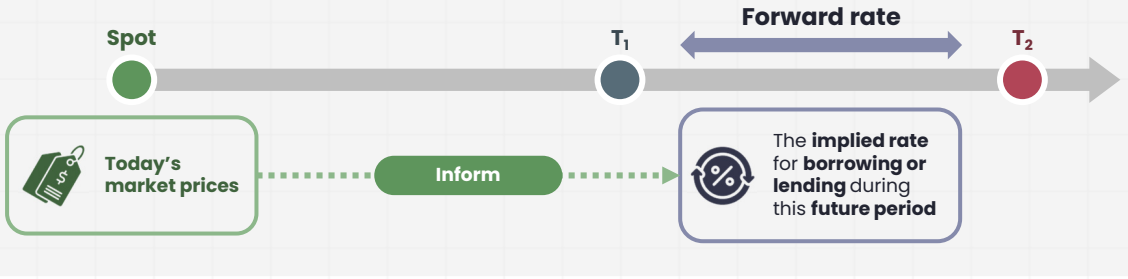
Forward Interest Rates

Forward Interest Rates

The **market's projected interest rate** between two points, both of which are **in the future**



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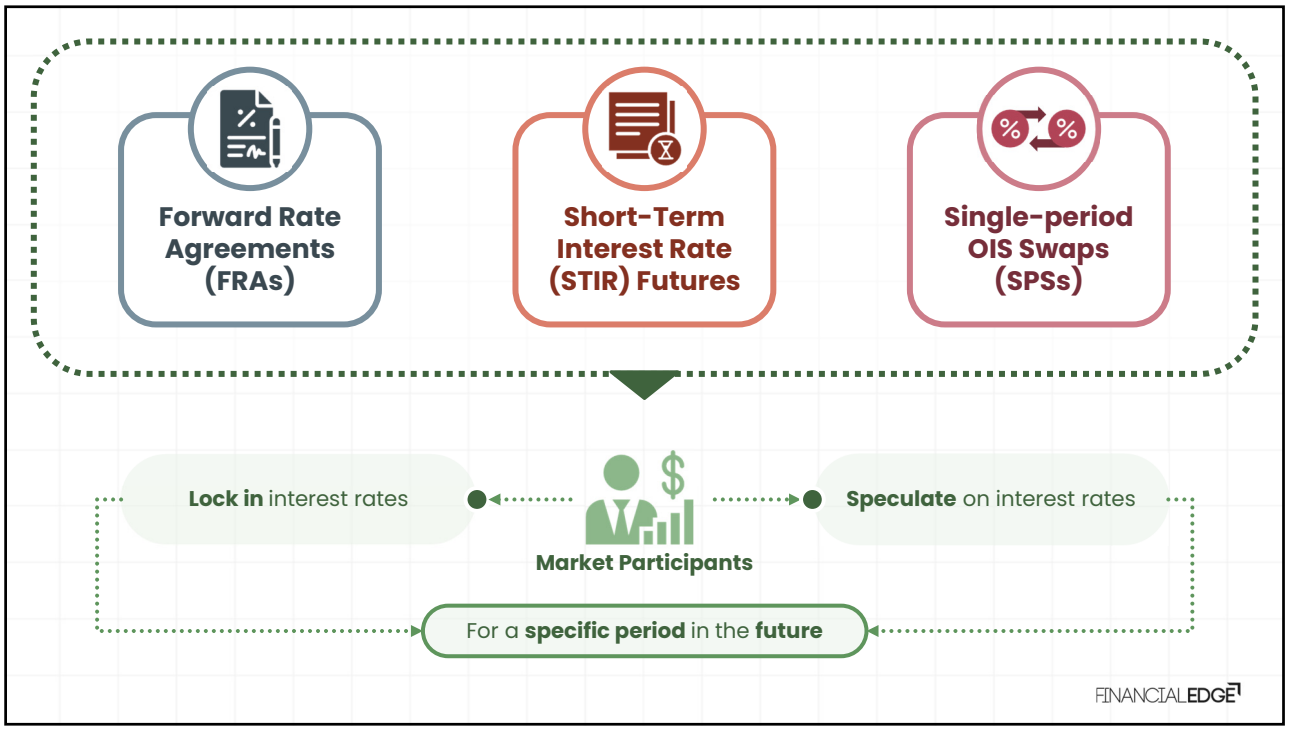
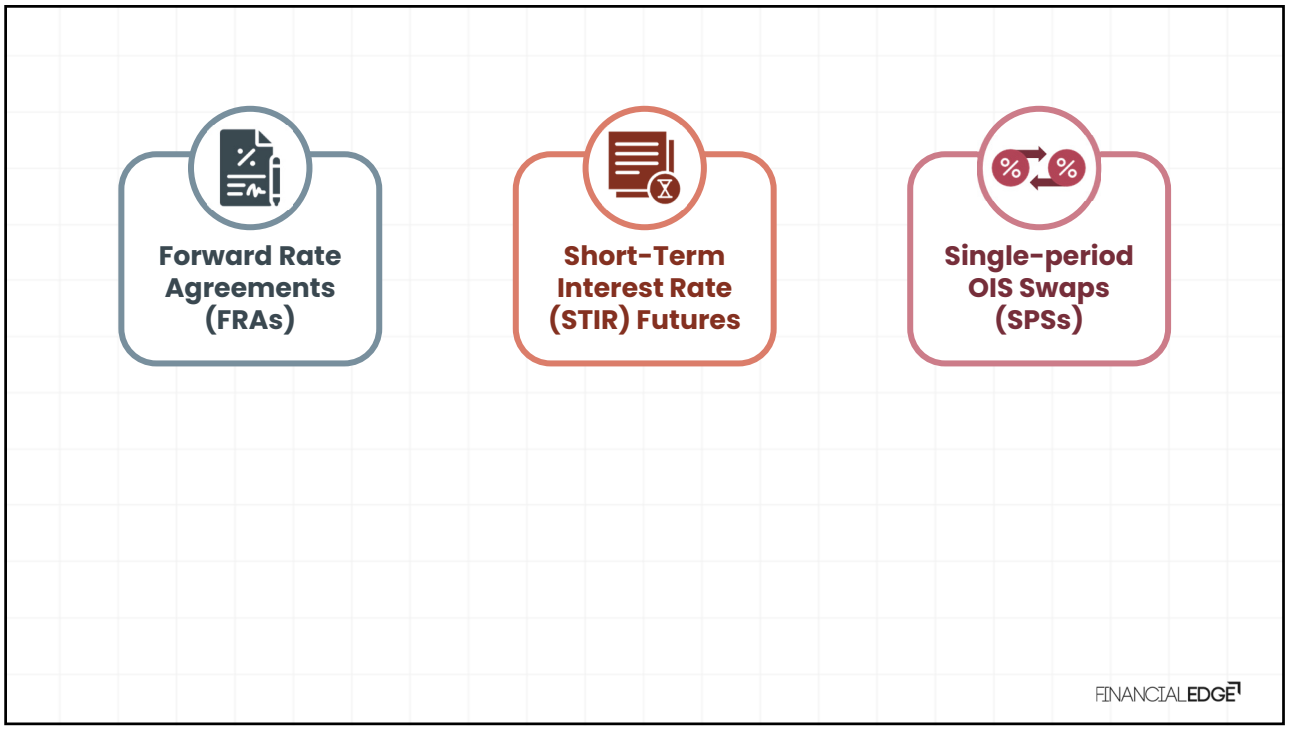
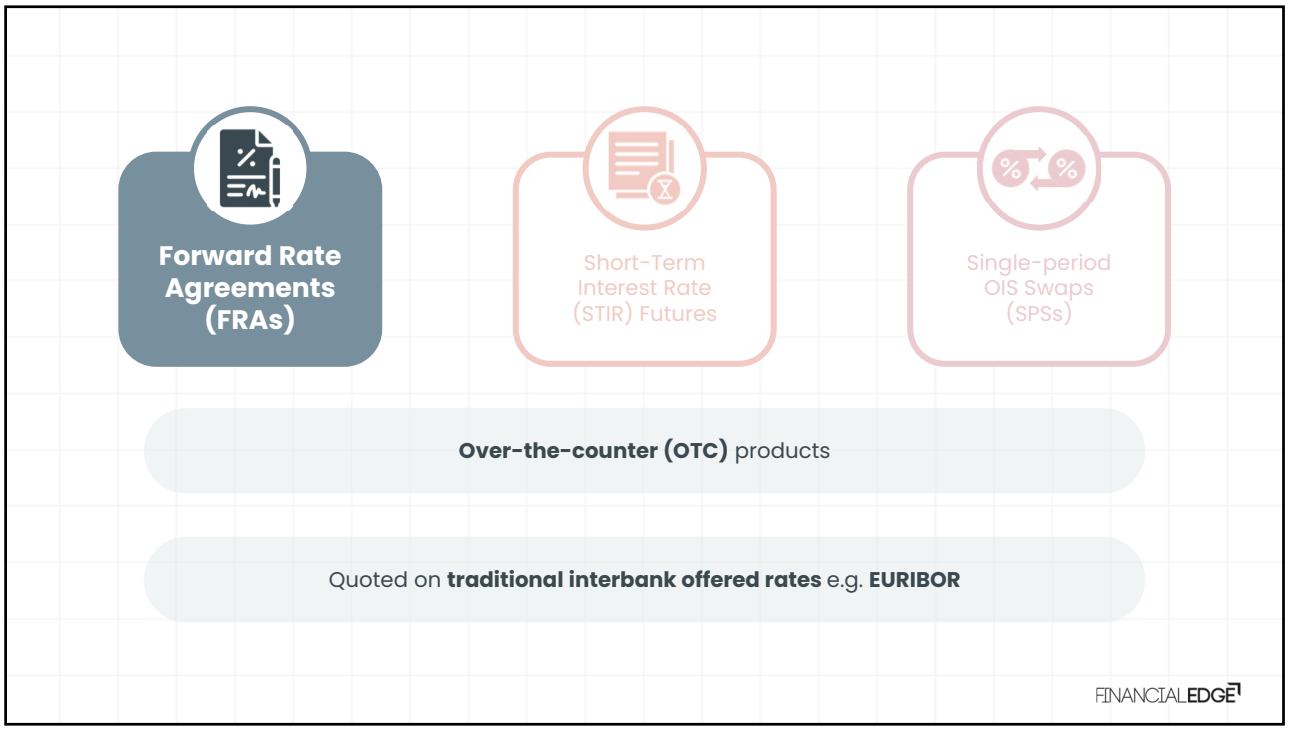
Forward Interest Rates

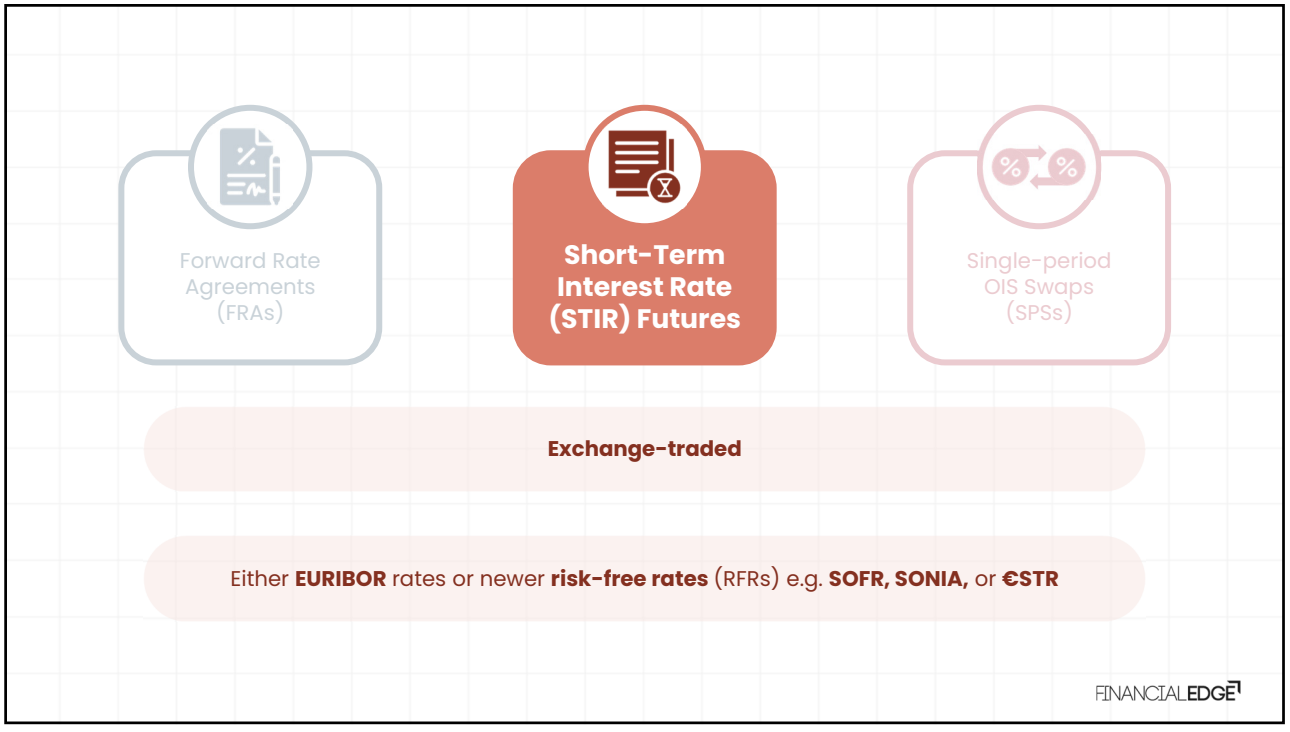
- Forward Rate Agreements (FRAs)
- Short-Term Interest Rate (STIR) Futures
- Single-period OIS Swaps (SPSs)

