

# **Bloomberg Global Semiconductor Top 20 Index Methodology**

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## Introduction

The Bloomberg Global Semiconductor Top 20 Index seeks exposure to a set of global companies that derive significant revenue from Semiconductor business.

Information related to the calculation and administration not defined in this document is available on:

[Bloomberg Global Equity Index Methodology](#)

[Bloomberg Global Equity Indices Non-Market Capitalization Corporate Action Methodology](#)

## Section 1: Index Overview

Name	Bloomberg Global Semiconductor Top 20 Index
Ticker(s)	BGSC (Price Return) BG SCT (Total Return) BGSCN (Net Return)
Currency	USD
Inception Date	30 March 2021
Launch Date	31 August 2021
Publication	Weekdays

## Section 2: Index Eligibility Process

### Parent Index

The index is derived from the Common Stocks, GDRs and ADRs from the Bloomberg World Large, Mid, Small Index (WLS), a float market-cap-weighted benchmark that covers 99% of the developed and emerging market.

## Section 3: Index Construction Process

### Index Selection Process

The index selects the largest 20 companies based on total company level revenue from semiconductor business as defined in the standard Bloomberg Industry Classification Standard (BICS) schema. Semiconductor is defined as BICS Level 3: Semiconductors. All eligible share classes of a qualifying company form part of the index.

Extract of BICS Level 3: Semiconductors Schema

Semiconductors

-Semiconductor Manufacturing

--- Back End Capital Equipment

--- Front End Capital Equipment

--- Assembly Material & Solutions

- Assembly & Testing Services
- Foundry Services
- Silicon Products
- Semiconductor Devices
- Analog ICs
- Discrete
- Intellectual Property - Semi
- Memory ICs
- Logic, Processors & App Specific

## Index Weighting

The index securities are modified market capitalization weighted. The initial weight of each issuer is determined by dividing the free float market capitalization of each issuer by the sum of the free float market capitalizations of all the issuers in the index.

Using a capping process, the initial weights are distributed such that the issuers by free float market capitalization are subject to a 15% cap. Any excess weight from capping is then redistributed proportionally to the remaining uncapped issuers.

If there are multiple securities per issuer, then the issuer weight is redistributed proportionally to all of the securities within the issuer based on the free float market capitalization of each security.

## Index Rebalance and Reconstitution

### Reconstitution

The index is reconstituted semi-annually in March and September. The Index Eligibility Process and Index Construction Process are applied using data as of any business day in the last week in January and July respectively (Selection Date). The Index reconstitutions are generally announced on the last Wednesday in February and August (Announcement Date). The Index reconstitutions then go effective on the 2<sup>nd</sup> Wednesday in March and September respectively (Effective Date).

Reconstitution		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Selection Date</b>	Last Week	X						X					
<b>Announcement Date</b>	Last Wed		X						X				
<b>Effective Date</b>	2 <sup>nd</sup> Wed			X						X			

### Rebalancing for Share Updates

The index is also rebalanced for share updates quarterly in March, June, September, and December. The share

updates are generally announced on the last Wednesday in February, May, August, and November (Announcement Date). The share updates then go effective on the 2<sup>nd</sup> Wednesday in March, June, September, and December respectively (Effective Date).

Share Update		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Announcement Date</b>	Last Wed		X			X			X			X	
<b>Effective Date</b>	2 <sup>nd</sup> Wed			X			X			X			X

Note that the selection, the announcement and the implementation of the semi-annual index reconstitutions coincide with the quarterly index share update dates.

Each Rebalance follows the exchange calendar of the following exchanges for trading days. Should a Rebalance fall on an exchange holiday of any of the exchanges below, it will be postponed to the next business day where all the exchanges are open.

--- NYSE, NASDAQ, Taiwan Stock Exchange, Korea Stock Exchange, Japan Stock Exchange, Euronext Amsterdam, Euronext Paris, Deutsche Börse Xetra

## Section 4: Index Maintenance

To ensure that the Index accurately reflects the aggregate performance of its constituent members, the Index must be rebalanced and reconstituted periodically and maintained on a daily basis for corporate actions, corporate events, any restatements, data integrity, and changes to the methodology.

### Index Calculation

Refer to the [Bloomberg Global Equity Indices Methodology](#) for index calculation details.

