

March 2020

Bloomberg Equity Indices

US Equity Index Methodology

Bloomberg Professional Services

Indices

- Aggregate
- Large Cap
- 1000
- 2000
- 2500
- 3000
- Micro Cap

Bloomberg

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INTRODUCTION

The Bloomberg US Equity Index family includes all investable companies in the U.S. The Bloomberg US Aggregate Equity Index (AGGE) represents approximately 99% of the US market by capitalization. The market size indices (B500, B1000, B2000, B2500, B3000, BMIC) are free-float market-capitalization-weighted Index. The indices follow the NYSE holiday calendar and will publish early when early closing allows.

Changes in the methodology may be necessary to help ensure representativeness, accuracy or integrity. Material changes to the methodology are reviewed and approved by the Bloomberg Product, Risk and Operations Committee (PROC). Bloomberg will provide reasonable notice to its clients of any planned changes along with the rationale for any changes.

INDEX CONSTRUCTION OVERVIEW

The Indices are constructed in a three-step process: (1) eligibility universe definition, (2) liquidity screening and (3) segmentation on the selection date. The Index is rebalanced following the selection date in March and September. Additionally, Index constituents' weights will be updated in June and December.

Name	Ticker
Bloomberg US Aggregate Equity Price Return / Total Return Index	AGGE / AGGET
Bloomberg US Large Cap Price Return / Total Return Index	B500 / B500T
Bloomberg US Large Cap Value Price Return / Total Return Index	B500V / B500VT
Bloomberg US Large Cap Growth Price Return / Total Return Index	B500G / B500GT
Bloomberg US Large Cap Dividend Yield Price Return / Total Return Index	B500D / B500DT
Bloomberg US 1000 Price Return / Total Return Index	B1000 / B1000T
Bloomberg US 1000 Growth Price Return / Total Return Index	B1000G / B1000GT
Bloomberg US 1000 Value Price Return / Total Return Index	B1000V / B1000VT
Bloomberg US 2000 Price Return / Total Return Index	B2000 / B2000T
Bloomberg US 2000 Value Price Return / Total Return Index	B2000V / B2000VT
Bloomberg US 2000 Growth Price Return / Total Return Index	B2000G / B2000GT
Bloomberg US 2500 Price Return / Total Return Index	B2500 / B2500T
Bloomberg US 2500 Value Price Return / Total Return Index	B2500V / B2500VT
Bloomberg US 2500 Growth Price Return / Total Return Index	B2500G / B2500GT
Bloomberg US 3000 Price Return / Total Return Index	B3000 / B3000T
Bloomberg US 3000 Value Price Return / Total Return Index	B3000V / B3000VT
Bloomberg US 3000 Growth Price Return / Total Return Index	B3000G / B3000GT
Bloomberg US Micro Cap Price Return / Total Return Index	BMIC / BMICT

CONSTITUENT SELECTION & WEIGHTING

Aggregate Index

The following outlines the steps taken to determine Index membership:

Eligibility Screening

To be eligible for the Index, a security must meet all criteria below. The eligibility screening is applied on each selection date.

Criteria	Application	Bloomberg Formula
Country Definition	All securities with primary listing of United States with either: 1) Bloomberg Country of Risk of United States, or 2) Domiciled in Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Republic of Ireland, Isle of Man, Jersey, Luxembourg, Monaco, Netherlands, Panama, Puerto Rico, Singapore or Switzerland.	(EQY_PRIM_SECURITY_COMP_EXCH = US) AND ((CNTRY_OF_RISK = US) OR (CNTRY_OF_DOMICILE= BS, BM, VG, KY, IE, IM, JE, LU, MC, NL, PA, PR, SG, CH))
Primary Listing	All securities primarily listed in the following U.S. exchanges: NYSE, NYSE American, NYSE ARCA, IEX, NASDAQ CM, NASDAQ GS, NASDAQ GM and CBOE BZX.	EQY_PRIM_EXCH_SHRT = UN, UA, UP, VF, UR, UW, UQ, UF
Security Type	Includes: Common Stock, Real Estate Investment Trusts, and Tracking Stock. Excludes: Depositary Receipts, Preferred and Convertible Preferred Stock, Units, Rights, and Warrants.	SECURITY_TYP = Common Stock, REIT, or Tracking Stock
Organization Type	Excludes: Business Development Companies, Closed-End Investment Companies, ETFs and ETNs, LLCs, Partnerships, Royalty Trusts, Special Purpose Acquisition Companies, and Special Purpose Vehicles.	BICS_LEVEL_3_INDUSTRY_NAME <> Investment Companies
Minimum Free-Float Shares Screening	Free-Float Share must be minimum 10.0% of the total shares outstanding.	EQY_FREE_FLOAT_PCT >= 10%

Liquidity Screening

Once the Index-eligible universe is defined, liquidity screens are applied. The liquidity screening is applied on each selection date.

