NOMURA

NOMURA-BPI

Cross-asset - Japan

Index rulebook

Research Analysts

Index Services Department

Index Services Department - NFRC
idx_mgr@nfrc.co.jp

Key features of the NOMURA-BPI

- The Nomura Bond Performance Index (NOMURA-BPI) was developed to reflect the performance of the entire secondary market for publicly offered, yen-denominated, fixed-income bonds issued in Japan.
- The portfolio of bonds that makes up the index (hereafter, the index portfolio) is determined based on given inclusion criteria.
- Securities in the NOMURA-BPI are classified into eight sectors: Japanese Government Bonds (JGBs), municipal bonds, government-guaranteed bonds, bank debentures, corporate bonds, yen-denominated foreign bonds (Samurai bonds), Mortgage Backed Securities (MBS) and Asset Backed Securities (ABS).
- The performance of NOMURA-BPI is calculated based on the marked-to-market valuation of the bonds that make up the index portfolio.
- The NOMURA-BPI has sub-index portfolios by sectors and by term to maturity. Their performance indices and portfolio indicators are also released.
- Bonds included in the NOMURA-BPI are reviewed monthly.

Major rule changes, additions, etc.

[September 27, 2019]

- Relaxation of the exclusion criteria with regard to TOKYO PRO-BOND Market listed bonds
- AddedSustainable Development Goals (SDGs)Classification
- Established First Entry rule

[March 30, 2023]

- Reflected revisions to SDGs Classification

Contents

1. Introduction

The Nomura Bond Performance Index (NOMURA-BPI)[1] is a bond performance index that reflects the performance of the entire secondary market for publicly offered, yen-denominated, fixed-income bonds issued in Japan.

Nomura Fiduciary Research & Consulting Co., Ltd. (NFRC)[2] is the Administrator of the NOMURA-BPI, and Nomura Research Institute, Ltd. (NRI) serves as the Calculation Agent.

NFRC assumes the primary responsibility of calculating on a daily basis the bond performance indices, their production and operation. Specifically, NFRC, in its role as operations manager:

- Maintains records of the index weightings of all constituents;
- Reviews the index portfolios according to the inclusion/exclusion criteria, and replaces securities in these portfolios as necessary, reflecting these changes in the performance and other indicators; it reviews the index portfolio inclusion criteria.
- Announces changes in securities included in the index portfolios, which are determined as a result of daily operations management and scheduled reviews; and
- Distributes the index portfolio performances, either through NRI's data delivery service or on its own.

The NOMURA-BPI is meant to be used as:

- A tool for determining investment policies (asset allocation strategies);
- A tool for determining investment manager structure;
- An investment management benchmark;
- A tool for portfolio management;
- An investment performance indicator; and
- A risk management tool.

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1. NOMURA-BPI® is a registered trademark of NFRC (Registered Number: 4991073)
2. NFRC took over the index business of Nomura Securities Co., Ltd. (NSC), effective 1 February 2023.

2. Sub-indices

The NOMURA-BPI has sub-index portfolios by sectors, by term to maturity, by industry, and by ratings. NFRC computes and releases sub-index performance indices and portfolio indicators for each of these portfolios.

Fig. 1: The structure of NOMURA-BPI
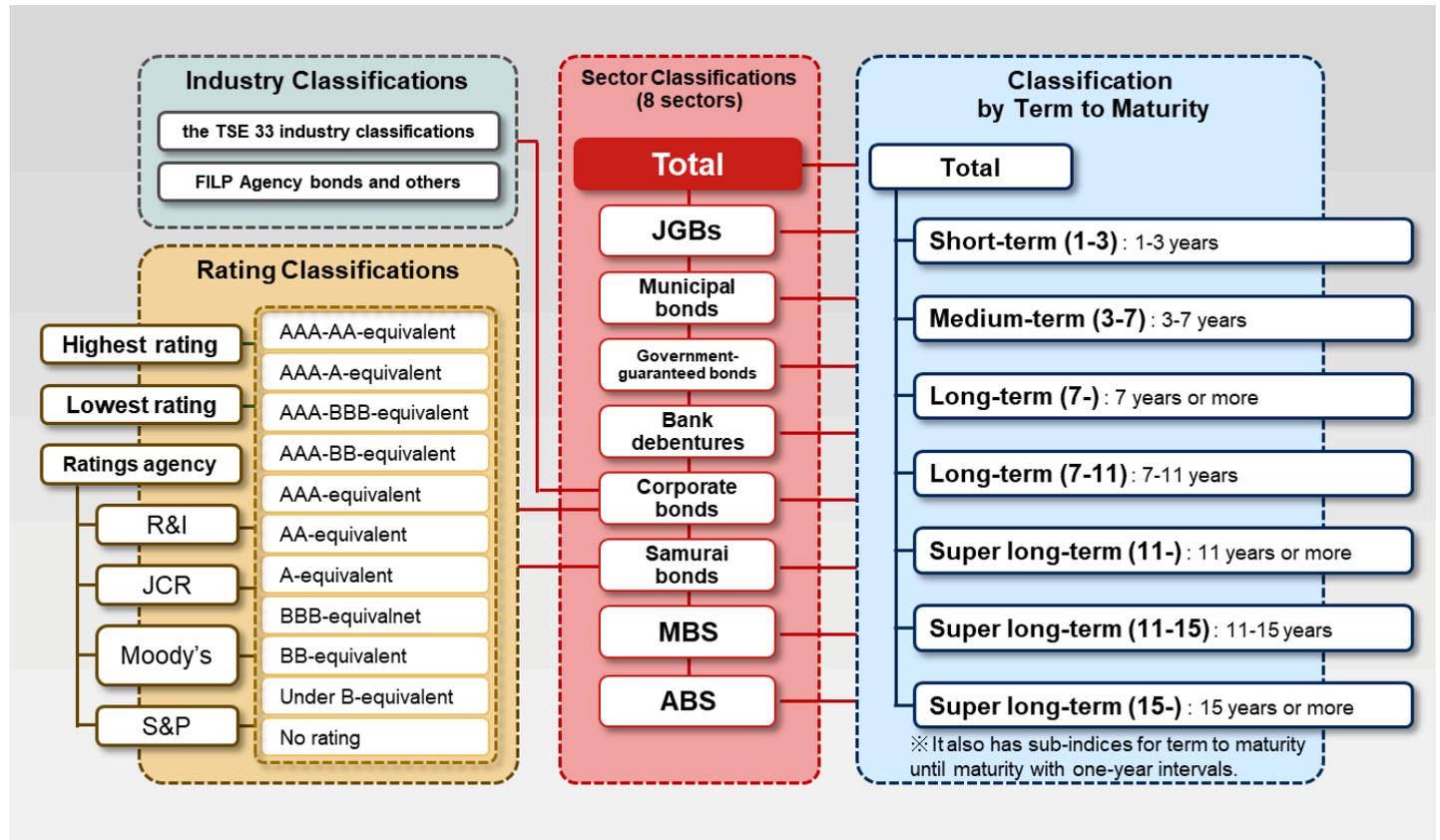
Source: NFRC