### Deletion Policy

Index securities are not deleted outside of the semi-annual reconstitution unless a security has a fundamental alteration, such as a merger, acquisition, delisting, or other major corporate event, that would make it ineligible for inclusion in the Index.

### Addition Policy

Index securities are not added outside of the semi-annual reconstitution.

### Replacement Policy

Index securities are not replaced outside of the semi-annual reconstitution.

### Corporate Actions

Refer to [Bloomberg Global Equity Indices Non-Market Capitalization Corporate Action Methodology](#) for the treatment of corporate actions.

Child company will be retained in the Index if it is included in Bloomberg World Large, Mid & Small Cap Index (WLS), child company ineligible for WLS will be removed from the index. Child company will be re-assessed for selection during the semi-annual reconstitution.

## **Stakeholder Engagement**

Bloomberg Index Services Limited (“BISL”) is in regular and ongoing engagement with its users through various channels, including via help desks, sales personnel, and direct communication with product personnel. To help ensure that the Index remains an accurate representation of global equities defined in the methodology, BISL endeavors to meaningfully incorporate these engagements into improvements in processes and service. Prior to any material change that might meaningfully impact users, BISL consults more broadly with stakeholders, where appropriate, before a recommendation is presented to the Product, Risk & Operations Committee (“PROC”) for approval. This concept of shared ownership enables BISL to produce the most relevant Index and helps ensure responsiveness to user needs.

## **Risks**

The following is a summary of certain risks associated with the Index but is not meant to be an exhaustive list of all risks associated with the Index. Although the Index is designed to be representative of the markets it is measuring, it may not be representative of every use case. There is also inherent, though transparent, judgment in its construction, as outlined in this methodology. The Index is designed for general applicability and not to address the individual circumstances and needs of users. BISL does not advise about the usefulness of the Index to a particular circumstance; users are therefore encouraged to seek their own counsel for such matters. This methodology is subject to change, which may impact its usefulness to users. Although efforts will be made to alert users of any change, every individual user may not be aware of them. Such changes may also significantly impact the usefulness of the Index. BISL may also decide to cease publication of this Index. BISL maintains internal policies regarding user transitions, but no guarantee is given that an adequate alternative is available generally or for a particular use case. Markets for stocks, as with all markets, can be volatile. As the Index is designed to measure this market, it could be materially impacted by market movements, thus significantly affecting the use or usefulness of the Index for some or all users. Also, certain equity markets are less liquid than others – even the most liquid markets may suffer periods of illiquidity. Illiquidity can have an impact on the quality or amount of data available to BISL for calculation and may cause the Index to produce unpredictable results.

## **Limitations of the Index**

Though the Index is designed to be representative of the markets it measures or otherwise aligns with its stated objective, it may not be representative in every case or achieve its stated objective in all instances. It is designed and calculated strictly to follow the rules of this methodology, and any Index level or other output is limited in its usefulness to such design and calculation.

Markets can be volatile, including those market interests that the Index measures or upon which the Index is dependent to achieve its stated objective. For example, illiquidity can have an impact on the quality or amount of data available to the administrator for calculation and may cause the Index to produce unpredictable or unanticipated results.

In addition, market trends and changes to market structure may render the objective of the Index unachievable or to become impractical to replicate by investors.

In particular, the Index measures global equity markets. As with all equity investing, the Index is exposed to market risk. The value of equities fluctuate with the changes in economic forecasts, interest rate policies established by central banks and perceived geo-political risk. The Index does not take into account the cost of replication and as a result a tracking portfolio's returns will underperform the Index with all else equal. As the Index is designed to measure those markets, it could be materially impacted by market movements, thus significantly impacting the use or usefulness of the fixings for some or all users.

## **Section 5: Benchmark Oversight and Governance**

### **Benchmark Governance, Audit and Review Structure**

BISL uses two primary committees to provide overall governance and effective oversight of its benchmark administration activities:

- The Product, Risk & Operations Committee ("PROC") provides direct governance and is responsible for the first line of controls over the creation, design, production and dissemination of benchmark Indices, strategy Indices and fixings administered by BISL, including the Index. The PROC is composed of Bloomberg personnel with significant experience or relevant expertise in relation to financial benchmarks. Meetings are attended by Bloomberg Legal & Compliance personnel. Nominations and removals are subject to review by the BOC, discussed below.
- The oversight function is provided by Bloomberg's Benchmark Oversight Committee ("BOC"). The BOC is independent of the PROC and is responsible for reviewing and challenging the activities carried out by the PROC. In carrying out its oversight duties, the BOC receives reports of management information both from the PROC as well as Bloomberg Legal & Compliance members engaged in second level controls.

