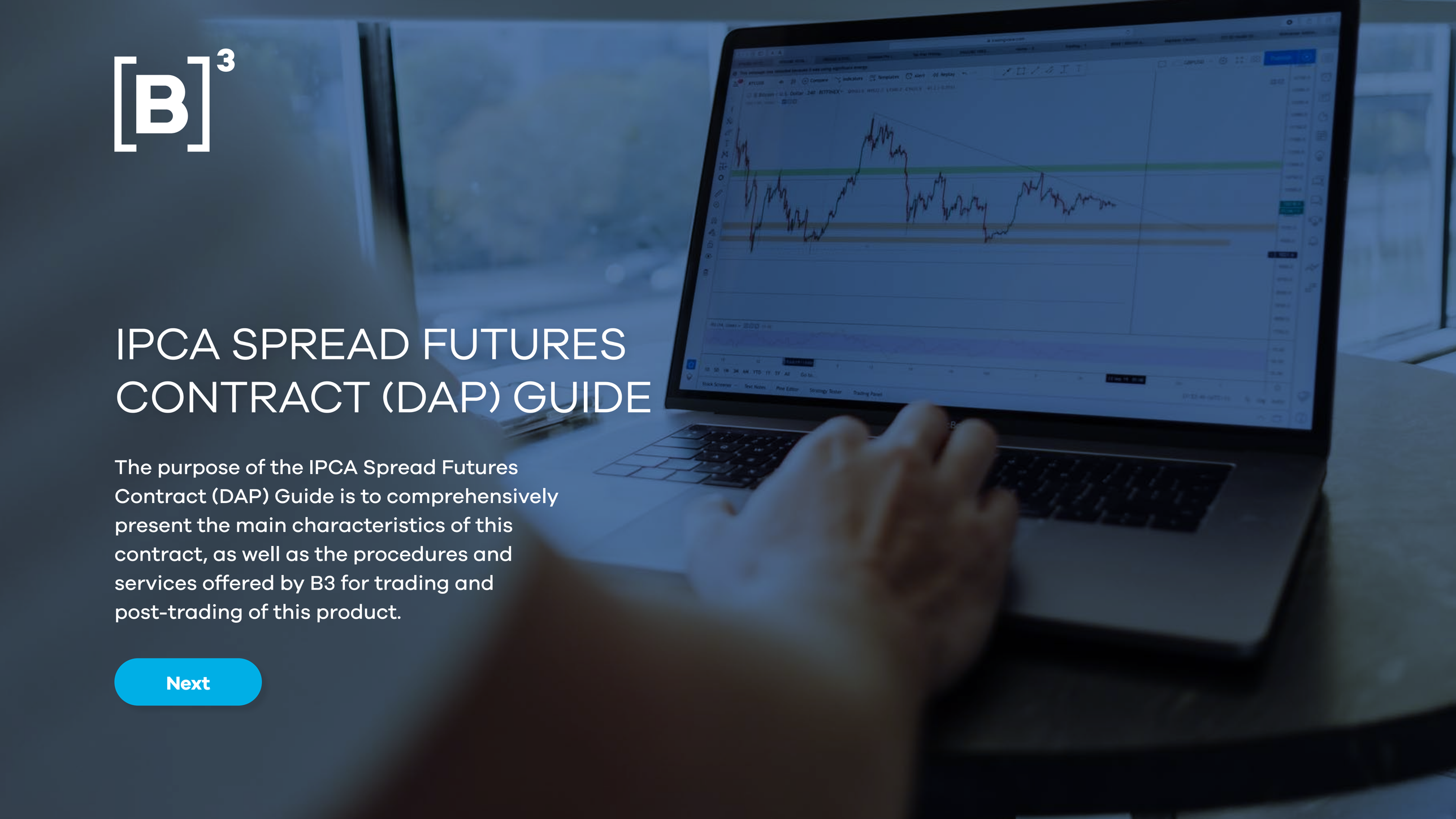

IPCA SPREAD FUTURES CONTRACT (DAP) GUIDE

The purpose of the IPCA Spread Futures Contract (DAP) Guide is to comprehensively present the main characteristics of this contract, as well as the procedures and services offered by B3 for trading and post-trading of this product.

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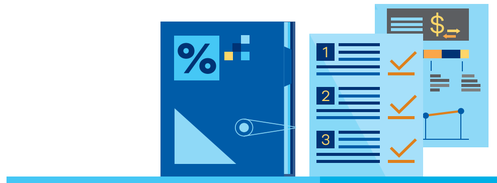
Presentation

We at B3 have the expertise and the entire systems, procedures and rules infrastructure necessary to provide DAP trade and post-trade services. We also have dedicated teams to assist your participants during trading processes and market development teams to discuss initiatives aimed at improving or enhancing the structure or dynamics of this product. .



The services and procedures presented in this Guide are detailed in the B3 Rules and Manuals and are available on http://www.b3.com.br

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Introduction

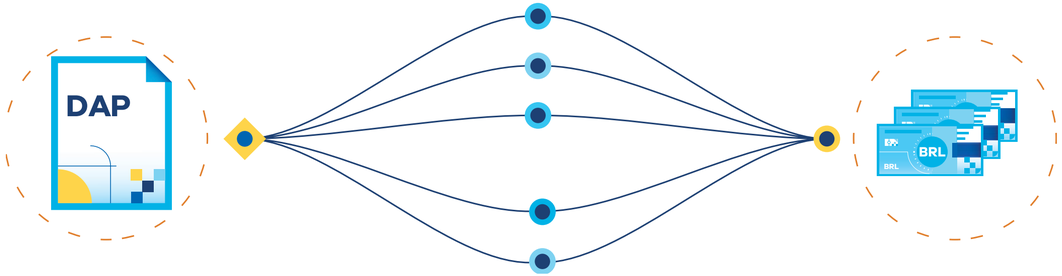
The Brazilian market for inflation-indexed assets presents high volatility and is an opportunity for the development of hedging and trading instruments.

In line with our objective of developing markets and facilitating inflation and real interest rate trading, B3 created the IPCA Spread Futures Contract, which is traded under the acronym DAP.

Since it is a listed futures contract, B3 acts as the central counterparty to these trades, thus reducing the credit risk between the parties involved in the transaction.

Furthermore, DAP enables different strategies for diverse audiences and meets market demands at certain points. Below we highlight two of these points:

- **Estimating** short-term or long-term implied inflation
- **Ease** of real interest rate trading



The seasonality of inflation implies seasonality of the real rate (spread). Therefore, the need to estimate implied inflation, whether long- or short- term, lies in the fact that DAP can be a good predictor of future inflation, and is therefore of great use to financial market participants (implied inflation represents inflation expectations).

In addition, the ease of trading combined with strategy possibilities puts DAP in the spotlight among possible contract alternatives.

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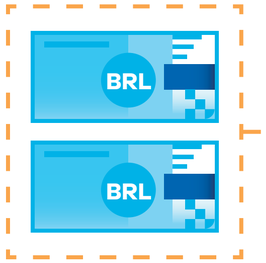
Inflation Derivatives

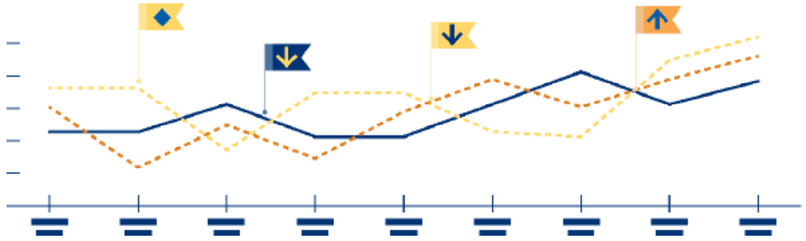
Both in Brazil and in the international market, inflation derivatives are a set of strategies from swaps to more complex products, such as futures and options.

The most common type of inflation derivative is the inflation swap, which allows investors to guarantee a return hedged against index linked inflation. This is one of the most popular types as although inflation swaps are often held to maturity, investors have the option of trading them in OTC markets before the contract expires.

Given their particularities and wide range of maturities, inflation derivatives have become a key product for investors looking to manage the risk of economic price index fluctuation.



In a swap contract, an investor agrees to pay a counterparty a fixed rate of a notional value in exchange for one or more floating rate payments.



The inflation variation over the contract will determine the amount to be paid. The calculation between fixed and floating values occurs at pre-set intervals.