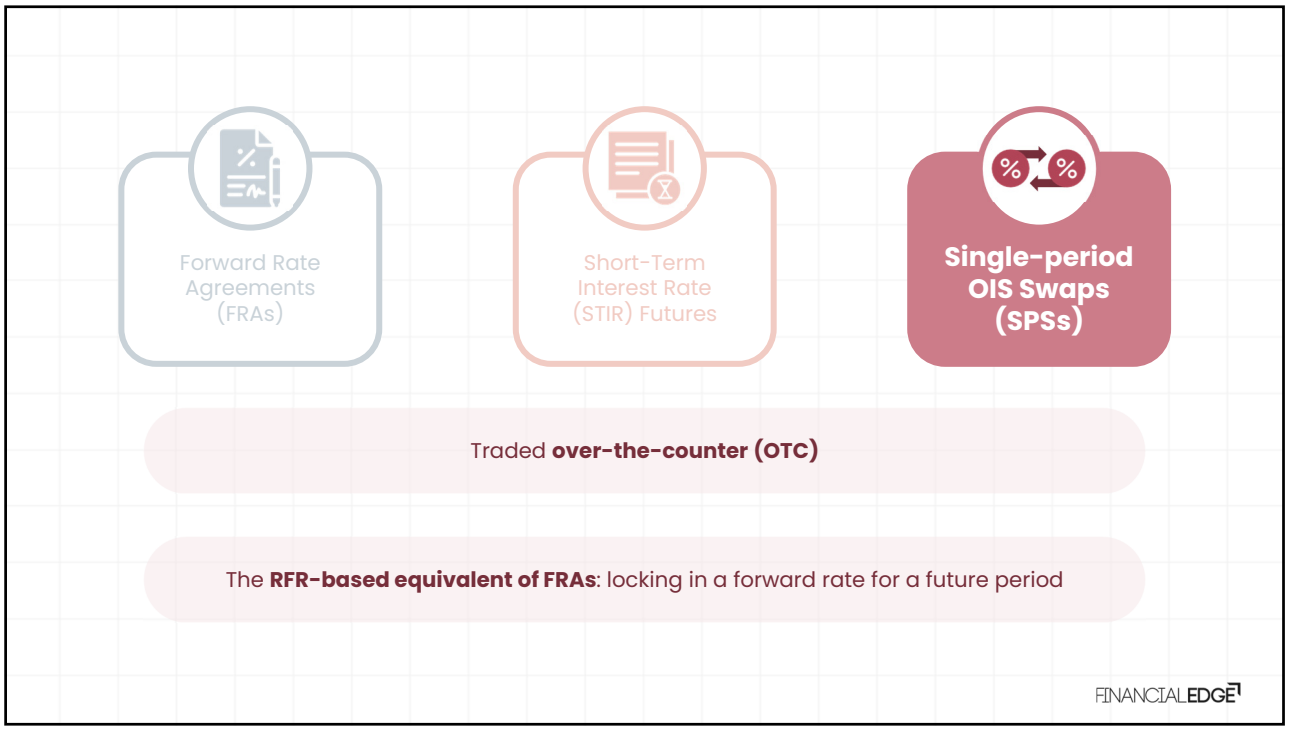
FINANCIALEDGE

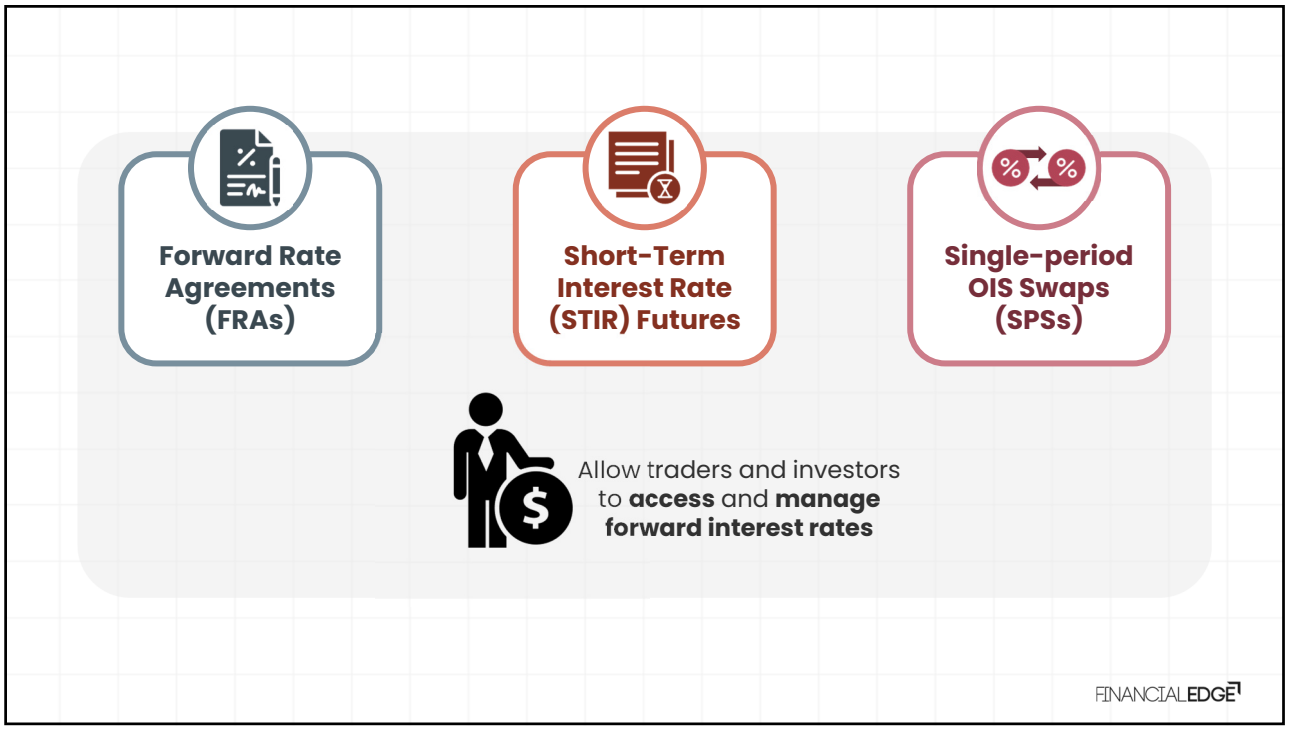


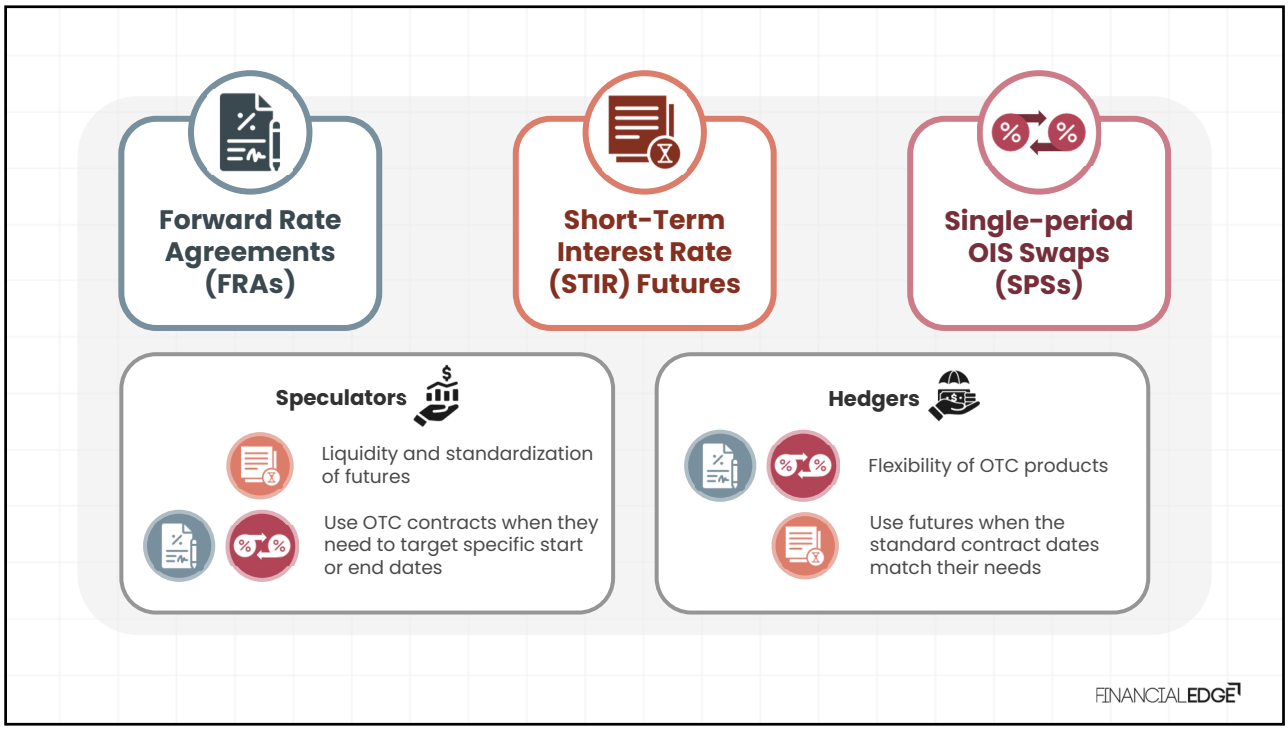


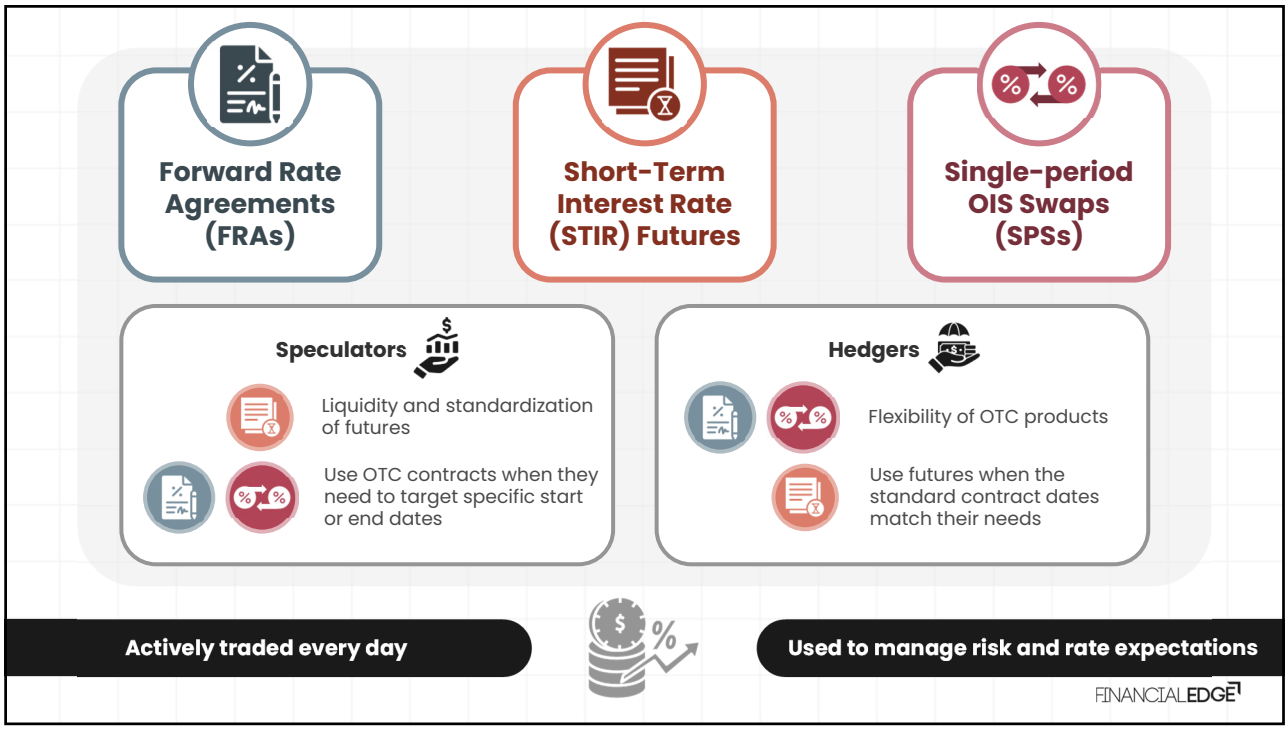












Forward Rate Agreements (FRAs) - Introduction

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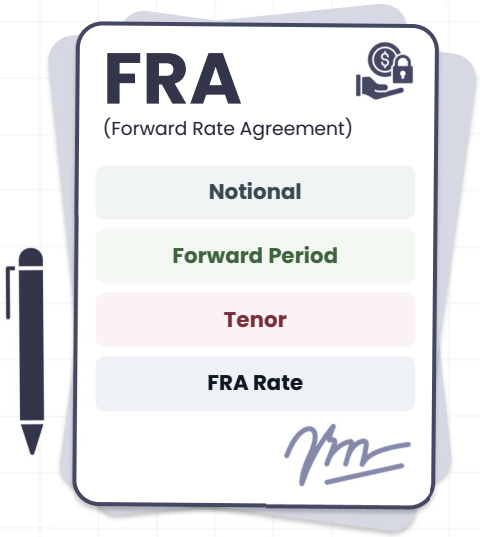

- **Over-the-counter** contract
- Two parties **lock in** a **projected interest rate** for a **future period**
- **No exchange** of **principal**
- **Single cash settlement** at start of forward period

