Bloomberg AusBond and NZBond Index Methodology

March 13, 2026

Bloomberg

Historical changes to index methodology

Date	Update
1988	UBS launches UBS Australian Bond Indices (AusBond) to serve as benchmarks for the Australian bond market
2014	Bloomberg acquires the AusBond Indices from UBS
October 2015	Minimum time to maturity of 1 month introduced
October 2015	Cessation of index publication on weekends and holidays
October 2015	Returns Universe qualification on the last business day of the prior month
October 2015	Launch of NZD credit, supranational, and local government indices and composite index comprising treasury, local government, credit, and supranational
October 2015	Publication of AusBond indices in 6 additional currencies and hedged into 6 additional currencies. Currencies include: USD, JPY, GBP, EUR, and NZD or AUD for AusBond or NZBond respectively
September 2016	Exclusion of commercial mortgage-backed securities and asset-backed securities
September 2016	Standardization in the use of maturity dates for maturity-banded subindices
September 2016	Inclusion of expected ratings and comparable issue ratings for prompt inclusion of new issues
October 2017	Inclusion of bonds based on issue date rather than settle date
October 2017	Removal of legacy economic call requirement
October 2017	Exclusion of bonds with a non-viability trigger
October 2017	Change to how public versus private issues are identified
October 2017	Clarification on the handling of public taps
October 2017	Re-inclusion of RBA initial take-up no longer held by the RBA
	Update to 'Index Rating' methodology to the middle rating of the three credit rating agencies included
October 2017	Move to T+1 settlement assumption for index calculations
December 2021	Removal of expected ratings Added AusBond Bank Bill Index +X % series
July 2024	Clarification on Bank Bill Index Added Net of tax indices
March 2026	Updates to the methodology per AusBond Enhancements and Methodology Change: System Transition

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THE BLOOMBERG AUSBOND AND NZBOND INDEX FAMILY

Overview

The Bloomberg AusBond and NZBond Indices (the "Indices") have been designed to measure the Australian and New Zealand investment-grade fixed income markets respectively. To be included in the Indices, bonds must qualify against a set of rules detailed in this document. The Indices include Australian dollar and New Zealand dollar denominated bonds with an investment grade index rating and minimum size outstanding in order to focus on liquid issues that represent the majority of the market. Further criteria such as ratings, coupon structure, and sector classifications are used to define the subcomponents of the Indices.

The AusBond and NZBond Indices at a glance

- Investment-grade fixed income securities (including certain mortgage securities)
- Minimum amount outstanding of $100 million ($50 million for inflation-linked securities)
- Local currency denominated securities (Australian dollars or NZ dollars respectively)
- AusBond Composite Index includes treasury, semi-government, credit and supranational issues. Inflation, Floating Rate Note (FRN), Bank Bill and Swap indices are also available.
- NZBond Composite Index includes treasury, local government, credit and supranational issues. Inflation, Bank Bill and Swap indices are also available.
- Market capitalisation weighted

In 1988, UBS created the suite of UBS Australian Bond Indices ("AusBond Indices") to serve as a stable, comprehensive, and objective basis for evaluating the performance of Australia's fixed income markets. Beginning with indices for bank bills, government, and semi-government securities, this index suite has expanded to cover all the major asset classes in the Australian fixed income market including credit, supranationals, and inflation-linkers. The AusBond Indices are leading benchmarks widely used in the Australian fixed income market. The New Zealand Bond Indices ("NZBond Indices") similarly provide a benchmark for evaluating performance of the New Zealand (NZ) fixed income market.

Bloomberg Index Services Limited ("BISL") acquired the Indices from UBS in 2014, and the Indices were rebranded as the Bloomberg AusBond Indices and Bloomberg NZBond Indices respectively. Since then, the Indices have been calculated, administered, and licensed by BloombergThe use of Bloomberg's data, technology, and distribution platforms provides robust means for tracking the fixed income markets of Australia and New Zealand and disseminating this information effectively.

This document (the "Index Methodology") describes the rules of construction of the Bloomberg AusBond and NZBond Indices and supplements index-specific documents to detail information for various Indices in a single publication.

This methodology document will cover:

- Index eligibility criteria and inclusion rules
- Rebalancing rules and mechanics

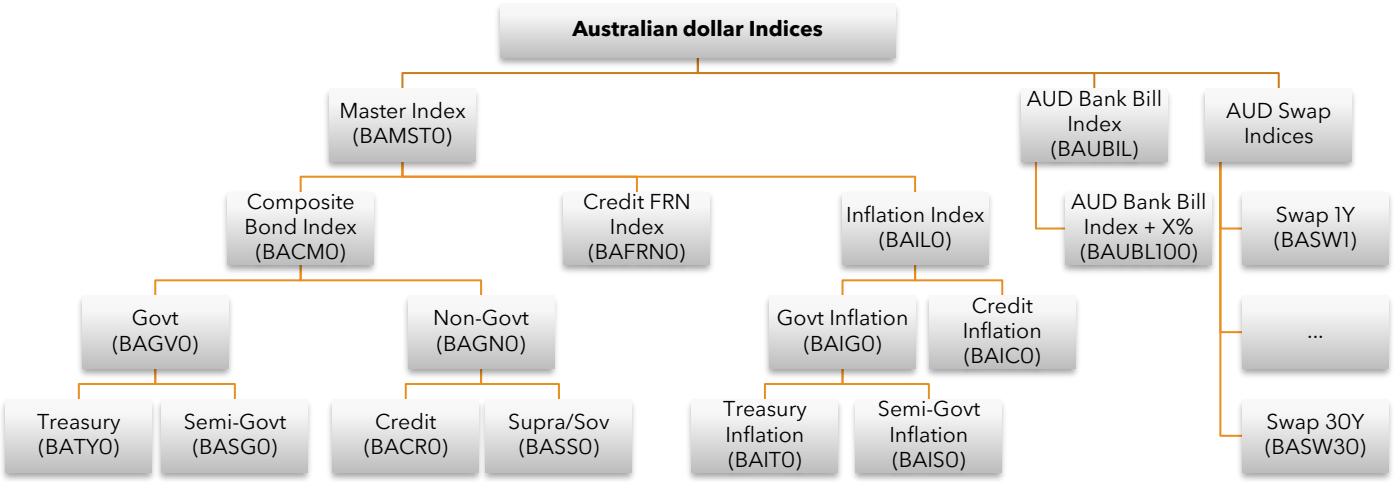
- Return calculations, analytics and pricing conventions
- Weighting and aggregation rules

A user should read an index specific methodology document in conjunction with this document in order to understand the rules that apply to a particular index. The Index Methodology is reviewed annually to maintain its relevance and integrity in providing a representative and accurate measure of the markets the Indices are designed to measure, as further described below.

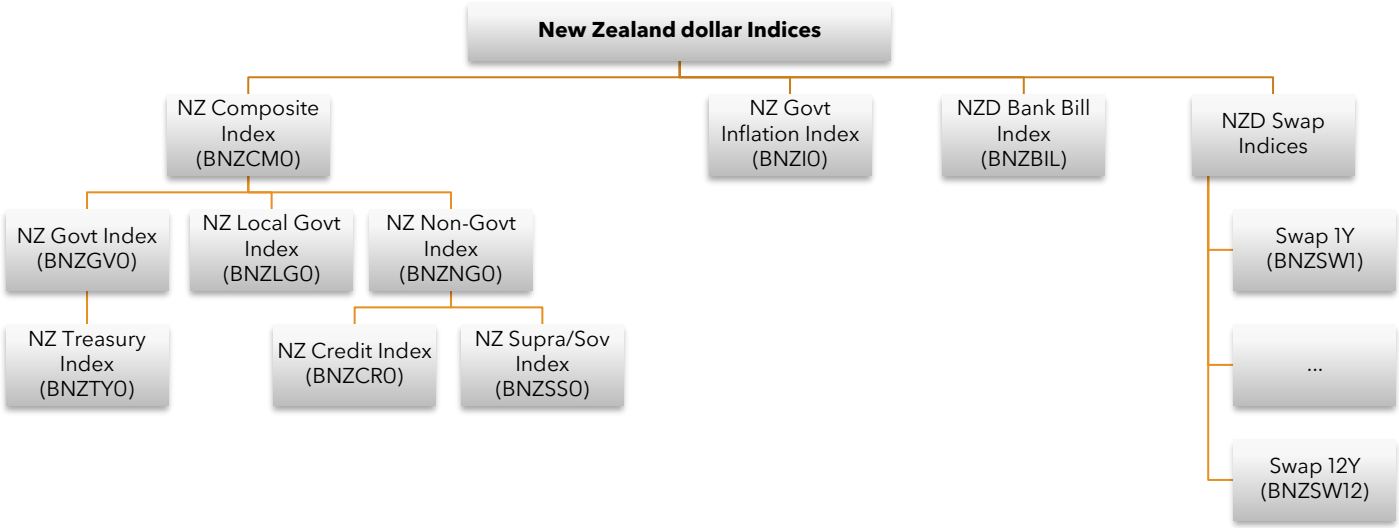
Index Family Structure

The charts below provide the structure of the Bloomberg AusBond and NZBond Indices and their primary component indices. The corresponding tickers in the Bloomberg Terminal® are shown in parentheses.