Listed below are the NOMURA-BPI sub-indices, which are subject to change:

NOMURA-BPI (Sectors) <Industry> <Rating> <Term to maturity>

(There is a space between each classification. If each <classification> describes "all", the name is optional.)

2.1 NOMURA-BPI Sectors

Securities in the NOMURA-BPI are classified into eight sectors (Figure 1).

- **JGBs**
  The portfolio includes bonds issued by the Japanese government. It is further classified into sub-sectors by the term to maturity at the time of the issuance (2 year, 5 year, 10 year and 20 year).

- **Municipal bonds**
  The portfolio includes bonds issued by municipal governments and the Japan Finance Organization for Municipalities (including the former Japan Finance Corporation for Municipal Enterprises and the Japan Finance Organization for Municipal Enterprises), but excludes issues, whose principal and interest are guaranteed by the Japanese government[3]. Bonds included in this sector are classified into those issued by municipal governments and other issuers. Municipal government bonds are further classified into those issued by the Tokyo Metropolitan government, five major (government-designated) cities and other municipal governments.

- **Government-guaranteed bonds**
  The portfolio includes bonds issued by public institutions andgovernment-affiliated corporation (tokushu hojin), whose principal and interest are guaranteed by the Japanese government[4]. Government-guaranteed bonds are classified into municipal public corporation bonds and other government-guaranteed bonds.

- **Bank debentures**
  The portfolio includes bonds issued by a specific group of financial institutions (generally referred to as publicly-offered bank debentures). The issuance of these bonds is governed by special laws (Long-Term Credit Bank Law and others). Bank debentures are further classified into specific bank debentures[5] and other bank debentures.

- **Corporate bonds**
  The portfolio includes bonds issued by domestic corporations and those issued by public institutions and tokushu hojin whose principal and interest are not guaranteed by the Japanese government. Corporates' sub-indices are classified by their industrial sector and ratings.

- **Samurai bonds**
  The portfolio includes yen-denominated bonds issued in Japan by non-Japanese issuers. Samurai bonds' sub-indices are classified by their ratings.

- **MBS**
  The portfolio includes securities backed by real estate loans (mortgages).

- **ABS**
  The portfolio includes securities backed by various types of assets. ABS are classified into life insurance fund (capital securities) bonds/subordinated-loan backed bonds, Real Estate Investment Trust (REIT)-corporation bonds and securities backed by fiscal-loan funds.

Apart from the sector indices noted above, NOMURA-BPI has sub-indices such as NOMURA-BPI excluding JGBs, NOMURA-BPI excluding specific bank debentures, NOMURA-BPI excluding ABS, NOMURA-BPI excluding MBS, and NOMURA-BPI excluding MBS/ABS.

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3. These bonds are classified as government-guaranteed bonds
4. Public institution bonds and government-affiliated corporation bonds, whose principal and interest are not guaranteed by the Japanese government are classified as corporate bonds
5. Specific bank debentures are those rated BBB or lower by all of the four rating agencies as of the portfolio determination date. For bank debentures that are not rated, ratings assigned to the financial institution's senior bonds or its issuer rating are referenced.

2.2 Term to maturity

The NOMURA-BPI is classified into seven sectors based on the number of years remaining until maturity as of the last day of the month (Figure 2). It also has sub-indices for term to maturity with one-year intervals, between year one and year 40. There are two types of terms to maturity, one based on scheduled redemptions and the other based on early redemptions. The first is the term until the final redemption date, and the latter is the term to maturity calculated using the weighted average of the future principal cash flow. The NOMURA-BPI uses the one based on scheduled redemption for classifying bonds by term to maturity.

