stated in the list of published GFS Indices available on the SOLACTIVE website:

[https://solactive.com/downloads/Solactive\\_GFS\\_List\\_of\\_Published\\_Indices.pdf](https://solactive.com/downloads/Solactive_GFS_List_of_Published_Indices.pdf)



## 1.4. PRICES AND CALCULATION FREQUENCY

The level of the INDICES are calculated on each CALCULATION DAY from 9:00 a.m. to 10:50 p.m. CET based on the TRADING PRICES on the EXCHANGES on which the INDEX COMPONENTS are listed. TRADING PRICES of INDEX COMPONENTS not listed in the INDEX CURRENCY are converted using the current Intercontinental Exchange (ICE) spot foreign exchange rate. Should there be no current TRADING PRICE for an INDEX COMPONENT, the later of: (i) the most recent CLOSING PRICE; or (ii) the last available TRADING PRICE for the preceding TRADING DAY is used in the calculation.

In addition to the intraday calculation a closing level of the INDICES for each CALCULATION DAY is also calculated. This closing level is based on the CLOSING PRICES for the INDEX COMPONENTS on the respective EXCHANGES on which the INDEX COMPONENTS are listed. The CLOSING PRICES of INDEX COMPONENTS not listed in the INDEX CURRENCY are converted using the 04:00 p.m. London time rates provided by WM/ Refinitiv (the "WM/ Refinitiv Rate"). If there is no 04:00 p.m. London time WM/ Refinitiv Rate for the relevant CALCULATION DAY, the last available 04:00 p.m. London time WM/Refinitiv Rate will be used for the closing level calculation.

## 1.5. LICENSING

Licenses to use the INDICES as the underlying value for financial instruments, investment funds and financial contracts may be issued to stock exchanges, banks, financial services providers and investment houses by SOLACTIVE.



## 2. INDEX SELECTION

On each SELECTION DAY, the INDEX ADMINISTRATOR will revise the composition of the INDICES.

In a first step, the INDEX ADMINISTRATOR determines the INDEX UNIVERSE in accordance with Section 2.1. The INDEX UNIVERSE comprises all those financial instruments which fulfill the INDEX UNIVERSE REQUIREMENTS (as specified in Section 2.1) and will constitute a starting pool from which the components of the INDICES will be selected. Based on this INDEX UNIVERSE, the new composition of the INDICES will be determined by applying the rules outlined in Section 2.2.

Each new INDEX COMPONENT will be assigned a weight as described in Section 2.3.

### 2.1. INDEX UNIVERSE REQUIREMENTS

The INDEX UNIVERSE is comprised of all financial instruments which fulfill the below requirements on the SELECTION DAY (the “**INDEX UNIVERSE REQUIREMENTS**”):

- Is a member of the STARTING UNIVERSE of the respective INDEX as defined in Section 8.1

The determination of the INDEX UNIVERSE is fully rule-based and the INDEX ADMINISTRATOR cannot make any discretionary decisions.

### 2.2. SELECTION OF THE INDEX COMPONENTS

Based on the INDEX UNIVERSE, the initial composition of the INDICES as well as any selection for an ordinary rebalance is determined on the SELECTION DAY in accordance with the following rules:

1. The raw factor score(s) of the respective factor are calculated as defined in Section 7
2. Each raw factor score is winsorized at a 3% level. This means values below the 3<sup>rd</sup> percentile will be set equal to the 3<sup>rd</sup> percentile, and values above the 97<sup>th</sup> percentile will be set equal to the 97<sup>th</sup> percentile
3. A Z-score is calculated to standardize each raw factor score. In case of sector neutral INDICES the Z-score is calculated within each sector. Meaning the average and standard deviation are calculated for each respective sector separately as opposed to the entire universe

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

4. Z-scores are capped at a lower bound of -3 and an upper bound of 3. If a Z-score is missing the security is not eligible for inclusion
5. The following Z-scores are multiplied with -1 such that lower values get the higher score:
  - Volatility



- Investment
  - Size
6. In case the respective factor is defined using more than one raw factor score, the final factor Z-score is defined as the average of all raw factor Z-scores
  7. The final factor score is defined as follows (except for the indices part of the Value-Growth Style series):
 
$$F = \begin{cases} 1 + Z, & Z > 0 \\ \frac{1}{1 - Z}, & Z \leq 0 \end{cases}$$
  8. Only one share class of each company is eligible for inclusion. If multiple share classes are part of the INDEX UNIVERSE, the most liquid share class (as determined by the minimum of the 1-month and 6-months AVERAGE DAILY VALUE TRADED) is eligible. To reduce turnover a security only replaces another share class in case its AVERAGE DAILY VALUE TRADED is 25% larger than the previously eligible share class. Indices that are part of the Value-Growth Style series can have multiple share classes included in the INDEX.
  9. The final selection is performed based on the following steps, depending on if the index is part of the default factors or the Value-Growth Style series:

