Global Convertibles Index Methodology

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The Bloomberg Global Convertibles Index is an index that blends the three regional Bloomberg Convertibles Indices, the US Convertibles Index, the EMEA Convertibles Index and the APAC Convertibles Index, into a single global benchmark for the convertibles asset class.

As with all Bloomberg indices, the Global Convertibles Index is rules-based with an objective and transparent set of criteria used for index membership determination and rebalancing. It is designed to be broad-based in its coverage of the global convertibles universe and usable for investors by offering a large variety of sub-indices that allow for detailed analysis and attribution of broad market performance. The index is calculated daily, using updated BVAL pricing and Bloomberg analytics.

In addition to this flagship Global Convertibles benchmark index, Bloomberg publishes structural breakdowns of the flagship index along multiple dimensions, including region, convertible profile, classification, bond currency, country of risk of the underlying equity listing, amount outstanding and credit quality. Sector-based sub-indices based on various classification schemes make this index family useful for traditional convertibles, credit and equity investors seeking to analyze returns of similar issuers across the capital structure.

The rules-based approach used to construct this index also facilitates both simple and sophisticated index customizations, giving investors the ability to create bespoke benchmarks tailored to their specific portfolio objectives.

This primer first gives a brief review of the regional Bloomberg Capital Convertibles indices and regional convertibles markets and then discusses the specific inclusion rules and calculations used for the Global Convertibles Index. This primer acts as a supplement to the Bloomberg Index methodology. Other than as described in this primer, the rules and other conventions and criteria set forth in the Bloomberg Index methodology apply.

Convertibles Market Overview

The Bloomberg Global Convertibles Index is intended to provide a benchmark for investors seeking to track the performance of the convertibles market as a portfolio target. Sub-indices offer investors an opportunity to track bonds more representative of their mandates (e.g., convertibles with the classic asymmetric profile, securities from investment grade issuers only, or securities that resemble straight debt or equity, etc.).

Market Participants

Issuers

Issuers of convertible securities in the US, EMEA and APAC regions have predominantly been corporates or financials. Issuers may choose to access the convertibles market for several reasons, including:

- reducing cash interest cost versus straight debt
- generating a premium on the potential sale of equity
- enhancing structuring flexibility via the premium, yield and early redemption options
- reaching the market quickly
- diversifying their investor base
- providing a global capital markets presence

Investors

Investors in convertible securities include dedicated long-only managers, arbitrage funds and cross asset class investors. The diversity of the market offers a variety of exposures to credit, equity and volatility fundamentals. Further to this, the convertible security can embed dividend or change of control options. Potential benefits from investing in convertible securities include:

- advantages of an asymmetric payoff profile

- gaining exposure to new credits
- accessing otherwise inaccessible equities
- expressing views on special situations
- arbitrage or relative value versus related credit or equity
- an alternative source of long-term volatility exposure

Bloomberg Global Convertibles Index Rules

Index Rules and Mechanics

The Bloomberg Global Convertibles Indices are objective, rules-based indices that include all major classes of convertible securities. Index composition is rebalanced on a monthly basis using the rules below, creating a consistent, objective, replicable and reliable representation of the US, EMEA, and APAC Convertibles markets. There are three categories of index rules used to calculate the index: security selection, liquidity screening and index rebalancing details.

Security Selection

The major criteria for securities to be included in the flagship Bloomberg Global Convertibles Index include:

- **Underlying equity instrument**: Convertible securities that convert into equity or underlyings that have some exposure to equities – e.g., basket of equities, indices, or a mix of equity and cash or commodity instruments are eligible. The index excludes securities converting fully into fixed amounts of cash, commodities or other bonds. Pre-IPO equity linked instruments are also excluded. Contingent convertible capital securities (sometimes referred to as "CoCos"[1]) that convert into equity based solely on capital ratio/viability triggers are not eligible. Contingent convertible capital securities that convert into equity based not solely on regulatory capital ratio or viability triggers but also on other traditional conversion criteria (for example, "CoCoCos") may be eligible provided they meet other inclusion criteria.
- **Underlying equity country of risk**: Convertible securities with a country of risk of the underlying equity in the US, EMEA, or APAC region are included.
- **Country of issue**: The index is not restricted to any specific countries of issue but is based on the country of risk.
- **Minimum amount outstanding**: The minimum amount outstanding for a security to be included in the index is set at the regional level. Once included, securities will not be dropped from the index due to a decrease in amount outstanding until and unless that amount falls below a region-specific minimum threshold. This allows for partial conversions/calls/puts and exchange rate fluctuations to be absorbed. For securities denominated in currencies other than their regional base currency, the regional base currency equivalent amount outstanding is determined using WM Company 4pm London FX spot rates. The minimum amount outstanding thresholds are detailed in Figure 1.