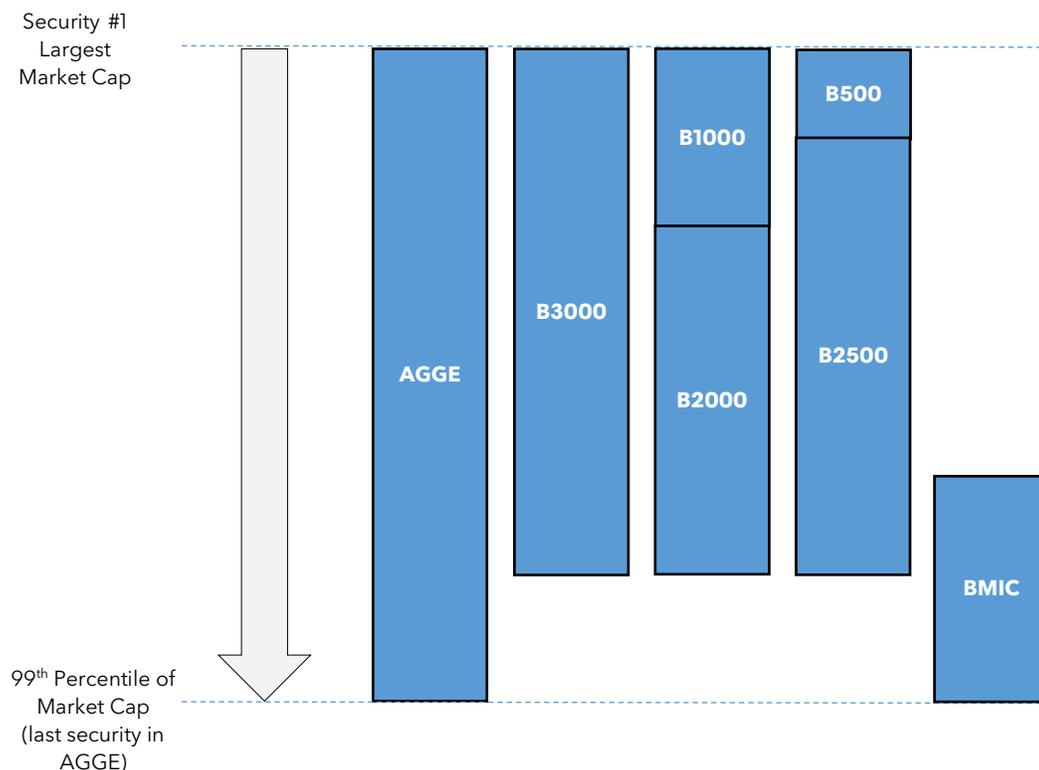
Step	Action	Criteria	Application	Formula
1	Market & Status Screening	Trading Regular Way	When-Issued securities excluded.	WHEN_ISSUED = N
		Minimum Trading Volume	Ratio of 100-day average trading volume and float shares greater than 0.001. Does not apply to index members that have been trading for less than 100-days, e.g., fast-track IPOs.	VOLUME_AVG_100D / EQY_FLOAT > 0.001
		Consecutive Trading Days Requirement	<p>If the composite price or primary exchange price is unavailable for 10 or more consecutive trading days since the security has been a part of the Eligible Universe, the security will not be included in the Index. Any trading day that the security had a TRADE_STATUS = N will be excluded from the 10 trading days.</p> <p>This rule does not apply to recent additions to the eligible universe such as Fast Track IPOs and Spun-off securities that have been trading for less than 10 days.</p>	<p>Excluding Fast Track IPOs and Spun-off securities, for all trading days since its inclusion in the eligible universe, the number of missing price days should be less than 10 days.</p> <p>Missing price day is any day that the security did not have a primary or composite price and the TRADE_STATUS = Y</p>
		Suspended Security	Generally, a Suspended security won't be considered for inclusion and a security Suspended after selection date but before rebalance date will not be added to the Index on the rebalance date. However, under certain circumstances, after further review, a Suspended securities may be included.	Exclude if TRADE_STATUS = N
		Seasoning of Securities	<p><i>Newly listed securities must have traded for a minimum of 5 days and have been ranked among the top 500 securities for 5 consecutive trading days over the course of the intra-rebalance period. Fast Track IPOs and Spun-off securities that are already in the index are exceptions to this rule, as they may have not traded for 3 months at the time of rebalance.</i></p> <p><i>Fast track new addition rule:</i> IPOs that rank by market capitalization in the top 500 companies during the intra-rebalance period will be added with a 3-day notice period as long as they have been trading for a minimum of 5 days and have been ranked among the top 500 securities for 5 consecutive trading days over the course of the intra-rebalance period.</p>	<p>Excluding Fast Track IPOs and Spun-off securities, on Selection Date (S_{date}) only include securities for which</p> <p>$S_{date} - \text{Date of first trade} \Rightarrow 3$ Months</p> <p>For any trading date t: If, $t_{date} - \text{'Date of first trade'} \Rightarrow 5$ trading days, add security to the Index on the 6th trading day if security's float market capitalization ranks among top 500 for 5 consecutive trading days.</p>

			At the subsequent semi-annual rebalance, such Fast Track new additions will continue to stay in the Index even if they are not among the top 500 securities by market capitalization as long as they meet all eligibility and liquidity criteria.	
		Price	A security new to the Aggregate Index must have a closing exchange price or an Index price on Selection Date and this price must be less than \$5,000.	Exchange Price < \$5000 or; Index Price < \$5000
2	Remove all equities that failed liquidity screening.			
3	Minimum Free-Float Shares Screening	Free-Float Shares	<p>Free-float shares are used in calculation of the Index. Bloomberg calculates this figure by subtracting shares held by insiders and those deemed to be stagnant shareholders from the shares outstanding. Stagnant holders include ESOPs, ESOTs, QUESTs, employee benefit trusts, corporations not actively managing money, venture capital companies and shares held by governments.</p> <p>Securities should have free-float market capitalization equal to or greater than 50% of the equity universe minimum size requirement (total market capitalization).</p>	<p>Minimum Float = $EQY_FLOAT * Index\ Price \geq 0.50 *$</p> <p>CUR_MKT_CAP of the smallest security in the universe as of the selection date</p>
4	Remove all equities that failed Minimum Free-Float Shares Screening.			
5	Minimum Total Market Capitalization Screening	Total Market Capitalization	Use percentile method to find the minimum market capitalization value in the Index eligible universe: cut-off percentile = total market capitalization of the security at the 99th percentile.	<ol style="list-style-type: none"> 1) Sort the Index-eligible universe by total market capitalization from highest to lowest 2) Find the 99th percentile rank. Rank is the position of a security in the universe: Rank = $0.99 * (\text{Number of securities in the Index-eligible universe} - 1) + 1$ 3) Calculate the integer and fraction part of the rank. E.g., if the rank is 3997.63, the integer part is 3997 and the fraction part is 0.63 4) Find the market cap of the securities in the position rank-integer and rank-integer + 1. In the above example, the market cap of the securities are in the 3997th and 3998th positions. 5) Calculate the 99th percentile market cap value by interpolating between the market cap of the securities in the position rank-integer and