Fig. 2: Portfolio classification by term to maturity

Classification	Term to maturity (scheduled redemption)
Short-term (1-3)	1 year or more and less than 3 years
Medium-term (3-7)	3 years or more and less than 7 years
Long-term (7-)	7 years or more
Long-term (7-11)	7 years or more and less than 11years
Super long-term (11-)	11 years or more
Super long-term (11-15)	11 years or more and less than 15 years
Super long-term (15-)	15 years or more

Source: NFRC

2.3 Corporate bonds industry classifications

Corporate bonds are classified by industry, based on 34 classifications (i.e., the TSE33 industry classifications and "FILP Agency bond and others"[6]) (Figure 3).

Fig. 3: NOMURA-BPI corporates' industry classifications

Fishery, Agriculture & Forestry	Mining
Construction	Foods
Textiles & Apparels	Pulp & Paper
Chemicals	Pharmaceutical
Oil & Coal Products	Rubber Products
Glass & Ceramics Products	Iron & Steel
Nonferrous Metals	Metal Products
Machinery	Electric Appliances
Transportation Equipment	Precision Instruments
Other Products	Electric Power & Gas
Land Transportation	Marine Transportation
Air Transportation	Warehousing & Harbor Transportation Services
Information & Communication	Wholesale Trade
Retail Trade	Banks
Securities	Insurance
Other Financing Business	Real Estate
Services	FILP Agency bonds and others[7]

Source: NFRC

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6. FILP stands for "Fiscal Investment and Loan Program"
7. Bonds issued by a corporation that is subject to governing law for incorporation and not listed on the stock market.

2.4 Ratings (corporate bonds and Samurai bonds)

2.4.1 Classification by ratings

Corporate bonds and Samurai bonds included in the NOMURA-BPI are classified into sub-indices by their ratings. The classification refers to the individual issue rating, not to issuer rating (Figure 4). For bonds that are not rated by a ratings agency, the classification may refer to deemed ratings. Long-term senior debt ratings and issuer ratings are not considered in the classification.

- **Deemed ratings in NOMURA-BPI**

For bonds that are not rated by a ratings agency (hereafter, unrated bonds), NFRC will deemd a bond to have been assigned a rating equivalent to that assigned to other debt by a rating agency (hereafter, deemed rating) provided that all of the following conditions are met and/or followed:

- The assigned rating and the deemed rating must both apply to bonds from the same issuer
- The assigned rating and the deemed rating must both apply to bonds issued under the same terms (i.e., with regard to the presence or absence of financial covenants or credit enhancements) [8]
- The deemed rating must be attributed to the same rating agency that rated the referenced bonds
- The rated bonds referenced must have one year or longer remaining until the term to maturity (scheduled redemption)

Deemed ratings are referred to as "X-equivalent".

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8. In-substance defeasance issues are grouped separately from unsecured senior debt from the same issuer.

2.4.2 Criteria for assigning ratings

- Classification by highest rating[9]
  The classification refers to the highest of the ratings assigned by R&I, JCR, Moody's and S&P.

- Classification by lowest rating
  The classification refers to the lowest of the ratings assigned by R&I, JCR, Moody's and S&P.

- Classification by ratings agency
  The classification refers to ratings among those assigned by the same ratings agency.

Fig. 4: Rating classifications

Sector	Criteria for assigning ratings	Classifications
Corporate bonds	・Highest rating ・Lowest rating ・R&I rating ・JCR rating ・Moody's rating ・S&P rating	AAA-AA-equivalent AAA-A-equivalent AAA-BBB-equivalent AAA-BB-equivalent AAA-equivalent AA-equivalent A-equivalent BBB-equivalent BB-equivalent Under B-equivalent No rating
Samurai bonds	・Highest rating ・Lowest rating ・R&I rating ・JCR rating ・Moody's rating ・S&P rating	AAA-AA-equivalent AAA-A-equivalent AAA-BBB-equivalent AAA-BB-equivalent AAA-equivalent AA-equivalent A-equivalent BBB-equivalent BB-equivalent Under B-equivalent No rating
Corporate bonds & Samurai bonds	・Highest rating	AAA-AA-equivalent AAA-A-equivalent AAA-equivalent AA-equivalent A-equivalent

Source: NFRC

9. If the classification of criteria for assigning ratings is "highest rating", only "AAA-AA", "AAA-A", "AAA", "AA", and "A" fall under its category.

2.5 Classification of SDGs

NRI classifies SDG-related bonds based on disclosures at the time of bond issuance, taking into consideration the use of proceeds and external reviews or lack thereof. The SDG-related classifications include green bonds, social bonds, sustainability bonds, and transition bonds. The NOMURA-BPI Total SDGs Extended sub-index comprises bonds deemed to be sustainability-linked bonds and transition-linked bonds, as well as bonds judged by NFRC to be eligible based on use of funds and issuer disclosures in accordance with clear rules established ahead of time.