FOR EXAMPLE :

- **A 5-year zero coupon swap** in which Part A **agrees to pay a 2.5% fixed** rate compounded annually on a BRL10,000 amount, while Part B **agrees to pay the compounded inflation rate.**
- **If the inflation exceeds** 2.5%, Part A will be the creditor otherwise it will be Part B. In both cases, Part A uses the swap to transfer its inflation risk to Part B.

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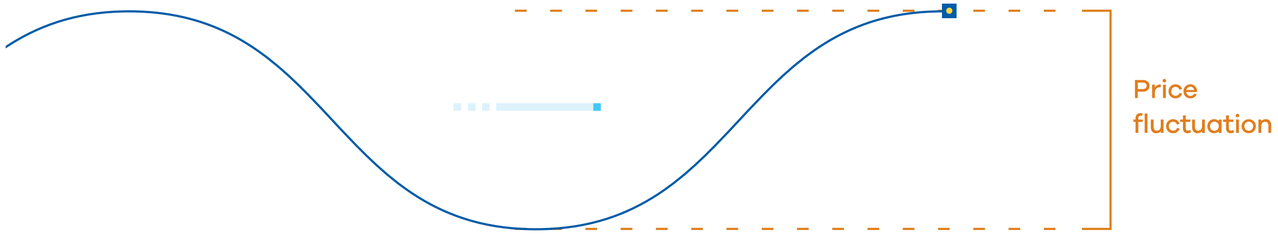
Inflation Futures Contract



Uncertainty over the economic environment may discourage investment and savings. In an economy whereby some sectors are "adjusted" by inflation while other sectors have fixed prices, inflation acts as a form of perverse redistribution among players. Inflation generates uncertainty in the economy, discouraging investment and hampering economic growth.

A high inflation environment increases public debt cost as interest rates have to offset the inflationary effect, including a risk premium to offset related uncertainties.

Not to mention that an increase in inflation above economic players' expectations can erode gains from financial investments, especially for securities with fixed-rate returns.

Due to these effects, central banks define price stability as the main objective of their policies, with an ideal inflation rate known as "inflation target".

One of the possible DAP strategies is to hedge these inflation exposures at both the active and passive ends. Among the advantages of using this contract, the following can be highlighted:

- **Reduced need for cash;**
- **Mitigation of credit risk;**
- **Settlement price defined by the market itself; and**
- **Ease of position settlement.**

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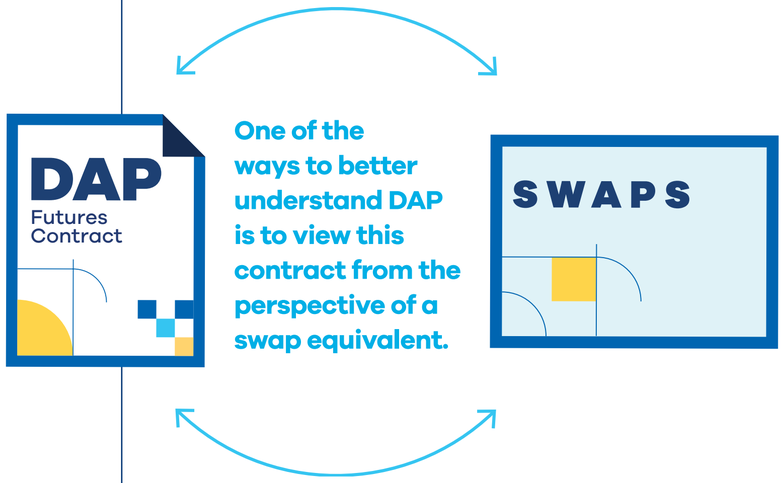
Implied Inflation

Implied inflation can be defined as the difference between nominal and real interest rates, resulting in the expectation of future price variation.

One way to observe implied inflation is to evaluate the rates of two listed futures contracts: DI Futures (DI1) and the IPCA Spread Futures (DAP), which will provide the economy's nominal and real interest rates, respectively

As they do not have intermediate spreads, these contracts provide good interest rate benchmarks for their expiration date, thus avoiding major assumptions and bootstrapping processes involved in the analysis of securities with intermediate spreads.

Swap Equivalent



One of the ways to better understand DAP is to view this contract from the perspective of a swap equivalent.

Swap is a derivative contract whose result is the swap of the variation of one asset for another by trading the variables risk.
In this type of contract, there is no transfer of flows, but the exchange of profitability at the contract's expiration due to the difference between two variables.

Thus, DAP can be interpreted in a manner equivalent to a Swap whereby the DAP contract buyer is long in Overnight DI and short in IPCA + Spread, while maintaining the dynamics of daily settlements typical of future contracts. This representation facilitates the perception of the involved exposures and helps visualize the applications that we will explore in this document.

Another interesting way to interpret the DAP short exposure is as an asset swap at a floating rate and as a liability swap at a fixed rate, both at the IPCA spread level and both legs being adjusted by the IPCA rate, which acts as a scale factor adjusting the contract's notional value so that it won´t be corroded by inflation.

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2. DAP Features

DAP's underlying asset is the IPCA spread, which is based on the real interest rate obtained by the difference between the average one-day interbank deposit rate (DI) and the inflation rate measured by the Extended Consumer Price Index (IPCA) as calculated by the Brazilian Institute of Geography and Statistics (IBGE). Therefore, DAP acts as a hedging instrument against fluctuations in the Brazilian real interest rate.

For this reason, DAP is a hedging instrument similar to a security without payment of intermediate interest flows, namely, without payment of a spread as it replicates the current cash value discounted by a real interest rate.

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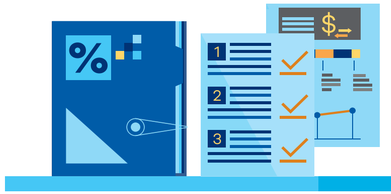

Contract Specifications

UNDERLYING

Real interest rate obtained from the calculation of the difference between the compounded DI rate in the period between the date of transaction, including, and the expiration date, excluding, and the IPCA variation verified between the transaction date and the contract's expiration date, including.

TICKER

DAP

CONTRACT SIZE

100,000 x BRL0.00025 x IPCA or Unit price (PU) multiplied by the Brazilian Reals value of each point, with the value of each point being BRL0.00025, multiplied by the pro rata value of the IPCA.

QUOTATION

Exponential Interest rates, expressed in per annum (based on 252 business days), to two decimal places.

TICK SIZE

0.01%.

ROUND-LOT

1 contract

LAST TRADING DAY

Last trading day preceding the expiration date.

EXPIRATION DATE

15th calendar day of the contract month. If this day is not a trading day, the expiration date will be on the following trading day.

CONTRACT MONTHS

All months

SETTLEMENT ON EXPIRATION

Cash settlement

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Trading

DAP is a futures contract listed on B3. Therefore, all trades on the secondary market are carried out through B3's PUMA Trading System. Any investor duly registered with a brokerage house may trade the DAP contract, provided that they comply with the provisions under B3's Operating Rules and the Operating Procedures Manual - BM&FBOVESPA Segment.

Investors should bear in mind that DAP trading is carried out at a rate that will generate a reverse PU position in custody, namely:

→ IPCA SPREAD BUYERS = SELLERS IN PU; AND
IPCA SPREAD SELLERS = BUYERS IN PU

EXPECTATION	TRADING RATE	PU POSITION
Rise	Bid	Short
Fall	Ask	Long

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Trading hours

REGULAR TRADING
9:00 AM - 4:30 PM

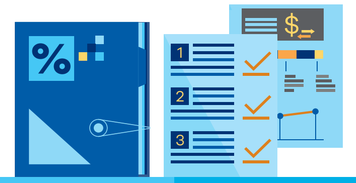
ORDER CANCELLATION
4:37 PM - 4:40 PM

ELECTRONIC CALL
4:40 PM

ORDER CANCELLATION
5:12 PM - 5:15 PM

EXTENDED TRADING (T+0 SESSION)
5:20 PM - 6:00 PM

The pre-opening phase will begin 5 minutes before the beginning of the trading phase



The trading hours table can be viewed on B3's portal under Solutions > Platforms > PUMA Trading System > Participants and traders > Trading hours > Derivatives > Indices

http://www.b3.com.br/pt_br/solucoes/plataformas/puma-trading-system/para-participantes-e-traders/horario-de-negociacao/derivativos/indices/

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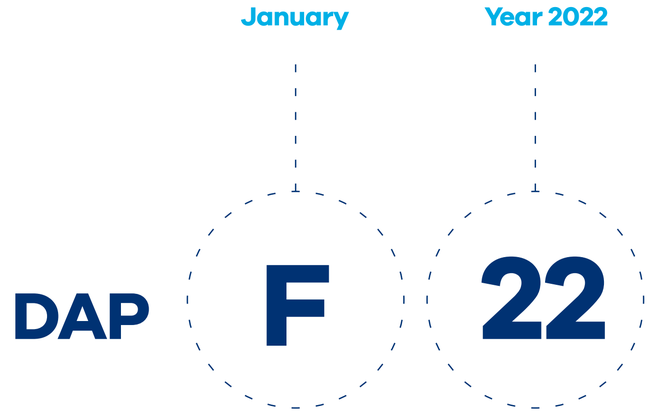
Ticker definition

The ticker that investors will find on the trading screen consists of 3 parts: AAA (ticker symbol) + B (expiration month) + CC (expiration year).