				rank-integer + 1. In our example the 99th percentile market-cap value would be: $Market_cap_{3997} + 0.63 * (Market_cap_{3998} - Market_cap_{3997})$
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SIZE INDICES

The The Bloomberg US Aggregate Equity Index (AGGE) is sub-divided based on market capitalization rank and security count.



The following steps are taken to determine Index memberships:

US Large Cap Index (B500)

Step	Action
1	After eligibility and liquidity screening, companies are sorted in descending order of total market capitalization and the cumulative free-float market capitalization is calculated for each company.
2	The core cut-off percentile is determined as the cumulative free-float market capitalization of the last security in the Index (The 500 th security in the case of the Bloomberg US Large Cap Index).
3	Lower threshold for the total market capitalization cut-off is determined as the total market capitalization of the company corresponding to the core cut-off percentile from step 2 + 2%.
4	All eligible securities in the current Index with a total market capitalization equal to or higher than the lower threshold for the total market capitalization from step 3 remain in the Index. Current Index members that do not meet the lower threshold for the total market capitalization are excluded from the current Index. K is the count of securities in the Index excluding the securities that do not meet the lower threshold for the total market capitalization.
5	Securities in the Bloomberg US Equity Index that are not in the current Index and that have a total market capitalization higher than the lower threshold for the total market capitalization threshold are considered as potential additions to the current Index. N-K securities from the potential additions are added to the Index in descending order of total market capitalization. Where N is the size of the Index (500 in the case of the Bloomberg US Large Cap Index), and K is the count of securities in the Index excluding the securities that do not meet the lower threshold for the total market capitalization.

US 1000 Index (B1000)

Step	Action
1	After eligibility and liquidity screening, companies are sorted in descending order of total market capitalization and the cumulative free-float market capitalization is calculated for each company.
2	The core cut-off percentile is determined as the cumulative free-float market capitalization of the last security in the Index (The 1000 th security in the case of the Bloomberg 1000 Index).
3	Lower threshold for the total market capitalization cut-off is determined as the total market capitalization of the company corresponding to the core cut-off percentile from step 2 + 2%.
4	All eligible securities in the current Index with a total market capitalization equal to or higher than the lower threshold for the total market capitalization from step 3 remain in the Index. Current Index members that do not meet the lower threshold for the total market capitalization are excluded from the current Index. K is the count of securities in the Index excluding the securities that do not meet the lower threshold for the total market capitalization.
5	Securities in the Bloomberg US Equity Index that are not in the current Index and that have a total market capitalization higher than the lower threshold for the total market capitalization threshold are considered as potential additions to the current Index. N-K securities from the potential additions are added to the Index in descending order of total market capitalization. Where N is the size of the Index (1000 in the case of the Bloomberg 1000 Index), and K is the count of securities in the Index excluding the securities that do not meet the lower threshold for the total market capitalization.

US 2000 Index (B2000)

Step	Action
1	After completing the reconstitution of the Bloomberg 1000 Index and Bloomberg 3000 Index, all companies in the B3000 ex the B1000 will constitute the B2000.

US 2500 Index (B2500)

Step	Action
1	After completing the reconstitution of the Bloomberg 500 Index and Bloomberg 3000 Index, all companies in the B3000 ex the B500 will constitute the B2500.

US 3000 Index (B3000)

Step	Action
1	After eligibility and liquidity screening, companies are sorted in descending order of total market capitalization and the cumulative free-float market capitalization is calculated for each company.
2	The core cut-off percentile is determined as the cumulative free-float market capitalization of the last security in the Index (The 3000 th security in the case of the Bloomberg 3000 Index).
3	Lower threshold for the total market capitalization cut-off is determined as the total market capitalization of the company corresponding to the core cut-off percentile from step 2 + 0.05%.
4	All eligible securities in the current Index with a total market capitalization equal to or higher than the lower threshold for the total market capitalization from step 3 remain in the Index. Current Index members that do not meet the lower threshold for the total market capitalization are excluded from the current Index. K is the count of securities in the Index after the exclusions.
5	Securities in the Bloomberg US Equity Index that are not in the current Index and that have a total market capitalization higher than the lower threshold for the total market capitalization threshold are considered as potential additions to the current Index. N-K securities from the potential additions are added to the Index in descending order of total market capitalization. Where N is the size of the Index (3000 in the case of the Bloomberg 3000 Index), and K is the count of securities in the Index excluding the securities that do not meet the lower threshold for the total market capitalization.

US Micro Cap Index (BMIC)

Step	Action
1	With companies in AGGE sorted in descending order of total market capitalization, all companies ranked from 2501 up to the end are included in BMIC.

Value and Growth Indices

The Bloomberg US Equity Value and Growth Indices are screened from the Bloomberg US Large Cap, US 1000, US 2000, US 2500 and US 3000 Indices and are constructed based on a linear combination of risk factors. The four factors are: 1) Earnings Yield, 2) Valuation, 3) Dividend Yield and 4) Growth. The factors are equal-weighted when forming a composite signal where Growth is considered to be a negative indicator and thus flipped to be a negative. The Indices are market-capitalization-weighted. The current price is used to calculate the price based ratios.