The Bloomberg AusBond Index Family



The Bloomberg NZBond Index Family



Subindices

The Indices include various subindices based on maturity bands, quality (i.e. credit ratings), issuer type and/or industry sectors. General subindices available include:

Criteria	Subindices
Maturity	*AusBond Indices* (30 buckets): 0+, 0-1, 0-3, 0-5, 0-8, 0-10, 0-15, 0-20, 1+, 1-2, 1-3, 1-5, 1-10, 1-15, 1-20, 2-5, 2-10, 3+, 3-5, 3-7, 5+, 5-7, 5-8, 5-10, 7+, 7-10, 10+, 10-20, 15+, 20+ years *NZBond Indices* (5 buckets): 0+, 0-5, 1+, 5-10, 10+ years (also 0-3, 3-7 and 7+ years for the Government Index)
Quality	AAA, AA- to AAA, AA- to AA+, A- to AA+, A- to A+, BBB- to BBB+
Issuer Type	Government, Treasury, Semi-Government, Non-Government, Credit, Supranational/Sovereign/Agency (SSA)
Industry Sector	Utilities, Financials, Industrials *(AusBond Credit Index only)*

Benchmark Index Design Principles

- **Representativeness**: The Indices use a consistent, systematic process to represent the fixed income markets by geographies, sectors, currencies, and maturities. Investors use indices to measure the performance and risk profile of a market. A balance is necessary between investability and completeness when determining index membership. For example, the Indices employ additional criteria, such as a minimum amount outstanding, to limit the Indices to the larger bonds which are generally considered more liquid. The Indices cover the investible universe of securities in the Australian and New Zealand bond markets across an array of asset classes. These include:
  - Government debt
  - Investment grade non-government debt
  - Inflation-linked securities
  - Floating rate securities

As the universe of securities changes over time, Bloomberg continually monitors new issuance to screen eligible securities for potential inclusion in the Indices.

- **Replicability**: Each of the Indices is a practical index capable of replication in a real-world portfolio.
- **Transparency**: The inputs used in index construction are publicly available, including inclusion rules, rebalancing frequency, and methodologies for the computation of index returns and statistics.
- **Data integrity**: Independent and transparent pricing is an important part of Bloomberg's index families. Rather than relying on single-dealer pricing or composite pricing across a small number of dealers, bonds in Bloomberg's indices are priced by BVAL, Bloomberg's securities valuation services. BVAL provides credible, transparent and defensible valuations across a broad spectrum of financial instruments, including fixed income, derivatives and structured notes. These prices are independent, drawing on numerous sources relevant to the market. This broad global dataset of market observations is combined with analytics and Bloomberg's terms and conditions databases to produce objective pricing with transparency into how the prices are derived.
- **Customization**: The suite of Indices is designed to accommodate specific portfolio objectives and constraints. The Indices offer a wide range of sub-maturities and market sectors allowing the construction of customized indices.

Benchmark Index Eligibility Rules

The following provides a summary of the general rules governing the Indices. Please refer to the Index-specific rules that follow in the Appendices.

Amount Outstanding

The amount outstanding or par value of a bond determines the notional balance on which an issuer pays interest and the amount of principal to be repaid by an issuer at the end of a bond's term. Par amount outstanding is seen as a measure of relative liquidity and as a proxy of the float available for investors to purchase, with larger bonds viewed as more accessible than smaller ones. For purposes of inclusion, Bloomberg Indices have a minimum amount outstanding rule that is applied on a security-level basis. This is sometimes referred to as a "minimum liquidity" rule. The minimum face value amount outstanding in order to be eligible for the Indices is as follows:

- $100 million for fixed-rate notes
- $100 million for floating-rate notes
- $50 million for inflation-linked notes

These amounts are denominated in the relevant local currency for the respective Indices.

It is possible for an existing security to become eligible for the Indices following a fungible tap that increases the amount outstanding over the minimum required. In this case, if all terms are available and meet all index criteria and the bond is priced, it will be added to the Projected Universe immediately and, on the next rebalancing date, included in the Returns Universe for the following month. Conversely, securities that fall below the minimum amount outstanding will be removed from the Projected Universe

immediately and the Returns Universe at the next rebalance date.

For the AusBond and NZBond Indices, the amount outstanding is not float-adjusted for index eligibility purposes. However, prior to December 2025, the float-adjusted amount outstanding was considered for index eligibility purposes in relation to treasury bonds in the NZBond Indices. The float adjustment deducted the amounts held by Reserve Bank of New Zealand (RBNZ) and Earthquake Commission (EQC) from the total amount outstanding.

Currency

Currency refers to a security's denomination and is independent of the country of the issuer. Securities must be denominated in Australian dollar (AUD) and New Zealand dollar (NZD) to be eligible for the Indices. A bond's currency is also important for identifying the appropriate reference curves to calculate security risk characteristics (duration, convexity, spread, etc.).

Maturity

A security must have an original term to maturity of at least one year and must have a minimum of one month to maturity in order to be eligible for the Indices. Accordingly, the Returns Universe will not contain any securities maturing within the current month (as it is constructed on the final business day of the prior month).

Maturity Bucketing

Securities qualify for maturity-band subindices based on their final maturity date. This treatment also applies for callable securities trading to call. There is an exception[1]:

- Securities with a fixed-to-float coupon structure will qualify for the fixed-rate indices until one month prior to the first coupon reset date. The first coupon reset date is treated as the maturity date when qualifying such securities into maturity-band subindices, during the fixed-rate phase.

Credit Quality

The credit rating of a security is a key classification in the fixed income market, with a clear distinction between investment grade (Baa3/BBB- or higher) and high yield (Ba1/BB+ or lower) debt.

An added layer of complexity exists in the assignment of credit quality because the rating agencies used in index classifications (Moody's, Standard & Poor's, and Fitch) may assign a different rating to the same security. BISL uses multiple ratings sources to classify securities, including bond-level ratings from the different agencies, issuer ratings, and foreign or local currency sovereign debt ratings.

Bloomberg Index Rating

Each bond is assigned an Index Rating in order to qualify it for inclusion in the AusBond and NZBond Indices. To qualify, a bond must be assigned an Index Rating of Baa3/BBB- or higher. While different types

[1] Indices with mortgage securities, prior to their deprecation in November 2025, were qualified based on their expected maturity date.

of ratings may be used in different scenarios, the Index Rating methodology includes ratings from the following three credit rating agencies (CRAs):

- S&P Global Ratings
- Moody's Ratings
- Fitch Ratings

Bloomberg uses the middle rating of Moody's, S&P and Fitch to determine a security's credit classification or Index Rating. This essentially works as a "two-out-of-three" rule because at least two of the three agencies need to rate a bond as investment grade to qualify it as investment grade. If only two agencies rate a security, the most conservative (lowest) rating is adopted as the Index Rating. If only one rates a security, that single rating is used.

Types of CRA Ratings Considered

The primary inputs into the Index Rating are the issue (bond level) ratings published by the CRAs (sometimes called "final" ratings). If a bond has been assigned a final issue rating from at least one CRA, that rating takes precedence in determining the Index Rating in accordance with the Index Rating Methodology above.

Classifications when Ratings are Unavailable

In certain cases, bond-level ratings for index eligible securities may not be available, while other assessments of credit quality, such as expected ratings or issuer-level ratings, are. The following rules are used to assign credit quality in such situations. They may be applied for short-term purposes where the absence of a rating may be temporary or in longer-term cases where a rating agency only offers issuer-level ratings, not bond-level ratings.

Use of Expected Ratings

When the credit rating assigned by a rating agency is referred to as "expected," it generally indicates that a rating has been assigned based on the agency's expectations of receiving final documentation from the issuer. Once the final documentation is received and reflects the agency's expectations, the expected rating is converted to a final rating. Expected ratings at issuance may be used to ensure timely index inclusion or to classify split-rated issuers properly. For example, if a bond has one confirmed high yield rating and one confirmed investment grade rating, a third unconfirmed i.e. "expected" rating may be used to prevent unnecessary index turnover between high yield and investment grade indices once the third rating is confirmed.