For example, the ticker DAPF22 refers to a DAP contract expiring in January (F) 2022.

The table below shows the code for each month of the year:



JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
F	G	H	J	K	M	N	Q	U	V	X	Z

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Contract price

The DAP value is based on the following items:

- **The contract's unit price (PU)** corresponds to 100,000 points discounted by the traded IPCA spread;
- **The contract's point value** is BRL0.00025;
- **The IPCA Index Number** published by IBGE is adjusted by the IPCA rate published by ANBIMA pro rata temporis between the date of the last official publication by IBGE and the date on which the contract was traded.

EXAMPLE:

- **Trading date** on August 29, 2020
- **DAP purchase** with expiration on August 15, 2026 (DAPQ26)
- **1,507 business days** to expiration
- **2.35% spread**
- **IPCA index number published** by IBGE on the last 15th = 5,344.63
- **IPCA projected by ANBIMA =** 0.30%, calculated pro rata temporis for 3 business days based on 20 business days for the period between the previous 15th (August) and the 15th day of the following month (September)

$$PU = \frac{100{,}000}{\left(\frac{2.35}{100} + 1\right)^{\frac{1507}{252}}} = \mathbf{87{,}030.81}$$

Following the PU calculation, you can find the contract's notional value.

$$\textbf{Notional} = 87{,}030.81 \times 0.00025 \times 5{,}344.63 \times \left(\frac{0.30}{100} + 1\right)^{\frac{3}{20}} = \textbf{R\$ 116,339.13}$$

Therefore, each contract expiring on **August 15, 2026** based on the above assumptions is equivalent to the amount of **BRL116,339.13.**

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Contract quantity

The calculation of the number of DAP contracts to be traded is based on the desired exposure or the position one intends to hedge.

EXAMPLE 1:

Let us assume that a fund has IPCA indexed assets that generate an exposure of BRL10 million and wants to hedge from that exposure using the DAP contract. The fund must calculate the notional value of a single contract and divide it by the amount to be hedged in the transaction.

$$\textbf{Notional} = 87{,}030.81 \times 0.00025 \times 5{,}344.63 \times \frac{(0.30 + 1)^{\frac{3}{20}}}{100} = \textbf{R\$ 116,339.13}$$

$$Q = \frac{10{,}000{,}000}{116{,}339.13} = 85{,}956 = \textbf{86 contracts}$$

For a more refined hedge adjustment, the amount must be calculated through exposure to the rate, instead of the proportion of the notional value of the contract.

EXAMPLE 2:

A fund has an exposure whose sensitivity measure is BRL20,000 over the variation to a single base point (0.01%) of IPCA spread (DV01), and wishes to hedge this exposure through a DAP contract.

The fund has chosen the DAPQ26 contract, which expires in August 2026 and has a DV01 of BRL67.95 per contract. Approximately 295 contracts should be traded and are calculated as follows:

$$Q = \frac{20{,}000}{67.95} = 294.35 = \textbf{295 contracts}$$

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Daily settlement

Daily settlement is a feature of futures contracts and is calculated daily at the end of each trading session.

The daily settlement is the cash settlement on credit or debit carried out daily in short and long accounts of this type of market, determining the difference between the day's Settlement Price (PA d+0) over the previous day's Settlement Price (PA d-1).

In the event of trades carried out on the same day, the daily settlement will be done by the difference between the day's settlement price and the price of the executed trade.

In the case of DAP, the previous day's settlement price will be adjusted by a factor that will result from the arbitrage between the previous day's CDI rate and the variation of the IPCA index pro rata tempore.

EXAMPLE 1: TRADE SETTLEMENT CARRIED OUT ON THE DAY:

- **Trading date** on August 29, 2020
- **DAP purchase** with expiration on August 15, 2026 (DAPQ26)
- **1,507 business days** to expiration
- **Contract quantity** 86
- **2.35%** spread
- **IPCA index number** published by IBGE on the last 15th = 5,344.63
- **IPCA projected by ANBIMA =** 0.30%, calculated pro rata temporis for 3 business days based on 20 business days for the period between the previous 15th (August) and the 15th day of the following month (September)
- **Settlement Price** published at the end of the day for the respective contract/expiration **= 87,030.90**

$$PU = \frac{100{,}000}{\left(\frac{2.35}{100}+1\right)^{\frac{1507}{252}}} = \mathbf{87{,}030.81}$$

Daily Settlement = $(87{,}030.90 - 87{,}030.81) \times 0.00025 \times 5{,}344.63 \times \frac{(0.30+1)^{\frac{3}{20}}}{100} \times 86 =$ **BRL10.35**

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Daily settlement

EXAMPLE 2: SETTLEMENT OF POSITIONS OPEN ON THE PREVIOUS DAY

- **The previous day's Settlement Price** (87,030.90) is adjusted by the arbitrage between the previous day's CDI published by B3 (August 19, 2020) and one pro rata temporis of the IPCA
- **Settlement Price** published at the end of the day (August 20, 2020) for the respective contract/expiration = 87,028.90
- **In this case,** the previous day's Settlement Price (August 19, 2020) will be adjusted as follows:

Adjusted SP = 87,030.90 x $\left(\frac{\left(\frac{1.90}{100} + 1 \right)^{\frac{1}{252}}}{\frac{5,347.832937}{5,347.032023}} \right)$ **= 87,024.36**

Daily Settlement = (87,030.90 - 87,024.36) x 0.00025 x 5,344.63 x $\frac{(0.30 + 1)^{\frac{4}{20}}}{100}$ x 86 **= BRL522.00**

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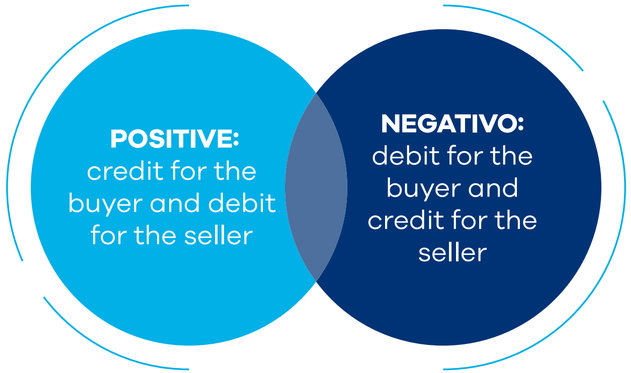
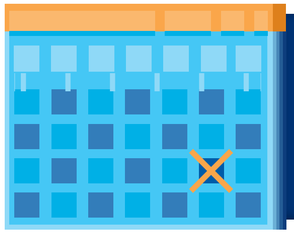
Daily settlement

To define which contract leg (short or long) will be credited or debited, it is important to note whether the settlement result was positive or negative:



The table below shows the results on the contract due to the effective IPCA spread variation..

Expectation	Trading Rate	PU Position	Effective IPCA Spread	Result
Rise	Bid	Short	Rises	+
Rise	Bid	Short	Falls	-
Rise	Ask	Long	Rises	-
Rise	Ask	Long	Falls	+



The financial results are transferred on the business day following the credit and debit date.