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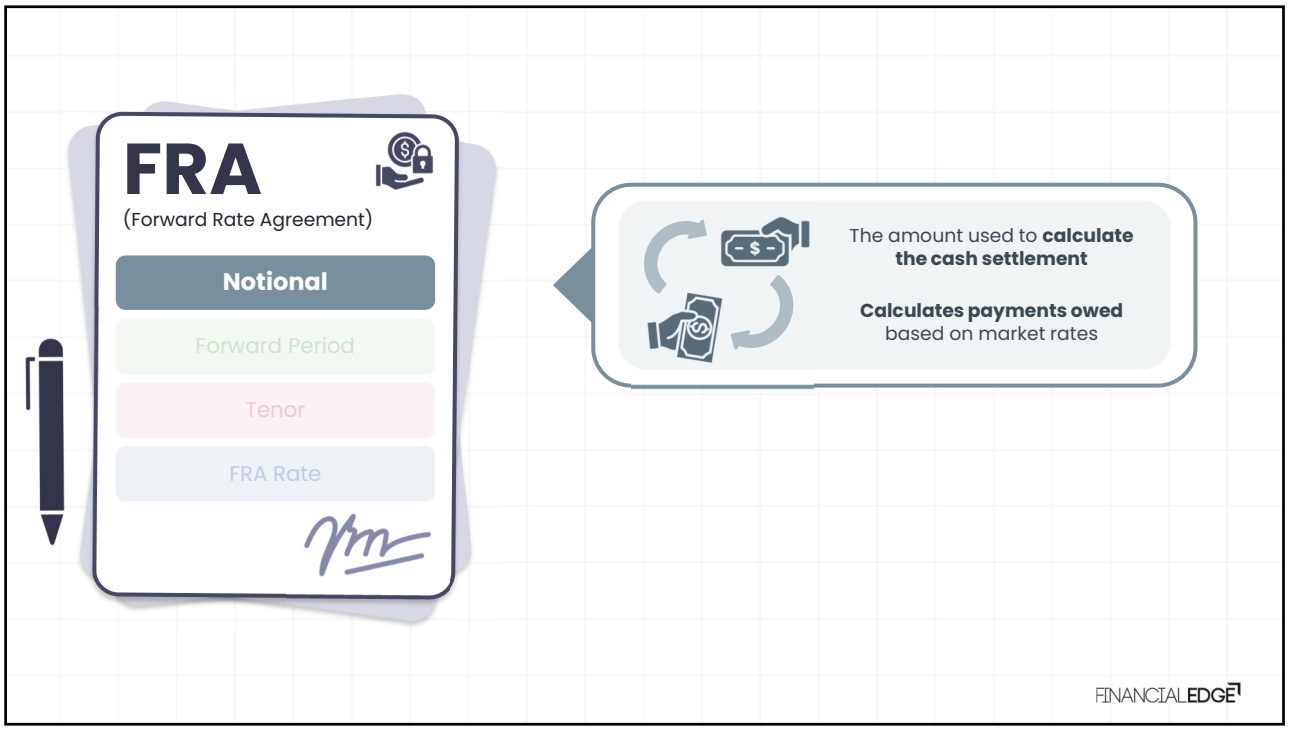

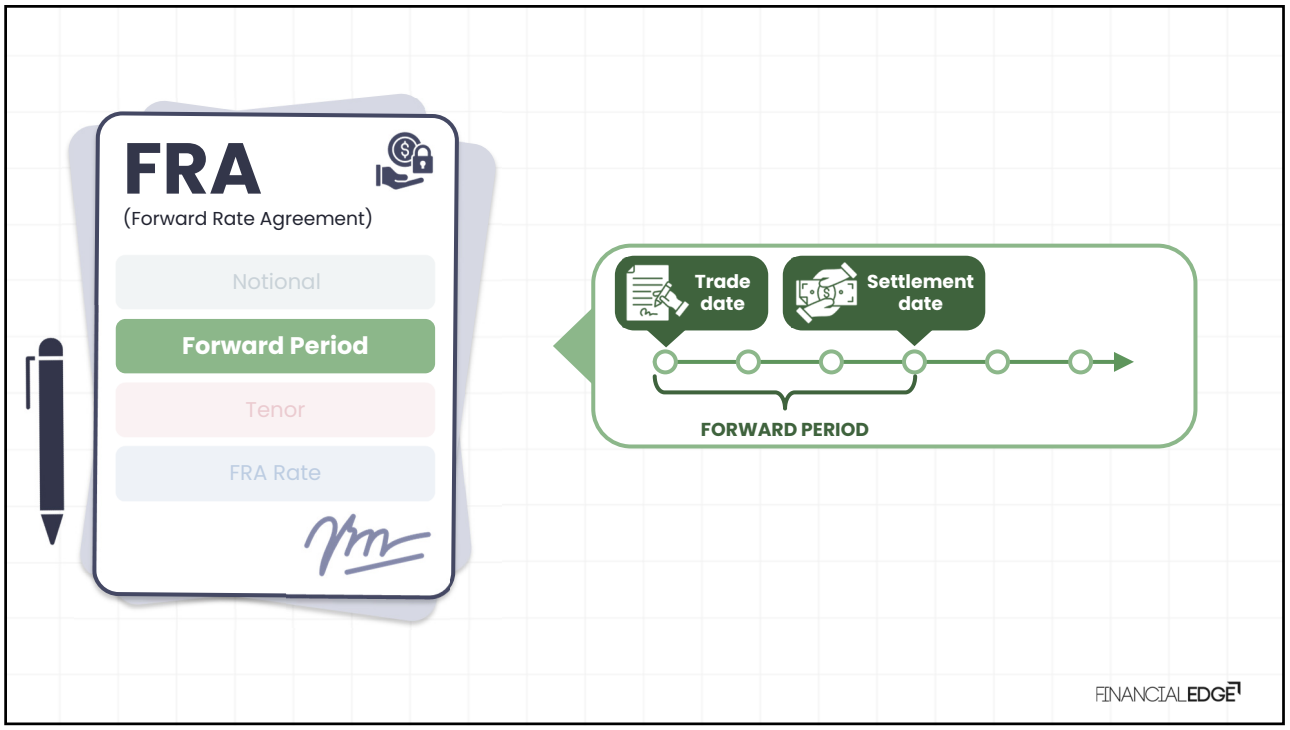

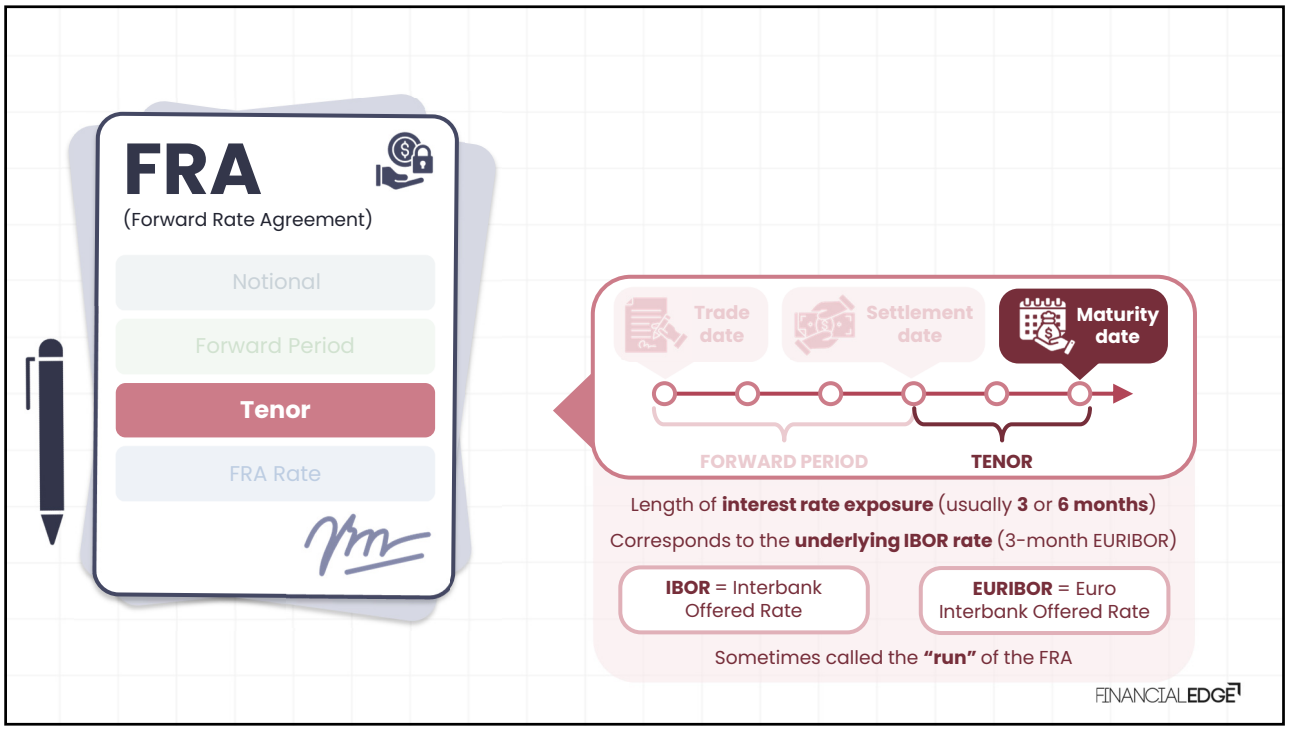

Forward Rate Agreements (FRAs) - Counterparties

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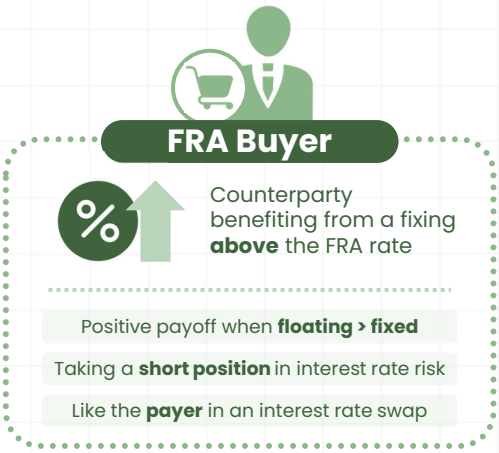

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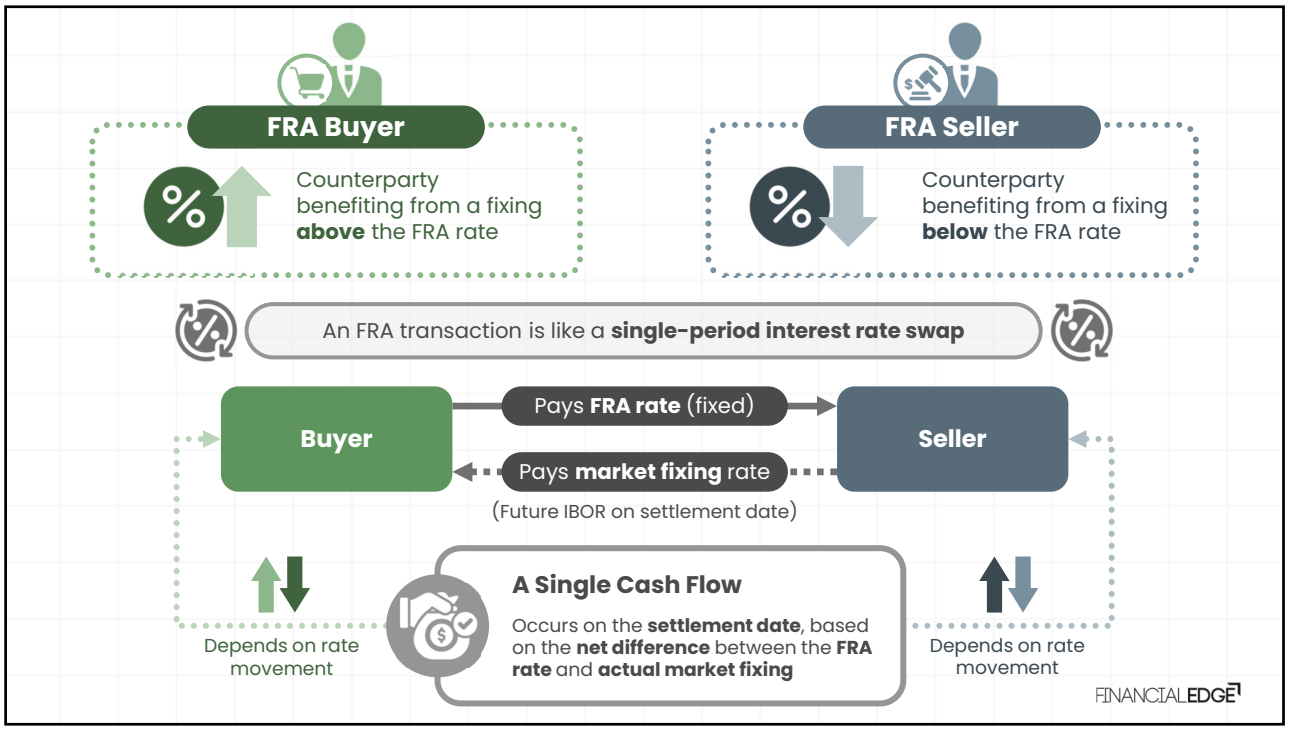

Forward Rate Agreement (FRA) - Prices

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FRA prices are always quoted in rate terms, not price

"3s9s"

03 = forward period (months)

09 = forward period + tenor of underlying rate (months)

"3s9s the 10th"

10th = 3x9 FRA start date

FRA QUOTE SHEET

6mth FRA	Bid	Offer
00X06	2.376	2.396
01X07	2.264	2.284
02X08	2.209	2.219
03X09	2.148	2.168
04X10	2.112	2.132
05X11	2.078	2.098
06X12	2.062	2.082
07X13	2.045	2.065
08X14	2.031	2.051
09X15	2.022	2.042
10X16	2.023	2.043
11X17	2.026	2.026
12X18	2.030	2.050

FINANCIALEDGE

FRA QUOTE SHEET

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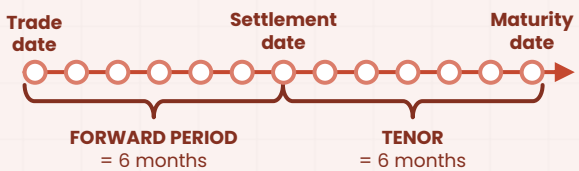
10X16	2.023	2.043
11X17	2.026	2.026
12X18	2.030	2.050

"6s12s"



Investor is a market taker

They would **cross the spread** (buy at the offer rate)

Lock in a **borrowing rate**

Buy the **6x12 FRA** at **2.082%**

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Forward Rate Agreement (FRA) Settlement

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FRA Settlement

Example

Buys a **6x12** FRA

Notional of **€100,000,000**

FRA rate = **2.082%**

OBSERVED UNDERLYING RATE
= 6-month EURIBOR

Trade date | **Settlement date** | **Maturity date**

FORWARD PERIOD
= 6 months

TENOR
= locking in a 6-month interest rate for borrowing

FRA trades **settle in cash**

Cash settlement

Based on the **net difference** between the **FRA rate** and the **6-month EURIBOR** market fixing

Timing of settlement

Occurs at the start of the interest period; payoff is calculated and settled 6 months from spot

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FRA Settlement

Example

- Buys a **6x12** FRA
- Notional of **€100,000,000**
- FRA rate = **2.082%**

(FRA buyer perspective)

$$\text{FRA settlement} = \frac{\text{Notional} \times (\text{EURIBOR} - \text{FRA rate}) \times (\text{days}/360)}{1 + \text{EURIBOR} \times (\text{days}/360)}$$

Calculate hypothetical interest differential

The difference between the **6-month EURIBOR rate** and **the FRA rate**

X

The **notional principal** and **loan period**

Payment timing (EURIBOR in arrears)

The interest differential represents **how much interest you'd pay**:

If you borrowed money in the **real world** at the **6-month EURIBOR rate**

vs.