Figure 1
Minimum amounts outstanding

Region	Amount Outstanding Threshold for Inclusion (mn)	Amount Outstanding Threshold for exclusion (mn)
US	$50	$50
EMEA	€ 100	€ 80
APAC ex Japan	$100	$80
Japan	¥10,000	¥8,000

[1] Contingent capital securities labeled as CoCos should not be confused with existing types of convertible securities mainly in the US market that are convertible into equity at the holders' option, based on specified stock or bond price triggers. Sometimes referred to as CoCos as well, these existing index eligible securities have long been part of the convertibles market.

- **Remaining life**: On each rebalancing date, securities must have more than one month until the last possible date of conversion.[2]
- **New Issues**: Qualifying securities issued but not necessarily settled on or before the month-end rebalancing date will qualify for inclusion in the following month's index, provided the required security's reference information and pricing are readily availability.
- **Credit quality**: There is no minimum rating requirement for inclusion of securities in the index. Unrated securities are eligible; however, securities must not be in default on the rebalance date. For sub-index classification of rated securities, the lower rating of Moody's and S&P is used. In case no security ratings are available, the lower of the respective issuer ratings is used, if available.
- **Currency**: The index is not restricted to specific currencies.
- **Market of issue/placement type**: Securities that are issued for the sole purpose of sale to one or a few specific investors are excluded. A security with Reg-S and Rule 144A tranches is treated as one security in par value to prevent double-counting.
- **Pricing source**: All Index securities are priced by BVAL, Bloomberg's evaluated pricing source. EMEA and APAC regions are marked at 4:15pm London and Tokyo 5pm, respectively, following local market settlement conventions. The US region is priced using 4pm New York bid prices using T+1 settlement.
- **Exclusions**: Illiquid securities with no reliable pricing source, Payment-In-Kind, and pre-IPO convertibles.

Monthly Rebalancing

The constituents for the Global Convertibles Index are determined on the last business day of each month when the index is rebalanced. Bonds need not have settled before the rebalance date to be eligible.

Holiday calendar

Publication of the Global Convertibles Index follows a consolidated New York, London, Hong Kong and Tokyo business calendar. The index will be published on any day that is a business day in any one of those regions.

Index rules changes

Index rules will be reviewed on a periodic basis by the Bloomberg Index group to reflect the evolving convertibles market. The frequency of rule changes will be kept to a minimum. Any such changes or necessary clarifications will be announced in advance on INP<GO>.

Index analytics

In addition to index and sub-index level returns, the Global Convertibles Index family offers aggregations of various risk analytics and sensitivities ("Greeks") that may prove useful for tracking and measuring the market.

All analytics are market value weighted except for average coupon, which is par value weighted. If a particular analytic is not calculated for a security, it will be excluded from the index/sub-index aggregation. Available fields include the following:

- **Coupon**: The average coupon of bonds in the index.
- **Current Yld**: The annual percentage rate of return based on the price. The current yield is calculated as (Stated Coupon or Dividend * Par Amount) / Convertible Price * 100.
- **CY/YTM/YTP**: The greater of current yield, yield to maturity or yield to put for each issue. Note that for mandatories, only current yield is used.

[2] Remaining life is determined using the maturity date for the US Convertibles Index.

- **Credit Spread**: The percentage of the recovery claim that the CDS seller expects to recover in the event that the underlying reference entity defaults.
- **Pct premium**: The percentage premium of the bid price to parity (the value of the underlying shares).
- **ImpVol**: The input volatility of the convertible security, calculated by BVAL. Issues for which implied volatility is not meaningful (i.e., all mandatories and securities with individual implied volatilities below 5% or above 100%) are excluded from the aggregation.
- **Risk Premium**: Measured as premium over bond floor, this field represents the average percentage difference between the price of each security and its bond floor (its value as a fixed income instrument) based on the bid prices and credit spread assumptions. Mandatories are excluded from this calculation, given the lack of a fixed redemption value. Similarly, distressed securities are excluded because the bond floor might not be representative of a potential recovery value.
- **P/BF**: The ratio of parity to bond floor/investment value.
- **Avg delta**: The theoretical delta to parity (in percentage terms). It is a measure of the convertible's sensitivity to small changes in the underlying stock price.
- **Avg gamma**: The absolute change in the delta percentage, given a one-percent change in the underlying's price.
- **Avg Vega**: The theoretical vega expressed as a percentage of par. The change in the convertible bond price, given an absolute shift in volatility of one percent.
- **Rho**: The change in convertible bond price, given a parallel shift in the risk-free yield curve. Also known as the interest sensitivity, rho is calculated using an upward movement of 10 bps and a downward movement of 10 bps in yield curve and normalized to represent a shift of 100 bps, expressed as a percentage: 100 * (P(Par Curve + 10bps) - P(Par Curve - 10 bps)) / 20 bps, where P is the convertible bond price.
- **Stock div yld**: The annual dividend yield of the underlying securities making up any particular index, weighted by the convertible market value of each issue.
- **Vega wgt implied vol**: The implied volatility based on the bid prices and weighted by the total vega of each issue. The latter is calculated by multiplying the face amount outstanding by the vega expressed as a percentage of par, and it shows by how much the total market value of the issue should change if the stock's volatility changes by one point. Compared with the market value weighted average implied volatility, the vega-weighted average tends to assign lower weights to bonds that are far out-of-the-money or deep-in-the-money (i.e., those for which implied volatility is less meaningful). Mandatories are excluded from the calculation, as are those securities where implied volatility is above 100% or below 5%.