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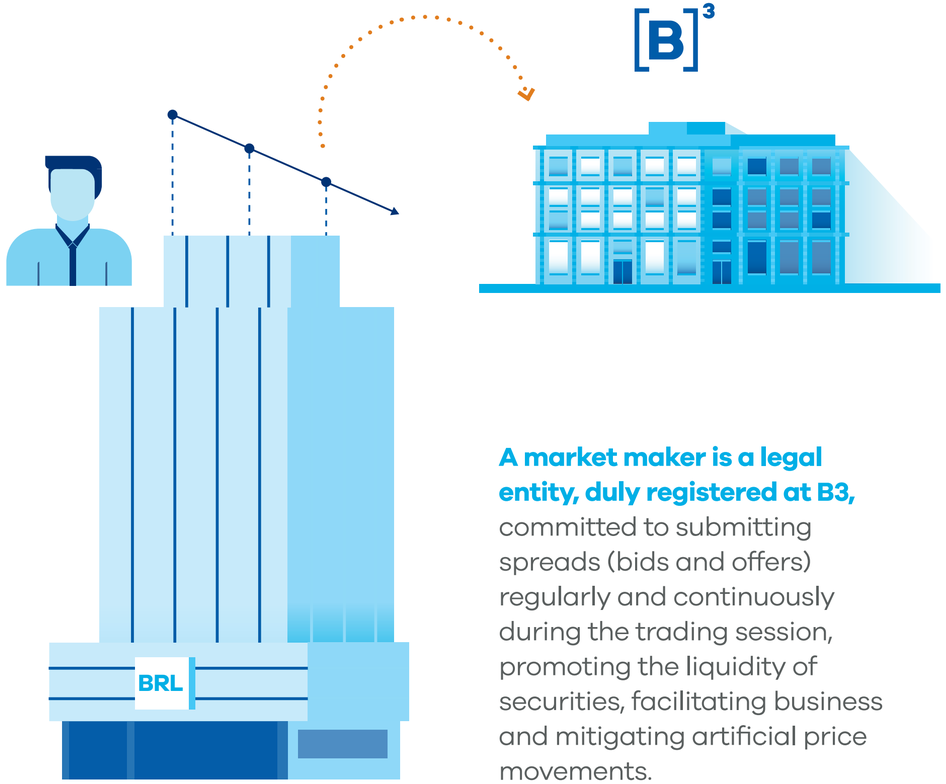
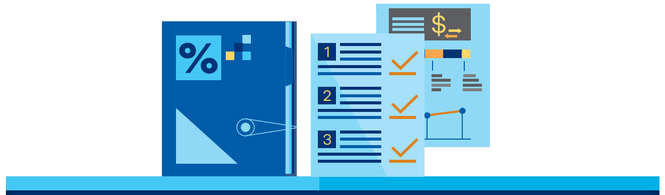


A market maker is a legal entity, duly registered at B3, committed to submitting spreads (bids and offers) regularly and continuously during the trading session, promoting the liquidity of securities, facilitating business and mitigating artificial price movements.

Market makers must act on a daily basis and respect their activity parameters (minimum amount, maximum spread and percentage of activity in the trading session).

The minimum amount of each offer is defined by B3, according to the asset/derivative characteristics and market dynamics. The market maker's prices for bid and ask offers shall respect a maximum interval (also known as spread), which is defined based on each asset/derivative.



The DAP market makers' activity parameters are available on B3's portal www.b3.com.br.

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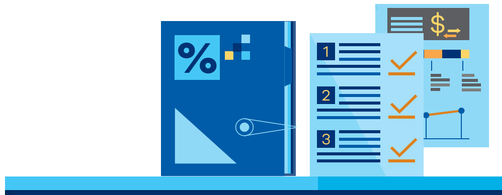
Margin

B3 acts as a central counterparty to guarantee the settlement of market positions, requiring collateral deposit for DAP positions and for other listed derivative contracts.

The margin value takes into account the value of the assets pledged as collateral and the client's portfolio. The margin value may change according to the client and the pledged assets, besides risk scenarios.



To view the DAP maximum theoretical margin values for long and short positions pledge as collateral visit B3's portal (www.b3.com.br).

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Trading tunnels

B3 uses trading tunnels as control mechanisms applicable to the quantities and price fluctuations of the assets and derivatives admitted to trading, with the aim of:

- **Mitigating** the impact of participant failures and operating errors;
- **Safeguarding** the asset and derivative price formation process;
- **Protecting** the health and integrity of the markets managed by B3;
- **Avoiding** systemic risk.

The following trading tunnels are used for DAP contracts:

REJECTION TRADING TUNNEL

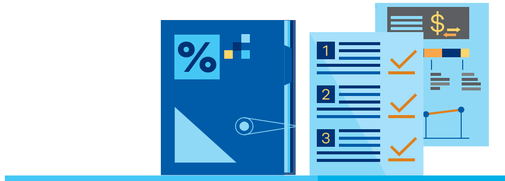
Prevents registration in the central order book of bids above a specified price or quantity and asks below a specified price or quantity.

AUCTION TRADING TUNNEL

Automatically submits to an ordinary auction any bids or asks that infringe specified price and quantity limits.

PROTECTION TRADING TUNNEL

During opening call, closing call and ordinary auctions, it automatically postpones the end of the opening or closing call or of an ordinary auction if the auction theoretical price or theoretical quantity infringes a specified limit.



The DAP trading tunnel specifications can be found on B3's portal at Home > Solutions > Platforms > PUMA Trading System > Participants and traders > Rules and trading parameters > Trading tunnels parameters > Derivatives and Options (Brazilian Real-Denominated Interest Rate Futures Contract)

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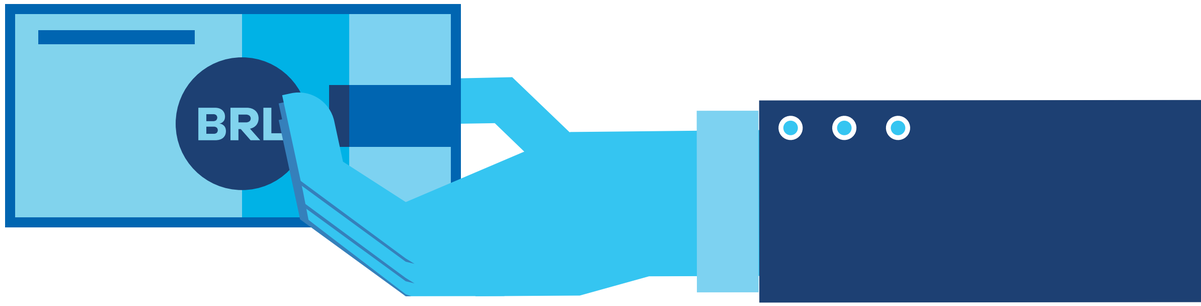
DAP Settlement Value

On expiration date, following the last settlement, open positions will be financially settled by registering a trade of a reverse nature (buy or sell) to that of the position, for the same quantity of contracts, and at the quotation (PU) of 100,000 points.

Settlement = (100,000-Adjusted SP) x 0.00025 x IPCA Index x Quantity



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Fees

The DAP contract trading fees at B3 takes into account the following aspects:

SPECIFIC UNIT COST

Base value calculated for exchange fees and variable registration fee for a single contract.

FEES AND REGISTRATION CHARGES

Fixed and variable components based on the ADV (average daily volume) in a progressive manner (fee schedule prices)

PERMANENCE FEE

BRL0.0093 per day (fee schedule prices)

SETTLEMENT FEE

BRL0.01 per contract (fee schedule prices)

All updated fees can be found on B3's portal (www.b3.com.br).

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OPERATING STRATEGY 1

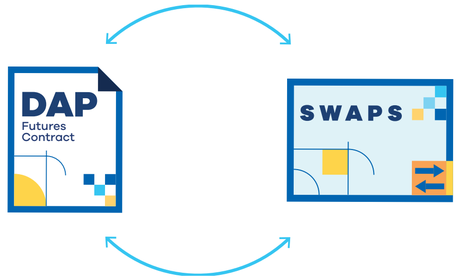
NTN-B portfolio with Floating IPCA Spread

Equivalent to a floating portfolio

Portfolio with 100,000 NTN-Bs with redemption on August 15, 2022

An investment fund has 100,000 NTN-Bs in its portfolio expiring in one year with a yield of IPCA + 0.18%.

The fund's management believes that this spread could increase depending on macroeconomic conditions and wishes to follow the market's movement by making it a floating spread.



As previously mentioned, DAP can be easily understood through a Swap equivalent.

