IMA Methodology – P3 Serie

IMA (ANBIMA Market Index) – P3 Serie

IRF-M P3

February Version – 2026

ANBIMA

Versions:

Previous version: May-2024

Current version: February-2026

Changes: On page 14, executive board updated. No changes in calculation methodology

Contents

1. What is IMA – P3 Serie?

IMA – P3 Serie is an index belonging to the broad IMA family of indexes. It represents the evolution, at market prices, of government bond portfolio and serve as benchmark for the segment. Such reference vary from other IMA-family indexes as it have a minimum average term (PMR) control device[1].

2. Theoretical portfolios

The composition of theoretical portfolios is reviewed monthly, reflecting changes in the quantity of outstanding bonds on the market, in order to preserve the indicator's representativeness and ensure that it records, upon rebalancing, a PMR equal to 1,110 days.

a) Bond Eligibility Criteria

- Of the government bonds priced by the ANBIMA, only the following are not eligible:
- bonds maturing in less than one month – the redemption of which would take place over the theoretical portfolio cycle;
- bonds placed through non-competitive issuances;
- bonds with one unique public offer placement[2];
- new maturities placed on the market in the last two business days prior to the rebalancing date of the theoretical portfolios.

The following are eligible for the P3 serie sub-index portfolio:

- IRF-M P3: fixed rate bonds (LTN and NTN-F)

b) Quantities used

The process of defining and disclosing the components, and their respective quantities, is carried out two business days prior to the index' rebalancing date (theoretical portfolio preview disclosure date), based on market quantities of the previous business day (d-3).

[1] The PMR of the portfolio is the weighted average PMR of its components. The PMR of each component is calculated as follows: $PMR_i = \sum_i^n \frac{FiT}{\sum_i^n Ft'}$ where Fi represents the asset's nominal payment flows, and Ti is the term, in calendar days, to the n events in the asset's payment flow.

[2] New maturities placed on the market after May 2010 are immediately included in the index. However, if there is no new placement within the following three months, they are removed from the index until the National Treasury Department makes the second placement, via a public offer.

Such quantities are changed only by the STN's definitive buy, sell, or exchange operations. Although bonds solely placed on the market through direct operations are not eligible to be part of IMA's theoretical portfolio, such amounts are added to the bonds outstanding used for calculation. Moreover, amounts of eligible maturities issued through STN's "Tesouro Direto" program are also included the calculation.

In the P3 serie index, in order to ensure the preservation of the PMR, the process of defining the quantities is as follows:

1. Price estimate and PMR calculation of eligible assets: given the last known indicative rate (from three business days prior to the rebalancing date), cash flow is adjusted forward to the recalculation date.

2. Calculation of the eligible portfolio's PMR (with estimated prices) and PMR for the rebalancing date:

$$PMR_c = \sum_{j=1}^{n} \frac{PMR_r^j \; x \; Q_{ma}^j \; x \; P_e^j}{\sum_i^n Q_{ma}^j \; x \; P_e^j}$$

Where:
PMR_c = Portfolio's PMR
PMR_r^j = asset's PMR j at the rebalancing date
Q_{ma}^j = Number of the bonds on the market, j adjusted according to maturity
P_e^j = estimated price of the asset j at the rebalancing date
n = number of index components

3. if PMR_c is equal to or greater than 1,110 calendar days[3], the used quantities Q_u^j will be equal to Q_{ma}^j. Otherwise, Q_u^j will be obtained by the consecutive reduction of Q_{ma}^j from the assets that have the lowest PMR_r^j until PMR_c reaches 1,110 calendar days. For fixed-rate bonds, whenever LTN and NTN-F with equal PMR_r^j coexist, the LTN's Q_{ma}^j will be reduced first.

c) Theoretical amounts

In rebalancing, the quantities set in the theoretical portfolio preview process (Q_u^j) are used, and the closing prices of the bonds on the rebalancing date, using the following procedure:

1. From the quantities of eligible bonds used (Q_u^j) and the closing price at the rebalancing date, an auxiliary index I_t^a is found:

[3]ANBIMA may change the 1,110-calendar-day parameter upon approval by ANBIMA's Benchmarks Subcommittee, aimed at preserving the index.

$$I_t^a = \sum_{j=1}^{k} Q_u^j \; x \; P_t^j$$

2. Next, the new valid theoretical quantities of each eligible bond (Q_{nv}^j)[4] are adjusted, as follows:

$$Q_{nv}^j = Q_u^j \; x \; \left(\frac{I_t}{I_t^a}\right)$$

Where:

P_t^j = ex-coupon price of the bond j at date t
I_t= index number at date t

d) Theoretical portfolio validity and rebalancing

IMA index theoretical portfolio composition remains constant across the portfolio cycle. Regarding IRF-M P3, the portfolio validity ranges from the second business day of the month through the first business day of the following month. Whenever such dates are non-business days, the following business day is considered instead.