Issuer Ratings

For unrated senior securities from issuers with other index eligible bonds, BISL may apply the issuer rating that exists on any existing senior bond. For unrated subordinated securities, BISL may apply the issuer subordinated rating. In cases where there is no subordinated rating, subordinated bonds will be excluded from the indices. In both cases, the middle issuer rating will be displayed at the security level as the "index rating", while the ratings for each agency will be displayed as NR. Issuer ratings are not used in cases where there are confirmed bond-level

ratings from at least one agency.

Sovereign ratings are assigned by the CRAs as a measure of the capacity and commitment of central governments to repay their outstanding debt obligations. For debt issued by a sovereign government, the issuer rating (rather than the issue rating) from the CRAs is used in determining the Index Rating.

- Domestic sovereign debt: Uses the long-term local currency debt rating assigned by the three CRAs
- Foreign sovereign debt: Uses the long-term foreign currency debt rating assigned by the three CRAs

Timing of Ratings Availability and Ratings Updates

For a CRA rating to be considered in the Index Rating, the ratings must be made available on the Terminal. For a bond to be included in the Returns Universe for a given month, the rating must be available prior to close of business on the rebalance date (i.e., last business day of the prior month).

If a CRA changes the rating assigned to a bond (either an upgrade or a downgrade) which changes the Index Rating, that change will be reflected in the bond characteristics within the index. An Index Rating change may cause a bond to move between the rating bands of an index. If a change in the CRA rating causes the Index Rating to change from being investment grade to high yield (or high yield to investment grade), that will be reflected in the Projected Universe of the relevant index immediately and the Returns Universe after the next rebalancing date.

Defaulted Securities

For index purposes, a security is considered to be in default if any of the following three occur:

1) The company files for bankruptcy
2) The bond is in "Technical Default" (e.g. has missed an interest or principal payment or is in covenant violation) which has neither been cured within the applicable grace period nor subject to the terms of an applicable forbearance/standstill agreement
3) The bond is subject to cross-default provisions that stipulate when an event on another bond or loan could trigger a default on the subject security.

In the event of a default, the accrued interest falls to zero, reversing any accrued interest since the last coupon payment date and causing a negative interest return. The bond continues to be priced in the returns universe until month-end, at which time it will exit the index. When securities default, index users will see all analytics, such as duration and spread, set to zero.

Sector Classifications

Composite Index Main Components

The AusBond Composite Index and NZBond Composite Index include four key sectors: Treasury, Semi Government (AusBond) / Local Government (NZBond), Supranational/Sovereign/Agency (SSA), and Credit. The issuer classification would leverage the Bloomberg Fixed Income Classification System

(BCLASS) and Bloomberg Industry Classification System (BICS).

Index	AusBond Composite Index	NZBond Composite Index
Treasury	BCLASS = Treasury	
Semi Government (*AusBond*) **Local Government (*NZBond*)**	Securities issued by Australian state and territory governments authorities, listed as follows: • Australian Capital Territory • New South Wales Treasury Corporation • Northern Territory Treasury Corporation • Queensland Treasury Corporation • South Australian Government Financing Authority • Tasmanian Public Finance Corporation • Treasury Corporation of Victoria • Western Australia Treasury Corporation	Securities issued by New Zealand local government authorities and entities wholly-owned and controlled by such local government authorities: BCLASS = Local Authority AND Country of Risk = Local* AND BICS = "Government")
Supranational, Sovereign and Agency (SSA)	BCLASS = Supranational, Sovereigns, Agency (Government Guaranteed) OR (BCLASS = Local Authority AND Country of Risk = Foreign* AND BICS = "Government")	
Credit	All other securities that meet index eligibility criteria.	

Structured Instruments

The Indices allow the following structured securities that meet all other index eligibility requirements:

- Covered bonds

Structured securities such as credit-linked notes, total return structures, collateralized debt obligations (CDOs), collateralized bond obligations (CBOs), collateralized fund obligations (CFOs) and synthetic securitizations are ineligible for the Indices. Hybrid capital securities (i.e., containing characteristics of both debt and equity) are also ineligible for the Indices. Commercial MBS and asset-backed securities (ABS) have been ineligible for inclusion in the Index since November 2016, and fixed-rate residential mortgage-backed securities (MBS) (bullet or soft-bullet) have been ineligible since December 2025.

Market of Issue Criteria

Private Placements

A security must be a publicly available issue to qualify for the Indices; private placement issues are excluded from the Indices. In order to qualify as public, a security must not be subject to Australian withholding tax by satisfying the public offer test requirements of section 128F of the Income Tax Assessment Act 1936. This requirement does not apply to NZBond Indices. The Indices employ Bloomberg Terminal fields to identify private placements and determine the status of the Australian withholding tax

exemption, which are strictly defined and make use of the Terminal's access to objective data[2].

A security is tagged as a private placement security based on its initial issuance. As such, a security that has been excluded from the Indices at issuance may not be considered at a later time following public taps to the issue. Any security that is confirmed to be public in nature at the time of issuance will be considered for inclusion in the Indices, as long as the total size of the issue, public or private, reaches the minimum size required for the relevant index, that issue will be added to the Projected Universe immediately and, at the next rebalancing date, to the Returns Universe for the following month. The entire issue size of the associated instrument will be included in the relevant index.[3]

Governing Law

A security must be governed by Australian law in order to qualify for the AusBond Indices. Having part of the security (e.g. collateral) governed by non-Australian law is also permitted. There is no governing law requirement for NZBond Indices.

Coupon Types

The AusBond Indices allow fixed-rate, floating-rate, fixed-to-float rate, and inflation-linked coupon securities. The NZBond Indices allow fixed-rate, fixed-to-float rate during fixed coupon period, and inflation-linked coupon securities. Zero coupon securities and strips are excluded from both AusBond and NZBond Indices.

Optionality (Callable and Puttable Bonds)

Callable and puttable securities must meet the same inclusion rules as securities without embedded optionality in order to qualify for the Indices. A called or put security will exit the index at its call or put price with any final principal or coupon cash flows. Cash flows from called securities are effectively reinvested into the index immediately on the payment date.

For clarity, some features that are similar to optionality but are not considered as such by the Indices are:

- Early redemption features on securities (whereby the issuer may redeem the security at any time close to final maturity date)
- Make-whole calls
- Contingent calls (e.g., tax changes calls)

[2] Available in {FLDS<GO>} and {DES<GO>} screens of individual bonds, the Bloomberg Terminal carries two fields identifying private placements:

- **PRVT_PLACE (DS512)**: This is a Y/N field which returns 'Y' when the issuer's offering documentation (e.g., prospectus or offering memorandum) includes statements to the effect that the security may be offered and/or sold only through private placements or other non-public offerings, or when other information from the issuer or another involved party reliably indicates that such restrictions exist.
- **WITHHOLDING_TAX_EXEMPT (DX112)**: This Y/N field indicates if a security is exempt from withholding tax. Per section 128F of the 'Income Tax Assessment Act 1936,' one can infer whether an instrument was offered to 10 or more investors by looking at whether income from said instrument is exempt from withholding tax.

[3] Prior to December 2025, a bond is tagged as a private placement bond based on its initial issuance, unless it has subsequent public taps greater than 100MM, in which case it would be tagged as public and eligible for inclusion into the Index.

Excluded Securities

The following types of securities are ineligible for the Indices:

- Convertibles
- Zero coupon
- Private placements
- Perpetuals
- Credit-linked notes
- Total return structures
- Collateralized debt, bond and fund obligations (CDOs, CBOs, CFOs)
- Synthetic securitizations
- Hybrid capital securities with deferral payment options
- Defaulted securities
- Amortizing structures (except Inflation Linked Annuities)

Benchmark Index Rebalancing Rules

Bloomberg AusBond and NZBond indices are rebalanced monthly, offering intra-month stability in index composition. Securities that meet all published index inclusion rules and eligibility criteria at the beginning of a given month will remain in the index for purposes of return calculations until the following month-end, when index composition is next reset. The Indices and their data, including index levels, returns, and analytics, are published daily on two different bases:

- Returns Universe
- Projected Universe

The provision of two different bases provides enhanced insight into the fixed income market that the Indices aim to represent.

- **Returns Universe**: The Returns Universe is designed to mimic a strict buy-and-hold portfolio with monthly rebalancing. The membership of the Returns Universe is constructed by applying the index eligibility rules at each monthly rebalancing date (i.e., the last business day of the prior month) and holding the resulting list of securities constant over the current month. Starting weights for the constituents are based on market values on the rebalancing date. All published return measures are calculated against the Returns Universe. In order for a new deal to be included in the Returns Universe, the deal must have terms and conditions available on the Terminal which meet all index criteria and it must be priced by BVAL prior to the monthly rebalancing date.