If you borrowed the **same money** at the **FRA rate**

Discount the interest differential

In a **real loan**, the **EURIBOR and FRA interest** would be paid **at the end** of the period

The interest differential is **discounted** back to the start of the hypothetical period **(FRA settlement date)**

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FRA Settlement

Example

- Buys a **6x12** FRA
- Notional of **€100,000,000**
- FRA rate = **2.082%**
- 6M EURIBOR = **2.158%** (182 days)

(FRA buyer perspective)

$$\text{FRA settlement} = \frac{\text{Notional} \times (\text{EURIBOR} - \text{FRA rate}) \times (\text{days}/360)}{1 + \text{EURIBOR} \times (\text{days}/360)}$$

FRA settlement $= \dfrac{100{,}000{,}000 \times (2.158\% - 2.082\%) \times (182/360)}{1 + 2.158\% \times (182/360)}$

$= €38{,}007.56$

Buyer receives

Floating rate **fixed above** the FRA rate

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FRA Settlement

Why do FRAs **settle at the beginning** of the period?

Trade is shortened, reducing credit risk

FRA buyer **receives payment upfront**, rather than waiting 6 months and taking on **counterparty risk**

FRA payoffs are non-linear

Because we **discount** the cash flow **using the floating rate**, the result is a **concave payoff**

FRA buyer still benefits as rates rise, but **each basis point gives slightly less value** in present terms than the one before **(buyer is short convexity)**

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FRA Settlement

FRA payoffs are non-linear

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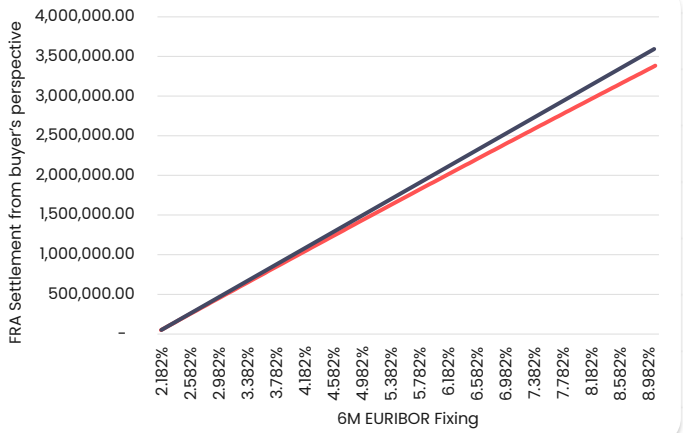

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Hedging with Forward Rate Agreements (FRAs)

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Hedging with FRAs

Hedgers use FRAs to **lock in** a fixed rate for a future period

Used when a borrower:

Plans to take out a **short-term loan** in the future

Wants to **hedge** one period of a **long-term floating-rate** loan

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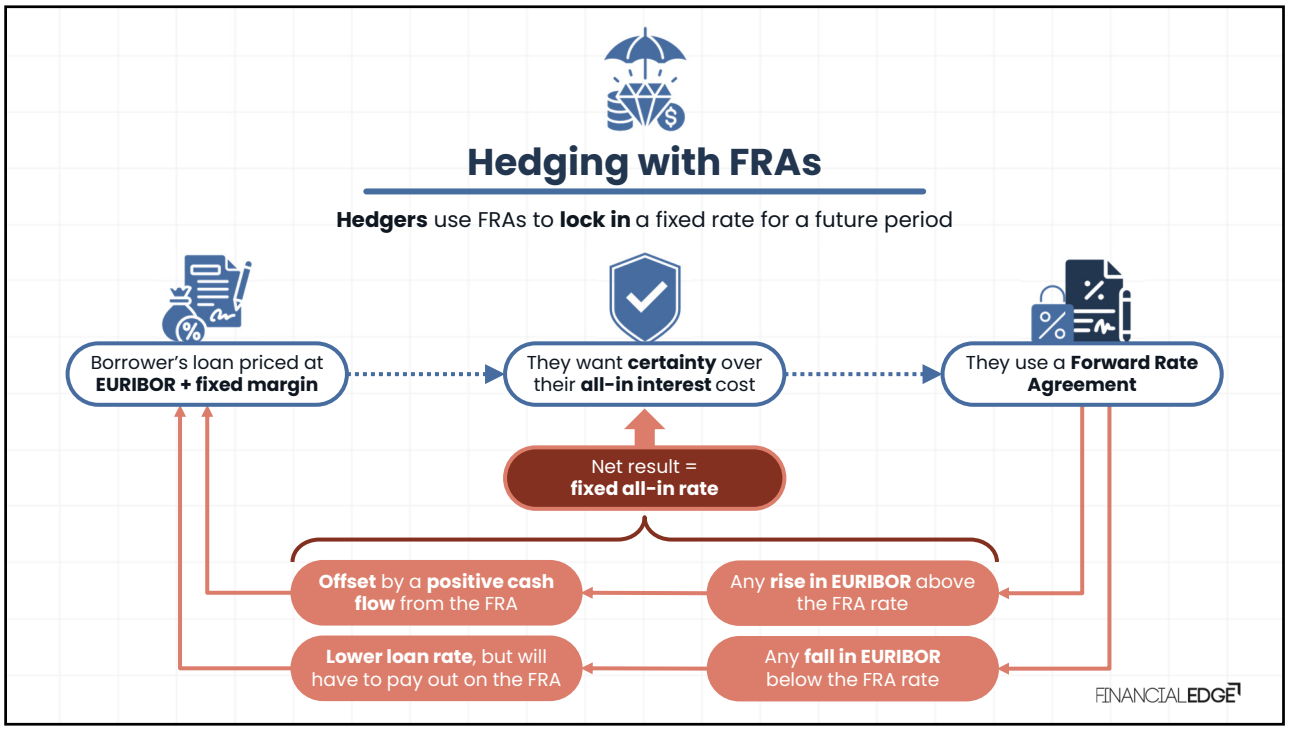

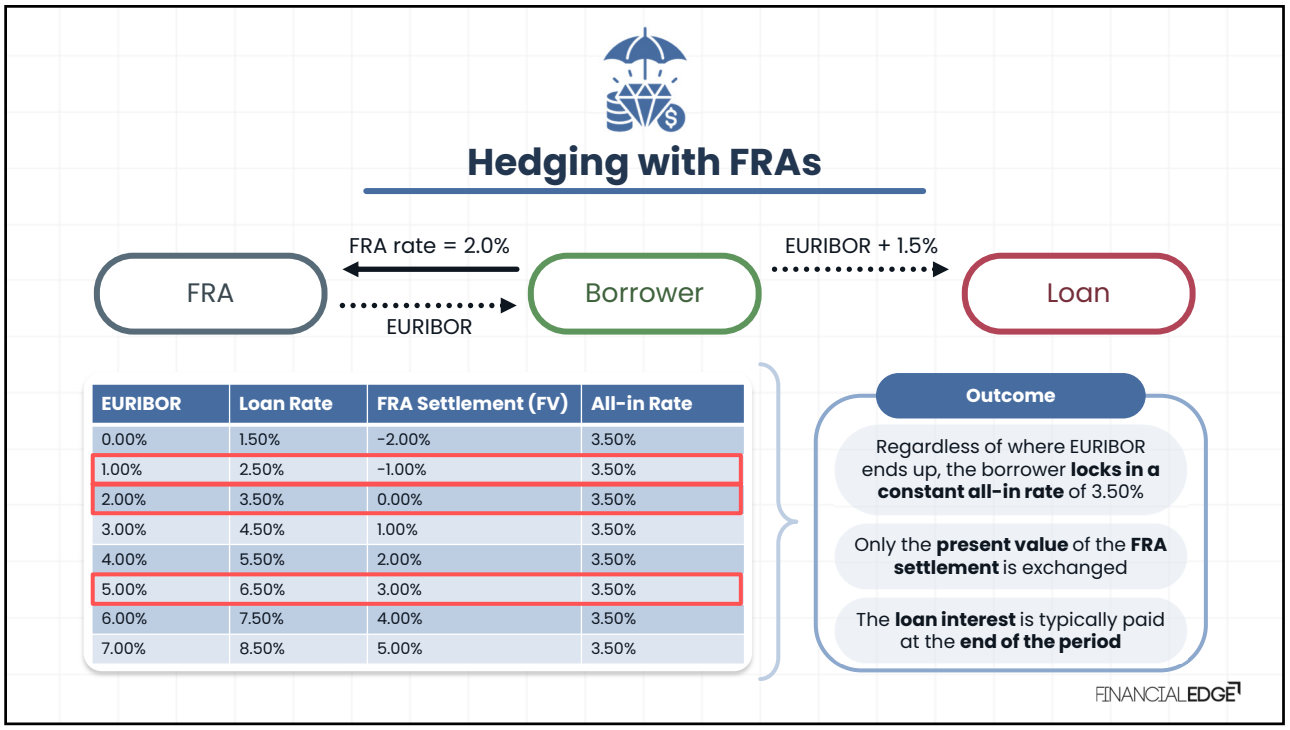

Forward Rate Agreements (FRAs) Pricing

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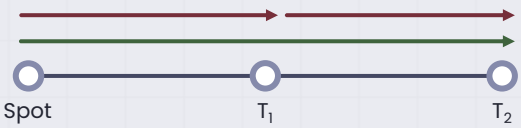
No-arbitrage argument

If you can invest from today until some future date in **two different ways**

Both strategies should give you **the same return**



The **return from option 1 and 2** should be **equal**

1. Investing from **today to a future time T_2**
2. Investing from **today to an intermediate point T_1**
   Locking in a forward rate from **T_1** to **T_2**

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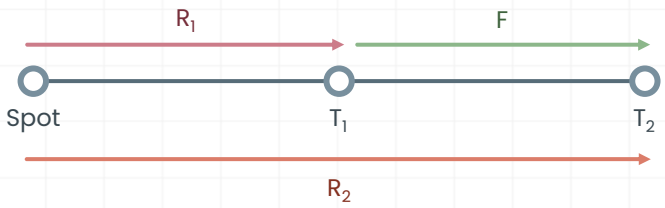
$$(1 + R_2 * T_2) = (1 + R_1 * T_1) * (1 + F * T_{1,2})$$



R_1 Spot rate from today to T_1

R_2 Spot rate from today to T_2

F Forward rate from T_1 to T_2

T Time period expressed as a day count fraction (A/360 in years)

The compounded equivalence approach

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The compounded equivalence approach

Works well for **risk-free rate** forwards

SOFR, SONIA, €STR based

Underlying rates are close to **default-free**

No credit premium

Doesn't work well for **IBOR-based** FRAs

The formula was often **close enough in practice**

Credit and **liquidity** conditions **relatively stable**

Little to no **term premium embedded** in IBOR curves

2007-2009

Financial crisis

Recognize term IBOR rates contain **credit** and **liquidity premiums**

Pricing IBOR FRAs using **no-arbitrage** approach often **differs greatly from market prices**

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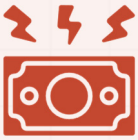
$$(1 + R_2 * T_2) = (1 + R_1 * T_1) * (1 + F * T_{1,2})$$

The compounded equivalence approach

Market pricing

(especially for **IBOR-based** instruments)

Supply and demand



Funding pressures

Credit risk

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$$(1 + R_2 * T_2) = (1 + R_1 * T_1) * (1 + F * T_{1,2})$$

The compounded equivalence approach

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(especially for **IBOR-based** instruments)

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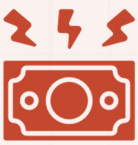

Funding pressures

Credit risk

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Example | **3x6 FRA**

Trade date	01/04/2025
Spot date	03/04/2025

	11am CET fixing	Maturity	ACT days
3M EURIBOR	2.3360%	03/07/2025	91
6M EURIBOR	2.3360%	03/10/2025	183

3x6 (implied)	2.3223%
11am CET fixing	2.1130%

FINANCIALEDGE

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3x6 (implied)	2.3223%
11am CET fixing	2.1130%

No-arbitrage formula

Implied 3x6 forward rate	2.3223%

The **theoretical fair value** expected under the assumption that term money market rates are **risk-free**