### Default Factor Selection

The number of securities to include into the INDEX is determined by taking 30% of the number of securities in the underlying STARTING UNIVERSE. This number is rounded to the nearest integer. If this results in less than 30 securities, the number of securities will be set equal to 30,

All eligible securities from the INDEX UNIVERSE that rank highest in terms of final factor score will be included in the INDEX to reach the defined number of securities. A buffer rule is applied during each subsequent rebalance to reduce turnover. Securities already part of the INDEX have to rank outside of the rank 1.2 times the required number of securities to be excluded. New securities have to rank within the rank 0.8 times the required number of securities to be included. If this results in less/more than the required number of securities, securities will be added/removed according to the final factor score to end up with the required number of securities. If two securities have the same final factor score, the one with the higher FREE FLOAT MARKET CAPITALIZATION in USD is selected

### Top Percentage Factor Selection

The number of securities to include into the INDEX is determined by taking the percentage specified in the respective index name of the number of securities in the underlying STARTING UNIVERSE. This number is rounded to the nearest integer.



All eligible securities from the INDEX UNIVERSE that rank highest in terms of final factor score will be included in the INDEX to reach the defined number of securities. A buffer rule is applied during each subsequent rebalance to reduce turnover. Securities already part of the INDEX have to rank outside of the rank 1.2 times the required number of securities to be excluded. New securities have to rank within the rank 0.8 times the required number of securities to be included. If this results in less/more than the required number of securities, securities will be added/removed according to the final factor score to end up with the required number of securities. If two securities have the same final factor score, the one with the higher FREE FLOAT MARKET CAPITALIZATION in USD is selected.

### Value-Growth Style Selection

The Z-scores of the value and growth factors are combined in the following way:

$$Z_{ValueGrowth} = \frac{Z_{Value} - Z_{Growth}}{2}$$

All eligible securities from the INDEX UNIVERSE that have a final factor score above the 70th percentile, will be included in the Value INDEX. Eligible securities from the INDEX UNIVERSE that have a final factor score below the 30th percentile, will be included in the Growth INDEX. All securities between the 30th and 70th percentile are included in both the Value INDEX and the Growth INDEX.

### Value-Growth Style MV Selection

The Z-scores of the value and growth factors are combined in the following way:

$$Z_{ValueGrowth} = \frac{Z_{Value} - Z_{Growth}}{2}$$

All eligible securities from the INDEX UNIVERSE receive a rank between 0 and 1 by descending final factor score. Securities already part of the INDEX require a rank change of at least 0.1 compared to the previous SELECTION DAY to change ranks at the SELECTION DAY. Starting from the security with the highest final score, securities that score above the 75th percentile by combined FREE FLOAT MARKET CAPITALIZATION are included in the Value INDEX. Securities scoring below the 25th percentile by combined FREE FLOAT MARKET CAPITALIZATION are assigned to the Growth INDEX. All securities between the 25th and 75th percentile are included in both the Value INDEX and the Growth INDEX.

(the "INDEX COMPONENT REQUIREMENTS")

The selection of the INDEX COMPONENTS is fully rule-based and the INDEX ADMINISTRATOR cannot make any discretionary decision.





## 2.3. WEIGHTING OF THE INDEX COMPONENTS

On each SELECTION DAY each INDEX COMPONENT is assigned a weight according to the weighting type specified in Section 8.2. The various weighting types are defined below.

### **Adjusted Free Float Market Capitalization**

Each security is assigned a weight as of the SELECTION DAY according to the product of the final factor score and FREE FLOAT MARKET CAPITALIZATION. Weights should be at least 0.01% or are capped at the lower of the MAXIMUM WEIGHT and 20 times the weight of the security in the underlying STARTING UNIVERSE. In case of sector neutral INDICES the sector weights are additionally capped at the sector weight in the underlying STARTING UNIVERSE plus 5%. Any excess weight resulting from the capping is redistributed pro-rata among the remaining securities.