- **Projected Universe**: The Projected Universe represents the changing risk profile of the market the index is designed to represent. The membership of the Projected Universe is defined by applying the security eligibility rules daily and setting constituent weights based on daily closing prices. The Projected Universe captures new issuance and removes securities that are no longer eligible as soon as information is made publicly available. Statistical measures are often cited against the Projected

Universe as it describes the changing nature of the market (e.g., the Projected Universe can be used to analyze how a large intra-month new issue – which will be added to the Returns Universe at month end – is expected to change the duration of the index). The Projected Universe is a projection of the next month's index as it accumulates all changes to the market over the course of the month; then, on the last business day of the month, the Projected Universe becomes the Returns Universe for the following month.

Benchmark Publication, Index Pricing and Analytics

The Bloomberg AusBond and NZBond Indices are published on all weekdays except New Year's Day holiday[4]. On holidays, the bonds will carry forward the last trading day's data until markets reopen. The index levels, or since inception returns, are calculated on a total return basis primarily in AUD or NZD depending on the index. The Indices are also available in other currencies. For Indices denominated in different base currencies other than the domestic currency of the Index, prices are rolled forward, but the total returns of the Indices still include currency returns from updated FX rates on that holiday. In addition to index total returns, Bloomberg also calculates index characteristics such as yields and durations.

Benchmark Index Pricing

Bloomberg aims to mark each bond with an appropriate and observable level when available. In addition to pricing sources, other pricing considerations (quote side, settlement and timing) are important as they often provide the basis for relating an index price with levels observed in the market.

Sources for Index Prices

All securities in the Indices are priced by the Bloomberg Valuated Service, BVAL. BVAL aims to provide credible, transparent and defensible valuations across a broad spectrum of financial instruments, including fixed income, derivatives and structured notes. These prices are independent, drawing on numerous sources relevant to the market. This broad global dataset of market observations is combined with analytics to produce objective pricing with transparency into how the prices are derived. As a result of this approach, the question of prioritization of different types of input data by BISL does not arise.

All quotes used in the Indices are T+2 mid prices from the BVAL Sydney 17:00 snapshot with the exception of new issues. Prices for new issues are calculated to the first settlement date.

Pricing Verification

The Index Operations team validates the quality of index pricing daily, including review of possible outliers identified during the verification process. Index users may also challenge price levels, which are then reviewed by the Index Operations team. If a discrepancy arises, the team will consult the relevant pricing provider to investigate further. For any questions, please contact your regional index team or email indexpricing@bloomberg.net.

Quote Type

Securities in the Indices are quoted according to the market conventions. Currently with the exception of a few Australian inflation linked bonds, all securities in the Indices are quoted in clean prices (i.e., excluding accrued interest) in percentage of par. A small number of Australian inflation linked bonds are quoted in dirty prices (i.e., including accrued interest) in percentage of par.

Timing and Frequency

Securities in the Indices are priced at 17:00 Sydney time. Index bonds are priced daily, except on market

[4] Prior to the AusBond System Transition in March 2026, the Indices are published on all business days (Monday-Friday) excluding regional holidays, adhering to the New South Wales and New Zealand holiday calendars respectively.

holidays.

Settlement Assumptions

For index purposes, securities are assumed to settle on the next calendar day. Except for AusBond and NZBond Bank Bill indices, at month-end, settlement is assumed to be the first calendar day of the following month, even if the last business day is not the last day of the month. This procedure allows for one full month of accrued interest to be calculated.

Benchmark Index Analytics

Index users rely on a range of fixed income analytics calculated by Bloomberg to quantify various risk exposures (duration, convexity, etc.) and the corresponding sensitivity to those risks for a given security, sector or asset class. Comparing the analytics of a portfolio relative to its benchmark allows investors to measure the magnitude of particular risks embedded within their portfolios and how they relate to the broad market. The Indices calculate all analytics on a next calendar day (T+1) basis. Analytics are calculated at the bond level using Bloomberg calculators and then aggregated to produce an index-level analytic value. Details on individual analytics and their calculations can be found in the Appendices and Glossary.

Unavailable Data and Unexpected Events

Where unforeseen events result in the unexpected closure of Australian or New Zealand fixed income markets, or where pricing data cannot reasonably be obtained or verified for one or more securities, affected securities will be priced using information from the last available index publication date.
If Australian or New Zealand market data is not available, the prior day's values will be used.

Exchanges

A security that experiences an exchange in the current month will be removed from the Projected Universe immediately after the exchange announcement and from the Returns Universe on its exchange effective date. If the new replacement security has identical terms with the one that has been exchanged, it will be added to the Returns Universe and Projected Universe on the exchange effective date.

Data Providers and Data Extrapolation

Other Data Inputs

The AusBond Bank Bill Index uses the Reserve Bank of Australia (RBA) cash rate and the Australian Stock Exchange (ASX) Bank Bill Swap (BBSW) rates[5]. The NZBond Bank Bill Index uses the Reserve Bank of NZ (RBNZ) official cash rate (OCR) and the NZ Financial Markets Association (NZFMA) Bank Bill Benchmark (BKBM) rates[6]. Any cash rate changes announced by the RBA and RBNZ are implemented in the Indices on the next index publication date following the announcement date.

[5] The ASX has been administrator of the Australian BBSW since 1 January 2017. BBSW was previously administered by the Australian Financial Markets Association (AFMA). More information on BBSW is available at ASX, *Benchmark administration*, available: http://www.asx.com.au/services/benchmark.htm.
[6] More information on BKBM is available at NZFMA, *NZFMA Reference Rate Pages – Rules*, available: https://nzfma.org/Site/_OLD/Market_Data/NZ_Reference_rate_pages_-_Rules.aspx.

Benchmark Index Returns Calculations and Weighting Rules

Benchmark index returns are calculated using security-level returns and weights that are reset daily.The standard measure of bond return is total return, which includes the local return from interest accrual/payments (coupon return), security price movements (price return) and scheduled and unscheduled payments of principal (paydown return). BISL also calculates excess return that investors use as a proxy for the duration-neutral return of a fixed income spread sector.

The standard methodology used to weigh security-level returns within a benchmark is market value weighting: an objective representation of the investment choice set for a particular index. Under this approach, the weight of each index eligible security is calculated at the beginning of each daily reporting period based on its price, accrued interest and par amount outstanding. Other weighting schemes are also available such as capped/constrained weights.

This section will offer an overview of security-level return and weight calculations used to arrive at benchmark-level returns.

Bond Total Return Calculations

Published returns for Bloomberg Ausbond and NZBond Indices measure the total return of a fixed income instrument, which includes capital appreciation and security price movements, interest payments and accruals, and principal repayments (scheduled or unscheduled) in the case of amortizing or sinkable bonds. Calculating these returns requires daily bond prices, accrued interest calculations, and a record of the timing and amount of coupon and principal payments. For indices in which the base reporting currency is different than the currency of principal and coupon payments, an additional currency return (with an option to reflect hedging or not) will also be included in the total return calculation. Currency return requires several additional inputs including daily spot and forward FX rates and bond-level yields.[7]

The components of a security's total return are discussed below.

Daily Price Return

The price return for a given period is derived from changes in security price during the reporting period (due to factors such as interest rate changes or spread movements) and is expressed as a percentage of the security's beginning of period market value. A clean price, that excludes accrued interest, is used in the price return calculation,[8] even for markets that are quoted on a dirty basis since changes in accrued interest are tracked separately as part of the coupon return.

$$Price\ Return = \frac{(Price_{Ending} - Price_{Beginning})}{(Price_{Beginning} + Accrued\ Interest_{Beginning})}$$

[8] For inflation-linked securities, published price return will use inflated prices (Real Price * Index Ratio) and inflated accrued interest for price and coupon return calculations and will therefore include changes in inflation in the return calculations. Also, inflation-linked annuities are calculated based on dirty prices.

Daily Coupon Return

The coupon return for a given period measures the interest income earned by a security, reflecting changes in accrued interest[9] plus any interest paid during that period, divided by the dirty price of the security at the beginning of the period. Coupon return is calculated in the same manner for both fixed- and floating-rate securities.[10]

$$Coupon\ Return = \frac{\left(Accrued\ Interest_{Ending} - Accrued\ Interest_{Beginning}\right) + Interest\ Payment}{\left(Price_{Beginning} + Accrued\ Interest_{Beginning}\right)}$$

In the case of a default, the ending accrued interest value is set to zero, reversing out any accrual posted since the last coupon payment, and the security shows a negative coupon return. BISL continues to price the security in the Returns Universe, and it continues to contribute to price return until month-end, at which time it is removed from the index.