2.5.1 Major SDGs sub-indices

Fig. 5: Major SDGs sub-indices

NOMURA-BPI Total SDGs
NOMURA-BPI Total Green bonds
NOMURA-BPI Total Social bonds
NOMURA-BPI Total Sustainability bonds
NOMURA-BPI Total Transition bonds
NOMURA-BPI Total SDGs Extended

Source: NFRC

3. Scheduled portfolio reconstitution

NFRC reviews and reconstitutes the NOMURA-BPI portfolios every month. Next month's portfolios are determined on the portfolio determination day of each month.

3.1 Scheduled reconstitution date

NOMURA-BPI portfolios are reconstituted on the first business day of the month (scheduled reconstitution date), with the inclusion/exclusion implemented after the bond market closes on the business day before the scheduled reconstitution date.

3.2 Portfolio determination date

In principle, next month's portfolio determination date is one of the following dates, whichever is the earlier:

- The business day after the 25th day of the month
- The three business days before the last business day of the month

However, the portfolio determination date may be changed if a JGB auction that may have a non-negligible impact is held between the day after the determination date and the last day of the month. Any such changes will be announced in advance.

3.3 Scheduled reconstitution base date

Next month's portfolio base is determined on the day before the portfolio determination date. The new portfolio structure is determined on the portfolio determination date based on disclosed information available as of the scheduled reconstitution base date.

3.4 Portfolio reconstitution announcement

Information about scheduled portfolio reconstitution is announced through NRI's data delivery service and other media, except in cases where definite information on new portfolios is unavailable due to unexpected circumstances.

4. Portfolio inclusion/exclusion criteria

4.1 Portfolio inclusion criteria for next month [10]

The NOMURA-BPI incorporates all securities that meet the inclusion criteria listed in Figure 6 as of the scheduled reconstitution base date into the index portfolios for the following month.

Fig. 6: NOMURA-BPI inclusion criteria

Issuance process	Publicly offered bonds issued in Japan	
Currency denomination	JPY	
Coupon	Fixed	
Outstanding face value	1 billion JPY or more	
Term to maturity (scheduled redemption)	1 year or more	
Rating	JGBs, municipal bonds, Government-guaranteed bonds, bank debentures	… No rating criteria
	Corporate bonds, Samurai bonds, MBS, ABS	… Equivalent to single-A or higher
Issue date	JGBs	Issues until the portfolio determination date[11]
	Bank debentures	Issues until the last day of the month two months before the portfolio determination date
	Others	Issues until the last day of the month prior to the portfolio determination date

Source: NFRC

10. The NOMURA-BPI's inclusion criteria have been revised based on changes in the market environment. Please see Appendix 1 for more details on changes in the inclusion criteria.
11. This rule was implemented at the time of the May 2018 portfolio reconstitution (24 April, 2018). Prior to that, JGB issues until the last day of the month of the portfolio determination date were eligible for the following month's index portfolio inclusion.

4.1.1 Issuance process

The NOMURA-BPI is designed to reflect the performance of all publicly offered bonds issued in Japan. Note that it excludes the following types of bonds from the pool of eligible securities:

- JGBs not publicly offered in the market (i.e., JGBs tailored for retail investors and sold New Over-the-Counter sales system, those issued for Bank of Japan Rollover)
- JGBs for Subscription/Contribution
- Corporate bonds offered specifically to retail investors
- Municipal bonds issued specifically to local residents (mini municipal bonds)
- Convertible bonds, warrant bonds
- Collateralized Bond Obligations (CBO), Collateralized Loan Obligations (CLO)
- MBS that fall in neither JHF MBS nor GHLC MBS, both of which are issued by the Japan Housing Finance Agency (JHF; formerly the Government Housing Loan Corporation, or GHLC)
- ABS that do not fall into any of these categories; life insurance fund bonds, life insurance subordinate loan ABS, investment corporation bonds and FILP ABS
- Bonds listed in TOKYO PRO-BOND Market and subject to disclosure rules of the Financial Instruments and Exchange Act, namely the securities that are not subject to the disclosure exemption stated in Article 3 of the Financial Instruments and Exchange Act.

4.1.2 Currency denomination

The NOMURA-BPI includes JPY-denominated bonds in terms of redemption, principal and interest payment.

4.1.3 Coupon

The NOMURA-BPI only covers fixed-coupon bonds (i.e., coupon payments remain unchanged from the issuance until maturity). Note that it does not include the following types of bonds:

- Step-up bonds
- Fix-to-Float bonds (issued as fixed-coupon bonds, with coupon payments changed to variable from the first call date)
- Discount bonds
- Deferred interest bonds
- Deferrable bonds
- Perpetual bonds

4.1.4 Outstanding face value

The NOMURA-BPI only includes bonds with an outstanding face value amount[12] of 1 billion JPY or more as of the last business day of the month following the scheduled reconstitution base date.

4.1.5 Term to maturity (scheduled redemption)

The NOMURA-BPI only includes bonds that are dated 365 days or more after the last day of the month following the scheduled reconstitution base date to the full redemption date. 29 February is also counted in.

4.1.6 Rating

For corporate bonds, samurai bonds, MBS and ABS, a rating equivalent to single-A or higher in terms of their highest ratings as of the scheduled reconstitution base date is required for inclusion in the NOMURA-BPI index portfolio. Please see "2.4 Ratings (corporate bonds and Samurai bonds)" for more details on rating requirements.

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12. Additional issuance after the portfolio determination date is disregarded.