### **Free Float Market Capitalization**

Each security is assigned a weight as of the SELECTION DAY according to FREE FLOAT MARKET CAPITALIZATION. Weights should be at least 0.01% or are capped at the lower of MAXIMUM WEIGHT and 20 times the weight of the security in the underlying STARTING UNIVERSE. In case of sector neutral INDICES the sector weights are additionally capped at the sector weight in the underlying STARTING UNIVERSE plus 5%. Any excess weight resulting from the capping is redistributed pro-rata among the remaining securities.

### **Inverse Volatility**

Each security is assigned a weight as of the SELECTION DAY according to the inverse of Volatility. Weights should be at least 0.01% or are capped at MAXIMUM WEIGHT. In case of sector neutral INDICES the sector weights are additionally capped at the sector weight in the underlying STARTING UNIVERSE plus 5%. Any excess weight resulting from the capping is redistributed pro-rata among the remaining securities.

### **Equal Weight**

Each security is assigned an equal weight as of the SELECTION DAY.

### **Value-Growth Style**

Each security is assigned a weight as of the SELECTION DAY according to FREE FLOAT MARKET CAPITALIZATION. The FREE FLOAT MARKET CAPITALIZATION is adjusted to reflect how close a stock belongs to the value or growth style. Securities that are purely assigned to the Value or the Growth INDEX receive 100% of FREE FLOAT MARKET CAPITALIZATION in that INDEX. Securities that are part of both the Value and Growth INDEX are percentile-ranked based on the value-growth score. This percentile is multiplied times the FREE FLOAT



MARKET CAPITALIZATION to determine the FREE FLOAT MARKET CAPITALIZATION assigned to the Value INDEX. The remaining FREE FLOAT MARKET CAPITALIZATION of the security is assigned to the Growth INDEX. The sum of FREE FLOAT MARKET CAPITALIZATION of each security in the Value and Growth INDEX sums up to 100%.

### **Value-Growth Style MV**

Each security is assigned a weight as of the SELECTION DAY according to FREE FLOAT MARKET CAPITALIZATION. The FREE FLOAT MARKET CAPITALIZATION is adjusted to reflect how close a stock belongs to the value or growth style. Securities that are purely assigned to the value or the Growth INDEX receive 100% of FREE FLOAT MARKET CAPITALIZATION in that index. Securities that are part of both the Value and Growth INDEX are ranked based on the value-growth score. The ranks are rescaled using an exponential distribution function between the 75th and 25th percentile of the combined FREE FLOAT MARKET CAPITALIZATION. A weight multiplier is derived from the rescaled ranks and is multiplied times the FREE FLOAT MARKET CAPITALIZATION to determine the FREE FLOAT MARKET CAPITALIZATION assigned to the Value INDEX. In case the weight multiplier is larger than 0.95, it is rounded to 1. In case the weight multiplier is lower than 0.05, it is rounded to 0. The remaining FREE FLOAT MARKET CAPITALIZATION of the security is assigned to the Growth INDEX. The sum of FREE FLOAT MARKET CAPITALIZATION of each security in the Value and Growth INDEX sums up to 100%.

## **3. REBALANCE**

### **3.1. ORDINARY REBALANCE**

In order to reflect the new selection of the INDEX COMPONENTS determined on the SELECTION DAY (in accordance with Section 2.1 and 2.2) the INDICES are adjusted on the REBALANCE DAY after CLOSE OF BUSINESS. This is carried out by implementing the shares as determined on the FIXING DAY based on the weights calculated on the SELECTION DAY.

For more information on the rebalance procedure please refer to the Equity Index Methodology, which is incorporated by reference and available on the Solactive website: <https://www.solactive.com/documents/equity-index-methodology/>.

SOLACTIVE will publish any changes made to the INDEX COMPONENTS with sufficient notice before the REBALANCE DAY on the SOLACTIVE website under the section "Announcement", which is available at <https://www.solactive.com/news/announcements/>.



## 3.2. EXTRAORDINARY REBALANCE

The INDICES are not rebalanced extraordinarily.

# 4. CALCULATION OF THE INDEX

## 4.1. INDEX FORMULA

The INDICES are calculated as a price return, net total return, and gross total return Index.

The calculation is performed according to the Equity Index Methodology, which is available on the SOLACTIVE website: <https://www.solactive.com/documents/equity-index-methodology/>. The divisor index formula stipulates that the level of the INDEX changes based on the change of the prices of its INDEX COMPONENTS taking into account their weight in the INDEX and any currency conversion in case the price of an INDEX COMPONENT is quoted in a currency other than the INDEX CURRENCY.