Ex-Dividend Coupon Return

For securities that trade on an ex-dividend basis, coupon accrual resets prior to the actual payment date based on a predefined period of time, known as the "ex-dividend period." The length of the ex-dividend period can vary from market to market. The coupon return for bonds that trade ex-dividend is calculated in a manner similar to other securities. However, in place of an actual interest payment made in the return calculation, a coupon owed is used during the ex-dividend period prior to actual coupon payment date and is discounted back to the current index settlement date. [11]

Daily Paydown Return

Paydown return is only calculated for inflation-linked annuities and is not calculated for other bond types. It measures the portion of total return that comes from receiving principal back as the bond's outstanding principal amortizes (i.e., declines over time). It is calculated as the principal payment received during the period divided by the dirty price of the security at the beginning of the period.

$$Paydown\ Return = \frac{\left(Principal\ Payment\right)}{\left(Price_{Beginning} + Accrued\ Interest_{Beginning}\right)}$$

Where:

Principal Payment = actual principal payment expressed as a percentage of par divided by the par amount outstanding at the beginning of the period.

Daily Currency Return

A bond's currency return is derived from converting local returns to a base reporting currency different from the underlying currency of the security. If the underlying and reporting currencies are the same, currency return is zero. BISL calculates hedged and unhedged currency returns for each reporting currency available for a given index, using FX rates from Bloomberg BFIX, a benchmark administered by BISL.

Daily Currency Return (Unhedged)

The unhedged currency return is calculated as the sum of the currency appreciation between the reporting currency and the currency denomination of a bond and the currency appreciation of the local return.

$$Currency\ Return = (1 + Local\ Return) \times (FX\ Appreciation)$$

Where:

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

$$FX\ Appreciation = \frac{(FX_{Ending} - FX_{Beginning})}{(FX_{Beginning})}$$

The Base Currency Total Return is the sum of local return and currency return:

$$Base\ Currency\ Total\ Return\ (Unhedged) = Local\ Return + Currency\ Return$$

Daily Currency Return (Hedged)

Hedged currency returns are designed to limit the FX exposure within an index. Since the indices rebalance monthly, the hedge is put on for one month, and the hedged currency return is calculated as:

$$Currency\ Return\ Hedged = Expected\ Currency\ Return + Residual\ Currency\ Return$$

The components for each can be found in Figure 15.

Figure 15
Components of Hedged Return

Hedge	Return Component	Calculation
Expected	Currency Return	Relative Forward Rate Differential × (1 + Expected Local Return)
	Relative Forward Rate Differential	$\frac{(Forward\ Rate - Spot\ Rate)}{Spot\ Rate}$
	Expected Local Return	$\left(1 + \frac{Yield_{Beginning\ of\ Month}}{2}\right)^{\frac{1}{6}} - 1$
Residual	Currency Return	$(\%\ Change\ in\ Spot) \times (Local\ Return - Expected\ Return)$
	Local Return	Price Return + Coupon Return + Paydown Return
	Exchange Rate	$\frac{Base\ Currency}{Local\ Currency}$

[9] On the last business day of each month, index settlement date is assumed to be the first calendar day of the following month, even if the last business day is not the last calendar day of the month, to allow for a full month of accrued interest to be calculated.
13. Prior to the AusBond System Transition in March 2026, the ex-dividend period is ignored and bonds continue to accrue interest until the payment date, at which point the full coupon is paid. Post March 2026, the ex-dividend period is observed by reflecting the full coupon on the ex-dividend date while accrued interest goes negative between the ex-dividend and the payment date.

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

Currency hedging applies to published returns only.

Analytics such as duration do not have a hedged or an unhedged version in either single- or multi-currency indices.

Bond Excess Return Calculations

Excess return is a metric used to quantify the duration-neutral return of a security by comparing the total return of a spread security to that of a risk-free treasury asset, represented by a treasury bond. Excess return is calculated for Bloomberg AusBond and NZBond Indices using a duration-bucket approach. This is discussed in more detail in "Appendix 3: Detailed Discussion of Excess Return Computations."

Index Weight Calculations

In addition to security-level returns, the second input required for index-level calculations is security-level weights, which are reset at the end of each day.

Market Value Weights

Central to the construction and calculation of many Bloomberg AusBond and NZBond indices is a market value weighting design. Weighting a basket of securities by outstanding debt reflects liquidity and market capacity for the asset class, resulting in indices that are intended to be replicable by investors managing against them. Void of any optimization or investment strategy, market value weighted indices simply measure the returns and risk characteristics of outstanding debt that meets index eligibility criteria.

The following section details the specific conventions used by Bloomberg AusBond and NZBond Indices in calculating index-level returns and statistics.

Bond Level Market Value

For each bond in Bloomberg AusBond and NZBond indices, market value is calculated each day based on the bond's current par amount outstanding, price and accrued interest as of the index settlement date:

$$Market\ Value_{Bond} = (Price_{Bond} + Accrued\ Interest_{Bond}) \times\ Par\ Amount\ Outstanding_{Bond}$$

A security's market value can be expressed in different reporting currencies. If the principal amount outstanding of a bond is denominated in a currency different than the index reporting currency, the amount outstanding would be converted using the spot exchange rate as of the index pricing date; price and accrued will not change with different reporting currencies as they are expressed as a percentage of par.

Day-over-day changes to market value can reflect various events such as corporate actions with adjustments to amount outstanding, yield movements with price fluctuations or an increase in interest payment due to a bond holder with changes in accrued interest.

Bond-Level Market Value Weights for Index Return Calculations

The market value of each bond within the Returns Universe of an index is set at the outset of each daily index reporting period as of the previous business day. These "Beginning" market values are used to derive static security-level weights for index level return aggregation until the next business day. The market value used for each bond is the same across all market value weighted indices and their related sub-indices by sector, maturity, currency, etc.

$$Returns\ Universe\ Market\ Value\ \% = \frac{Security\ Market\ Value_{Beginning}}{\sum Security\ Market\ Value_{Beginning}}$$

In alternative weight indices, such as those that limit issuer concentration or target specified sector allocations, each security's contribution to index-level return is still based on security-level market values at the beginning-of-day. To satisfy the alterative weighting criteria, the amount outstanding for each bond is adjusted in a rules-based manner based on the specific weighting methodology. This adjusted amount outstanding is used to calculate index-level returns and is held constant throughout the month for each bond in the Returns Universe.

Bond-Level Weights for Index Statistics Calculations

Index-level statistics such as duration, yield, and OAS are weighted by the daily or "Ending" market value of each index eligible bond in the Projected Universe. Published sector allocation percentages for flagship indices are also based on the Projected Universe using ending market value.[12]

$$Projected\ Universe\ Market\ Value\ \% = \frac{Security\ Market\ Value_{Ending}}{\sum Security\ Market\ Value_{Ending}}$$

In alternative weight indices, the amount outstanding for each bond in the Projected Universe is rescaled each day, based on current price and accrued interest, to effectively rebalance overall market value exposures based on the specific alternative weighting scheme. As a result, index users will see the Projected Universe of an index meet the market value targets of an alternative weighting scheme each day, even though Returns Universe weights may drift from their initial targets.

Index Return Calculations and Aggregation

With security-level returns and weights, it is possible to calculate and publish aggregated index-level returns and risk analytics. Benchmark index returns are reported over various periods (daily, monthly, annual, etc.).