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Synthetic IPCA Hedge

NTN-B Matched Sale with IPCA Spread Futures

The DAP contract buyer is long in CDI and short in IPCA + a fixed rate. Therefore, one can intuit that when adding a DAP long position to an NTN-B portfolio, the manager will swap their exposure from IPCA+ to CDI*.

Another valid but less intuitive interpretation is to isolate the inflation variation in the abovementioned Swap equivalent. In doing so, we would come up with an IPCA + Floating Spread asset versus an IPCA + Fixed Spread liability, so that DAP buyers can swap their exposure for a variable spread. In the above example, this allows clients to capture the spread opening (increase in the difference between CDI and IPCA) brought forward by them.

VNA NTNB Sep. 15, 2020	**3,324.28**	**Price given** (market)
Expiration	**Aug. 15, 2022**	**Price given** (contract)
Term (in business days)	**478**	Price calculated on **Sep. 18, 2020**
Traded quantity	**100,000**	**Price given** (portfolio)
Trading cost	**0.18%**	On **Sep. 18, 2020**
PU NTN-B	**3,705.2**	Price calculated by the **trading cost**
Cash (R$)	**370,525,000.00**	**100,000 x 3,705.25**
DV01	**0.6723**	Price variation resulting from **0.01% variation in the contract fee**

DV01 (or 1 basis point value) is a sensitivity measure that measures the interest rate risk of assets or asset portfolio by estimating the price variation over the yield variation in a single basis point (0.01%), usually expressed in its absolute value.

In the example above, the DV01 is the difference between unit prices (PUs) calculated at 0.18% (3,705.25) and 0.19% (3,704.58).

DV01 = | 3,704.58 – 3,705.25 |= 0.6723

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Synthetic IPCA Hedge

NTN-B Matched Sale with IPCA Spread Futures

• Buy IPCA Futures Contract at B3

Exposure	**370.525.000,00** → Cash value of **NTN-Bs**
Strategy	Swap **NTN-B fixed spread to floating spread**
Expiration	**DAPQ22** → August 15, 2022
Future Trade	**Buy** → Equals the purchase of **IPCA Spread**
PU Position	**Long**
Traded Futures Spread	**0.18%** → $\frac{100{,}000}{(1.0018)^{\frac{478}{252}}}$
PU	**99,659.46**
IPCA Index	**5,347.03** → Index number published by **IBGE and adjusted by the Anbima IPCA**
Reference Value (VR)	**133,220.53**
DV01	**25.22** → Price variation **resulting from 0.01%** variation in the traded futures spread
Contract Quantity	**2,666**

The number of contracts necessary to achieve the strategy will be obtained by the relation between the NTN-B DV01 and the Futures Contract DV01 multiplied by the quantity of hedged assets, as follows:

$$\frac{0.6723}{25.22} \times 100{,}000 = 2{,}666$$

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NTN-B Matched Sale with IPCA Spread Futures

Establish hypotheses for the IPCA Spread effective between the trading and settlement dates

Assuming that on expiration, there may be several situations for the CDI and for the IPCA, we devised three different situations and tested the hypotheses:

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Effective CDI	2.50%	2.70%	3.00%
Effective IPCA	2.00%	2.50%	2.90%
Effective IPCA Spread	**0.49%**	**0.20%**	**0.10%**
IPCA Index	5,551.70	5,603.43	5,644.98
Adjusted Futures PU	100,588.15	100,028.63	99,843.25
VNA NTN-B	3,859.67	3,895.64	3,924.53

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Synthetic IPCA Hedge

NTN-B Matched Sale with IPCA Spread Futures

Strategy result

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
NTN-B Redemption (R$)	385,967,000	389,564,000	392,453,000
Total Settlements (R$)	2,176,277	106,924	(589,753)
Total (R$)	388,143,277	389,670,924	391,863,247
Hedge Spread	**0.47%**	**0.19%**	**0.09%**

As we can see, regardless of the index variation for each hypothesis, the final result will always be the variation of the effective IPCA Spread, namely, the CDI.

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Synthetic IPCA Hedge

NTN-B Matched Sale with IPCA Spread Futures

Operating cost and margin call assumptions at B3

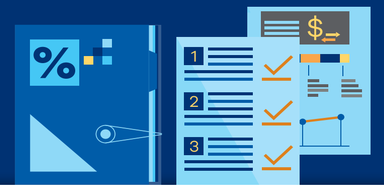
The purchase of 2,666 IPCA futures contracts will result in a total cost of BRL3,902.56 or BRL1.16 per contract, equivalent to 0.00079% of the exposure to be hedged.

The Maximum Theoretical Margin (MTM) estimated for 2 days, according to the criteria adopted by B3, will be equivalent to 3.57% of the exposure to be hedged in the approximate amount of BRL3,453,210.66.

It should be noted that the effective margin will depend on the portfolio as a whole, and there may be margin offset between the different markets where the hedger has open positions, respecting the criteria established by B3.

Final summary

The implementation of this strategy allows the investment fund to hedge the NTN-B fixed spread of its portfolio against a floating spread following the changes in the macroeconomic scenario.



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OPERATING STRATEGY 2

Synthetic NTN-B

Conversion of an LFT portfolio into NTN-B

Portfolio with 10,000 LFTs with redemption on August 15, 2022

An investment fund has 10,000 LFTs in its portfolio with redemption on August 15, 2022 whose yield is the Selic Rate. The fund's management wishes to convert this asset's yield into synthetic NTN-B linked to the IPCA+ 0.18% per year traded in the IPCA spread futures market.

Since the objective is to change the LFT portfolio into synthetic NTN-B, we will convert the respective cash value into its equivalent NTN-B quantity with related expirations so as to find the DV01, whose maturity is August 15, 2022.

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Synthetic IPCA Hedge
NTN-B Matched Sale with IPCA Spread Futures

To this end, the following analysis is done:

VNA LFT	**10,687.80**	Price given **on the date**
Term (in business days)	**478**	**Calculated price**
Asset Quantity	**10,000**	**Price given** (portfolio)
LTF traded rate	**0.00%**	Rate traded **on the date**
PU Buy	**10,687.80**	$\frac{10{,}687.80}{1.0000^{\frac{478}{252}}}$
Cash (R$)	**106,878,000.00**	**10,000 x 10,687.80**
Selic Rate Expectation	**2.00%**	**Market expectation**
Projected Redemption (R$)	**110,968,915.71**	$10{,}000 \times 10{,}687.80 \times 1.02^{\frac{478}{252}}$
NTN-B PU	**3,705.25**	Expiration **Aug. 15, 2022**
Quantity	**28,845**	$\frac{106{,}878{,}000.00}{3{,}705.25}$
DV01	**0.6723**	NTN-B price variation resulting **from 0.01% variation in the fee**

DV01 (or 1 basis point value) is a sensitivity measure that measures the interest rate risk of assets or asset portfolio by estimating the price variation over the yield variation in a single basis point (0.01%).

In the example above, the DV01 is the difference between unit prices (PUs) calculated at 0.18% (3,705.25) and 0.19% (3,704.58) for the corresponding NTN-B to be synthesized.

DV01 = | 3,704.58 – 3,705.25 | = 0.6723

Another approach would be to use the equivalence through Modified Duration, which is explained in Annex III on DV01.

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Synthetic IPCA Hedge

NTN-B Matched Sale with IPCA Spread Futures

Sell IPCA Spread Futures Contract

Exposure	**106,878,000.00**	Cash value of LFTs
Strategy	Synthetic NTN-B	
Transaction	**DAP Sale**	Equals the sale of CDI and **purchase of IPCA+**
PU Position	**Long**	The fund will be long in PU and **short in rate**
Spread	**0.18%**	Spread traded in the **futures Market**
PU	**99,659.46**	$\frac{100{,}000}{1.0018^{\frac{478}{252}}}$
IPCA Index	**5,347.03**	Index number published by **IBGE and adjusted by the Anbima IPCA**
Notional Value (R$)	**133,220.53**	**99,659.46 x 0.00025 x 5,347.03**
DV01	**25.22**	Price variation **resulting from 0.01%** variation in the traded futures spread
Contract Quantity	**769**	

The number of contracts necessary to achieve the strategy will be obtained by the relation between the NTN-B DV01 and the Futures Contract DV01 multiplied by the quantity of hedged assets, as follows:

$$\frac{0.6723}{25.22} \times 28{,}845 = 769$$

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Slope directional positions and Forward Rate Agreement (FRA) on IPCA Spread

Synthetic IPCA Hedge

NTN-B Matched Sale with IPCA Spread Futures

Establish hypotheses for the IPCA Spread effective between the trading and settlement dates

Assuming that during the period there will be several situations for the CDI and for the IPCA, we devised three different situations and tested the hypotheses. As we can see below, regardless of the index variation for each hypothesis, the result will be approximately the variation of the hedge underlying IPCA Spread (0.18%).