FRA mid-market quote

3x6 mid quote at 11am CET	2.1130%

More than **20 basis points** lower than the implied forward rate

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Example | **3x6 FRA**

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Spot date	03/04/2025		
	11am CET fixing	**Maturity**	**ACT days**
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3x6 (implied)	2.3223%		
11am CET fixing	2.1130%		

Theoretical approach

Does **not** work for **IBOR FRAs** anymore

No-arbitrage logic assumes there's **no credit** or **liquidity risk**

This assumption **broke down** during the **financial crisis**

Term money market rates (EURIBOR) are **no longer risk-free**

The way FRAs are priced in the real world has evolved

IBOR FRAs are priced using **short-term interest rate futures**, **interest rate swaps**, and **tenor basis swaps** – all reflecting **actual credit** and **liquidity conditions** in the market

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Short-Term Interest Rate (STIR) Futures

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Short-Term Interest Rate Futures (STIR)

Exchange-traded, cash settled forward contracts on money market interest rates

IBOR-based: EURIBOR futures

Includes both

RFR-based: SOFR and €STR futures

Quoted in terms of price

FUTURES PRICE = 100 – forward rate

Forward rate = 3%

Futures price = 97.00

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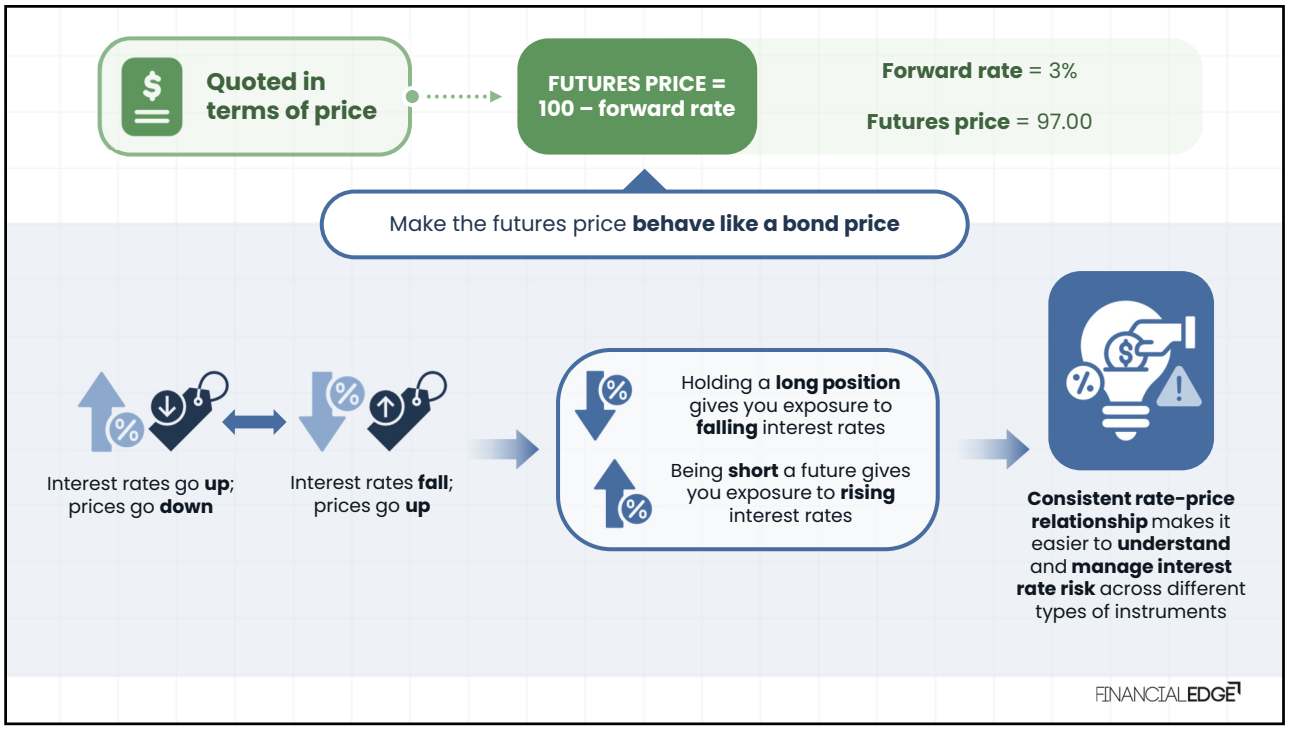

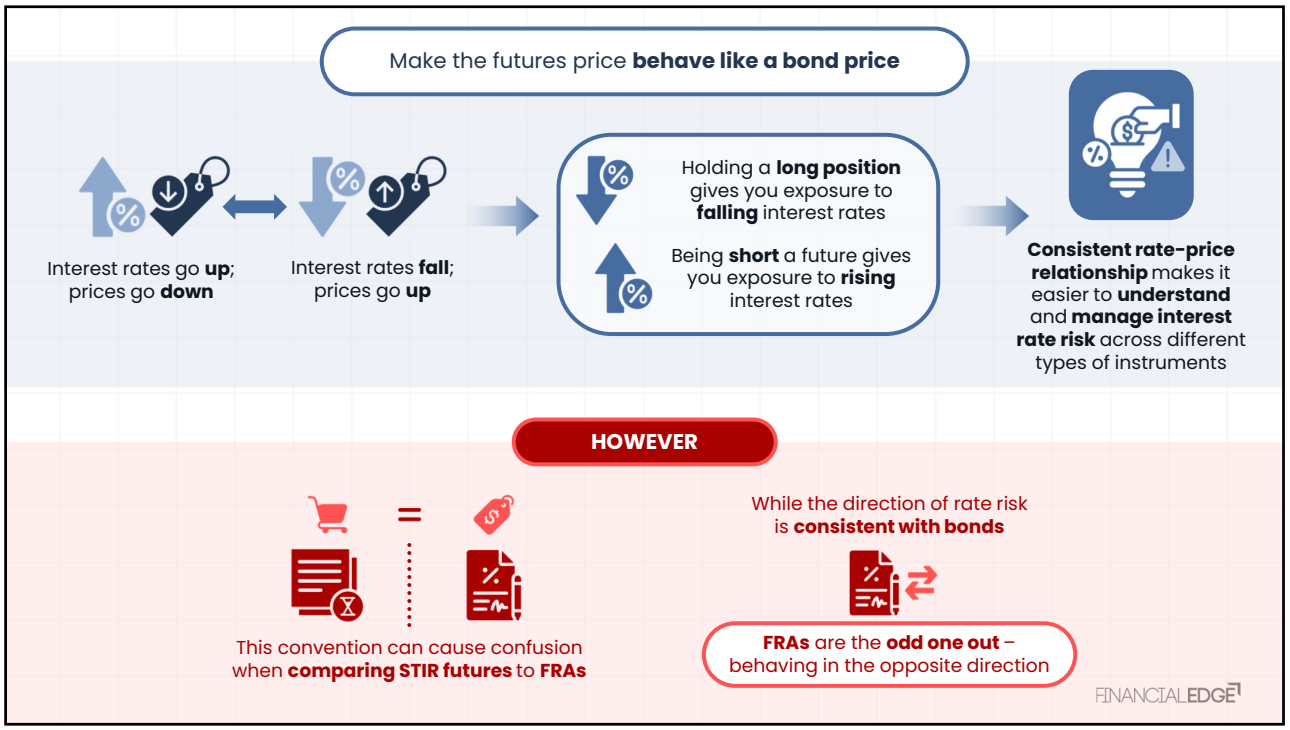

Euro Interbank Offered Rate (EURIBOR) Futures

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EURIBOR Futures

EURIBOR futures are **standardized**

Key **contract features** are defined by the exchange that the contract trades on

Underlying rate

Reference **3-month** EURIBOR contracts

There are **no 6-month** EURIBOR contracts

If investors want to **hedge a single 6-month EURIBOR** fixing, **FRAs** are their only option

EURIBOR futures

Symbol	Description	ExpDate	Feed	Bid	B	Ask	A	Last	L	+/-	Volume	OI	Time
I-M25	Three Month Euro (Euribor) Fut	16/06/2025	ICEF	97.855	▲	97.860	▲	97.860	▶	0.020	43,837	877k	11:01:09
I-U25	Three Month Euro (Euribor) Fut	15/09/2025	ICEF	97.990	▼	97.995	▼	97.995	▶	0.020	25,689	654k	11:01:50
I-Z25	Three Month Euro (Euribor) Fut	15/12/2025	ICEF	98.055	▼	98.060	▼	98.055	▶	0.020	25,360	658k	11:02:00
I-H26	Three Month Euro (Euribor) Fut	16/03/2026	ICEF	98.065	▼	98.070	▼	98.070	▶	0.025	20,377	441k	11:02:00
I-M26	Three Month Euro (Euribor) Fut	15/06/2026	ICEF	98.050	▼	98.055	▼	98.055	▶	0.035	17,268	400k	11:01:45
I-U26	Three Month Euro (Euribor) Fut	14/09/2026	ICEF	97.995	▼	98.000	▼	98.000	▶	0.035	10,815	282k	11:01:55
I-Z26	Three Month Euro (Euribor) Fut	14/12/2026	ICEF	97.930	▼	97.935	▼	97.930	▶	0.035	12,172	310k	11:02:00
I-H27	Three Month Euro (Euribor) Fut	15/03/2027	ICEF	97.855	▼	97.860	▼	97.860	▶	0.040	8,332	191k	11:01:50
I-M27	Three Month Euro (Euribor) Fut	14/06/2027	ICEF	97.785	▼	97.790	▼	97.790	▶	0.045	5,972	134k	11:01:50
I-U27	Three Month Euro (Euribor) Fut	13/09/2027	ICEF	97.720	▼	97.725	▼	97.725	▶	0.050	7,531	118k	11:02:00
I-Z27	Three Month Euro (Euribor) Fut	13/12/2027	ICEF	97.665	▼	97.670	▼	97.670	▶	0.055	5,232	167k	11:01:50
I-H28	Three Month Euro (Euribor) Fut	13/03/2028	ICEF	97.615		97.620	▼	97.620		0.060	3,441	69,479	10:53:49
I-M28	Three Month Euro (Euribor) Fut	19/06/2028	ICEF	97.565	▼	97.570	▼	97.570	▶	0.060	2,582	45,176	11:01:55
I-U28	Three Month Euro (Euribor) Fut	18/09/2028	ICEF	97.525	▼	97.530	▼	97.530	▶	0.065	1,748	38,948	11:01:50
I-Z28	Three Month Euro (Euribor) Fut	18/12/2028	ICEF	97.485	▼	97.490	▼	97.490	▶	0.070	2,722	52,275	11:01:50

Month:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code:	F	G	**H**	J	K	**M**	N	Q	**U**	V	X	**Z**

FINANCIALEDGE

EURIBOR Futures

EURIBOR futures are **standardized**

Key **contract features** are defined by the exchange that the contract trades on

Underlying rate

Reference **3-month** EURIBOR contracts

Period starting on **3rd Wednesday** of the contract month

DEC25 = Wednesday 17th December 2025

Why does it expire on Monday 15th December?

EURIBOR is fixed **T+2**

Fixing on 15th December **determines the rate** for the period beginning 17th December

EURIBOR futures

Symbol	Description	ExpDate	Feed	Bid	B	Ask	A	Last	L	+/-	Volume	OI	Time
I-M25	Three Month Euro (Euribor) Fut	16/06/2025	ICEF	97.855	▲	97.860	▲	97.860	▶	0.020	43,837	877k	11:01:09
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I-M26	Three Month Euro (Euribor) Fut	15/06/2026	ICEF	98.050	▼	98.055	▼	98.055	▶	0.035	17,268	400k	11:01:45
I-U26	Three Month Euro (Euribor) Fut	14/09/2026	ICEF	97.995	▼	98.000	▼	98.000	▶	0.035	10,815	282k	11:01:55
I-Z26	Three Month Euro (Euribor) Fut	14/12/2026	ICEF	97.930	▼	97.935	▼	97.930	▶	0.035	12,172	310k	11:02:00
I-H27	Three Month Euro (Euribor) Fut	15/03/2027	ICEF	97.855	▼	97.860	▼	97.860	▶	0.040	8,332	191k	11:01:50
I-M27	Three Month Euro (Euribor) Fut	14/06/2027	ICEF	97.785	▼	97.790	▼	97.790	▶	0.045	5,972	134k	11:01:50
I-U27	Three Month Euro (Euribor) Fut	13/09/2027	ICEF	97.720	▼	97.725	▼	97.725	▶	0.050	7,531	118k	11:02:00
I-Z27	Three Month Euro (Euribor) Fut	13/12/2027	ICEF	97.665	▼	97.670	▼	97.670	▶	0.055	5,232	167k	11:01:50
I-H28	Three Month Euro (Euribor) Fut	13/03/2028	ICEF	97.615		97.620	▼	97.620		0.060	3,441	69,479	10:53:49
I-M28	Three Month Euro (Euribor) Fut	19/06/2028	ICEF	97.565	▼	97.570	▼	97.570	▶	0.060	2,582	45,176	11:01:55
I-U28	Three Month Euro (Euribor) Fut	18/09/2028	ICEF	97.525	▼	97.530	▼	97.530	▶	0.065	1,748	38,948	11:01:50
I-Z28	Three Month Euro (Euribor) Fut	18/12/2028	ICEF	97.485	▼	97.490	▼	97.490	▶	0.070	2,722	52,275	11:01:50

Month:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code:	F	G	**H**	J	K	**M**	N	Q	**U**	V	X	**Z**

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EURIBOR Futures

EURIBOR futures are **standardized**

Key **contract features** are defined by the exchange that the contract trades on

Contract size

€2,500 x contract price

EXAMPLE

DEC25 EURIBOR trading at 98.06

Notional contract value:

€2,500 × 98.06 = **€245,150**

EURIBOR futures

Symbol	Description	ExpDate	Feed	Bid	B	Ask	A	Last	L	+/-	Volume	OI	Time
I-M25	Three Month Euro (Euribor) Fut	16/06/2025	ICEF	97.855	▲	97.860	▲	97.860	▶	0.020	43,837	877k	11:01:09
I-U25	Three Month Euro (Euribor) Fut	15/09/2025	ICEF	97.990	▼	97.995	▼	97.995	▶	0.020	25,689	654k	11:01:50
I-Z25	Three Month Euro (Euribor) Fut	15/12/2025	ICEF	98.055	▼	98.060	▼	98.055	▶	0.020	25,360	658k	11:02:00
I-H26	Three Month Euro (Euribor) Fut	16/03/2026	ICEF	98.065	▼	98.070	▼	98.070	▶	0.025	20,377	441k	11:02:00
I-M26	Three Month Euro (Euribor) Fut	15/06/2026	ICEF	98.050	▼	98.055	▼	98.055	▶	0.035	17,268	400k	11:01:45
I-U26	Three Month Euro (Euribor) Fut	14/09/2026	ICEF	97.995	▼	98.000	▼	98.000	▶	0.035	10,815	282k	11:01:55
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Month:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code:	F	G	**H**	J	K	**M**	N	Q	**U**	V	X	**Z**

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EURIBOR Futures

P&L Exercise

1 What is the implied forward rate for 3-month EURIBOR in December 2025?

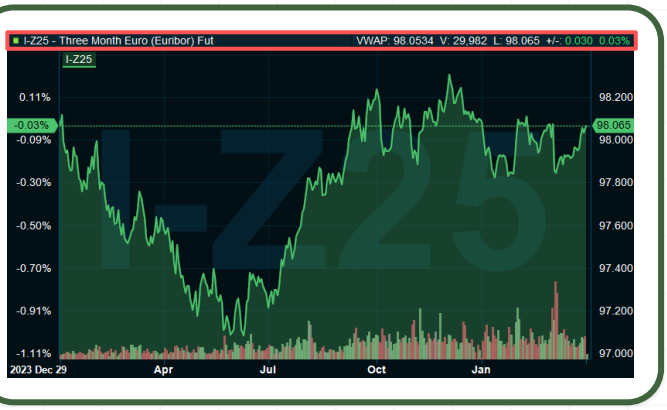
Futures are quoted as **100 – forward rate**

CALCULATION

DEC25 EURIBOR trading at 98.06

Implied forward rate:

100 - 98.06 = **1.94%**



Source: Infront

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EURIBOR Futures

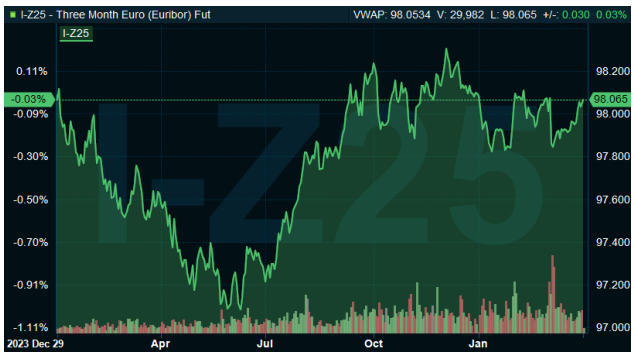
P&L Exercise

2 If the DV01 per contract is €25, what is your position DV01 if you're long 500 contracts?

CALCULATION

€25 x 500 = **€12,500 portfolio DV01**

For every basis point move in the implied rate, your **position's value changes by €12,500**



Source: Infront

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EURIBOR Futures

P&L Exercise

3 If the futures price moves from 98.06 to 98.24, what's your P&L?

Price move of **0.18** or **18** basis points

Since you're long, and the price went up, you're **making money**

CALCULATION

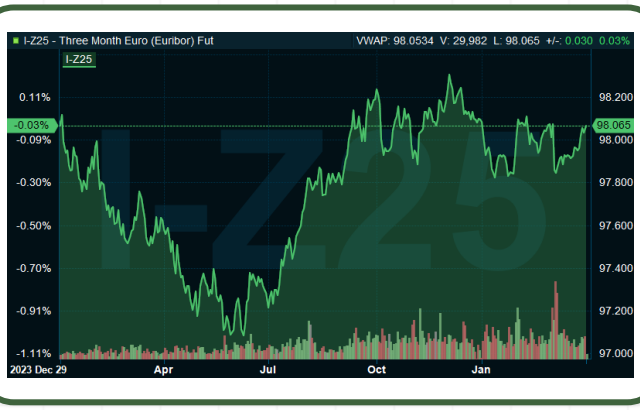
Move x DV01

18bps x €12,500 = **€225,000**

Tick size = 0.005

0.18 / 0.005 = **36 ticks**

36 x €12.50 × 500 = **€225,000**



Source: Infront

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Comparing Forward Rate Agreements (FRAs) to Euro Interbank Offered Rate (EURIBOR) Futures

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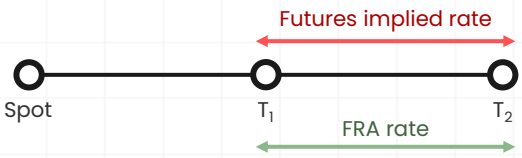
FRAs vs. EURIBOR Futures

The Convexity Adjustment

It's tempting to think that the FRA rate and the futures implied rate (100 – P) for the same period should be identical

But they're not



DV01: how much a contract's value changes when rates move

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FRAs vs. EURIBOR Futures

The Convexity Adjustment

DV01: how much a contract's value changes when rates move

STIR futures have a **constant** DV01

EURIBOR futures DV01 = €25

DV01 is fixed and never changes regardless of the rate level

FRAs have a **variable** DV01

Depending on discount rates

Like bonds, their **rate sensitivity changes as rates change.** If you're short an FRA, your DV01 increases when rates move in your favor

FRA vs. futures position has **convexity**, creating a **need to rebalance** as rates move

Selling FRA/shorting futures – being long convexity – makes rebalancing trades **profitable**

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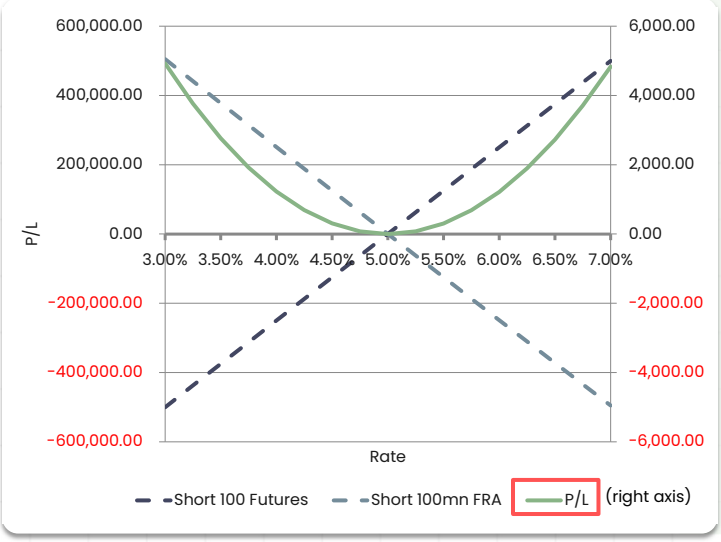

P/L for an initially hedged **FRA vs. EURIBOR futures position** where a **short** position is taken in both

Convexity in action

Both contracts settle against the **same rate** at expiry

Pricing them the same today gives the trader a **convexity free position**

Traders respond to the arbitrage opportunity: FRA rates or futures prices get pushed down, increasing implied futures rates, or both

The market introduces a **negative carry** to offset the convexity gain over the holding period

FRA rates almost always **trade below** the futures implied rate for the same period

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What are the **implications of convexity** in practice?

If we use futures price to infer forward rates, we need to apply a **convexity adjustment**

Size of adjustment

- Volatility
- Time to expiry

Higher volatility and **longer** time horizons **increase** the convexity benefit – increasing the size of the adjustment

The **overall level of interest rates** also plays a smaller role

The practical impact is often **minor**

Trading interest is often limited by **low liquidity** and **wider bid-offer** spreads

Convexity adjustment on

Adjustment = -0.36 bps

Adjustment increases with time

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Risk-Free Rate (RFR) Futures

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RFR Futures

Overnight rates

Settle against an **average** of many daily overnight fixings over the contract's reference period

Contract reference period

Typically, **1** or **3 months**

1	3	
SOFR	SOFR	€STR
SONIA	SONIA	SARON

Final **settlement rate** is calculated differently

Take **all the overnight rates** across the period and **aggregate** them

Compounded average

$$\left[\prod_{i=1}^{n}\left(1+\frac{R_i^{RFR}}{360}*d_i\right)-1\right]*\frac{360}{\sum d_i}$$

Arithmetic average

$$\frac{\sum \frac{R_i^{RFR}}{360}*d_i}{\sum d_i}$$

Settlement **occurs at the end** of the underlying reference period (in arrears)

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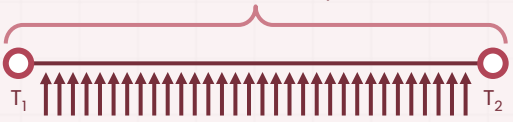
RFR Futures

Overnight rates

Settle against an **average** of many daily overnight fixings over the contract's reference period

Contract reference period



RFR futures reflect reference rate fixings over a **continuous period**

This changes how they **behave** and **how we use** them

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Secured Overnight Financing Rate (SOFR) Futures

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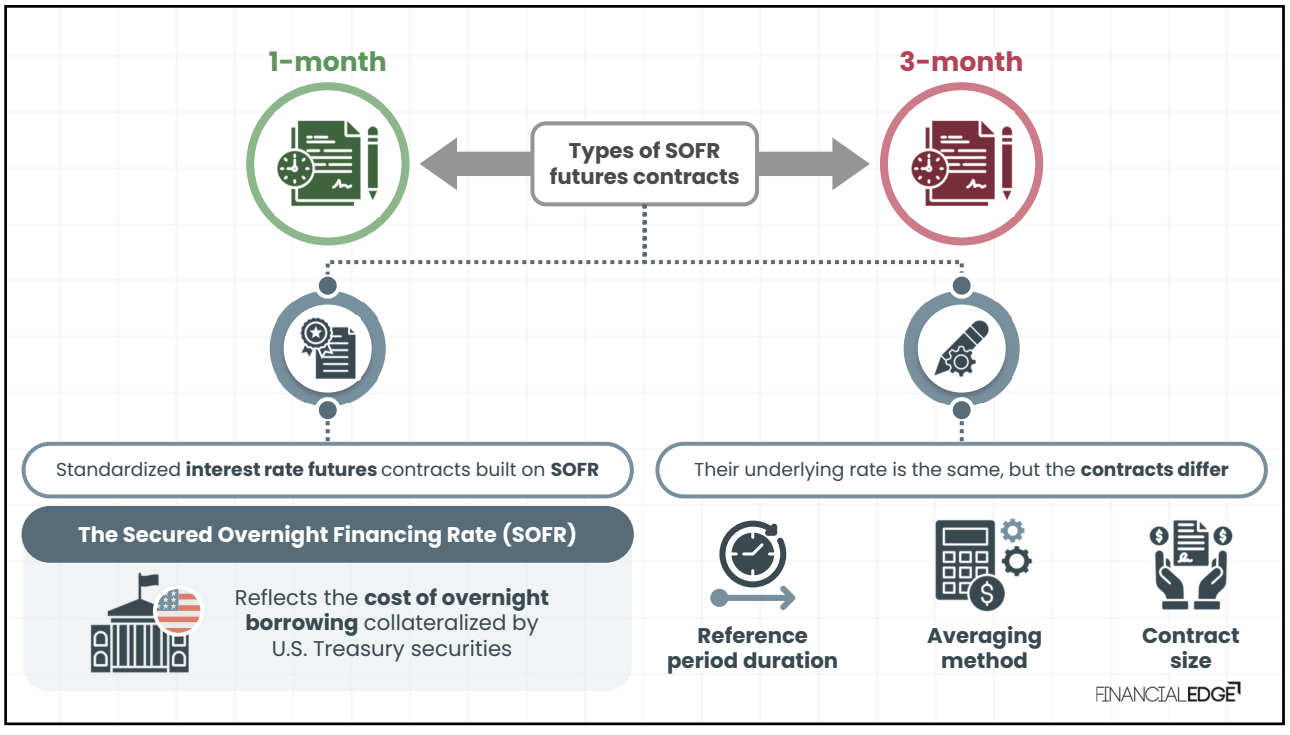

1-month

3-month

	CME Three-Month SOFR Futures	CME One-Month SOFR Futures
Trading Unit	Compounded daily Secured Overnight Financing Rate ("SOFR") interest during contract Reference Quarter, such that each basis point per annum of interest = $25 per contract. **Reference Quarter:** For a given contract, interval from (and including) 3rd Wed of 3rd month preceding Delivery Month, to (and not including) 3rd Wed of Delivery Month.	Average daily Secured Overnight Financing Rate ("SOFR") interest during futures contract Delivery Month, such that each basis point per annum of interest is worth $41.67 per futures contract.
Price Basis	Contract-grade IMM Index: **100 minus R**. **R** = compounded daily SOFR interest during contract Reference Quarter.	Contract-grade IMM Index: **100 minus R**. **R** = average daily SOFR interest during contract Delivery Month.
	Example: Contract price of 97.2950 IMM Index points signifies **R** = 2.705 percent per annum.	
Contract Size	$25 per basis point per annum	$41.67 per basis point per annum
Delivery	Cash settlement, by reference to Final Settlement Price, on first US government securities market business day following Last Day of Trading.	
	Final Settlement Price: Contract-grade IMM Index evaluated on the basis of realized SOFR values during contract Reference Quarter: $R = [\Pi i \{1+(d_i/360)*(r_i/100)\} - 1] \times (360/D) \times 100$ n = Number of US government securities market business days in the Reference Quarter i ~ Running variable indexing US government securities market business days during Reference Quarter Π_i denotes the product of values indexed by the running variable, i = 1,2,...,n. r_i = SOFR value for i^{th} US government securities market business day d_i = Number of calendar days to which ri applies D = $\Sigma_i d_i$ (ie, number of calendar days in Reference Quarter)	**Final Settlement Price:** Contract-grade IMM Index evaluated at **R** = arithmetic average of daily SOFR during Delivery Month.