4.1.7 Issue date

Inclusion criteria in terms of issue date are as follows:

- JGBs: Issues until the portfolio determination date[13]

- Bank debentures: Issues until the last day of the month two months before the portfolio determination date
- Other bonds: Issues until the last day of the month before the portfolio determination date

4.1.8 Other policies related to eligibility for inclusion

- Subordinated bonds
  The difference between senior and subordinated bonds is not taken into account in selecting bonds.
- Basel III-compliant bonds
  The presence or absence of callable clause, prepayment clause or puttable clauses is not considered in the selection of bonds.
- Callable/puttable bonds
  The presence or absence of callable clause, prepayment clause or puttable clause is not considered in the selection of bonds.

4.1.9 First Entry Rule

As a general rule, for bonds whose eligibility cannot be determined by the inclusion criteria set forth in this rule book, an investigation is conducted within a certain monitoring period from the issue date of the relevant bond, and whether or not they are to be included is determined. Announcements are made before and after the monitoring period. However, if public information, such as laws or regulation changes, clarifies rationality for inclusion of the relevant bond, an announcement will be made without setting a monitoring period.

4.1.10 Other potential for inclusion

If an event that is material in terms of portfolio inclusion occurs after the portfolio determination date, the issue in question may be included in the next-month portfolio. Any such change would be announced in advance.

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13. This rule was implemented at the time of the May 2018 portfolio reconstitution (24 April, 2018). Prior to that, JGB issues until the last day of the month of the portfolio determination date were eligible for the following month's index portfolio inclusion.

4.2 Portfolio exclusion criteria for next month

Any issues that fall short of the inclusion criteria (Figure 6) as of the scheduled reconstitution base date will be excluded from the index portfolio in the following month.

Listed below are specific criteria for exclusion from the index portfolio.

4.2.1 Outstanding face value

Debt issues whose outstanding face value amount[14] will decrease to levels below 1 billion JPY on the last business day of the month following the scheduled reconstitution base date will be excluded from the index portfolio.

For JHF (GHLC) MBS sector, the remaining face value amount (i) at the last business day of the next month is calculated based on a performance factor[15] and a rescheduled factor[16] , which are announced by the JHF:

Remaining face value amount$_i$ (last business day of next month)

= Original face value amount$_i$ × performance factor$_i$ (next month)

For issues for which the next month's performance factor information is not available by the scheduled reconstitution base date, the remaining face value amount at the last business day of the next month is calculated using a projected scheduled factor for the next month is defined as below:

Remaining face value amount$_i$ (last business day of next month)

= Original face value amount$_i$ × projected scheduled factor$_i$ (next month)

Projected scheduled factor$_i$ (next month) = Performance factor (this month)

× Rescheduled factor$_i$ (next month)÷ Rescheduled factor$_i$ (this month)

In addition, the projected scheduled factor (i) of the next month is set to 0% when the next month corresponds to the clean-up call month (April or October) of the MBS issue (i), and its performance factor (i) of this month (March or September) becomes 10% or less at the scheduled reconstitution base date.

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14. Additional issuance after the portfolio determination date is disregarded.
15. For MBS, the performance factor indicates the ratio of remaining principal to the original face amount (the projected repayment amount of the current month is considered). Data on performance factor for the next month are announced on the 25th of every month (or the prior business day if the 25th is a weekend or holiday), provided by each MBS issue on the JHF website.
16. The rescheduled factor indicates the ratio of remaining principal to the original face amount, which is updated every six months by reflecting repayment progress since issuance. The rescheduled factor for each MBS issue is announced on the JHF website on the 25th of every month (or the prior business day if the 25th is a weekend or holiday).

4.2.2 Term to maturity (scheduled redemption)

The NOMURA-BPI excludes bonds of less than 365 days until the full redemption date as of the last day of the month following the scheduled reconstitution base date. 29 February is also counted in.

4.2.3 Credit Ratings

For corporate bonds, Samurai bonds, MBS and ABS, bonds that have lost all their Single A grade (i.e., downgraded to Triple B or lower) in terms of their highest ratings as of the scheduled reconstitution base date will be excluded from the NOMURA-BPI index portfolio. Please see "2.4 Ratings (corporate bonds and Samurai bonds)" for more details on rating requirements.

4.2.4 Other potential for exclusions

If a full early redemption and/or a default – and/or a similar material credit event –occurs after the portfolio determination date, the issue in question may be excluded from the next month's index portfolio. Any such change would be announced in advance.

5. Unscheduled portfolio reconstitution

In principle, index portfolios for the next month, as determined on the portfolio determination date, will remain unchanged. However, these planned portfolios may be subject to an unscheduled reconstitution, which will be implemented between the portfolio determination date and the last business day of the month, if NFRC becomes aware that a security in the portfolios for the next month comes to meet any of the following categories:

5.1 Exclusion of defaulted debt and fully called bonds

- **Default**
  In the event of a default, the debt issue concerned would be removed from the NOMURA-BPI index portfolio the first business day after its last trading day.

- **Full early redemption**
  Callable bonds are excluded from the index portfolio on the day they are called fully.

5.2 Other criteria for unscheduled reconstitution

A material event other than these explained in 5.1 may lead to an unscheduled portfolio reconstitution. Any such change would be announced in advance.