Any dividends or other distributions are reinvested across the entire basket of INDEX COMPONENTS by means of a divisor at the opening of the effective date (the so-called ex-date) of the payment of such dividend or other distribution.

A more detailed description of the mechanics of the index calculation formula can be found in the Equity Index Methodology under Section 1.2.

## 4.2. ACCURACY

The level of the INDICES will be rounded to 2 decimal places. Divisors will be rounded to six decimal places. TRADING PRICES and foreign exchange rates will be rounded to six decimal places.

## 4.3. ADJUSTMENTS

Under certain circumstances, an adjustment of the INDICES may be necessary between two regular REBALANCE DAYS. Such adjustment has to be made if a corporate action (as specified in Section 4.4 below) in relation of an INDEX COMPONENT occurs. Such adjustment may have to be done in relation to an INDEX COMPONENT and/or may also affect the number of INDEX COMPONENTS and/or the weighting of certain INDEX COMPONENTS and will be made in compliance with the Solactive Equity Index Methodology, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/equity-index-methodology/>.

SOLACTIVE will announce the INDEX adjustment giving a notice period of at least two TRADING DAYS (with respect to the affected INDEX COMPONENT) on the SOLACTIVE website under the Section "Announcements",



which is available at <https://www.solactive.com/news/announcements/>. The INDEX adjustments will be implemented on the effective day specified in the respective notice.

## 4.4. CORPORATE ACTIONS

As part of the INDEX maintenance SOLACTIVE will consider various events – also referred to as corporate actions – which result in an adjustment to the INDICES between two regular REBALANCE DAYS. Such events have a material impact on the price, weighting or overall integrity of INDEX COMPONENTS. Therefore, they need to be accounted for in the calculation of the INDICES. Corporate actions will be implemented from the cum-day to the ex-day of the corporate action, so that the adjustment to the INDICES coincides with the occurrence of the price effect of the respective corporate action.

Adjustments to the INDICES to account for corporate actions will be made in compliance with the Equity Index Methodology, which is available on the SOLACTIVE website: <https://www.solactive.com/documents/equity-index-methodology/>. This document contains for each corporate action a brief definition and specifies the relevant adjustment to the INDEX variables.

While SOLACTIVE aims at creating and maintaining its methodology for treatment of corporate actions as generic and transparent as possible and in line with regulatory requirements, it retains the right in accordance with the Equity Index Methodology to deviate from these standard procedures in case of any unusual or complex corporate action or if such a deviation is made to preserve the comparability and representativeness of the INDICES over time.

SOLACTIVE considers following, but not conclusive, list of corporate actions as relevant for INDEX maintenance:

- Cash Distributions (e.g. payment of a dividend)
- Stock distributions (e.g. payment of a dividend in form of additional shares)
- Stock distributions of another company (e.g. payment of a dividend in form of additional shares of another company (e.g. of a subsidiary))
- Share splits (company's present shares are divided and therefore multiplied by a given factor)
- Reverse splits (company's present shares are effectively merged)
- Capital increases (such as issuing additional shares)
- Share repurchases (a company offer its shareholders the option to sell their shares to a fixed price)
- Spin-offs (the company splits its business activities into two or more entities and distributes new equity shares in the created entities to the shareholders of the former entity)
- Mergers & Acquisitions (transaction in which the ownership of a company (or other business organizations) are transferred or consolidated with other entities, e.g. fusion of two or more separate companies into one entity)



- > Delistings (company's shares are no longer publicly traded at a stock exchange)
- > Nationalization of a company (effective control of a legal entity is taken over by a state)
- > Insolvency

## 4.5. RECALCULATION

SOLACTIVE makes the greatest possible efforts to accurately calculate and maintain its indices. However, errors in the determination process may occur from time to time for variety reasons (internal or external) and therefore, cannot be completely ruled out. SOLACTIVE endeavors to correct all errors that have been identified within a reasonable period of time. The understanding of "a reasonable period of time" as well as the general measures to be taken are generally depending on the underlying and is specified in the Solactive Correction Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/correction-policy/>.

## 4.6. MARKET DISRUPTION

In periods of market stress SOLACTIVE calculates its indices following predefined and exhaustive arrangements as described in the Solactive Disruption Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/disruption-policy/>. Such market stress can arise due to a variety of reasons, but generally results in inaccurate or delayed prices for one or more INDEX COMPONENTS. The determination of the INDICES may be limited or impaired at times of illiquid or fragmented markets and market stress.