On a quarterly basis, the PROC reports to the BOC on governance matters, including but not limited to client complaints, the launch of new benchmarks, operational incidents (including errors & restatements), major announcements and material changes concerning the benchmarks, the results of any reviews of the benchmarks (internal or external) and material stakeholder engagements.

### **Index and Data Reviews**

The Index Administrator will periodically review the Indices (both the rules of construction and data inputs) on a periodic basis, not less frequently than annually, to determine whether they continue to reasonably measure the intended underlying market interest, the economic reality, or otherwise align with their stated objective. More frequent reviews may be done in response to extreme market events and/or material changes to the applicable underlying market interests.

Criteria for data inputs include reliable delivery and active underlying markets. Whether an applicable market is active depends on whether there are sufficient numbers of transactions (or other indications of price, such as indicative quotes) in the applicable constituents (or similar underlying constituent elements) that a price (or other value, as applicable) may be supplied for such constituent(s).

Other than as set forth in this methodology, there are no minimum liquidity requirement for Index constituents and/or minimum requirements or standards for the quantity or quality of the input data. The review will be conducted by product managers of the Index in connection with the periodic rebalancing of the Index or as otherwise appropriate.

Any resulting change to the methodology deemed to be material (discussed below) will be subject to the review of the PROC under the oversight of the BOC, each of which committees shall be provided all relevant information and materials it requests relating to the change. Details regarding the PROC and BOC are described above. Material changes will be reflected and tracked in updated versions of this methodology.

Material changes related to the Index will be made available in advance to affected stakeholders whose input will be solicited. The stakeholder engagement will set forth the rationale for any proposed changes as well as the timeframe and process for responses. The Index Administrator will endeavor to provide at least two weeks for review prior to any material change going into effect. In the event of exigent market circumstances, this period may be shorter. Subject to requests for confidentiality, stakeholder feedback and the Index Administrator's responses will be made accessible upon request.

In determining whether a change to an Index is material, the following factors shall be taken into account:

- The economic and financial impact of the change;
- Whether the change affects the original purpose of the Index; and/or
- Whether the change is consistent with the overall objective of the Index and the underlying market interest it seeks to measure.

### **Internal and External Reviews**

BISL's Index administration is also subject to Bloomberg's Compliance function, which periodically reviews various aspects of its businesses to determine whether it is adhering to applicable policies and procedures, and assess whether applicable controls are functioning properly. In addition, Bloomberg may from time to time appoint an independent external auditor with appropriate experience and capability to review adherence to benchmark regulation. The frequency of such external reviews will depend on the size and complexity of the operations and the breadth and depth of Index use by stakeholders.

### **Expert Judgement**

The Index is rules-based, and its construction is designed to consistently produce values without the exercise of expert judgment or discretion. Nevertheless, BISL may use expert judgment or discretion with regards to the following:

- Index restatements
- Extraordinary circumstances during a market emergency
- Data interruptions, issues, and closures
- Significant acquisitions involving a non-Index company

When expert judgment or discretion is required, BISL undertakes to be consistent in its application, with recourse



to written procedures outlined in the methodology of the Index and internal procedures manuals. In certain circumstances exercises of expert judgment or discretion are reviewed by senior members of BISL management and Bloomberg Compliance teams, and are reported to the PROC, BISL's governance committee, which operates under the supervision of BISL's oversight function, the BOC. BISL also maintains and enforces a code of ethics to prevent conflicts of interest from inappropriately influencing index construction, production, and distribution, including the use of expert judgment or discretion.

### **Data Providers and Data Extrapolation**

The Index is rules-based, and its construction is designed to consistently produce Index levels without the exercise of discretion. The Index is produced without the interpolation or extrapolation of input data.

In addition, the Index Administrator seeks to avoid contributions of input data that may be subject to the discretion of the source of such data and instead seeks to use input data that is readily available and/or distributed for a number of non-index or benchmark creation purposes. Accordingly, the index requires no 'contributors' to produce and no codes of conduct with any such sources are required.