Source: CME

CME (Chicago Mercantile Exchange)

International Monetary Market (IMM)

Standard settlement dates introduced by the **International Monetary Market**

3rd Wednesdays of **March, June, September,** and **December**

Globally accepted expiry cycle for many futures and options contracts

FINANCIALEDGE

1-month

3-month

	CME Three-Month SOFR Futures	CME One-Month SOFR Futures
Trading Unit	Compounded daily Secured Overnight Financing Rate ("SOFR") interest during contract Reference Quarter, such that each basis point per annum of interest = $25 per contract. **Reference Quarter:** For a given contract, interval from (and including) 3rd Wed of 3rd month preceding Delivery Month, to (and not including) 3rd Wed of Delivery Month.	Average daily Secured Overnight Financing Rate ("SOFR") interest during futures contract Delivery Month, such that each basis point per annum of interest is worth $41.67 per futures contract.
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Source: CME

A one basis point move in **price** reflects a one basis point change in the **implied forward rate**

3-month SOFR DV01: **$25**

Compounded method

1. Takes each day's SOFR
2. Adjusts it for the number of days it applies to
3. Compounds it across the full reference period

Daily interest is **reinvested**, earning interest on interest – making **compounding a truer reflection** of funding **costs or returns** over the quarter

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1-month

3-month

	CME Three-Month SOFR Futures	CME One-Month SOFR Futures
Trading Unit	Compounded daily Secured Overnight Financing Rate ("SOFR") interest during contract Reference Quarter, such that each basis point per annum of interest = $25 per contract. **Reference Quarter:** For a given contract, interval from (and including) 3rd Wed of 3rd month preceding Delivery Month, to (and not including) 3rd Wed of Delivery Month.	Average daily Secured Overnight Financing Rate ("SOFR") interest during futures contract Delivery Month, such that each basis point per annum of interest is worth $41.67 per futures contract.
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Arithmetic method

Uses the **arithmetic average** of daily SOFR fixings over the delivery month

1. Takes each day's SOFR, weighted by the number of calendar days it applies to, and average them out to give R
2. Futures price = 100 - R

1-month SOFR DV01: **$41.67**

Source: CME

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1-month

3-month

Arithmetic averaging

Compounded averaging

Fixed SOFR DV01: **$41.67**

Fixed SOFR DV01: **$25**

Provide exposure to the **SOFR curve**

Difference in **averaging methods**

Affects **how they behave** and how precisely they match **hedging** needs

Difference in **durations**

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3M Secured Overnight Financing Rate (SOFR) Contracts

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How do SOFR contract dates work?

SOFR futures **VS.** Legacy IBOR futures

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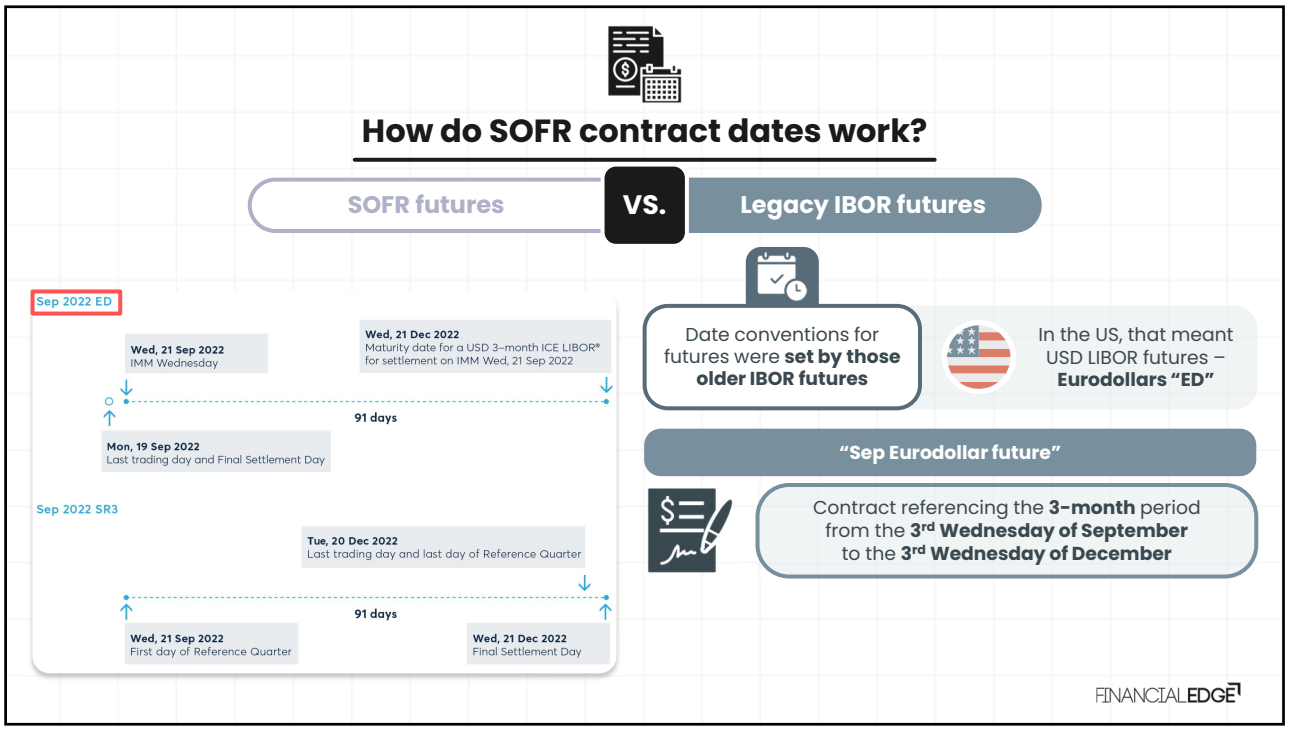