## 5. MISCELLANEOUS

### 5.1. DISCRETION

Any discretion which may need to be exercised in relation to the determination of the INDICES (for example the determination of the INDEX UNIVERSE (if applicable), the selection of the INDEX COMPONENTS (if applicable) or any other relevant decisions in relation to the INDICES) shall be made in accordance with strict rules regarding the exercise of discretion or expert judgement.

### 5.2. METHODOLOGY REVIEW

The methodology of the INDICES is subject to regular review, at least annually. In case a need of a change of the methodology has been identified within such review (e.g. if the underlying market or economic reality has changed since the launch of the INDICES, i.e. if the present methodology is based on obsolete assumptions and factors and no longer reflects the reality as accurately, reliably and appropriately as before), such change will be made in accordance with the Solactive Methodology Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/methodology-policy/>.

Such change in the methodology will be announced on the SOLACTIVE website under the Section "Announcements", which is available at <https://www.solactive.com/news/announcements/>. The date of the last amendment of this INDICES is contained in this GUIDELINE.

### 5.3. CHANGES IN CALCULATION METHOD

The application by the INDEX ADMINISTRATOR of the method described in this document is final and binding. The INDEX ADMINISTRATOR shall apply the method described above for the composition and calculation of the INDICES. However, it cannot be excluded that the market environment, supervisory, legal and financial or tax reasons may require changes to be made to this method. The INDEX ADMINISTRATOR may also make changes to the terms and conditions of the INDICES and the method applied to calculate the INDICES that it deems to be necessary and desirable in order to prevent obvious or demonstrable error or to remedy, correct or supplement incorrect terms and conditions. The INDEX ADMINISTRATOR is not obliged to provide information on any such modifications or changes. Despite the modifications and changes, the INDEX ADMINISTRATOR will take the appropriate steps to ensure a calculation method is applied that is consistent with the method described above.



## 5.4. TERMINATION

SOLACTIVE makes the greatest possible efforts to ensure the resilience and continued integrity of its indices over time. Where necessary, SOLACTIVE follows a clearly defined and transparent procedure to adapt Index methodologies to changing underlying markets (see Section 5.2 "Methodology Review") in order to maintain continued reliability and comparability of the indices. Nevertheless, if no other options are available the orderly cessation of the INDICES may be indicated. This is usually the case when the underlying market or economic reality, which an index is set to measure or to reflect, changes substantially and in a way not foreseeable at the time of inception of the index, the index rules, and particularly the selection criteria, can no longer be applied coherently or the index is no longer used as the underlying value for financial instruments, investment funds and financial contracts.

SOLACTIVE has established and maintains clear guidelines on how to identify situations in which the cessation of an index is unavoidable, how stakeholders are to be informed and consulted and the procedures to be followed for a termination or the transition to an alternative index. Details are specified in the Solactive Termination Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/termination-policy/>.

## 5.5. OVERSIGHT

An oversight committee composed of staff from SOLACTIVE and its subsidiaries (the "**OVERSIGHT COMMITTEE**") is responsible for decisions regarding any amendments to the rules of the INDICES. Any such amendment, which may result in an amendment of the GUIDELINE, must be submitted to the OVERSIGHT COMMITTEE for prior approval and will be made in compliance with the Methodology Policy, which is available on the SOLACTIVE website: <https://www.solactive.com/documents/methodology-policy/>.



## 6. DEFINITIONS

**“AVERAGE DAILY VALUE TRADED”** means, in respect of an INDEX COMPONENT, the sum of DAILY VALUE TRADED over the specified period divided by the number of TRADING DAYS that fall in the specified period.

**“BENCHMARK REGULATION”** shall have the meaning as defined in Section “Introduction”.

**“BMR”** shall have the meaning as defined in Section “Introduction”.

**“CALCULATION DAY”** is equal to the CALCULATION DAY of the index that makes up the starting universe. A link to the guideline of the index that makes up the starting universe can be found in Section 8.1.

**“CLOSE OF BUSINESS”** is the calculation time of the closing level of the INDICES as outlined in Section 1.4.

The **“CLOSING PRICE”** in respect of an INDEX COMPONENT and a TRADING DAY is a security's final regular-hours TRADING PRICE published by the EXCHANGE and determined in accordance with the EXCHANGE regulations. If the EXCHANGE has no or has not published a CLOSING PRICE in accordance with the EXCHANGE rules for an INDEX COMPONENT, the last TRADING PRICE will be used.