Daily Index Return Calculations

Bond level returns and weights are the inputs used to calculate published daily index level returns. Local currency returns at the bond level will be consistent across Bloomberg AusBond and NZBond Indices, but total returns will vary from index to index based on the base reporting currency and whether the

[12] To avoid a circular reference, average price and coupon are weighted by end of period par value.

index is currency hedged or unhedged. Bond index weights are index-specific based on the universe of eligible bonds.

$$Index\ Total\ Return_{Daily} = \sum (Bond\ Return_{Daily} \times\ Bond\ Weight_{Beginning})$$

Cumulative and Periodic Total Return Calculations

Since Inception Total Return and Index Value

For each Bloomberg index, the cumulative total return since index inception is calculated and used to determine periodic returns over longer and/or intra-month time horizons. **Since inception total return (SITR)** is calculated at the index level and is a compounded return linking historical index cumulative daily returns and the current daily return. This approach assumes that the index is always fully invested in the Returns Universe after each day and that any accumulated cash from the previous day is reinvested pro rata into the universe.

$$Since\ Inception\ Total\ Return = \left[\left(Base\ Value + SITR_{Beginning}\right) \times \left(1 + Total\ Return_{Daily}\right)\right] - Base\ Value$$

From the since inception total return, an **index level** is calculated by adding Base Value and is used to calculate total returns over any given time period where index levels are available.

$$Index\ Value = SITR * \left(\frac{Base\ Value}{100}\right) + Base\ Value$$

Periodic Total Return Calculations

All periodic returns (MTD, 1-week, 1-month, 3-month, 6-month) are calculated as the geometric difference in the since-inception total return at the beginning of the current period and the since-inception total return for the current day:

$$Periodic\ Total\ Return = \frac{\left(SI\ Total\ Return_{T} - SI\ Total\ Return_{Begin-of-Period}\right)}{\left[1 + \left(\frac{SI\ Total\ Return_{Begin-of-Period}}{100}\right)\right]}$$

Periodic Excess Return Calculations

Because excess returns are the arithmetic differences between the total return of the index and a duration-matched hypothetical risk-free security, compounding monthly excess returns is not an accurate way to display excess returns over time frames longer than one month. However, whereas excess return cannot be compounded, total return can. Bloomberg publishes both the total and excess return for each index monthly, so we are also able to calculate a total return of the implied duration-matched treasury portfolio of that index (the difference between the excess and total returns of the index).

Mathematically, the total return of the index and the implied treasury portfolio can then be compounded separately and compared, even as its composition is reset every month, yielding a valid periodic excess return derived from the arithmetic differences between the two.

Accessing Indices

Bloomberg Indices may be accessed through a variety of platforms.

Bloomberg Terminal®

- 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, including Bloomberg AusBond and NZBond indices, into a hierarchical view, facilitating navigation and comparisons. The "My Indices" tab allows a user to focus on a set of favorite indices.
- INP<GO>: A page dedicated specifically to all Bloomberg index publications, which among others include:
  - Index Announcements and Technical Notes related to the indices
  - Index Factsheets for selected indices
  - Primers and Guides
  - Monthly publications, such as Bloomberg AusBond/NZBond - Month-in-Review and Bloomberg AusBond/NZBond - End-of-Month Rept.
- DES<GO>: The index description page provides transparency into an individual index including membership information, aggregated characteristics and returns, and historical performance.
- PORT<GO>: Bloomberg's Portfolio & Risk Analytics solution includes tools to analyze the risk, return, and current structure of indices. Analyze the performance of a portfolio versus a benchmark or use models for performance attribution, tracking error analysis, value-at-risk, scenario analysis, and optimization.

Bloomberg Indices Website

Please see the Index website for further information about BISL and the indices it administers.

Data Distribution

Index subscribers may choose to receive index data in files. Files may include:

- Index level and/or constituent level returns and characteristics for any indices
- Automatic delivery of files via email or SFTP following the completion of the index production process after market close
- Clients may receive standard files or may customize file contents

Index data is also available via authorized redistributors.

Index Licensing

Bloomberg requires index data licenses for services and products linked to the Indices.

Appendices

Appendix 1: Primary Index Inception Dates

Bloomberg AusBond Index Family

Composite Bond Index	30 September 1989
Government Index	30 June 1998
Treasury Index	31 March 1988
Semi-Government Index	30 September 1988
Non-Government Index	31 December 1998
Supra/Sov Index	31 January 2005
Credit Index	30 September 1989
Inflation Index	31 December 1998
Government Inflation Index	31 March 1991
Treasury Inflation Index	30 June 2014
Semi Government Inflation Index	30 June 2014
Credit Inflation Index	31 December 1998
Credit FRN Index	31 December 1998
AUD Bank Bill Index	31 March 1987
AUD Swap Indices (1-30 Year)	30 April 2005
AUD Bank Bill Index + X %	31 May 2016
Net of TaxTax Indices	31 July 1998

Bloomberg NZBond Index Family

Composite Bond Index	31 December 2010
Government Index	31 December 1995
Treasury Index	31 December 2010
Local Government Index	31 December 2010
Non-Government Index	31 December 2010
Supra/Sov Index	31 December 2010
Credit Index	31 December 2010
Government Inflation Index	31 December 1995
NZD Bank Bill Index	31 December 1999

Appendix 2: Index Rules for Currency Hedging and Currency Returns

The following section details the currency hedging and currency return rules for AusBond and NZBond Indices. Although Unhedged Base Currency Total Returns are calculated daily, currency hedging is done at the beginning of the month. As such, MTD Unhedged Base Currency Total Returns is used to derive both MTD Hedged Base Currency Total Returns and Daily Hedged Base Currency Total Returns.

Unhedged Base Currency Total Returns

Consider an investor who buys foreign currency at the beginning of the month and sells the position back into base currency at the end of the month. The realized capital gain from this investment in foreign currency is:

$$FX\ Appreciation = \frac{FX_{end} - FX_{beg}}{FX_{beg}} \qquad (1)$$

FX_{beg} and FX_{end} are the base currency values of one unit of the foreign currency at the beginning and the end of the return period, respectively.

Consider an investor who buys a bond denominated in a foreign currency at the beginning of the month and, at the end of the month, sells the bond and converts the foreign currency proceeds back into the base currency. The investor's (base-currency) realized return on investment is:

$$\begin{aligned} Base\ Currency\ Total\ Return &= (1 + Local\ Return) \times (1 + FX\ Appreciation) - 1 \qquad (2) \\ &= Local\ Return + FX\ Appreciation + \big((Local\ Return) \times (FX\ Appreciation)\big) \end{aligned}$$

To keep analytics as intuitive and tractable as possible, BISL decomposes index returns into additive components. Accordingly, currency return[13] is defined as follows:

$$Currency\ Return = Base\ Currency\ Total\ Return - Local\ Return \qquad (3)$$

where:

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

Currency return is the difference between base-currency return and local return. Substituting Equation (2) into Equation (3) provides:

$$\begin{aligned} Currency\ Return &= FX\ Appreciation + \big((Local\ Return) \times (FX\ Appreciation)\big) \qquad (4) \\ &= (1 + Local\ Return) \times (FX\ Appreciation) \end{aligned}$$

The currency return on the bond is not equal to the capital gain on a pure currency investment. From Equation (1), the base currency capital gain on a pure currency investment is FX Appreciation, while the bond's currency return is FX Appreciation + (local return) * (FX Appreciation). The bond's currency return contains an interaction component (local return) * (FX Appreciation) in addition to the capital gain on a currency investment.

[13] The Bloomberg AusBond and NZBond Indices source FX spot and forward rates from Bloomberg BFIX.

Hedged Base Currency Total Returns

For currency-hedged indices, as well as unhedged indices, the currency return satisfies the relation:

$$Currency\ Return = Base\ Currency\ Total\ Return - Local\ Return$$

While the definition of currency return remains unchanged, the calculation of base currency total return becomes somewhat more complicated for currency-hedged indices. The index position in a bond denominated in a foreign currency for a hedged index is a position in two instruments: the bond plus a one-month currency forward:

$$Base\ Currency\ Total\ Return\ (hedged) \quad (5a)$$
$$= Base\ Currency\ Total\ Return\ (unhedged) + (H \times (Forward\ Return))$$

where:

base currency total return (unhedged) is provided in Equation (2)

H is the size of the hedge measured in local currency

$$Forward\ Return = \frac{Forward\ Value - FX_{end}}{FX_{beg}} \quad (5b)$$

Forward Value is the number of base currency units to be received for each unit of the local currency delivered in the forward contract. This value is set in the marketplace at the beginning of the month and received at delivery at the end of the month.

Equation (5a) can be re-expressed as follows:

$$Hedged\ Base\ Currency\ Total\ Return\ (MTD) \quad (6)$$
$$= (Local\ Return) + \big(Currency\ Return\ (unhedged)\big) + (H \times (Forward\ Return))$$

Note that the second term on the right-hand side of Equation (6) moves in the opposite direction as the third term. If the hedge were perfect, these terms would reduce to a constant and remove all sensitivity to the exchange rate at the end of the month.

$$Daily\ Hedged\ Base\ Currency\ Total\ Return\ (hedged)_t \quad (7)$$
$$= \left(\frac{100 + Hedged\ Base\ Currency\ Total\ Return\ (MTD)_t}{100 + Hedged\ Base\ Currency\ Total\ Return\ (MTD)_{t-1}}\right) * 100 - 100$$

Equation (5a) is general. It provides the base currency total return under any hedging rule. By setting H according to index rules, Equation (5a) becomes a full specification of base currency total return for Bloomberg Indices.