5.3 Announcement of unscheduled portfolio reconstitution

Information about unscheduled portfolio reconstitution is announced through NRI's data delivery service and other media, except in cases where definite information on such a change is unavailable until that actually takes place due to unexpected circumstances.

6. Calculating index value

6.1 Method for calculating index

6.1.1 Total investment return index (Total index)

This is an index of investment return including capital and income gains. Assuming that the index portfolio was purchased on the last business day of the previous month at a value including accrued interest, coupon payments and redemptions are added to the market value amount (including accrued interest), which is announced as the index value for the day. All coupon payments and redemptions are assumed to be received in cash without interest on the day they are made, and are reinvested in the following portfolio reconstitution. Coupon payments made on weekends and holidays are assumed to be made on the following business days.

$$BPI_{(today)} = BPI_{(e.l.m.)} \times \frac{MVLt_{(today)} + CF_{(e.l.m, today)}}{MVLt_{(e.l.m.)}}$$

Where

$$MVLt_{(i)} = P_{(i)} \times Amount_{(i)} \times \frac{1}{100}$$

$BPI_{(today)}$	:	Total index value, today
$BPI_{(e.l.m.)}$	:	Total index value, the last business day of the previous month
$MVLt_{(today)}$	:	Market value amount (including accrued interest) of index portfolio, today
$MVLt_{(e.l.m.)}$	:	Market value amount (including accrued interest) of index portfolio, the last business day of the previous month
$CF_{(e.l.m., today)}$	:	Total income gains and redemptions paid from the last business day of the previous month through today
$P_{(i)}$	:	"Dirty price" at point i
$Amount_{(i)}$	:	Outstanding face value amount at point i

6.1.2 Capital investment return index (Capital index)

This is an index of investment return in terms of capital gains. Assuming that the index portfolio was purchased on the last business day of the previous month at the "dirty price", redemptions are added at the market value amount (excluding accrued interest). All redemptions are assumed to be received in cash without interest on the day they are made, and are reinvested in the following portfolio reconstitution.

$$BPIc_{(today)} = BPIc_{(e.l.m.)} \times \left[1 + \frac{MVLc_{(today)} - MVLc_{(e.l.m.)} + RD_{(e.l.m.,today)}}{MVLt_{(e.l.m.)}}\right]$$

Where

$$MVLc_{(i)} = SP_{(i)} \times Amount_{(i)} \times \frac{1}{100}$$

$BPIc_{(today)}$	:	Capital index value, today
$BPIc_{(e.l.m.)}$	:	Capital index value, the last business day of the previous month
$MVLc_{(today)}$	:	Market value amount (excluding accrued interest) of index portfolio, today
$MVLc_{(e.l.m.)}$	:	Market value amount (excluding accrued interest) of index portfolio, the last business day of the previous month
$MVLt_{(e.l.m.)}$	:	Market value amount (including accrued interest) of index portfolio, the last business day of the previous month
$RD_{(e.l.m., today)}$	:	Mid-term redemptions arising from the last business day of the previous month through today
$SP_{(i)}$	:	Clean price at point i
$Amount_{(i)}$	:	Outstanding face value amount at point i

6.2 Return[17]

6.2.1 Total return (annualized)

$$Rt(m,n) = \left[\frac{BPI(n)}{BPI(m)} - 1\right] \times \frac{365}{\Delta t_D}$$

Point m is assumed to precede point n in a given timeline.

Rt(m,n)	:	Total return from point m through point n
BPI(i)	:	Index value at point i
Δt_n (>0)	:	Days between point m and point(excluding the settlement date)

6.2.2 Capital return (annualized)

$$Rc(m,n) = \left[\frac{BPIc(n)}{BPIc(m)} - 1\right] \times \frac{365}{\Delta t_D}$$

Point m is assumed to precede point n in a given timeline.

Rc(m,n)	:	Capital return from point m through point n
BPIc(i)	:	Principal investment return index at point i
Δt_n (>0)	:	Days between point m and point n (excluding the settlement date)

6.2.3 Income return (annualized)

Ri(m,n) = Rt(m,n) - Rc(m,n)

Point m is assumed to precede point n in a given timeline.

Ri(m,n)	:	Income return from point m through point n
Rt(m,n)	:	Total return from point m through point n
Rc(m,n)	:	Capital return from point m through point n

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17.   Only monthly data were created for investment return before 30 September 1993.

6.3 Reference for obtaining market data

The NOMURA-BPI references bond market pricing data for the marked-to-market valuation of the index portfolios (listed in descending order of priority):

- JS Price
- Nomura price

These data are provided on a settlement-day basis, and should be converted to traded-day basis data for use as reference in calculating portfolio and performance indicators.

JS Price is jointly developed and managed by Nikkei Inc., Nikkei Financial Technology Research Institute, Inc., NRI and NSC. to price bonds for mark-to-market accounting. JS Prices are checked to detect relative and absolute outliers using a precision logic filter developed by Nikkei Inc., Financial Technology Research Institute Inc., NRI and NSC.

In addition, JS Price lists more than 12,000 bonds in total (mainly publicly offered and private placement domestic bonds) and covers almost 100% of index portfolios. Furthermore, JS Price offers daily prices with good continuity.

NSC dealers value Nomura prices for NSC's own daily valuation process, and NSC is one of the key financial instrument firms in the yen bond market, and is actively engaged in transactions with other financial instrument firms and its clients. For this reason, NSC is in a good position to obtain traded prices and/or quotations in the secondary market.