The following table details the factor descriptors (all values are captured at the month's end prior to reconciliation):

Factor	Descriptor
Earnings Yield (E)	Earnings to Price (E/P)
	Cash Flow to Price (CF/P)
	Forward Earnings to Price (EPSFY1/P)
Valuations (V)	Book to Price (B/P)
	Sales to Price (S/P)
Dividend Yield (D)	Dividend to Price (D/P)
Growth (G)	Growth in Sales (SPSG)
	Growth in Net Income (EPSG)
	Long-term Growth (EPSLTG)

Let $E(n)$ be the exposure of stock n to Earnings Yield factor;
 $V(n)$ the stock exposure to Valuations factor;
 $D(n)$ the stock exposure to Dividend Yield;
 $G(n)$ the stock exposure to Growth.

The exposure of stock n to the composite Value factor is:

$$\text{Value}(n) = E(n) + V(n) + D(n) - G(n);$$

$$Z() = \text{Z-score}$$

$$\begin{aligned} \text{Where: } E(n) &= Z(E/P) + Z(CF/P) + Z(EPSFY1/P) \\ V(n) &= Z(B/P) + Z(S/P) \\ D(n) &= Z(D/P) \\ G(n) &= Z(PSG) + Z(EPSG) + Z(EPSLTG) \end{aligned}$$

Let $W(n)$ be the weight of stock n in the Base-Index. Next, rank stocks according to $\text{Value}(n)$. The top 30% of stocks get full weight in the Value Index, i.e., proportional to $W(n)$. The bottom 30% of stocks get full weight in the Growth Index. The middle 40% get split between Value and Growth Indices based on linear interpolation.

Value tilt factor calculation:

Top 30% of stocks value tilt would be 1. The bottom 30% of stocks value tilt would be 0. Middle 40% get linearly interpolated tilt from 1 (at 30th percentile) to 0 (at 70th percentile).

Growth tilt factor calculation:

$$\text{Growth tilt} = 1 - \text{Value tilt}$$

The middle 40% get split between Value and Growth Indices based on linear interpolation.

IPOs that are fast-tracked into the underlying Index are simultaneously added to the corresponding Value and Growth Indices. The position size of the IPO security in the Value and Growth Index is determined based on the composite value factor score of the security as of last business day prior to the inclusion to underlying Index. For IPOs, fiscal annual data is used to compute the composite value factor score until the quarterly and trailing 12 month data is available. The change in usage of annual to quarterly or trailing 12 month data is made on a go forward basis.

Note, the market valuation of the Value and Growth Indices is the same as the underlying index. Securities with missing descriptors receive the median value descriptor of the underlying.

See Appendix: Value and Growth Calculation Details for more information.

Dividend Yield Index

The Bloomberg US Large Cap Dividend Yield Index (B500D) represents the performance of top securities by Dividend Indicated Yield screened from the Bloomberg US Large Cap Index (B500), excluding REITs. At rebalance the index holds top 100 names with highest Dividend Indicated Yield. To control for turnover, existing members ranked 101 to 120 by Dividend Indicated Yield are also retained by the Index, potentially increasing the membership count beyond 100. Companies are weighted by Dividend Indicated Annualized Amount. No action is taken for announcement of suspended dividends.

The following table details the steps for membership screening (all values are captured at the month's end prior to reconciliation):

Criteria	Description
Bloomberg US Equity Large Cap Index (B500) ex REITs	Companies must be part of this Index universe excluding REITs.
Dividend Indicated Yield	The most recently announced gross dividend, annualized based on the Dividend Frequency (DV016, DVD_FREQ), then divided by the current market price.
Dividend Indicated Annualized Amount	Dividend Indicated Annualized Amount * Shares Outstanding

$$Index\ Security\ Weight_{i,t} = \frac{Dividend\ Indicated\ Annualized\ Amount_{i,mt}}{\sum_{i=1}^n Dividend\ Indicated\ Annualized\ Amount_{i,mt}}$$

Index Shares_{i,t} after rebalance = sum(shares before rebalance * price) of the Dividend Yield Index t * Index Security Weight after rebalance_{i,t} / Security Price_{i,t}

Dividend Tilt Factor_{i,t} = Index Shares_{i,t} / Base-Index Shares_{i,t}

Where:

Security Price_{i,t} = price from applying the waterfall method

Base-Index Shares_{i,t} = Index Shares from Base-Index

Index Security Weight_{i,t} = Security Weight on the reconstitution date

Dividend Indicated Annualized Amount_{i,mt} = Dividend Indicated Annualize Amount of the security on the month end prior to the reconstitution

Index Shares_{i,t} = Index Shares Dividend Yield Index

Index Tilt Factors are calculated on the reconstitution, float shares updates follow the Base-Index schedule for float adjustments.

CORPORATE ACTIONS

The methodologies for treatment of corporate actions are provided at the following links:

- Aggregate, Large Cap, Value, Growth: [Corporate Action Methodology Market-Capitalized Indices](#)
- Dividend Yield: [Corporate Action Methodology Non-Market-Capitalized Indices](#)

Cut-Off time for Corporate Actions which can be moved over to the following day is 16:35 ET on the business day preceding the ex-date. On Early market close days the cut-off will be 35 minutes following the close of US Exchanges.