Market profile and list of available sub-indices

The flagship Bloomberg Global Convertibles Index is a broad index that includes all convertible securities that meet the published rules, thus establishing a convertibles securities benchmark that is broadly representative of the global convertibles market.

We also publish numerous sub-index families along multiple dimensions that offer structural breakdowns, return series and market profiles of the broad universe. Some of the major sub-index categories and available indices are listed below by sub-index type.

Amount outstanding

This family of sub-indices uses higher thresholds for the amount outstanding, keeping all other index rules intact. For non-US denominated bonds, exchange rates as of the previous close are used for the USD-equivalent amount outstanding.

- Minimum $100mn outstanding amount and greater.
- Minimum $250mn outstanding amount and greater.

- Minimum $500mn outstanding amount and greater.
- Minimum $1bn outstanding amount and greater.

Figure 2
Convertibles Process
This family of sub-indices classifies bonds by profile, using the following definitions:

Profile	Description
Distressed	Bid Price below 60% of par (or below 60% of accreted value for zeros and OIDs)
Busted	Percentage market premium greater than 70%*
Equity Sensitive	Percentage market premium less than 20%*
Typical	Remaining bonds, i.e., non-distressed bonds, with a percentage premium greater than 20%* and less than 70%*

*Threshold scales down linearly to zero during the two years until the next redemption date.

To classify indices by profile, distressed convertibles are first filtered out using the abovementioned criteria. The remaining three categories of profile-based indices are subsequently organized based on the premium criteria.

Credit quality

The composite index is broken down into investment grade and non-investment grade subindices. These categories are further broken down into individual credit ratings, ranging from Aaa to D across investment grade to high yield categories. Securities with a rating, or failing that, an available issuer rating, will fall into these categories. Unrated securities will fall into an NR category.

Region and country

Sub-indices based on region with further breakdown into country are available, with the country classification, based on country of risk.

Currency

Sub-indices based on currency are also available in USD, EUR, JPY, HKD, GBP, CHF, SGD, AUD, CNY, ZAR, AED, SEK and THB.

Returns Universe vs. Projected Universe for sub-indices

The Returns Universe for sub-indices is set at the beginning of each month and remains static for the month. The Projected (Forward) Universe, on the other hand, is a dynamic set of securities that changes daily and is derived by applying the index criteria on the Returns Universe of the composite index. Therefore, the number of securities comprising the Projected Universe may differ from the Returns Universe. However, the total returns for an index is calculated as the market value-weighted aggregate of the total return of individual securities comprising the Returns Universe.

Appendix: Total Return Calculations

Components of monthly total return calculations

Returns for the convertible index are weighted based on a security's market value at the beginning of the month. The basic methodology can be expressed as follows,

$$Pb = Beginning\ Price$$

$$Pe = Ending\ Price$$

$$Ab = Beginning\ Accrued\ Interest$$

$$Ae = Ending\ Accrued\ Interest$$

$$CouponPmt = coupon\ paid\ during\ the\ month$$

$$Relative\ Forward\ Rate\ Differential = \frac{(Forward\ Rate - Spot\ Rate))}{Spot\ Rate}$$

$$Exchange\ Rate = \frac{Base\ Currency}{Local\ Currency}$$

$$Forward\ Rate = Spot\ rate\ beginning \times \frac{(1 + One\ Month\ Base\ Depo)}{(1 + One\ Month\ Local\ Depo)}$$

1. Monthly Price Return:

$$PR = \frac{(Pe - Pb)}{(Pb + Ab)}$$

2. Monthly Coupon Return:

$$CR = \frac{[(Ae - Ab) + CouponPmt]}{(Pb + Ab)}$$

3. Monthly Currency Return: The return derived from converting local returns to the base currency of the index (i.e., EUR). If the underlying and reporting currencies are the same, currency return is zero. Currency returns can be hedged or unhedged.

- **Monthly Currency Return (Unhedged):**

$$UFR = \%\ change\ in\ spot \times (1 + Local\ Return)$$

$$Local\ Return = Price\ Return + Coupon\ Return$$

- **Monthly Currency Return (Hedged):**

$$HFR = Relative\ Forward\ Rate\ Differential + Residual\ Currency\ Return$$

$$Residual\ Currency\ Return = (\%\ change\ in\ spot) \times (Local\ Return)$$

4. Monthly Total Return

- **Monthly Total Return (Unhedged):**

$$UTR = PR + CR + UFR$$

- **Monthly Total Return (Hedged):**

$$HTR = PR + CR + HFR$$

The above returns for an index or sub-index are calculated as an aggregate of the security total returns weighted by their respective market values in euros.

All returns assume intra-month cash flows are not reinvested and the indices contain no cash.

All exchange rates for the purpose of returns calculations are as of the last business day of the month.

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