The disclosure of new theoretical portfolio, in turn, occurs after index calculation on the theoretical portfolio last validity day.

Index	Validity Period	Rebalancing
IRF-M *P3*	From the second business day of one month until first business day of the next month	After calculation of first business day of the month

3. Index Calculation

IMA indexes are chain-linked by the Laspeyres method (the prices of their components are weighted by their theoretical quantities, on the base period). Thus, changes in the composition of the theoretical portfolio do not impact the index's profitability.

In order to obtain the result of each IMA sub-index, the theoretical amount of each bond (on the base period) is multiplied by its respective price (on the reference date), thus producing each bond's number of points within the index. The sum of the number of points across all index components returns the index number. It should be noted that both coupon payments

[4]Therefore, we have: $\sum_{j=1}^{k} Q_{nv}^j \; x \; (P_t^j + C_t^j) = I_t$, which preserves the index continuity vis-à-vis the change in the theoretical portfolio and the relative values of each bond against the market portfolio (total value of eligible bonds).

and eventual redemptions occurring on the reference date will be taken in account for calculating the index.

The index number (I_t) is calculated according to the following formula:

$$I_t = \sum_{j=1}^{k} Q_{nv}^{j} \; x \; (P_t^j + C_t^j)$$

Where:

k: number of components of the index

Q^j_{nv}: is the maturity j valid theoretical amount

P^j_t: the maturity j ex-coupon price at reference date t

C^j_t: the maturity j interest payment at reference date t

4. Database

a) Quantities

Through an agreement settled with ANBIMA, the STN is in charge of sending, daily, the market quantities the Association, for all maturities participating in the different portfolios.

In the event of data unavailability, ANBIMA will be responsible for updating market quantities, making use of issuance information (public offers) and redemption, disclosed in due time by SELIC (Sistema Especial de Liquidação e de Custódia) and STN.

b) Prices

Prices used for valuing the theoretical portfolios components, of the IMA indexes, are calculated daily by ANBIMA, based on a survey with a representative sample composed of banks, asset administrators and financial intermediaries active on the government bonds' secondary market. The survey aims at capturing the fair price of each bond, i.e., the value at which a given institution would do business with that specific maturity, regardless of whether or not any trade actually took place during the day.

In order to eliminate spurious prices and outliers, several statistical criteria and filters are applied. For a thorough description of the statistical filtering process, refer to ANBIMA's Code of Regulation and Best Practices on the Trading of Financial Instruments, available at the ANBIMA website.

At the end of this process, for each maturity, an indicative average rate is determined. In cases where it is not possible to calculate such rates for a maturity that is part of the index theoretical portfolios, the last available rate will be used and a new unitary price for the reference date will be calculated.

5. Events that cause interference in the index daily calculation

After disclosure, the numbers of the published indexes will not be recalculated.

Any events concerning data compilation, calculation and disclosure of the indexes will be disseminated throughout ANBIMA's websites.

6. Termination and Interruption Policy

Index cessation or interruption will be evaluated by the ANBIMA's Benchmarks Advisory Group and approved by its Pricing Advisory Group.

ANBIMA will disclose index cessation decisions through its communication channels.

7. Disclosure

a) Preview and monthly theoretical portfolio

The list of components and quantities that will be taken into account for each theoretical portfolio, during the respective validity period, is disclosed two business days in advance to the rebalancing date, in the morning. Theoretical portfolios are published, in the evening, immediately following the calculation of the closing values of the last day of validity of the theoretical portfolios (which normally occurs no later than 7 pm).

b) Daily market quantities

A list containing statistics regarding outstanding government bonds and their changes is disclosed daily, during the morning (one business day lag).

c) Daily results

Results of the indexes and their statistics are disclosed daily, after the determination of their components' secondary market prices, which occurs, normally, no later than 7 pm.