Action	Moved to Following Day
Spin-off	No
Exchanges and Conversions (Reclassification of Shares)	No
Rights Offering	No
Special Cash Dividends	No
Stock Split	No
Stock Dividend	No
Name and Ticker Change	No
Mergers & Acquisitions	Yes
Delisting	Yes
Regular Cash Dividends	Yes
Change in Listing	Yes

INDEX CALCULATION

The price Index is calculated daily using the below formula:

$$I_t = \frac{\sum_{i=1}^n TF_{i,t} \times CAC_{i,t} \times N_{i,t} \times P_{i,t}}{D_t}$$

Where:

I_t = the Index value on calculation date t; on the Index inception date the Index level is denoted as I_0 , which is equal to 100;

D_t = the divisor on calculation date t; on the Index inception date the Index divisor is denoted as D_0

$N_{i,t}$ = free-float shares of stock i used in the Index on calculation date t

n = the total number of stocks in the Index;

$P_{i,t}$ = price of stock i on calculation date t;

$TF_{i,t}$ = Tilt Factor stock i on calculation date t; each member in the market cap based Base-Index will have a tilt factor of 1¹

$CAC_{i,t}$ = Adjustment Factor for stock i on calculation date t; each member in the market cap based Base-Index will have an adjustment factor of 1²

The total return Index, which reflects the returns of dividends over time, is calculated daily using the below formula:

¹ Tilt Factor (TF) is only applicable to Carve-out indices (e.g. Value, Growth) and Non-Market cap weighted indices (e.g. Dividend Yield, R-Factor Score Weighted, R-Factor Score Optimized). Tilt Factor "tilts" the weight of the security based on its factor score (Value score, Growth Score, R-Factor score etc.)

² CAC is only applicable to Non-Market cap weighted indices (e.g. Dividend Yield, R-Factor Score Weighted, R-Factor Score Optimized). Adjustment Factor role is to maintain the security's weight exposure through corporate actions and other index changes.

$$Index\ Dividend_t = \frac{\sum_{i=1}^n DV_{i,t} \times N_{i,t}}{D_t}$$

$$Daily\ Total\ Return_t = (I_t + Index\ Dividend_t) / I_{t-1} - 1$$

$$Total\ Return\ Index_t = Total\ Return\ Index_{t-1} * (1 + Daily\ Total\ Return_t)$$

Where:

I_t = the Index value on calculation date t; on the Index inception date the Index level is denoted as I_0 which is equal to 100;

D_t = the Index Divisor on calculation date t; on the Index inception date the divisor is denoted as D_0

$N_{i,t}$ = Free-Float Shares of stock i used in the Index on calculation date t

n = the total number of stocks in the Index;

$P_{i,t}$ = price of stock i on calculation date t;

$DV_{i,t}$ = dividend per share paid for stock i on calculation date t;

Note: In the above formula for Index Dividend_t, CAC_{i,t} and N_{i,t} are values of the Corporate Action Coefficient of stock i and the Number of Shares of stock i in the index, respectively, prior to the dividend payment. On days when there are multiple corporate actions, one of which is Dividend, the sequence number associated with the corporate action determines the values of CAC_{i,t} and N_{i,t}. For example if on the Ex-dividend day for a stock i, the company also acquires another company for stock and the order of events is Dividend followed by Acquisition, then the CAC_{i,t} and N_{i,t} used for Index Dividend_t will be the pre-acquisition values CAC_{i,t} and N_{i,t}. On the other hand, if the order of events is Acquisition followed by Dividend, then the values of CAC_{i,t} and N_{i,t} used for Index Dividend_t will be the post-acquisition values of CAC_{i,t} and N_{i,t}.

Pricing

The Index securities are priced by applying a waterfall based on availability. Cut-Off time for US Equity Prices is 16:35 ET, the final calculations will be done using the last available price at that time, or using the waterfall logic if there is no price for current day. On Early market close days the cutoff will be 35 minutes following the close of US Exchanges.

Price	Description	Bloomberg Mnemonic / Identifier
1) Official Closing	An exchange-calculated and published closing price. Depending on the methodology used by the exchange, the closing price may differ from the last traded price.	PX_OFFICIAL_CLOSE / "TICKER EQY_PRIM_SECURITY_PRIM_EXCH Equity" Ex: AAPL UW Equity
2) Composite Official Closing	The composite closing price based on the last eligible sale received from market participants prior to the closing.	PX_OFFICIAL_CLOSE / "TICKER EQY_PRIM_SECURITY_COMP_EXCH Equity" Ex: AAPL US Equity
3) Bloomberg Calculated Price	Bloomberg will calculate the end-of-day adjusted price as per the terms of the corporate action and previous business day's Index price.	

Precision

The Index is calculated using the following precision:

Field	Precision
Index Level	10 decimal places
Market Capitalization	unrounded
Index Divisor	6 decimal places (rounded up)
Prices	Exchange prices 4 decimal places for corporate action adjustments
Shares	3 decimal places
Dividends	6 decimal places
Adjustment Factors	6 decimal places

Historic Backfill

The securities in the historical backfill are priced by applying a waterfall based on availability, the result is the "Index Price":

Price	Description	Bloomberg Mnemonic
1) Official Closing	An exchange-calculated and published closing price. Depending on the methodology used by the exchange, the closing price may differ from the last traded price. Available starting January 4, 2016.	PX_OFFICIAL_CLOSE
2) Last	Last trade from the primary exchange.	PX_LAST
3) Composite Official Closing	The composite closing price based on the last eligible sale received from market participants prior to the closing. Available starting November 7, 2014.	PX_OFFICIAL_CLOSE
4) Composite Last	The composite last closing price based on the last eligible sale received from market participants prior to the closing. Not in waterfall starting January 4, 2016.	PX_LAST
5) Bloomberg Calculated Price	Bloomberg will calculate the end-of-day adjusted price as per the terms of the corporate action and previous business day's Index price.	