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Effective CDI	2.50%	3.00%	4.00%
Effective IPCA	2.00%	2.00%	2.50%
Effective IPCA Spread	**0.49%**	**0.98%**	**1.46%**
IPCA Index	5,551.70	5,551.70	5,603.43

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Synthetic IPCA Hedge

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Strategy Results

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Adjusted PU futures	100,588.15	101,520.90	102,443.99
VNA LFT	11,200.30	11,304.16	11,513.24
LFT Adjustment (R$)	112,002,990	113,041,599	115,132,408
Total Settlements (R$)	(627,563)	(1,622,834)	(2,632,088)
Total (R$)	**111,375,427**	**111,418,765**	**112,500,320**
Profitability = IPCA+	**0.19%**	**0.21%**	**0.23%**

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Slope directional positions and Forward Rate Agreement (FRA) on IPCA Spread

Synthetic IPCA Hedge

NTN-B Matched Sale with IPCA Spread Futures

Operating cost and margin call assumptions at B3

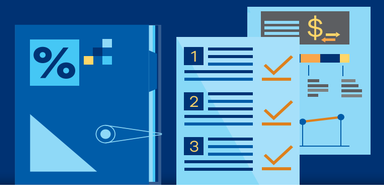
The sale of 769 IPCA futures contracts will result in a total cost of BRL891.79 or BRL1.16 per contract, equivalent to 0.00080% of the percentage to be hedged.

The Maximum Theoretical Margin (MTM) estimated for 2 days, according to the criteria adopted by B3, will be equivalent to 3.22% of the exposure to be hedged in the approximate amount of BRL3,297,870.66.

It should be noted that the effective margin will depend on the portfolio as a whole, and there may be margin offset between the different markets where the hedger has open positions, respecting the criteria established by B3.

Final summary

The implementation of this strategy allowed the pension fund to create a synthetic NTN-B with a yield of approximately IPCA+ 0.18% a year with no changes to the portfolio composition.



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OPERATING STRATEGY 3

Conversion of an IPCA debentures portfolio into CDI-linked debentures

Buy IPCA + Spread linked debentures with redemption on August 15, 2025

This strategy is similar to Strategy 1, but the portfolio is composed of IPCA-linked private securities.

A private credit fund has 10,000 IPCA-linked debentures plus 5% in its portfolio for 5 years and wishes to realize a yield equivalent to the Selic Rate (or CDI Rate), but does not have the option to acquire such securities under the risk of non-compliance with the portfolio. However, through the IPCA Spread Futures Contract, they can obtain the same result without running the risk of non-compliance.

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NTN-B Matched Sale with IPCA Spread Futures

Portfolio	**IPCA Debentures + 5%**	**Price given** (portfolio)
VNA Debenture	**10,000.00**	**Price given**
Expiration	**August 15, 2026**	**Price given**
Yearly spread	**5.00%**	**Price given**
Term (business days)	**1,232**	**Calculated price**
Quantity	**10,000**	**Price given** (portfolio)
Traded Rate	**3.00%**	Rate traded **on the date**
VNA Debenture + Interest	**12,693.81**	**$10{,}000 \times (1.05)^{\frac{1232}{252}}$**
PU	**10,985.82**	$\frac{12{,}693.81}{(1.03)^{\frac{1232}{252}}}$
Cash (R$)	**109,858,200.00**	
DV01	**5.2129**	Price variation resulting from **0.01% variation in the traded rate**

DV01 (or 1 basis point value) is a sensitivity measure that measures the interest rate risk of assets or asset portfolio by estimating the price variation over the yield variation in a single basis point (0.01%).

In the example above, the DV01 is the difference between unit prices (PUs) calculated at 3.00% (10,985.82) and 3.01% (10,980.61).

DV01 = | 10,980.6042 – 10,985.8171 | =5.2129

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Buy IPCA Futures Contract at B3

Exposure	**109,858,200.00** → Cash value of **debentures**
Strategy	Convert into **synthetic LFT**
Expiration	**DAPQ26** → August 15, 2026
Trade	**Buy**
PU Position	**Short** → The fund will be short **in n contracts**
Spread	**2.60%** → Spread traded in the **futures market**
PU	**88,206.74** → $\frac{100{,}000}{1.026^{\frac{1232}{252}}}$
IPCA Index	**5,347.03** → Index number published by **IBGE and adjusted by the Anbima IPCA**
Notional Value (R$)	**117,911.02** → **88,206.74 x 0.00025 x 5,347.03**
DV01	**56.17** → Price variation **resulting from 0.01%** variation in the traded futures spread
Contract Quantity	**928**

As we can see, the futures contract's trading rate is 40 bps (0.40 pp.) lower than the rate traded for the debenture. This is mainly due to the debenture's credit spread, besides other price pressures.

The number of contracts necessary to achieve the strategy will be obtained by the relation between the debentures DV01 and the Futures Contract DV01 multiplied by the quantity of hedged securities, as follows:

$$\frac{5.21}{56.17} \times 10{,}000 = 928$$

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NTN-B Matched Sale with IPCA Spread Futures

Establish hypotheses for the CDI, the IPCA and the IPCA Spread effective between the trading and settlement dates

Assuming that on expiration, there may be several situations for the CDI and for the IPCA, we devised three different situations and tested the hypotheses:

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Effective CDI	6.00%	7.00%	8.00%
Effective IPCA	4.00%	4.00%	5.00%
Effective IPCA Spread	1.92%	2.88%	2.86%
IPCA Index	6,477.19	6,477.19	6,787.42

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Strategy Results

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Adjusted futures PU	96,815.58	101,363.53	101,231.27
VNA Debentures	15,376.81	15,376.81	16,113.29
Debentures Redemption (R$)	153,768,094	153,768,094	161,132,913
Total settlements (R$)	(4,785,256)	2,048,984	1,938,861
Total (R$)	**148,982,838**	**155,817,078**	**163,071,773**
Profitability	**6.43%**	**7.41%**	**8.41%**

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Operating cost and margin call assumptions at B3

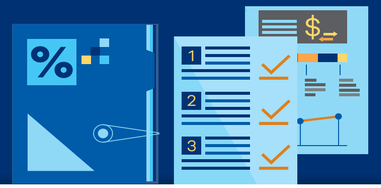
The purchase of 928 IPCA futures contracts will result in a total cost of BRL1,076.48 or BRL1.16 per contract, equivalent to 0.00070% of the percentage to be hedged.

The Maximum Theoretical Margin (MTM) estimated for 2 days, according to the criteria adopted by B3, will be equivalent to 6.86% of the exposure to be hedged in the approximate amount of BRL7,506,313.13.

It should be noted that the effective margin will depend on the portfolio as a whole, and there may be margin offset between the different markets where the hedger has open positions, respecting the criteria established by B3.

Final summaryl

The implementation of this strategy allowed the pension fund to create a synthetic LFT with a yield of CDI (or Selic Rate) added of 0.40% spread a year obtained by the difference between the debenture's trading rate and the IPC Spread Futures Contract with no changes to the portfolio composition.



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OPERATING STRATEGY 4.1

Slope directional positions and Forward Rate Agreement (FRA) on IPCA Spread

Besides pure directional positions, there are also two very usual trades using two simultaneous vertices – FRA and yield curve slope trades. While FRA trades the forward rate between two maturities, incorporating both level (parallel) and slope movements, yield curve slope trades are restricted to yield curve slope movements, so it is traded based on the differential between both rates.

Both trades are based on combined strategies between two futures contracts of an opposite nature between a short and a long leg and the main difference between the two types of trades lies in the ratio between the contracts, besides the traded asset.

As well as hedging transactions, agents can use DAP for speculative purposes by trading cross positions to increase leverage and reduce trading margins and costs.

Slope trades directly trade the difference between the long and short maturity rate, so that their nature will be the opposite between maturities, namely, whoever buys slope also buys DAP with longer maturity and sells the shortest maturity contract, and whoever sells the slope reverses the positions.