**“DAILY VALUE TRADED”** means, in respect of an INDEX COMPONENT and a TRADING DAY, the product of (i) the CLOSING PRICE of such INDEX COMPONENT and (ii) the volume traded (measured as a number of shares) of such INDEX COMPONENT on the EXCHANGE during such TRADING DAY.

**“EXCHANGE”** is with respect to the INDEX and every INDEX COMPONENT, the respective exchange where the INDEX COMPONENT has its listing as determined in accordance with the rules in Section 2.

**“FIXING DAY”** is equal to the SELECTION DAY.

The **“FREE FLOAT”** is with regard to each of the securities fulfilling the INDEX COMPONENT REQUIREMENTS on a SELECTION DAY the share class-specific fraction of the total number of shares of such share class issued that are available for trading by market participants and not locked-in by long term holders, as sourced from data vendors.

The **“FREE FLOAT MARKET CAPITALIZATION”** is with regard to each of the securities fulfilling the INDEX COMPONENT REQUIREMENTS on a SELECTION DAY the share class-specific free float market capitalization. It is calculated as the multiplication of the shares outstanding in FREE FLOAT (as sourced from data vendors) with the CLOSING PRICE of the share class as of the respective SELECTION DAY.

**“GUIDELINE”** shall have the meaning as defined in Section “Introduction”.

**“INDEX”** shall have the meaning as defined in Section “Introduction”.

**“INDEX ADMINISTRATOR”** shall have the meaning as defined in Section “Introduction”.

**“INDEX COMPONENT”** is each security reflected in the INDEX.

**“INDEX COMPONENT REQUIREMENTS”** shall have the meaning as defined in Section 2.2.

**“INDEX CURRENCY”** is the currency specified in the column “Currency” in the table in Section 1.2.

**“INDEX UNIVERSE REQUIREMENTS”** shall have the meaning as defined in Section 2.1.





**"INDEX UNIVERSE"** is the sum of all financial instruments which fulfill the INDEX UNIVERSE REQUIREMENTS.

**"INDICES"** shall have the meaning as defined in Section "Introduction".

**"LIVE DATE"** shall have the meaning as defined in Section 1.3.

**"MAXIMUM WEIGHT"** shall have the meaning as defined in Section 8.2.

**"OVERSIGHT COMMITTEE"** shall have the meaning as defined in Section 5.5.

**"REBALANCE DAY"** is equal to the REBALANCE DAY of the index that makes up the starting universe. A link to the guideline of the index that makes up the starting universe can be found in Section 8.1. The REBALANCE DAY is sometimes also referred to as the Adjustment Day. This will have the same meaning. Section 8.1 also contains the months when the Solactive GFS INDICES are rebalanced as the frequency of rebalancing may differ from the starting universe.

**"SELECTION DAY"** is equal to the SELECTION DAY of the index that makes up the starting universe. A link to the guideline of the index that makes up the starting universe can be found in Section 8.1.

The **"SHARE CLASS MARKET CAPITALIZATION"** is with regard to each of the securities in the INDEX UNIVERSE on a SELECTION DAY the share class-specific market capitalization for any security in the INDEX UNIVERSE. It is calculated as the multiplication of the shares outstanding with the CLOSING PRICE of the share class as of the respective SELECTION DAY.

**"SOLACTIVE"** shall have the meaning as defined in Section "Introduction".

**"START DATE"** shall have the meaning as defined in Section 1.3.

**"STARTING UNIVERSE"** is the INDEX UNIVERSE as defined in the guideline of the underlying benchmark index specified in Section 8.1.

The **"TOTAL MARKET CAPITALIZATION"** is with regard to each of the securities in the INDEX UNIVERSE on a SELECTION DAY the sum of all SHARE CLASS MARKET CAPITALIZATIONS of a company.

**"TRADING DAY"** is with respect to an INDEX COMPONENT included in the INDEX at the REBALANCE DAY and every INDEX COMPONENT included in the INDEX at the CALCULATION DAY immediately following the REBALANCE DAY (for clarification: this provision is intended to capture the TRADING DAYS for the securities to be included in the INDEX as new INDEX COMPONENTS with close of trading on the relevant EXCHANGE on the REBALANCE DAY) a day on which the relevant EXCHANGE is open for trading (or a day that would have been such a day if a market disruption had not occurred), excluding days on which trading may be ceased prior to the scheduled EXCHANGE closing time and days on which the EXCHANGE is open for a scheduled shortened period. The INDEX ADMINISTRATOR is ultimately responsible as to whether a certain day is a TRADING DAY.