6.4 Key indices and data released

Key indices provided in the NOMURA-BPI and their base dates are as follows (base dates vary depending on the index):

Index	Base date (= Base index value)	Publication start date
NOMURA-BPI Total (Short/Medium-term)	December 28, 1983 (=100) [18]	May 1986
NOMURA-BPI Total (Long/Super long-term)	December 29, 1995 (=100)	May 1986
NOMURA-BPI MBS	March 31, 2003 (=100)	April 2003
NOMURA-BPI excluding ABS	December 28, 1983 (=100)	April 2008
NOMURA-BPI Total SDGs	December 29, 2017 (=100)	November 2019
NOMURA-BPI Total SDGs Extended	December 29, 2017 (=100)	April 2023

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18. Prior to 31 August 1993, indices were provided on a monthly basis.

7. Definition of NOMURA-BPI indicators

7.1 Definition of issue-specific return-risk indicators

In NOMURA-BPI, the issue-specific return-risk indicators are defined as follows (see *Japan Bond Indices Handbook, 14 June 2016*, for the definition of future cash flow and return-risk indicators in the MBS sector):

- **Current yield CY (%)**

$$CY = \frac{Cpn \times FV}{SP}$$

SP	:	Clean price (JPY)
Cpn	:	Coupon rate (%)
FV	:	Face value (JPY100)

- **Simple yield SY (%)**

$$SY = \frac{Cpn + \dfrac{FV - SP}{Yr}}{SP} \times 100$$

SP	:	Clean price (JPY)
Cpn	:	Coupon rate (%)
FV	:	Face value (JPY100)
Yr	:	Term to maturity (scheduled redemption)

- **Compound yield r (%)**

Multiple values r fit formula below

$$P = \sum_{i} CF_i \times \left(1 + \frac{r}{100} \times \frac{1}{2}\right)^{-2t_i}$$

P	:	Dirty price
CF_i	:	i th future cash flow (JPY)
t_i	:	Number of years until CF_i occurs

Future cash flow CF_i includes principal and interest payments (unless otherwise specified)

- **T-spread *Tspd* (%)**

$$Tspd = r - r_g$$

Let P_g be a dirty price of the bond which is assumed a JGB that has the same cash flow as the one for which Tspd is calculated:

$$P_g = \sum_i CF_i \times DF(t_i)$$

Calculate r_g (compound yield) for P_g as:

$$P_g = \sum_i CF_i \times \left(1 + \frac{r_g}{100} \times \frac{1}{2}\right)^{-2t_i}$$

CF_i	:	i th future cash flow (JPY)
$DF(t_i)$	:	Discount coefficient at point t[19]
t_i	:	Number of years until CF_i occurs

- **Term to maturity (considering early redemption) WAL (Weighted Average Life; years)**

Weighted Average Life = Σ (t × Principal received at time t) ÷ Total Principal

- **Duration *D* (years)**

$$D = \sum_i \frac{CF_i \times \left(1 + \frac{r}{100} \times \frac{1}{2}\right)^{-2t_i} \times t_i}{P}$$

CF_i	:	i th future cash flow (JPY)
t_i	:	Number of years until CF_i occurs
P	:	Dirty price

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19. The JGB discount factor is computed using the NOMURA Par Yield Model.

- **Modified duration** *mD*

$$mD = \frac{D}{1 + \frac{r}{100} \times \frac{1}{2}} \left(= -\frac{1}{P}\frac{dP}{dr} \right)$$

    P   :   Dirty price

- **Convexity** *CV*

$$CV = \sum_i \frac{CF_i \times \left(1 + \frac{r}{100} \times \frac{1}{2}\right)^{-2t_i - 2} \times t_i \times \left(t_i + \frac{1}{2}\right)}{P} \left(= -\frac{1}{P}\frac{d^2P}{dr^2} \right)$$

    CF_i :   i th future cash flow (JPY)

    t_i :   Number of years until CF_i occurs

    P   :   Dirty price

- **Effective duration** *EffD* **, effective convexity** *EffCV*

$$EffD = \frac{1}{P}\sum_i t_i \times CF_i \times DF(t_i) \times \exp(-\alpha t_i)$$

$$EffCV = \frac{1}{P}\sum_i t_i^2 \times CF_i \times DF(t_i) \times \exp(-\alpha t_i)$$

Where α (yield curve spread) satisfies the following formula

$$P = \sum_i CF_i \times DF(t_i) \times \exp(-\alpha t_i)$$

    CF_i :   i th future cash flow (JPY)

    $DF(t_i)$:   Discount coefficient at point t_i[20]

    t_i :   Number of years until CF_i occurs

    P   :   Dirty price

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20. The JGB discount factor is computed using the NOMURA Par Yield Model.

7.2 Definition of portfolio indicators

Portfolio indicators are calculated using the issue-specific indicators of all issues in the index portfolio. The weighted average is used in the calculation, as shown in Figure 7.