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NTN-B Matched Sale with IPCA Spread Futures

• Buy short maturity and sell long maturity for IPCA Spread Contract

Strategy	Sell IPCA Spread FRA	
Leg	Short	Longa
Expiration	May 15, 2021	May 15, 2025
Term in Business Days	183	1,188
Quantity *	558	100
IPCA Spread	1.00%	3.00%
Trade	Buy	Sell
PU Position	Short	Long
PU	99,280.02	86,992.47
IPCA Index	5,347.03	5,347.03
Notional Value (R$)	132,713.36	116,287.88
DV01	9.54	53.21

DV01 (or 1 basis point value) is a sensitivity measure that measures the interest rate risk of assets or asset portfolio by estimating the price variation over the yield variation in a single basis point (0.01%).

The short leg quantity will be adjusted by the DV01 of both maturities:

$$\frac{53.21}{9.54} \times 100 = 558$$

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Final data up to close-out of the long leg

Assuming different scenarios for both contracts' rates upon short squeeze, after 93 business days and evaluating the results.

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Remaining term K21 (days)	182	182	182
Remaining term K25 (days)	1,187	1,187	1,187
K21 Rate	1.00%	1.05%	1.00%
K25 Rate	2.90%	3.05%	3.10%
Effective CDI	3.00%	3.00%	3.00%
Effective IPCA	2.00%	2.00%	2.00%
Effective IPCA Spread	0.98%	0.98%	0.98%

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On short and long DAP settlement

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
DAP K21 PU	99,283.94	99,248.46	99,283.94
DAP K25 PU	87,401.65	86,804.01	86,605.90
K21 PU adjusted (0+t)	99,283.86	99,283.86	99,283.86
K25 PU adjusted (0+t)	86,995.84	86,995.84	86,995.84

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Short DAP result (R$)	(60.42)	26,408.38	(60.42)
Long DAP result (R$)	54,251.54	(25,644.83)	(52,129.67)
Total Settlement (R$)	54,191.12	763.55	(52,190.09)

As we can see from the total financial result, it was consistent with the established position. Since the established position was the sale of the slope, the sale of the long maturity and the simultaneous purchase of the short maturity, it was expected that it would generate a gain when the realized scenario was aligned with the projected scenario – the rate differential reduction, as per the Hypothesis 1 scenario.

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Operating cost and margin call assumptions at B3

Cost per Contract	1.16 →	**Estimated Price**
Quantity	658 →	**Long**
Total Cost	763.28 →	**658 x 1.16**
	SHORT LEG	**LONG LEG**
% Theoretical Margin	1.11% →	6.86%
Theoretical Margin	821,999.71 →	797,734.55
Margin	24,265.17	

The purchase of 658 IPCA futures contracts will result in an approximate total cost of BRL763.28 or BRL1.16 per contract. The Maximum Theoretical Margin (MTM) estimated for 2 days, according to the criteria adopted by B3, will be equivalent to BRL24,265.18.

It should be noted that the effective margin will depend on the portfolio as a whole, and there may be margin offset between the different markets where the hedger has open positions, respecting the criteria established by B3 as well as the B3 fee, which may vary according to the volume traded by each institution.

Final summary

The agent expects gains from the slope by directly trading the differential between long maturity and short maturity rates by assuming speculative positions and trading cross-rate positions by increasing leverage and reducing collateral.

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IPCA Spread FRA

FRA (Forward Rate Agreement) trades, therefore, trade the forward rate for the period between both maturities, similarly to American interest rate futures contracts or a future futures contract.

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Synthetic IPCA Hedge

NTN-B Matched Sale with IPCA Spread Futures

Buy short maturity and sell long maturity for IPCA Spread Futures Contract

Strategy	Sell IPCA Spread FRA	
Leg	Short	Long
Expiration	May 15, 2021	May 15, 2025
Term in Business Days	183	1,188
Quantity *	88	100
IPCA Spread	1.00%	3.00%
Trade	Buy	Sell
PU Position	Short	Long
PU	99,280.02	86,992.47
IPCA Index	5,347.03	5,347.03
Notional Value (R$)	132,713.36	116,287.88
DV01	9.54	53.21

*** The short leg quantity will be adjusted by the PU of both maturities:**

$$\frac{86{,}992.47}{99{,}208.02} \times 100 = 88$$

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IPCA Spread FRA Result

Strategy	**Sell IPCA Spread FRA**
Expectation	**Spread Fall**
Trade	**Spread Sale**
Term in business days	**1,005** → **= 1,188 - 183**
Forward Spread	**3.37%** → $\left[\left(\frac{99{,}280.02}{86{,}992.47}\right)^{\left(\frac{252}{1005}\right)}\right] - 1$

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Final data up to close-out of the long leg

Assuming that during the period there will be several situations for the CDI and for the IPCA, we projected three situations and tested the hypotheses.

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Remaining term K21 (days)	90	90	90
Remaining term K25 (days)	1,095	1,095	1,095
K21 Rate	2.00%	2.00%	2.00%
K25 Rate	2.34%	3.26%	4.17%
FRA t	2.37%	3.37%	4.37%
Effective CDI	3.00%	3.00%	3.00%
Effective IPCA	2.00%	2.00%	2.00%
Effective IPCA Spread	0.98%	0.98%	0.98%

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On short and long DAP settlement

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
DAP K21 PU	99,295.26	99,295.26	99,295.26
DAP K25 PU	90,437.86	86,988.46	83,734.40
K21 PU adjusted (0+t)	99,638.12	99,638.12	99,638.12
K25 PU adjusted (0+t)	87,306.25	87,306.25	87,306.25

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Short DAP Result (R$)	40,628.25	40,628.25	40,628.25
Long DAP Result (R$)	421,691.21	(42,793.06)	(480,927.25)
Total (R$)	462,319.46	(2,164.81)	(440,344.00)

As we can see from the total financial result, it was consistent with the established position. Since the established position was the sale of FRA, the sale of the long maturity and the simultaneous purchase of the short maturity, it was expected that it would generate a gain when the realized scenario was aligned with the projected scenario – the FRA rate reduction, as per the Hypothesis 1 scenario.

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Operating cost and margin call assumptions at B3

Cost per Contract	**1.16**	→	**Estimated Price**
Quantity	**188**		
Total Cost	**218.08**	→	**188 x 1.16**
	SHORT LEG		**LONG LEG**
% Theoretical Margin	**1.11%**	→	**6.86%**
Theoretical Margin	**129,634**	→	**797,735**
Margin	**668,100.00**		

The purchase of 188 IPCA futures contracts will result in an approximate total cost of BRL218.08 or BRL1.16 per contract.

The Maximum Theoretical Margin (MTM) estimated for 2 days, according to the criteria adopted by B3, will be equivalent to BRL668,100.00.

It should be noted that the effective margin will depend on the portfolio as a whole, and there may be margin offset between the different markets where the hedger has open positions, respecting the criteria established by B3 as well as the B3 fee, which may vary according to the volume traded by each institution.

Final summary

The agent expects the IPCA spread to narrow (and therefore assumed a short position) in the forward period (FRA) between the short and the long maturity. This hypothesis may occur if expectations are for a decrease in the CDI rate and/or an increase in the IPCA for the same period.

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OPERATING STRATEGY 5

Synthetic IPCA Hedge

In this strategy, agents intend to assume positions in two different futures markets to obtain IPCA hedge or even to assume speculative positions in inflation by trading cross positions in two different futures markets.

The purchase (or sale) of IPCA Spread Futures Contract combined with the sale (or purchase) of DI Futures Contract will result in a synthetic IPCA futures contract strategy, whereby the agent must seek an ongoing balance between the traded quantities of both contracts.

This strategy will require a few adjustments to the contracts to be used as they are products with different maturities and notional values:

- **Contracts have different expiration dates.** Therefore, the two maturities closest (immediately before and after) to the DAP maturity can be chosen. For simplification purposes, we will choose a single DI Futures maturity (the closest after the DAP maturity and with the greatest liquidity).
- **The DI Futures (DI) Contract expires on the 1st day of the month** and maintains the highest liquidity in January across long maturities. The IPCA Spread Futures Contract (DAP) expires on the 15th of the reference month. Therefore, it should be considered that the DI Futures contract will be reversed on the expiration date of the DAP contract.
- **The quantities of DI Futures (DI)** will be adjusted by the PV01, in order to find the exact quantities for the realization of the strategy.