To account for availability of some price sources the below periodic waterfalls were used in the historic backfill:

Periodic Pricing Waterfall		
March 9, 2007 - November 6, 2014	November 7, 2014 - January 3, 2016	January 4, 2016 - Present
1) Last	1) Last	1) Official Closing
2) Composite Last	2) Composite Official Closing	2) Composite Official Closing
3) Bloomberg Calculated Price	3) Composite Last	3) Bloomberg Calculated Price
	4) Bloomberg Calculated Price	

The Index history was generated employing the Index methodology with the exception of the following qualifications:

Dates	Methodology Exception
Inception - 1/18/2019	The free-float shares used for calculation of the Index are referenced on the selection date and will not change, in the event of adjustments, until after the rebalance date. All Index calculations prior to 1/18/2019 used the potentially adjusted free-float share on settle date as of record on 1/18/2019.
Inception - 1/1/2014	Most eligibility screens are valid as of rebalance date only. Intra-quarter validation was not implemented.
Inception - 9/16/2019	Prior to 9/17/2019 IPOs Fast Tracked to the Large Cap Index were allocated 50% to the US Large Cap Value Index and 50% to the US Large Cap Growth Index.

INDEX MAINTENANCE

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

The Indices select securities in March and September; supplemental share updates are done in June and December on the 2nd Friday of the month. The rebalancing becomes effective on 1st Monday business day of the following month. Free-float shares may be adjusted up to the 3rd Friday.

Action	Day	Mar	Apr	Jun	Jul	Sep	Oct	Dec	Jan
Security Selection	2nd Friday	X				X			
Shares Update	2nd Friday			X				X	
Effective Date	1st Monday Business day		X		X		X		X

STAKEHOLDER ENGAGEMENT

BISL is in constant 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 Bloomberg US Index remains an accurate representation of US equities defined in the methodology, it endeavors to meaningfully incorporate these engagements into improvements in processes and service. Prior to any material change that might meaningfully impact users, Bloomberg consults more broadly with stakeholders, where appropriate, before a recommendation is presented to the PROC for approval. This concept of shared ownership enables BISL to produce the most relevant Indices and helps ensure responsiveness to user needs.

RISKS

The following is a summary of certain risks associated with the Bloomberg US Index but is not meant to be an exhaustive list of all risks associated with the Index. Although the Indices are designed to be representative of the markets they are measuring, they may not be representative of every use case. There is also inherent, though transparent, judgment in their 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 Bloomberg US Equity 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 Bloomberg US Equity Index. BISL may also decide to cease publication of an 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 Bloomberg US Equity Index is designed to measure this market, its Indices 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 Bloomberg US Equity Index to produce unpredictable results.

LIMITATIONS OF THE INDEX

Although each Index is designed to be representative of the market it measures or otherwise align with its stated objective, it may not be representative in every case or achieve its stated objective in all instances. The Index 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 indices measure US equity markets. As with all equity investing, the indices are exposed to market risk. The value of equities fluctuate with the changes in economic forecasts, interest rate policies established by central banks and perceived geopolitical risk. The indices do 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 indices are designed to measure those markets, they could be materially impacted by market movements, thus significantly impacting the use or usefulness of the fixings for some or all users.

In addition, certain Sub-Indices may be designed to measure smaller subsets of the indices (e.g. such as specific styles, size, and sector). Some of these Sub-Indices have very few qualifying constituents and may have none for a period of time. During such period, the Sub-Index will continue to be published at its last value, effectively reporting a 0% return, until new constituents qualify. If no constituents are expected to qualify (due to changes in market structure and other factors), the Sub-Index may be discontinued. In such an event, this discontinuation will be announced to Index users.

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.

The PROC reports quarterly 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.

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 to 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.

INDEX AND DATA REVIEWS

The Index Administrator will periodically review the Indices (both the rules of construction and data inputs) periodically, 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 Indices in connection with the periodic rebalancing of the Indices 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 committee shall be provided all relevant information and materials it requests relating to the change. Details regarding the PROC and BOC are described [below]. Material changes will be reflected and tracked in updated versions of this Methodology.

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.

Material changes related to the Indices 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.

EXPERT JUDGMENT

BISL may use expert judgment with regards to the following:

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

When expert judgment is required, BISL undertakes to be consistent in its application, with recourse to written procedures outlined in this Methodology and internal procedures manuals. In certain circumstances exercises of expert judgment are reviewed by senior members of BISL management and Bloomberg Compliance teams, and are reported to the PROC. 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.

DATA PROVIDERS AND DATA EXTRAPOLATION

The Indices are rules-based, and their construction is designed to consistently produce Index Levels without the exercise of discretion. The Indices are 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 Indices require 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.

BISL will review all indices for restatement if the discrepancy is in excess of 3 bps. Subsequent course of action is dictated by whether the Index is Primary or Non-Primary and when the discrepancy occurred (see list of Primary Indices below).

A Primary Index will be restated as long as the discrepancy occurred in the last 2 business days. A discrepancy occurring earlier than the last 2 business days will be reviewed on a case-by-case basis. A discrepancy of less than 3 bps of total return will not be subject to review. A decision to restate any Index results in the restatement of all Indices.

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

Primary Indices

- Bloomberg US Aggregate Equity Index (AGGE)
- Bloomberg US Large Cap Index (B500)

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 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

BISL will plausibly follow, but will not commit to, actions in accordance to the following guidelines.