The **"TRADING PRICE"** in respect of an INDEX COMPONENT and a TRADING DAY is the most recent published price at which the INDEX COMPONENT was traded on the respective EXCHANGE.

**"WM / REFINITIV RATE"** shall have the meaning as defined in Section 1.4.



## 7. FACTOR DEFINITIONS

Each equity risk factor is defined below.

### 7.1. VALUE

The value factor is calculated as follows:

$$Value = \frac{Book\ Value\ of\ Equity_t}{Total\ Market\ Capitalization_t}$$

Where:

*Book Value of Equity<sub>t</sub>* = Book value of equity as of last fiscal year prior to SELECTION DAY t

*Total Market Capitalization<sub>t</sub>* = TOTAL MARKET CAPITALIZATION as of SELECTION DAY t

### 7.2. QUALITY

The quality factor is a combination of the low investment and profitability factors. These are calculated as follows:

$$Investment = \frac{Total\ Assets_t}{Total\ Assets_{t-1y}} - 1$$

Where:

*Total Assets<sub>t</sub>* = Assets as of last fiscal year prior to SELECTION DAY t

*Total Assets<sub>t-1y</sub>* = Assets as of second to last fiscal year prior to SELECTION DAY t

$$Profitability = \frac{Earnings_t}{Book\ Value\ of\ Equity_t}$$

Where:

*Earnings<sub>t</sub>* = Earnings as of last fiscal year prior to SELECTION DAY t

*Book Value of Equity<sub>t</sub>* = Book value of equity as of last fiscal year prior to SELECTION DAY t



### 7.3. MOMENTUM

The momentum factor is calculated as the price change from 12-months ago to 1-month ago:

$$\text{Momentum} = \frac{\text{Price}_{t-1m}}{\text{Price}_{t-12m}} - 1$$

Where:

$\text{Price}_{t-1m}$  = Local price adjusted for splits and spinoffs as of 1-month prior to SELECTION DAY t

$\text{Price}_{t-12m}$  = Local price adjusted for splits and spinoffs as of 12-month prior to SELECTION DAY t

### 7.4. LOW VOLATILITY

The volatility factor is calculated as the standard deviation of daily returns over the past 251 business days prior to the Selection Day:

$$\text{Volatility} = \sqrt{\frac{1}{n-1} \sum_{t=1}^n (r_t - \bar{r})^2}$$

Where:

$n = 251$

$r =$  Total return on day t

### 7.5. LOW SIZE

The raw size factor is calculated as follows:

$$\text{Size} = \text{Total Market Capitalization in USD}_t$$

Where:

$\text{Total Market Capitalization USD}_t =$  TOTAL MARKET CAPITALIZATION in USD as of SELECTION DAY t

### 7.6. GROWTH

The growth factor is a combination of the earnings per share growth and the sales per share growth factors. These are calculated as follows. In case earnings or sales are not available three years in the past



or in the future, the growth metric is only calculated over two years or one year respectively. If no such values are available, the growth metric is set equal to 0.

$$\text{Earnings per share Growth} = \frac{\left[ \left( \frac{EPS_t}{EPS_{t-3y}} \right)^{1/3} - 1 \right] + \left[ \left( \frac{FEPS_{t+3y}}{EPS_t} \right)^{1/3} - 1 \right]}{2}$$

Where:

$EPS_t$  = Earnings per share as of last fiscal year prior to SELECTION DAY t

$EPS_{t-3y}$  = Earnings per share as of fiscal year three years prior to SELECTION DAY t

$FEPS_{t+3y}$  = Forecasted earnings per share for fiscal year three years after SELECTION DAY t

$$\text{Sales per share Growth} = \frac{\left[ \left( \frac{SPS_t}{SPS_{t-3y}} \right)^{1/3} - 1 \right] + \left[ \left( \frac{FSPS_{t+3y}}{SPS_t} \right)^{1/3} - 1 \right]}{2}$$

Where:

$SPS_t$  = Sales per share as of last fiscal year prior to SELECTION DAY t

$SPS_{t-3y}$  = Sales per share as of fiscal year three years prior to SELECTION DAY t

$FSPS_{t+3y}$  = Forecasted sales per share for fiscal year three years after SELECTION DAY t



## 8. INDEX CHARACTERISTICS

The sections below contain the characteristics of the Solactive Global Factor Series INDICES. Section 8.1 describes which starting universe is used to construct the INDEX given the base index name. If no size segment is specified at the end of the base index name (e.g. Small Cap, Investable Universe, or All Cap) it refers to the Large & Mid Cap size segment.