Bloomberg indices set H as follows:

$$H = \left(1 + \frac{Yield\ to\ Worst_{BOM}}{2}\right)^{\frac{1}{6}} \quad (8)$$

H is a projected end-of-month market value per unit of local currency invested at the beginning of the month (BOM). In Equation (8), local-currency security value is projected to grow at the rate implied by its yield.

The perfect currency hedge would set H equal to the bond's end-of-month local-currency value. However, the perfect hedge could not be obtained by an actual investor at the beginning of the month: the local currency value of the index at the end of the month is not known at the beginning of the month, when the hedge must be implemented. Index construction always stresses the importance of investability. In this spirit, the index does not use end-of-month values in determining the currency hedge.

For individual securities, the following equation can be used to calculate currency returns according to hedged index rules:

From Equation (5a), currency return (hedged) is the sum of currency return (Unhedged) and H*(Forward Return).

$$Currency\ Return\ (hedged) = Currency\ Return\ (unhedged) + \ (H \times (Forward\ Return))$$

This is shown below from Equation (4) and Equation (5b).

$$Currency\ Return\ (hedged) = \big((1 + Local\ Return) \times (FX\ Appreciation)\big) + \left(H \times \left(\frac{Forward\ Value - \ FX_{end}}{FX_{beg}}\right)\right)$$

$$= \ \big((1 + Local\ Return) \times (FX\ Appreciation)\big) + \left(H \times \frac{Forward\ Value - \ FX_{beg}}{FX_{beg}}\right) - \left(H \times \frac{FX_{end} - \ FX_{beg}}{FX_{beg}}\right)$$

Therefore,

$$Currency\ Return = \left(H \times \left(\frac{Forward\ Value - FX_{beg}}{FX_{beg}}\right)\right) + \ \big((1 + Local\ Return - H) \times (FX\ Appreciation)\big) \qquad (9)$$

All the components of the first term in Equation (9) are known at the time the hedge is implemented.

Since index hedges are designed to be implementable by investors at the beginning of the month, they are not perfect: the bond will have residual currency exposure in the index after hedging. This residual currency exposure is equal to the difference between the size of the hedge and the market value of the security at the end of the month. The FX appreciation realized by this exposure is measured by the second term in Equation (9).

Appendix 3: Detailed Discussion of Excess Return Computation

The fixed income community generally gauges the compensation for holding risky assets by measuring performance of spread product asset classes relative to the treasury asset class. It follows that for an individual security, a portfolio or an entire asset class, excess returns offer a more pure measure of this compensation than nominal returns.

While many different excess return calculation methodologies exist, the differences mainly reflect the various ways to define an equivalent treasury position. The simplest technique compares the return of a spread sector security to the closest on-the-run Treasury, while more precise methods require the equivalent Treasury position to match the duration of the spread security. One of these more precise methods, known as the duration-bucket approach, calculates an equivalent Treasury return for each duration neighborhood and bases the excess return calculation on the average returns on Treasuries and spread sectors partitioned into semi-annual duration cells.

The following discussion details the Duration-Bucket Approach used to compute excess returns for Bloomberg AusBond and NZBond indices. The precise excess return computations are then complemented with an intuitive approximation based on option adjusted spread (OAS), which explains how to properly weigh portfolio level spreads and spread changes to allow aggregated analytics to be used in excess return approximations.

Duration-Bucket Approach

A duration-bucket approach is used to calculate excess returns for Bloomberg AusBond and NZBond indices. Using this methodology, BISL first buckets the universe of treasuries that correspond to a bond's currency denomination into half-year duration buckets starting at zero. Treasuries are bucketed based on their beginning-of-month duration values and will not change buckets intra-month. A market value weighted return is then calculated for each half-year duration bucket. The return for a given security's duration-matched risk-free asset is interpolated from its duration at the beginning of the month and the duration and total return of the two adjacent treasury buckets. The excess return for the security is then calculated as the difference between its total return and the interpolated return.

Calculating Periodic and Cumulative Excess Returns

Since excess returns are the arithmetic differences between the total return of the index and a duration-matched hypothetical risk-free security, compounding monthly excess returns is not an accurate way to display excess returns over timeframes longer than one month. But whereas excess returns cannot be compounded, total returns can. Since BISL publishes both the total and excess returns of each index monthly, we also calculate a total return of the implied duration-matched treasury portfolio of that index (the difference between the excess and total returns of the index).

Mathematically, total returns of the index and the implied treasury portfolio can then be compounded separately and compared, even as its composition is reset every month, yielding a valid periodic excess return derived from the arithmetic differences between the two.

The following example explains the technique using a three-month horizon (November 2023- January 2024) for a hypothetical index:

Let:

TR_{index} = Total Return of the Index

ER_{index} = Excess Return of the Index

$TR_{ImpliedTsy}$ = Total Return of the Implied Duration Matched Treasury Portfolio

For any given month:

$$TR_{index} - ER_{index} = TR_{ImpliedTsy}$$

For the three-month horizon:

$$Nov23TR_{index} - Nov23ER_{index} = Nov23TR_{ImpliedTsy}$$
$$Dec23TR_{index} - Dec23ER_{index} = Dec23TR_{ImpliedTsy}$$
$$Jan24TR_{index} - Jan24ER_{index} = Jan24TR_{ImpliedTsy}$$

Over the three-month period, ending January 2024, the total return of the index would be:

$$ThreeMonthTR_{index} = [(1 + Nov23TR_{Index}) \times (1 + Dec23TR_{Index}) \times (1 + Jan24TR_{Index})] - 1$$

The total return of the implied duration-matched treasury portfolio over the same three-month period would be:

$$ThreeMonthTR_{ImpliedTsy} = \left[\left(1 + Nov23TR_{ImpliedTsy}\right) \times \left(1 + Dec23TR_{ImpliedTsy}\right) \times \left(1 + Jan24TR_{ImpliedTsy}\right)\right] - 1$$

Then the compounded three-month excess return at the end of March 2013 is simply:

$$ThreeMonthER_{index} = ThreeMonthTR_{index} - ThreeMonthTR_{ImpliedTsy}$$

Example:

Hypothetical Index

Date	Total Return % (USD)	Excess Return %	Total Return ImpliedTsy % (TR_{index}-ER_{index})
November 30, 2023	4.529	0.886	*3.643*
December 29, 2023	3.828	0.256	*3.572*
January 31, 2024	-0.275	0.078	*-0.353*

$$ThreeMonthTR_{index} = \left((1 + 4.529\%) \times (1 + 3.828\%) \times (1 - 0.275\%)\right) - 1 = 8.232\%$$
$$ThreeMonthTR_{ImpliedTsy} = \left((1 + 3.643\%) \times (1 + 3.572\%) \times (1 - 0.353\%)\right) - 1 = 6.966\%$$
$$ThreeMonthER_{index} = 8.232\% - 6.966\% = 1.266\%$$

Appendix 4: Bank Bill Index Calculations

Interpolation of Yields for Bank Bills

Calendar Days Until maturity	Interpolated Rate
1-7	$R1$
8-14	$\frac{2}{3}R1 + \frac{1}{3}R2$
15-21	$\frac{1}{3}R1 + \frac{2}{3}R2$
22-28	$R2$
29-35	$\frac{8}{9}R2 + \frac{1}{9}R3$
36-42	$\frac{7}{9}R2 + \frac{2}{9}R3$
43-49	$\frac{6}{9}R2 + \frac{3}{9}R3$
50-56	$\frac{5}{9}R2 + \frac{4}{9}R3$
57-63	$\frac{4}{9}R2 + \frac{5}{9}R3$
64-70	$\frac{3}{9}R2 + \frac{6}{9}R3$
71-77	$\frac{2}{9}R2 + \frac{7}{9}R3$
78-84	$\frac{1}{9}R2 + \frac{8}{9}R3$
88-91	$R3$

where

R1	=	RBA 24-hour cash rate (AUD) or RBNZ 24-hour cash rate (NZD)
R2	=	1M BBSW rate (AUD) or 1M NZFMA rate (NZD)
R3	=	3M BBSW rate (AUD) or 3M NZFMA rate (NZD)

Bank Bill Pricing and Notional Determination

$$P_i = \frac{100}{1 + r(\frac{t}{DC})}$$

where

P_i	=	price of each respective bank bill
r	=	interpolated rate as of last rebalance date
t	=	remaining number of days to maturity, at month-end include weekends
DC	=	day count, in this case 365