Non-Primary Index Restatement Guidelines

Event	Action (If discovered within 2 business days)
Corporate Action	
Spin-off	Restate indices and reissue files.
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.
Rebalance	
Incorrect Add	Unless the error is discovered during pro-forma period, update will be made at next rebalance.
Incorrect Removal	
Share changes	
Pricing	
Revision	Restate indices and reissue file.

APPENDIX

Value and Growth Calculation Details

Calculation	Details
ZScore	$(\text{value} - \text{mean}) / \text{std}(\text{ddof}=0)$
Growth - Linear interpolation (applies to revenue and EPS)	<p>Steps:</p> <ul style="list-style-type: none"> Define x for months: [0],[12],[24],[36],[48] Define y for corresponding annual values (revenue and EPS). All 5 values must be present. Note: Where all 5 values are 0, they are treated as not present. Perform Linear regression of y on x. Take slope and divide it by average of (absolute values of each y) to calculate unit-less growth <p>Reference: https://scikit-learn.org/stable/modules/generated/sklearn.linear_model.LinearRegression.html</p> <p>No defaults overridden</p>
Winsorize and ZScore for Value factor	All descriptors are first filled for blank values with median of the universe, then winsorized before computation of z-score. However filling and winsorization not needed
Winsorize	<p>Returns a Winsorized version of the input array. The lowest values are set to 0.5 percentile, and the highest values are set to 99.5 percentile.</p> <p>Example 1: for B500, treat 0.5% of the names (use floor of 2, when 0.5% is fractional 2.5) as outlier. So take 3rd highest value and use it to replace 1st and 2nd value. Similarly, So take 498th lowest value and use it to replace last 2 values.</p> <p>Example 2: for B1000, treat 0.5% of the names (=5) as outlier. So take 6th highest value and use it to replace top five values. Similarly, So take 995th lowest value and use it to replace last 5 values.</p> <p>Reference: https://docs.scipy.org/doc/scipy-0.13.0/reference/generated/scipy.stats.mstats.winsorize.html</p> <p>No defaults overridden.</p>
Forward Earnings to Price	Uses previous day price which tilt uses today's price

Data Dictionary

Mnemonic	ID	Description	Definition
BICS_LEVEL_3_INDUSTRY_NAME	BI003	BICS Level 3 Industry Name	Returns the Bloomberg Industry Classification System (BICS) level 3 name.
CNTRY_OF_DOMICILE	DX113	Country of Domicile	Returns the ISO (International Organization for Standardization) code of the country where the company's senior management is located. For covered warrants the country of the issuer is returned. For uncovered warrants, the country of the underlying security is returned.
CNTRY_OF_RISK	DX129	Country of Risk	<p>Returns the International Organization for Standardization (ISO) country code of the issuer's Country of Risk. The Country of Risk for public companies can take on three different methodologies: Red Chip, Holding Company, or 10 Points. Methodologies will be applied to companies, if applicable, in the order below.</p> <p>Holding Companies Holding Companies with no direct material assets or operations should take on the CoR of the country which holds the largest portion of company operations, defined by the largest amount of subsidiaries containing matching country-level criteria. When this information cannot be sourced, the country which the company generates the highest amount of revenue from should be used.</p> <p>10-Points: Methodology consists of four factors. Management location is defined by the Country of Domicile, which is the location of key company players as Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Operating Officer (COO), and/or General Counsel.</p> <p>Breakdown of four factors with relevant API fields:</p> <p>4 points: Location of Management / Country of Domicile (DX113, CNTRY_OF_DOMICILE)</p> <p>3 points: Country of Listing / Primary Security Composite Exchange Code (DS555, EQY_PRIM_SECURITY_COMP_EXCH)</p> <p>2 points: Sales / Revenue / Country of Largest Revenue (DZ657, COUNTRY_OF_LARGEST_REVENUE)</p> <p>1 point: Reporting Currency / Currency Override (DS215, EQY_FUND_CRNCY)</p> <p>The country with the highest points is defined as the Country of Risk. Any scoring ties will go to the Country of Domicile.</p> <p>The Country of Risk methodology used for private companies will be chosen based on debt issuance. If</p>

			<p>the private company has issued debt, the CoR should take on the CoR of the debt obligor (DY372). If the private company has no issued debt, the CoR should take on the CoR value of its parent company. In the case where there is no parent company and no debt issued, the 10-Point methodology will be used.</p> <p>Note: Country of Risk does not identify political, geographic, and/or economical risk alone. The methodology was originally established in 1999 and enhanced in 2008 in which the importance of reporting currency shifted from most important factor to least. The change was implemented on ongoing bases.</p>
CUR_MKT_CAP	RR902	Current Market Cap	Total current market value of all of a company's outstanding shares stated in the pricing currency. Capitalization is a measure of corporate size.
EQY_FLOAT	DS377	Equity Float	Number of shares that are available to the public. This figure is calculated by subtracting the shares held by insiders and those deemed to be stagnant shareholders from the shares outstanding. Stagnant holders include ESOP's, ESOT's, QUEST's, employee benefit trusts, corporations' not actively managing money, venture capital companies and shares held by governments. The number of shares is stated in millions.
EQY_FREE_FLOAT_PCT	DS914	Free Float Percent	Percent of the company stock that is freely traded. Free Float Percent is calculated with the following formula: (Float / Current Shares Outstanding) * 100.
EQY_PRIM_EXCH_SHRT	DS196	Primary Exchange Code	Exchange code for the main exchange on which the security is listed.
EQY_PRIM_SECURITY_COM_P_EXCH	DS555	Primary Security Composite Exchange Code	Returns the composite exchange code for the primary security of this security's class/line. Primary security refers to the security trading in this class/line's primary market. The composite exchange code indicates the country where the primary security of this security's class/line is listed.
EQY_PRIM_SECURITY_PRIM_EXCH	DS550	Primary Security Primary Exchange Code	Returns the primary exchange code for the primary security of this security's class/line. Primary security refers to the security trading in this class/line's primary market.
PX_CLOSE_DT	PR378	Date Of Last Close	<p>Date that corresponds to the most recent close price.</p> <p>This is always the exchange date. The close price correlates with Closing Mid/Trade Price (PR376, PRIOR_CLOSE_MID). For non-US and non-exchange traded Mutual Funds with no bid or ask pricing available, this field will be updated at 12:00 a.m. EST. For Open end funds, this field will return data if Last Price (PX_LAST, PRO05) is populated.</p>