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NTN-B Matched Sale with IPCA Spread Futures

DI Futures purchase combined with IPCA Spread Futures sale

As an example, we will use 100 DAP contracts

Strategy	Buy Synthetic **IPCA Futures**	
Contract	**DI Futures**	**DAP Futures**
Expiration	**January 1st, 2023**	**January 15, 2023**
Term in business days	**310**	**321**
Rate	**7.00%**	**3.00%**
Trade	**Buy**	**Sell**
PU Position	**Short**	**Long**
PU	**92,013.87**	**96,304.77** $\left[\frac{100{,}000}{(1+i)^{\frac{n}{252}}}\right]$
IPCA Index		**5,347.03** Index published by IBGE and adjusted by **IPCA Anbima**
Notional Value (R$)	**92,013.87**	**128,736.13** **DAP =** PU x IPCA Index x 0.00025
DV01 *	**10.58**	**15.92** Price variation resulting from 0.01% variation in the traded rate
Hedge Underlying – IPCA	**3.88%**	$\frac{1.07}{1.03}$ -1 = 3.88% p.a., which is the implied inflation
Quantity	**150**	**100** $100 \times \frac{(15.92)}{(10.58)} = 150$

DV01 (or 1 basis point value) is a sensitivity measure that measures the price variation over the yield variation in a single basis point (0.01%) in absolute value.

The number of contracts necessary to achieve the strategy will be obtained by the relation between the DV01 Futures Contract multiplied by the quantity of DAP contracts, as follows:

$$\frac{15.92}{10.58} \times 100 = 150$$

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NTN-B Matched Sale with IPCA Spread Futures

Establish hypotheses for the CDI, the IPCA and the effective IPCA Spread between the trading and settlement dates

Assuming different scenarios for the CDI and for the IPCA effective in the period between the position entry and exit:

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Effective CDI	5.00%	5.00%	5.00%
Effective IPCA Spread	3.50%	3.50%	3.50%
Effective IPCA	3.98%	3.88%	3.78%
IPCA Index on the date	5,347.34	5,347.34	5,347.34
DI1F23 remaining term	309	309	309
DI1F23 rate	7.00%	7.05%	7.00%
DI1F23 PU	92,038.58	91,985.87	92,038.58
DAPF23	320	320	320
DAPF23 Rate	2.90%	3.05%	3.10%
DAPF23 remaining term	320	320	320
DAPF23 PU	96,434.95	96,256.73;	96,197.46

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Based on the information above, the following are the prices adjusted for the futures contracts:

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Adjusted DI PU	92,031.69	92,031.69	92,031.69
Adjusted DAP PU	96,317.92	96,317.92	96,317.92

Strategy result

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
DI1F23 Result (R$)	(1,033.67)	6,872.74	(1,033.67)
DAPF23 Result (R$)	15,644.82	(8,179.43)	(16,103.37)
Total (R$)	14,611.15	(1,306.69)	(17,137.04)

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Operating cost and margin call assumptions at B3

Trading 150 DI futures contracts combined with 100 IPCA Spread futures contracts will result in an approximate total cost of BRL215.00 equivalent to BRL1.16 per DAP contract and BRL0.66 per DI contract (approximate prices).

The Maximum Theoretical Margin (MTM) estimated for 2 days, according to the criteria adopted by B3, will be equivalent to 2.70% of the DI Futures position and 2.45% òf the DAP position. However, as B3 calculates the joint risk of positions considering primitive risk factors, the maximum theoretical margin will be the difference between both prices.

	DI FUTURES	DAP
Maximum Theoretical Margin	2.70%	2.45%
Quantity	150	100
Estimated Margin	372,984.84	315,403.84
Net Theoretical Margin	57,581.32	

It should be noted that the effective margin will depend on the portfolio as a whole, and there may be margin offset between the different markets where the investor has open positions, respecting the criteria established by B3 as well as the B3 fee, which may vary according to the volume traded by each institution.

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Final summary

The implementation of this strategy allowed the agent to obtain a synthetic IPCA futures contract so as to hedge investors against price fluctuations measured by the IPCA Index.

The use of a hedging strategy allows hedging against price fluctuations or the creation of speculative positions in the IPCA movement. The lower collateral allocation might also allow for leverage.

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OPERATING STRATEGY 6

NTN-B Matched Sale with IPCA Spread Futures

In this strategy, trades are carried out aimed at generating cash without losing the opportunity for asset gains.

In the cash transaction, the agent sells its position IPCA-linked cash assets and, simultaneously, takes short positions in the IPCA Spread futures market.

* Cash invested in asset with 100% CDI revenue

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Portfolio with 100,000 NTN-Bs

NTN-B Expiration	**May 15, 2023**	**Price given** (contract)
Term in business days	**534**	Calculation in **business days**
Asset Quantity	**100,000**	**Price given** (portfolio)
Rate	**2.20%**	**Price given** (market)
PU (R$)	**3,884.54**	**Calculated price**
Cash (R$)	**384,454,407.20**	**PU x Quantity**
DV01	**0.75**	

DV01 (or 1 basis point value) is a sensitivity measure that measures the interest rate risk of assets or asset portfolio by estimating the price variation over the yield variation in a single basis point (0.01%). In the example above, the DV01 is the difference between unit prices (PUs) calculated at 2.21% (3,844.54) and 2.22% (3,843.80).

DV01 =|3,844.54 - 3,843.80| = 0.75

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NTN-B Matched Sale with IPCA Spread Futures

Sell IPCA Spread Futures Contract

Expiration	**May 15, 2023**
Trade	**DAPK23 Sale**
PU Position	**Long PU**
Traded IPCA Spread	**2.25%**
PU	**95,394.42** ⟵ $\frac{100{,}000}{(1.0225)^{\frac{534}{252}}}$
IPCA Index	**5,347.03**
Notional Value (R$)	**127,519.21** ⟵ **95,394.42 x 5,347.03 x 0.00025**
DV01	**26.42** ⟵ **Price variation resulting from 0.01% variation in the rate**
Quantity	**2,834**
Exposure (R$)	**361,325,813.25** ⟵ **Notional value x quantity of contracts**

The quantity of contracts necessary to achieve the strategy will be obtained by the relation between the synthetic NTN-B DV01 and the Futures Contract DV01 multiplied by the quantity of hedged assets, as follows:

$$\frac{0.75}{26.42} \times 100{,}000 = 2{,}834$$

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Establish hypotheses for the IPCA Spread effective between the trading and settlement dates

Assuming that during the period there will be several situations for the CDI and for the IPCA, we devised three different situations and tested the hypotheses.

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Effective CDI	6.00%	6.00%	6.00%
Effective IPCA	3.50%	3.80%	4.00%
Effective IPCA Spread	2.42%	2.12%	1.92%
IPCA Index	5,751.38	5,786.76	5,810.41
Adjusted PU*	100,343.21	99,729.66	99,323.69
Total Settlements (R$)	(1,398,286)	1,108,174	2,783,658

	HYPOTHESIS 1	HYPOTHESIS 2	HYPOTHESIS 3
Cash applied to CDI (R$)	434,979,888	434,979,888	434,979,888
Settlements (R$)	(1,398,286)	1,108,174	2,783,658
Total (R$)	433,581,602	436,088,062	437,763,547
Profitability	5.84%	6.13%	6.32%
IPCA +	2.26%	2.24%	2.23%

*To simplify the calculation, all futures contract settlements were made in a single account by adjusting the initial PU to the full term of the transaction.

The strategy result will yield the result of the original investment, which will be approximately the IPCA plus the spread.

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Operating cost and margin call assumptions at B3

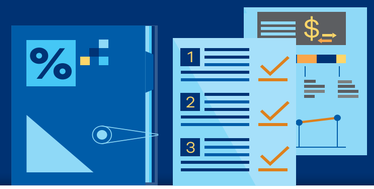
The sale of 2,834 IPCA futures contracts will result in a total cost of BRL3,287.00 or BRL1.16 per contract.

The Maximum Theoretical Margin (MTM) estimated for two days, according to the criteria adopted by B3, will be equivalent to 2.45% of the exposure to be hedged in the approximate amount of BRL8.852.482.

It should be noted that the effective margin will depend on the portfolio as a whole, and there may be margin offset between the different markets where the hedger has open positions, respecting the criteria established by B3 as well as the B3 fee, which may vary according to the volume traded by each institution.

Final summary

This strategy allowed the institution to generate cash without losing the opportunity for gains in the respective asset.



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