Fig. 7: Portfolio Indicator Calculation Methods

Indicator	Calculation Method
Coupon rate Term to maturity (scheduled redemption) Term to maturity (considering early redemption) Dirty price Clean price	Outstanding face value amount weighted average
Current yield Simple interest yield Compound interest yield T-spread	Market value amount (excluding accrued interest) weighted average
Duration Modified duration Convexity Effective duration Effective convexity	Market value amount (including accrued interest) weighted average

Source: NFRC

Appendix 1: Past rules on NOMURA-BPI index composition

Sector Changes in the NOMURA-BPI Total

Fig. 8: Sector changes in the NOMURA-BPI

May 2003	Some petroleum bonds were taken over by the government following a repeal of the Japan National Oil Corporation Law. Government-guaranteed petroleum bonds were thus reclassified as JGBs, instead of government-guaranteed bonds.
January 2004	With the repeal of the Electric Power Development Promotion Law, electric power development corporation bonds were reclassified as electric/gas utility bonds, instead of FILP agency bonds and others.
February 2004	As with the change in May 2003, government-guaranteed petroleum bonds taken over by the government were reclassified as JGBs, instead of government-guaranteed bonds.
January 2005	Portfolio index released in accordance with rating classifications by ratings agency.
April 2009	Securities issued by the Japan Finance Corporation for Municipal Enterprises and the Japan Finance Organization for Municipal Enterprises were classified as follows: Municipal corporation bonds backed by government: government-guaranteed bonds (same as before) Municipal corporation bonds backed by government: government-guaranteed bonds (same as before) Bonds issued by the Japan Finance Organization for Municipal Enterprises: corporate bonds (through March 2009), municipal bonds (from April 2009)

Source: NFRC

Past Changes in NOMURA-BPI Inclusion Criteria

Fig. 9: Past Changes in NOMURA-BPI Inclusion Criteria

October 1993	Inclusion timing of newly-issued non-JGB bonds changed to two months following issuance from one month following issuance with the release of daily data.
December 1993	Offering method for bank debentures reviewed, and the timing of the inclusion of newly-issued bank debentures changed to three months following issuance from two months following issuance starting with November 1993 issuances.
January 1993 Samurai bonds JGBs	Corporate bonds : New rating criteria applied (at least A or the equivalent) : Rating criteria changed (to at least A or the equivalent from AAA) : Intermediate issues may be included[21]
June 2002	Date for determining inclusion in portfolio changed from the last business day of the month to the 25th of the month, and inclusion standards then changed as follows: ・Inclusion determined based on rating as of the 25th of that month. ・Inclusion determined based on remaining value as of end of following month using data through the 25th of that month.
April 2003	Government Housing Loan Corporation MBS are added.
June 2005	Date for following month's portfolio determination date: Changed to earlier of : 1) first business day after the 25th; or 2) three business days before the last business day of the month. Note that the inclusion selection is made one business day prior to the portfolio determination day. Note: The portfolio determination day may be changed if the JGB auction for a given month falls later than the day after the portfolio determination date.
April 2008	Some ABS included (FILP ABS, REIT bonds, life insurance capital fund notes and subordinated loan bonds)
April 2014	Retail investor bonds (corporate bonds tailored for retail investors and local government bonds for retail subscription) will be excluded from the index portfolio.
October 2019	Changed an exclusion criteria for TOKYO PRO-BOND Market listed bonds.

Source: NFRC

Changes in Pricing

Fig. 10: Changes in Pricing

	Listed bonds		Unlisted bonds
	JGBs	Non-JGBs	
December 30, 1983 - September 30, 1993	TSE closing price		
October 1, 1993 - November 30, 1998			
December 1, 1998 - September 30, 2000	Nomura Securities bid rate		
October 1, 2000 - February 1, 2002	Nomura price		
February 2, 2002 -	Japan Standard Bond Price (JS Price), and if not available, Nomura price		

Source: NFRC

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21. Until the mid-1990s, medium-term JGBs (2 years and 4 years) had a strong tendency to be accumulated by medium-term government bond JGB funds designed for retail investors, and the NOMURA-BPI did not include medium-term JGBs in its early years. However, 4 year JGBs began to be issued in large amounts in 1993, and traded actively among institutional investors. This led to the inclusion of these bonds in the index in 1996.

Appendix 2: Data delivery services

Data on performance indices, such as the total investment return index, and portfolio indicators are available from the following sources:

NOMURA-BPI data providers

- NFRC
  http://qr.nomuraholdings.com/en/bpi/index.html
- QUICK
  NRIJ001   NOMURA Indices guidance
  NRIJ100-NRIJ111   NOMURA-BPI
- Refinitiv Japan
  NMSBPI   NOMURA-BPI guidance
- Bloomberg
  NBPI<GO>   NOMURA-BPI guidance
- Jiji Press
  BPIG/12400   NOMURA-BPI total investment return index

Detailed data including next month's index portfolios

Detailed data on portfolio indices and issue-specific indicators are available on IDS, NRI's data delivery services.

Contact: Nomura Research Institute, Ltd., Investment Data Service Department

ids-sales@nri.co.jp

Contact for further inquiries

Nomura Fiduciary Research & Consulting Co., Ltd.

e-mail : bpi@nfrc.co.jp

Appendix 3: Policies with regard to NFRC's indices

The below index-related policies are published on our website.

See the following link for details:

http://qr.nomuraholdings.com/en/guides/index.html

- Index Governance Framework
- Conflicts of Interest Policy
- Index Calculation Policy
- Glossary (Fixed Income)
- Complaints Handling Policy