8. Disclaimer / Liability Exemption

Disclosure of the IMA is for information purposes only; its usage by economic agents is optional. ANBIMA shall be held harmless for eventual damages or losses that might arise to users who utilize this index with any purpose and, in this case, the latter assumes entire and exclusive liability.

9. Periodic Review

The composition of the theoretical portfolios is reviewed monthly, capturing on such occasions the changes that occurred in stocks of securities on the market, in order to preserve the representativeness of the indicator. In addition, ANBIMA relies on the Benchmark Advisory Group to carry out extraordinary revisions, in case market movements that directly affect the indices are allowed, or changes in the methodology are suggested. Any changes made to the indices and methodologies are published on ANBIMA's institutional website and announced at least 120 days in advance, as provided for in the methodology.

10. Final considerations

Unforeseen cases in the methodology will be evaluated by the responsible bodies.

On occasions when changes to preserve the index require immediate action, the procedures to be adopted can be evaluated and approved by restricted groups of members of the responsible bodies. In such cases, the assessment must be made by at least five representatives of the Benchmarks Advisory Group and approved by at least three representatives of the Pricing Advisory Group (preferably including the president and vice president of the forum).

All decisions are disclosed through the Association's communication channels.

Appendix : Mathematical Formulas

Duration Bond = $$\frac{\sum_{j=1}^{k} du^j * PU^j}{\sum_{j=1}^{k} PU^j}$$

Where:
- **k** is the cash flow numbers
- **du** is the number of workdays of the flow
- **PU** is the bond price

Duration Basket $= \sum_{j=1}^{k} D^j * W^j$

Where:
- **k** is the number of bonds
- **D** is the duration of each bond
- **W** is the weight of each bond in the index

Yield = $\sum_{j=1}^{k} TIR^j * W^j$

Where:
- **k** is the number of bonds
- **TIR** is the internal rate of return (indicative rate) of each bond
- **W** is the weight of each bond in the index

$$\textbf{Redemption Yield} = \frac{\sum_{j=1}^{k} TIR^{j} * D^{j} * W^{j}}{\sum_{j=1}^{k} D^{j} * W^{j}}$$

Where:

- **k** is the number of bonds
- **TIR** is the internal rate of return (indicative rate) of each bond
- **D** is the duration of each bond
- **W** is the weight of each bond in the index

$$\textbf{Convexity bond} = \frac{1}{(1+i)^{2}} * \left[\sum_{t=1}^{n} \frac{\frac{Ft}{(1+i)^{t}}}{V} * (t^{2} + t) \right]$$

Where:

- **t** = flow period per year (252 workdays)
- **i** = TIR
- **F** = nominal flow
- **V**= present value (sum of discounted flows)

$$\textbf{Convexity Basket} = \frac{PMR_{r}^{j} \; x \; Q_{ma}^{j} \; x \; P_{e}^{j}}{\sum_{i}^{n} Q_{ma}^{j} \; x \; P_{e}^{j}}$$

Where:

- PMR_{c} = average renegotiation period of basket
- PMR_{r}^{j} = average renegotiation period of bond *j* for the rebalanced date
- Q_{ma}^{j} = Market quantity of bond *j* adjusted according to the maturity date
- P_{e}^{j} = Price of bond *j* estimated for the rebalancing date
- n = number of index components

$$\text{PMR Bond} = \frac{\sum_{j=1}^{k} F^j * T^j}{\sum_{j=1}^{k} F^j}$$

Where:

- **k** is the number of bond's payment flow
- **F** are the nominal payment flows
- **T** period in days of k events in the bond´s payment flow

$$\text{PMR Basket} = \sum_{j=1}^{n} \frac{PMR_r^j \; x \; Q_{ma}^j \; x \; P_{\underline{e}}^j}{\sum_{i}^{n} Q_{ma}^j \; x \; P_{e}^j}$$

Where:

- PMR_c = average renegotiation period of basket
- $\mathbf{PMR_r^j}$ = average renegotiation period of bond *j* for the rebalanced date
- $\mathbf{Q_{ma}^j}$ = Market quantity of bond *j* adjusted according to the maturity date
- $\mathbf{P_e^j}$ = Price of bond *j* estimated for the rebalancing date
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