Section 8.2 describes the factor that is applied, if the INDEX is sector neutral, and the weighting method that is used, given the respective factor name.

In case of top percentage indices, the respective percentage number is added to the index name (e.g. Value Top 10 Percent Index). For those indices, the Top Percentage Factor Selection in Section 2.2 is applied.

### 8.1. STARTING UNIVERSE

Base Index Name	Starting Universe Name	Starting Universe ISIN	Starting Universe Guideline	Rebalance Months
Solactive GFS Global Markets	Solactive GBS Global Markets Large & Mid Cap Index	DE000SLA7729	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS Developed Markets	Solactive GBS Developed Markets Large & Mid Cap Index	DE000SLA41B6	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS Emerging Markets	Solactive GBS Emerging Markets Large & Mid Cap Index	DE000SLA75V2	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS Developed Markets Europe	Solactive GBS Developed Markets Europe Large & Mid Cap Index	DE000SLA4FY4	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States	Solactive GBS United States Large & Mid Cap Index	DE000SLA4YB3	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS North America	Solactive GBS North America Large & Mid Cap Index	DE000SLA34H8	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS Developed Markets ex North America	Solactive GBS Developed Markets ex North America Large & Mid Cap Index	DE000SLA4EG4	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November



Solactive GFS Developed Markets ex United States	Solactive GBS Developed Markets ex United States Large & Mid Cap Index	DE000SLA4HK9	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS Japan	Solactive GBS Japan Large & Mid Cap Index	DE000SLA4MZ7	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS Developed Markets Pacific	Solactive GBS Developed Markets Pacific Large & Mid Cap Index	DE000SLA3520	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States 500	Solactive GBS United States 500 Index	DE000SLOAE65	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States 100	Solactive GBS United States 100 Index	DE000SLOAFM8	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States 400	Solactive GBS United States 400 Index	DE000SLOAE99	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States 600	Solactive GBS United States 600 Index	DE000SLOAFC9	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States 900	Solactive GBS United States 900 Index	DE000SLOGND8	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States 400 + 600	Solactive GBS United States 400 + 600 Index	DE000SLOGYV7	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States 1500	Solactive GBS United States 1500 Index	DE000SLOAFF2	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-United-States-Benchmark-Series.pdf</a>	May / November
Solactive GFS United States 1000	Solactive United States 1000 Index	DE000SLOFQG6	<a href="https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf</a>	June/December



Solactive GFS United States 2000	Solactive United States 2000 Index	DE000SLOFQK8	<a href="https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf</a>	June/December
Solactive GFS United States 3000	Solactive United States 3000 Index	DE000SLOFQN2	<a href="https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf</a>	June/December
Solactive GFS United States 200	Solactive United States 200 Index	DE000SLOGKV6	<a href="https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf</a>	June/December
Solactive GFS United States 2500	Solactive United States 2500 Index	DE000SLOGKS2	<a href="https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf</a>	June/December
Solactive GFS United States 800	Solactive United States 800 Index	DE000SLOGKY0	<a href="https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-United-States-Benchmark-Series.pdf</a>	June/December
Solactive GFS Sweden	Solactive GBS Sweden Large & Mid Cap Index	DE000SLA4UX5	<a href="https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf">https://solactive.com/downloads/Guideline-Solactive-GBS-Benchmark-Series.pdf</a>	May / November

## 8.2. WEIGHTING

Factor Name	Sector Neutral	Weighting	Maximum Weight
Value	No	Adjusted Free Float Market Capitalization	5%
Quality	No	Adjusted Free Float Market Capitalization	5%
Momentum	No	Adjusted Free Float Market Capitalization	5%
Low Volatility	No	Inverse Volatility	5%
Low Size	No	Equal Weight	5%
Value SN	Yes	Adjusted Free Float Market Capitalization	5%
Quality SN	Yes	Adjusted Free Float Market Capitalization	5%
Quality SN Top 10 Percent	Yes	Adjusted Free Float Market Capitalization	10%



Value Style	No	Value-Growth Style	-
Growth Style	No	Value-Growth Style	-
Value Style MV	No	Value-Growth Style MV	
Growth Style MV	No	Value-Growth Style MV	

## 9. HISTORY OF INDEX CHANGES

Version	Date	Description
1.0	19 May 2022	Index Guideline creation
2.0	05 September 2022	Addition of Value-Growth Style series
2.1	18 November 2022	Addition of Top Percentage Factor Selection
2.2	10 October 2023	Addition of Value-Growth Style MV series



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