PX_LAST	PR005	Last Price	Returns the last price provided by the exchange. For securities that trade Monday through Friday, this field will be populated only if such information has been provided by the exchange in the past 30 trading days. For initial public offerings (IPO), the day before the first actual trading day may return the IPO price. For all other securities, this field will be populated only if such information was provided by the exchange in the last 30 calendar days. This applies to common stocks, receipts, warrants, and real estate investment trusts (REITs).
PX_OFFICIAL_CLOSE	PQ04 0	Official Closing Price	Official Close is an exchange-calculated and published closing price. Depending on the methodology that is used by the exchange, the closing price may differ from the last traded price.
SECURITY_TYP	DS213	Security Type	Description of the specific instrument type within its market sector.
VOLUME_AVG_100D	HS023	Average Volume 100 Day	Number of shares traded on average for the past 100 trading days. The average is calculated based on the total volume over the last 100 trading days divided by 100. The end date for past 100 days is always the prior business day.
WHEN_ISSUED	DS597	When Issued	Indicates if the security does not have a firm settlement.

Glossary of Terms

Term	Definition
Acquirer	A merger or an acquisition (M&A) occurs when one party (or multiple parties known as the Acquirer) acquires ownership in an existing company (referred to as Target).
Base-Index	The underlying benchmark Index from which another Index is derived. The Base-Index is typically a market cap weighted Index. For example the Bloomberg SASB Large Cap Index is based on the Bloomberg US Large Cap Index (B500). The derived Index is termed Sub-Index as defined below.
Child	In a Spin-off, the Parent company creates an independent company typically a subsidiary referred to as the Child.
Corporate Action Coefficient (CAC)	The calculation of adjusted shares for the Sub-Index after the corporate action event.
Fast Track	The Index methodology that allows of an initial public offering to be added to an Index in advance of the next Rebalancing Date.
Parent	In a Spin-off, the Parent company creates an independent company typically a subsidiary referred to as the Child.
Rebalance	The selection and weighting of securities in an Index based upon its methodology.
Rebalance Date	The day of selection and weighting of securities in an Index based upon its methodology.
Spin-off	A corporate action in which a Parent company creates an independent company typically a subsidiary referred to as the Child.
Sub-Index	An Index that "carved-out" from the Base-Index. Sub-Indices in each segment should add up to the Base-Index. Examples of segments are Size (Large, Mid, Small), Style (Value, Growth) and Sector (Industrial, Technology, Utilities etc.).
Target	A merger or an acquisition (M&A) occurs when one party (or multiple parties known as the Acquirer) acquires ownership in an existing company (referred to as Target).
Tilt Factor	Tilt Factor (TF) is only applicable to carve out Indices (e.g. Value, Growth). A Tilt Factor "tilts" the weight of the security based on its factor score (e.g., Value Score, Growth Score).
Tilt Inclusion Factor	A binary variable that can take a value of 0 or 1 based on $1 - TF$.

ACCESSING INDEX DATA

Bloomberg Terminal®	<p>Bloomberg indices are the benchmarks of choice for capital markets investors.</p> <ul style="list-style-type: none">• IN <GO> - The Bloomberg Index Browser displays the latest performance results and statistics for the indices as well as history. IN presents the indices that make up Bloomberg's global, multi-asset class Index families into a hierarchical view, facilitating navigation and comparisons. The "My Indices" tab allows a user to focus on a set of favorite indices.• PORT <GO> - Bloomberg's Portfolio & Risk Analytics solution includes tools to analyze the risk, return, and current structure of indices. PORT includes tools to analyze performance of a portfolio versus a benchmark as well as models for performance attribution, tracking error analysis, value-at-risk, scenario analysis, and optimization.• DES <GO> - The Index description page provides transparency into the current and projected Index universe including membership information, aggregated characteristics and returns, and historical data.
Bloomberg Indices Website bloomberg.com/bloombergindices	<p>The index website makes available limited Index information including:</p> <ul style="list-style-type: none">• Index methodology and factsheets• Current performance numbers for select indices
Index Licensing	<p>Bloomberg requires an index data license for services and products linked to the indices. Examples include:</p> <ul style="list-style-type: none">• Exchange-traded index products• OTC products• Index or constituent-level redistribution• Custom index solutions

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New York

+1-212-318-2000

London

+44-20-7330-7500

Singapore

+65-6212-1000

Hong Kong

+852-2977-6000

Tokyo

+81-3-3201-8900

Sydney

+61-2-9777-8600

indexhelp@bloomberg.net

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VERSIONS

Date	Update	Owner
9/17/2019	Methodology written	William Mast (Product Manager)
11/18/2019	Methodology updated for addition of B1000, B2000, B2500, B3000 & BMIC	William Mast (Product Manager)
1/27/2020	Methodology updated for addition of B1000V, B1000G, B2000V, B2000G, B2500V, B2500G, B3000V & B3000G	William Mast (Product Manager)
3/20/2020	Content edited for clarity	William Mast (Product Manager)