Notional amount of new 13 week bill is based on

$$Notional_{13w} = \frac{Notional_{7w-1}}{Price_{13w}}$$

Bank Bill Index + X% Calculations

Calculation of Daily Returns for Bank Bills + X%

$$\boldsymbol{Daily\ Return = AUD\ Bank\ Bill\ Index\ Daily\ Return + \frac{X}{365}}$$

where

X = Annualized cash rate to be added to the AUD Bank Bill Index returns

Ticker	Name	X
BAUBL050	Bloomberg AusBond Bank Bill +0.5%	0.5%
BAUBL100	Bloomberg AusBond Bank Bill +1%	1%
BAUBL175	Bloomberg AusBond Bank Bill +1.75%	1.75%
BAUBL200	Bloomberg AusBond Bank Bill +2%	2%
BAUBL250	Bloomberg AusBond Bank Bill +2.5%	2.5%
BAUBL275	Bloomberg AusBond Bank Bill +2.75%	2.75%
BAUBL300	Bloomberg AusBond Bank Bill +3%	3%
BAUBL325	Bloomberg AusBond Bank Bill +3.25%	3.25%
BAUBL350	Bloomberg AusBond Bank Bill +3.5%	3.5%
BAUBL400	Bloomberg AusBond Bank Bill +4%	4%
BAUBL425	Bloomberg AusBond Bank Bill +4.25%	4.25%
BAUBL450	Bloomberg AusBond Bank Bill +4.5%	4.5%
BAUBL475	Bloomberg AusBond Bank Bill +4.75%	4.75%

Net of tax Indices

Calculation of Daily Returns for Net of tax Indices.

$$Daily\ Return = IR_t \times (1 - tr)$$

where

IR_t = Underlying index return on Index Business Day t

tr = The predefined tax rate for the index

Ticker	Name	tr
BAUBLT15	Bloomberg AusBond Bank Bill 15% Net of Tax Index	15%
BACR0T15	Bloomberg AusBond Credit 0+ Yr 15% Net of Tax Index	15%
BACM0T15	Bloomberg AusBond Composite 0+ Yr 15% Net of Tax Index	15%
BAGV0T15	Bloomberg AusBond Govt 0+ Yr 15% Net of Tax Index	15%

Appendix 5: Benchmark Oversight and Governance

Benchmark Governance Structure

Please refer to the BISL Benchmark Procedures Handbook available here.

Index and Data Reviews

Please refer to the BISL Benchmark Procedures Handbook available here.

Expert Judgement

If a security's primary pricing source fails to generate a price or if BISL's own verification procedures call into question the price of a security provided from a pricing source, BISL may exercise expert judgment. Please refer to the BISL Benchmark Procedures Handbook available here.

Conflicts of Interest

Please refer to the BISL Benchmark Procedures Handbook available here.

Restatement Policy

Please refer to the BISL Benchmark Procedures Handbook available here.

Cessation Policy

Please refer to the BISL Benchmark Procedures Handbook available here.

Appendix 6: General Methodology Considerations

Limitations of the Indices

Though the Indices are designed to be representative of the markets they measure or otherwise align with their stated objective, they may not be representative in every case or achieve their stated objective in all instances. They are designed and calculated strictly to follow the rules of this Index 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 which the Indices intend to measure or upon which the Indices are dependent in order to achieve their stated objective. For example, illiquidity can have an impact on the quality or amount of data available to the Index Administrator for calculation and may cause the Indices 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 the fixed income markets of Australia and New Zealand. As with all fixed income investing, the Indices are exposed to interest rate risk. The value of bonds fluctuates with the changes in the interest rate policies established by central banks and the natural movement of rates over time. Bonds with optionality will also be impacted by interest rate volatilities. Most fixed income securities often trade at a spread to the base interest rate curve. The level of the spread reflects the additional premium an investor requires for taking the additional credit risk, liquidity risk, and other risks. The change of the spread, which reflects primarily the change in perceived risk of a security, comes from both common

forces, affecting all bonds with similar characteristics, and information specific to a particular issuer. As the Indices are designed to measure those markets, its indices could be materially impacted by market movements, thus significantly impacting the use or usefulness of the fixings for some or all users.

In addition, subindices within the AusBond and NZBond family are designed to measure smaller subsets of the Indices such as specific sectors, maturities, or credit quality bands. Some of these subindices have very few qualifying constituents and may have none for a period of time. During such period, the subindex 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 issuance trends and other factors), the subindex may be discontinued. In such an event, this discontinuation will be announced to index users.

Appendix 7: Glossary of Terms

- **Accrued interest**: The interest that has accumulated on a bond since the last interest payment up to, but not including, the settlement date.
- **Amount Outstanding**: The total current amount of the bond issue that is outstanding in the market. Initial Reserve Bank of Australia take-up of AOFM issued Treasury securities is excluded from the Indices. Reserve Bank of New Zealand take-up of NZGB issued securities is excluded from the indices.
- **AUD**: Australian dollar.
- **BCLASS**: Bloomberg Fixed Income Classification System Industry Classification System is a classification scheme designed to reflect the large universe of corporate, government, government-related and securitized bonds that comprise the global fixed income investment choice set.
- **BICS**: Bloomberg Industry Classification System for Fixed Income (BICS FI) is a hierarchical system that classifies fixed income security issuers.
- **BVAL**: The Bloomberg Valuation Service algorithmically combines a wealth of market data, sophisticated analytics and asset class specific relative value models to produce independent, credible and defendable valuations for securities.
- **Business Days**: weekdays (Monday through Friday).
- **Convexity**: The second derivative of a security's price with respect to its yield, divided by the security's price. A security exhibits positive convexity when its price rises more for a downward move in its yield than its price declines for an equal upward move in its yield.
- **Country of Risk**: The International Organization for Standardization (ISO) country code of the issuer's country of risk. Methodology consists of four factors listed in order of importance: management location, country of primary listing, country of revenue and reporting currency of the issuer.
- **Coupon**: The interest rate stated on a bond when it's issued. The coupon is typically paid semiannually. This is also referred to as the "coupon rate" or "coupon percent rate. For fixed-income indices, this is the par-weighted average coupon of the index members.
- **CRA**: Credit rating agency. The Indices use S&P Global, Moody's and Fitch.
- **Currency**: A security's currency of denomination as described in the prospectus.
- **Duration**: This is the Macaulay duration of a bond or index. The weighted average maturity of the security's cash flows, where the present values of the cash flows serve as the weights. The greater the duration of a security, the greater its percentage price volatility.
- **Expected maturity date**: Refers to the planned early maturity date or refinance date, as published in the prospectus, in relation to mortgage securities.
- **Face value**: The value of a financial instrument, as stated on the instrument. Interest is calculated on face value. Also called Par Value or Nominal Value.

- **IAC**: Index Advisory Council.
- **Indices**: refers to the indices in the Bloomberg AusBond and NZBond index family.
- **Index Ratings**: The ratings of securities adopted for the purpose of the Indices based on a set methodology outlined in this document.
- **Maturity Date**: This is the date on which the principal amount of the bond becomes due and is repaid to the investor. The Indices supplement maturity dates with call dates for callable bonds and the expected maturity date for mortgages in the indices.
- **Modified Duration**: The percentage price change of a security for a given change in yield. The higher the modified duration of a security, the higher its risk.
- **NZD**: New Zealand dollar.
- **Sector Classification**: This is a categorization of a bond by its industry, government affiliation, or related characteristic of its issuer. The Indices are divided into four main and supplemented by Bloomberg Industry Classification System for Fixed Income (BICS FI). BICS FI is a hierarchical system that classifies fixed income security issuers.
- **Projected Universe**: The Projected Universe membership is defined by applying the security eligibility rules daily and setting constituent weights based on daily closing prices.
- **Returns Universe**: The Returns Universe membership is defined by applying the security eligibility rules at each monthly rebalancing date and holding the resulting list of securities constant over the month.

Environmental, Social and Governance 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.	Other
Item 3. Name of the benchmark or family of benchmarks.	Bloomberg AusBond and NZBond Index Family
Item 4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	No
Item 5. 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. Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets. The ESG factors shall be disclosed at an aggregated weighted average value at the level of the family of benchmarks.	
(a) List of environmental factors considered:	Not applicable
(b) List of social factors considered:	Not applicable
(c) List of governance factors considered:	Not applicable
Item 6. 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. Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets. 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. 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.	
(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

Item 7. Data and standards used	
(a) Data input. (i)*Describe whether the data are reported, modelled or sourced internally or externally.* (ii)*Where the data are reported, modelled or sourced externally, please name the third party data provider.*	Not applicable
(b) Verification and quality of data. *Describe how data are verified and how the quality of those data is ensured.*	Not applicable
(c) Reference standards *Describe the international standards used in the benchmark methodology.*	Not applicable
Date on which information has been last updated and reason for the update:	November 2022, publication

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