### **Conflicts of Interest**

The Index confers on BISL discretion in making certain determinations, calculations and corrections from time to time. In making those determinations, calculations and corrections, the Index Administrator has no obligation to take the needs of any Product Investor or any other party into consideration. BISL is committed to avoiding and, where necessary, managing actual or potential conflicts of interest in the BISL decision-making process and has established a Conflicts of Interest Policy to minimize or resolve actual or potential conflicts of interest. BISL does not create, trade or market Products.

### **Restatement Policy**

BISL strives to provide accurate calculation of its indices. However, to the extent a material error in index values is uncovered following publication and dissemination, a public notification will be made alerting of such error and the expected date of a revised publication, if warranted.

An error to an equity Index in excess of 3 basis point over one day will automatically be reviewed for restatement. If the Index in error is a Primary Index (listed below) and has occurred in the last 2 business days, a restatement will be made for all impacted indices. Errors occurring beyond the last 2 business days will be evaluated on a case-by-case basis.

Real-time indices are not considered for restatement, all real-time dissemination is considered indicative.

Primary Indices:

Bloomberg US Large Cap Equity Index (B500T)

Bloomberg Developed Markets Large & Mid Cap Index (DMTR)

Bloomberg Emerging Markets Large & Mid Cap Index (EMTR)

If the error affects a non-Primary Index the following factors will be reviewed to determine whether to restate. Not

all conditions need to be present to warrant a restatement, and certain factors may be more determinative than others depending on the circumstances of the given error.

- The relative importance of the data field impacted by the error;
- When the error occurred and when it was discovered;
- The number of indices and sub-indices affected;
- Whether the impacted indices are linked to tradable products;
- The magnitude of the error;
- The burden of restatement on client re-processing relative to the impact of the error;
- The impact of the restatement on analytical tools.

Best efforts will be made to address errors in non-Primary indices as outlined in the table below:

Event	Action (If discovered within 2 business days)
<b>Missed Corporate Action</b>	
Spin-off	Restate indices and reissue file
Regular Cash Dividend	
Special Cash Dividend	
Stock Split	
Stock Dividend, Bonus	
Mergers & Acquisition	Update made the next business day; no restatement and no reissuance of files
Delisting	
Reclassification	
Change in Listing	
IPO incorrectly added	Update made at next rebalance
<b>Rebalance</b>	
Incorrect Add	Unless the error is discovered during pro-forma period, update will be made at next rebalance
Incorrect Removal	
Share changes	

### ESG Disclosures

EXPLANATION OF HOW ESG FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY	
Item 1. Name of the benchmark administrator.	Bloomberg Index Services Limited ("BISL")
Item 2. Type of benchmark or family of benchmarks.	Equities
Item 3. Name of the benchmark or family of benchmarks.	Bloomberg Global Semiconductor Top 20 Index

<b>Item 4.</b> Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	No
<p><b>Item 5.</b> Where the response to Item 4 is positive, please list below, for each family of benchmarks, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets.</p> <p>The ESG factors shall be disclosed at an aggregated weighted average value at the level of the family of benchmarks.</p>	
(a) List of environmental factors considered:	Not applicable
(b) List of social factors considered:	Not applicable
(c) List of governance factors considered:	Not applicable
<p><b>Item 6.</b> Where the response to Item 4 is positive, please list below, for each benchmark, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816, depending on the relevant underlying asset concerned.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets.</p> <p>The ESG factors shall not be disclosed for each constituent of the benchmark, but shall be disclosed at an aggregated weighted average value of the benchmark.</p> <p>Alternatively, all of this information may be provided in the form of a hyperlink to a website of the benchmark administrator included in this explanation. The information on the website shall be easily available and accessible. Benchmark administrators shall ensure that information published on their website remains available for five years.</p>	
(a) List of environmental factors considered:	Not applicable
(b) List of social factors considered:	Not applicable
(c) List of governance factors considered:	Not applicable
Hyperlink to the information on ESG factors for each benchmark:	Not applicable
<b>Item 7.</b> Data and standards used	
(a) Data input. <i>(i) Describe whether the data are reported, modelled or sourced internally or externally.</i> <i>(ii) Where the data are reported, modelled or sourced externally, please name the third party data provider.</i>	Not applicable
(b) Verification and quality of data. <i>Describe how data are verified and how the quality of those data is ensured.</i>	Not applicable
(c) Reference standards <i>Describe the international standards used in the benchmark methodology.</i>	Not applicable
<b>Date on which information has been last updated and reason for the update:</b>	November 2022, Update

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