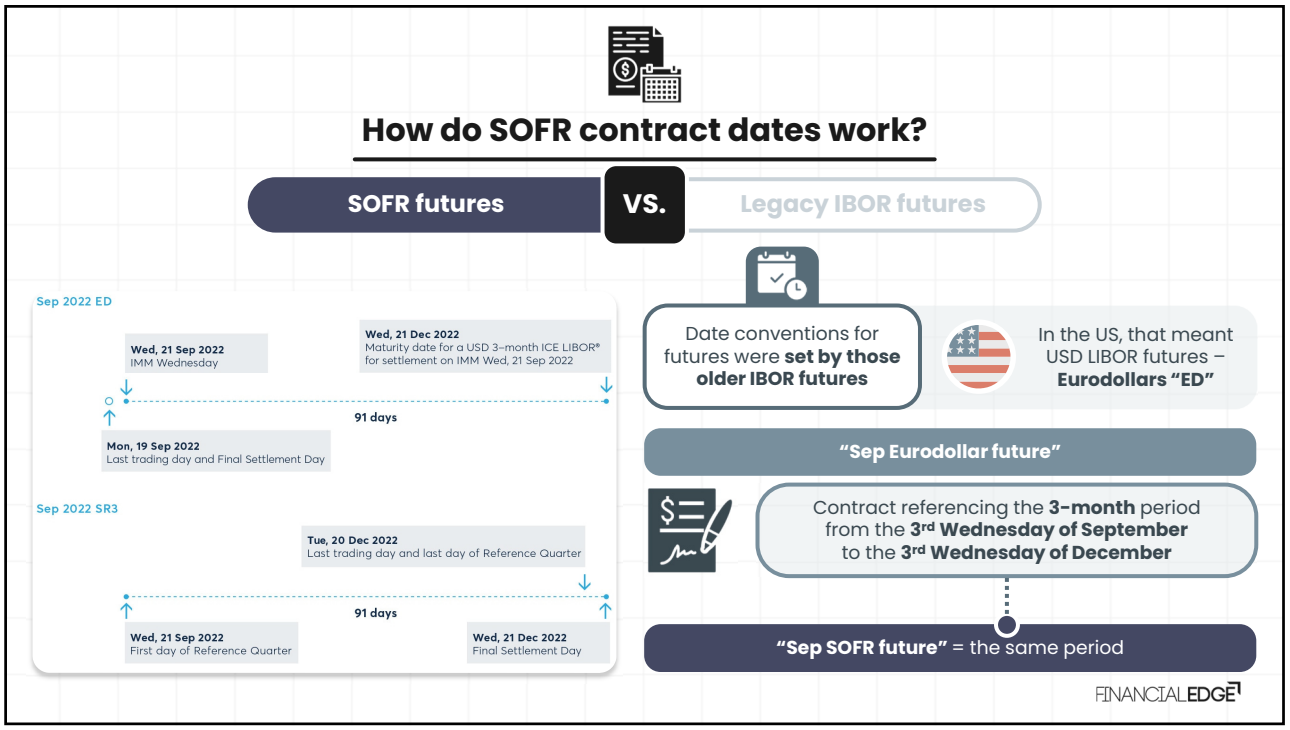

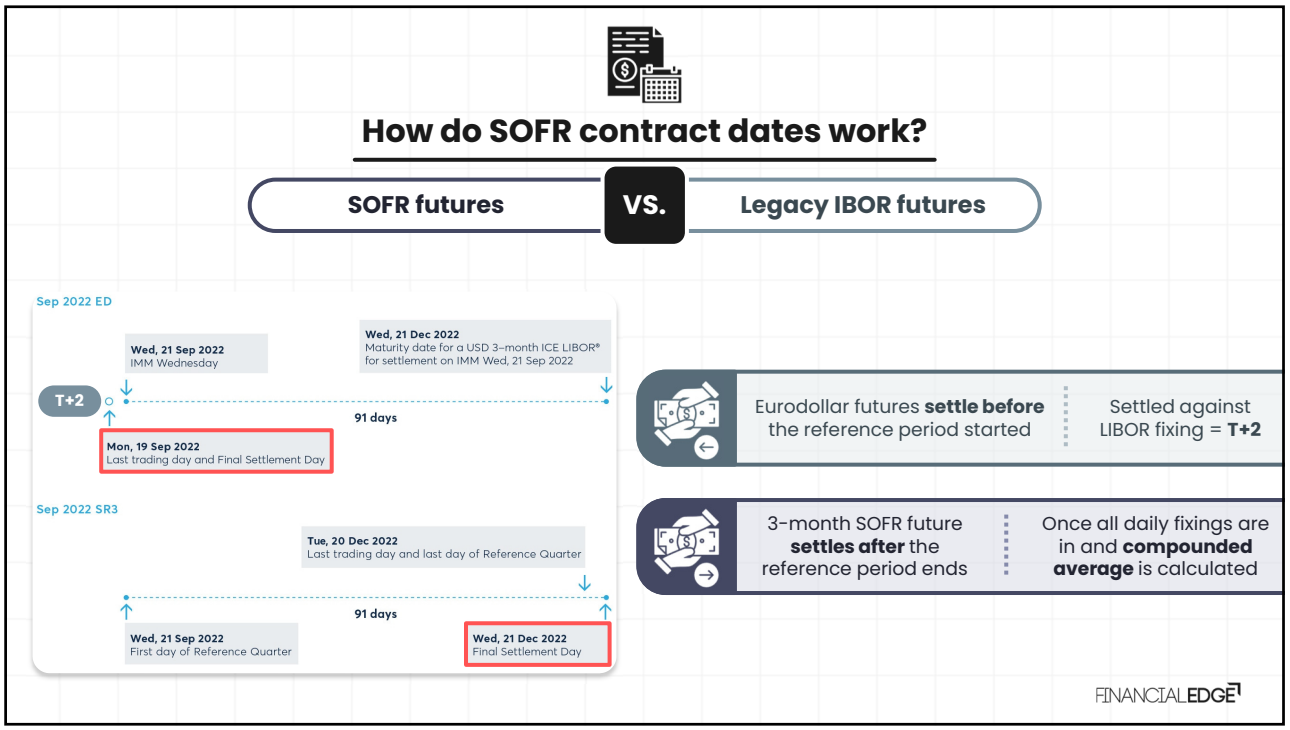
How do SOFR contract dates work?
SOFR futures
VS.
Legacy IBOR futures
Sep 2022 ED
Wed, 21 Sep 2022
IMM Wednesday
Wed, 21 Dec 2022
Maturity date for a USD 3-month ICE LIBOR® for settlement on IMM Wed, 21 Sep 2022
T+2
91 days
Mon, 19 Sep 2022
Last trading day and Final Settlement Day
Sep 2022 SR3
Tue, 20 Dec 2022
Last trading day and last day of Reference Quarter
91 days
Wed, 21 Sep 2022
First day of Reference Quarter
Wed, 21 Dec 2022
Final Settlement Day
Eurodollar futures settle before the reference period started
Settled against LIBOR fixing = T+2
3-month SOFR future settles after the reference period ends
Once all daily fixings are in and compounded average is calculated
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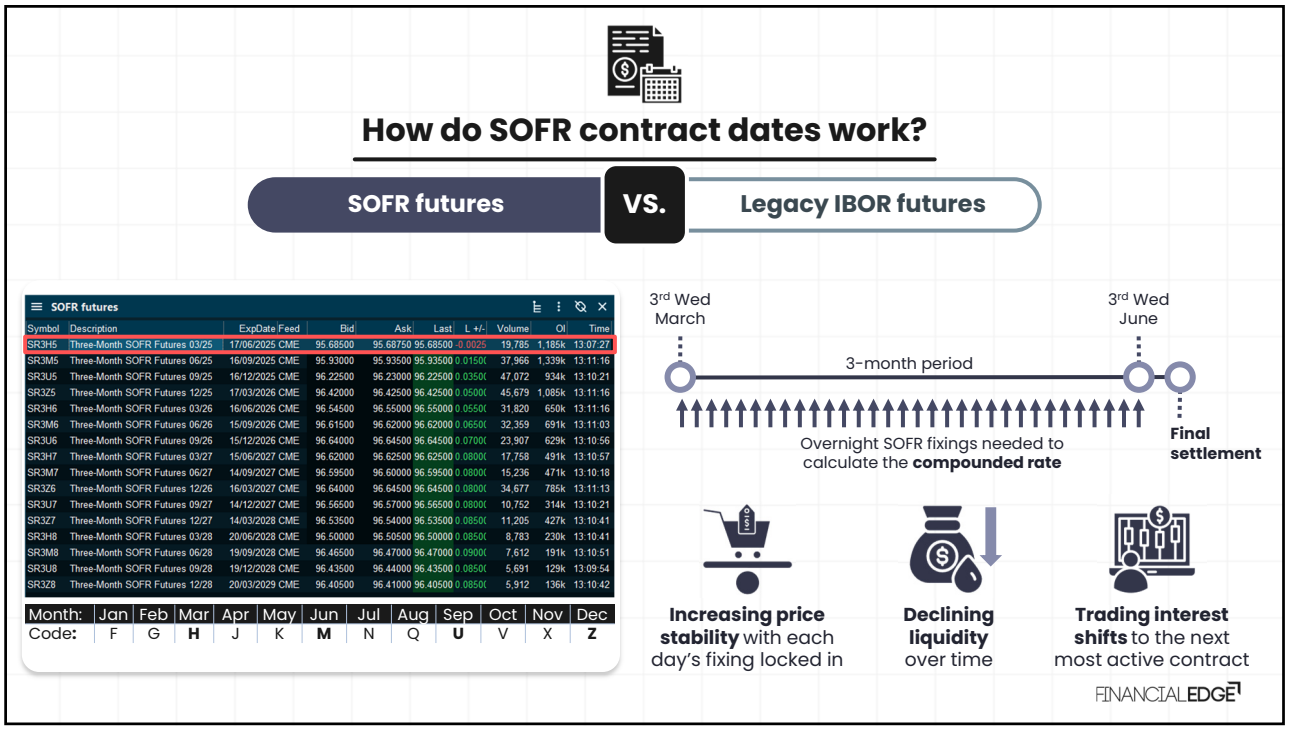
How do SOFR contract dates work?
SOFR futures
VS.
Legacy IBOR futures
SOFR futures
Symbol Description ExpDate Feed Bid Ask Last L +/- Volume OI Time
SR3H5 Three-Month SOFR Futures 03/25 17/06/2025 CME 95.68500 95.68750 95.68500 -0.0025 19,785 1,185k 13:07:27
SR3M5 Three-Month SOFR Futures 06/25 16/09/2025 CME 95.93000 95.93500 95.93500 0.0150 37,966 1,339k 13:11:16
SR3U5 Three-Month SOFR Futures 09/25 16/12/2025 CME 96.22500 96.23000 96.22500 0.0350 47,072 934k 13:10:21
SR3Z5 Three-Month SOFR Futures 12/25 17/03/2026 CME 96.42000 96.42500 96.42500 0.0500 45,679 1,085k 13:11:16
SR3H6 Three-Month SOFR Futures 03/26 16/06/2026 CME 96.54500 96.55000 96.55000 0.0550 31,820 650k 13:11:16
SR3M6 Three-Month SOFR Futures 06/26 15/09/2026 CME 96.61500 96.62000 96.62000 0.0650 32,359 691k 13:11:03
SR3U6 Three-Month SOFR Futures 09/26 15/12/2026 CME 96.64000 96.64500 96.64500 0.0700 23,907 629k 13:10:56
SR3H7 Three-Month SOFR Futures 03/27 15/06/2027 CME 96.62000 96.62500 96.62500 0.0800 17,758 491k 13:10:57
SR3M7 Three-Month SOFR Futures 06/27 14/09/2027 CME 96.59500 96.60000 96.59500 0.0800 15,236 471k 13:10:18
SR3Z6 Three-Month SOFR Futures 12/26 16/03/2027 CME 96.64000 96.64500 96.64500 0.0800 34,677 785k 13:11:13
SR3U7 Three-Month SOFR Futures 09/27 14/12/2027 CME 96.56500 96.57000 96.56500 0.0800 10,752 314k 13:10:21
SR3Z7 Three-Month SOFR Futures 12/27 14/03/2028 CME 96.53500 96.54000 96.53500 0.0850 11,205 427k 13:10:41
SR3H8 Three-Month SOFR Futures 03/28 20/06/2028 CME 96.50000 96.50500 96.50000 0.0850 8,783 230k 13:10:41
SR3M8 Three-Month SOFR Futures 06/28 19/09/2028 CME 96.46500 96.47000 96.47000 0.0900 7,612 191k 13:10:51
SR3U8 Three-Month SOFR Futures 09/28 19/12/2028 CME 96.43500 96.44000 96.43500 0.0850 5,691 129k 13:09:54
SR3Z8 Three-Month SOFR Futures 12/28 20/03/2029 CME 96.40500 96.41000 96.40500 0.0850 5,912 136k 13:10:42
Month: Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Code: F G H J K M N Q U V X Z
3rd Wed March
3rd Wed June
3-month period
Final settlement
Overnight SOFR fixings needed to calculate the compounded rate
Increasing price stability with each day's fixing locked in
Declining liquidity over time
Trading interest shifts to the next most active contract
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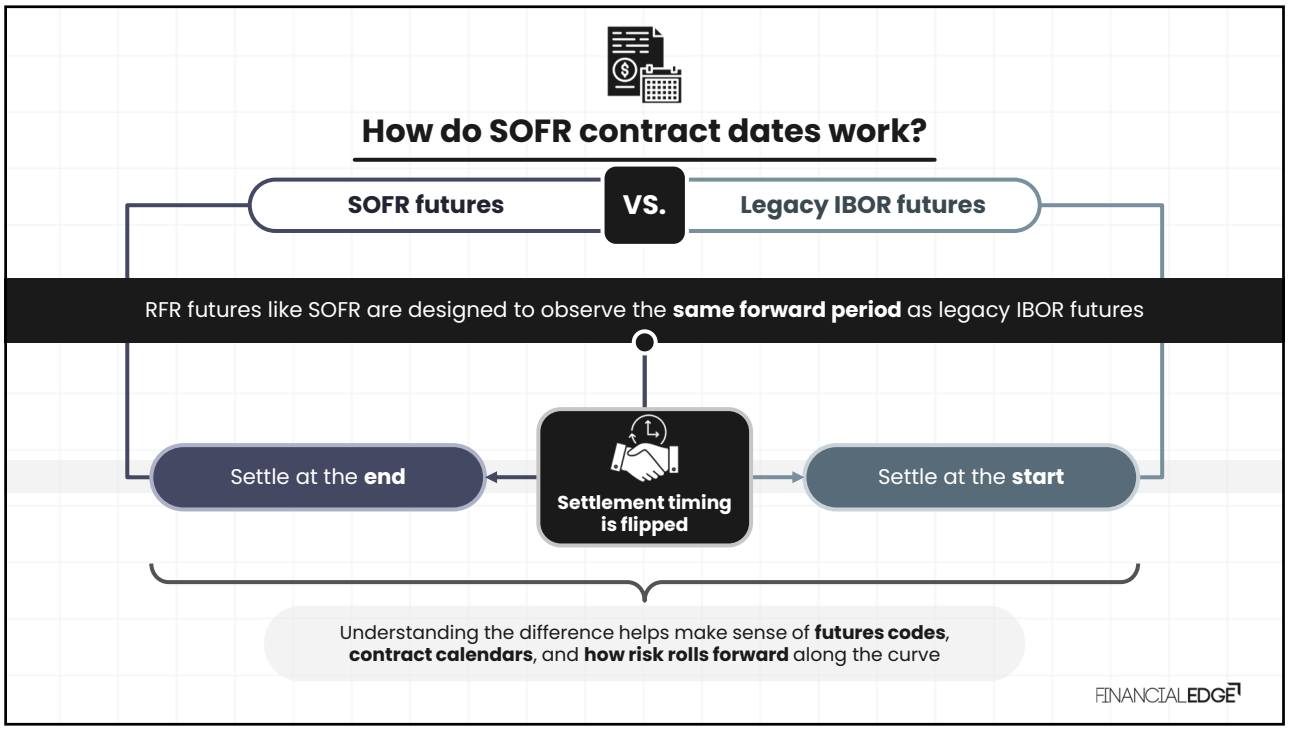

Secured Overnight Funding Rate (SOFR) Futures – Volumes and Open Interest

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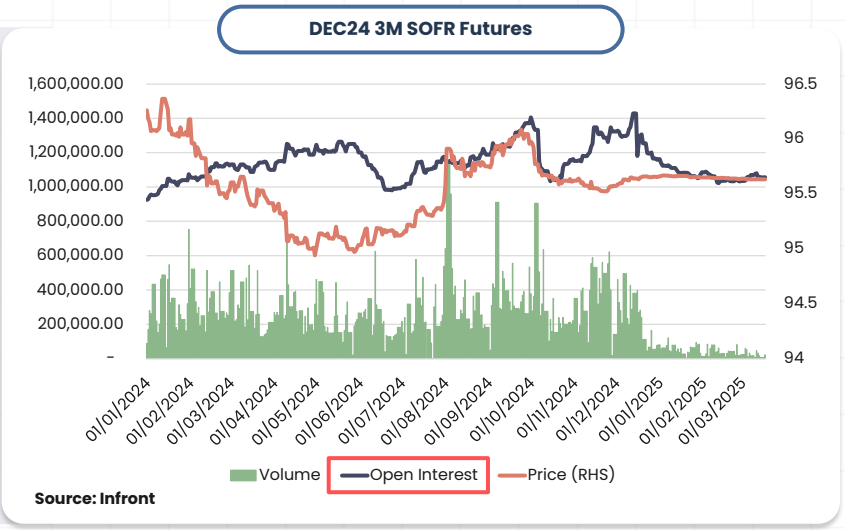
How SOFR futures behave as they approach expiry

OPEN INTEREST

Remains **elevated** throughout most of the contract's life

Stays high during the **reference period** (3rd Wednesday of September to the 3rd Wednesday of December)

Traders **hold their positions** until very close to settlement



Source: Infront

FINANCIALEDGE

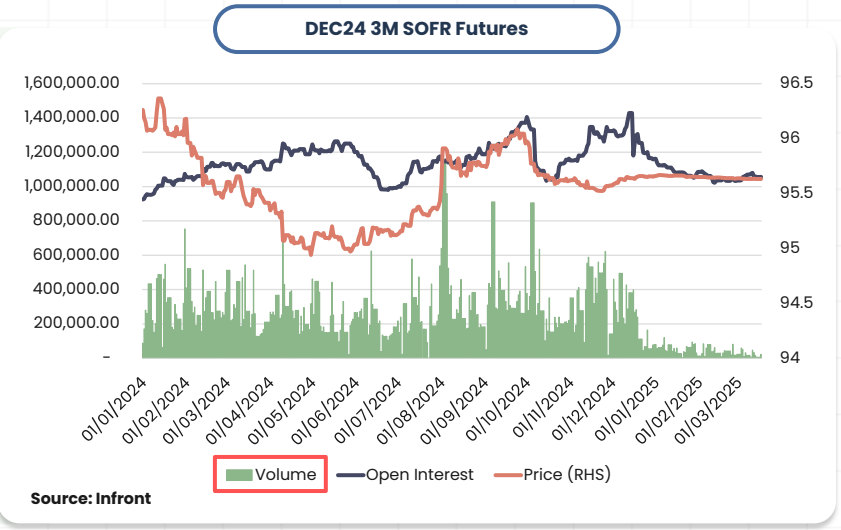
How SOFR futures behave as they approach expiry

TRADING VOLUME

Daily volume is **strong and active** throughout most of the contract's life

Drops sharply once the reference period begins

Futures price becomes **anchored to realized overnight rates**



Source: Infront

FINANCIALEDGE

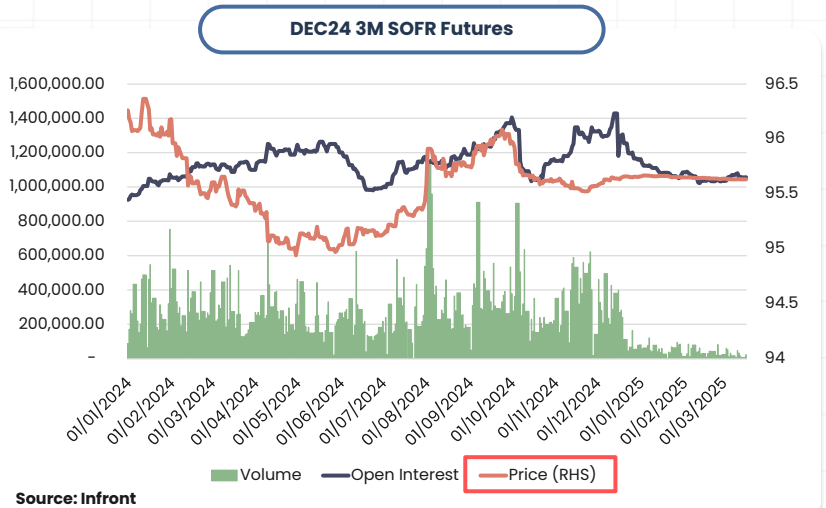
How SOFR futures behave as they approach expiry

FUTURES PRICE

Price is more **volatile**, reacting to shifts in rate expectations

Each new SOFR fixing is **locked** into the final average. There is **less and less to speculate** on

Price **volatility declines** significantly as the outcome is becoming mechanically fixed



Source: Infront

FINANCIALEDGE

How SOFR futures behave as they approach expiry

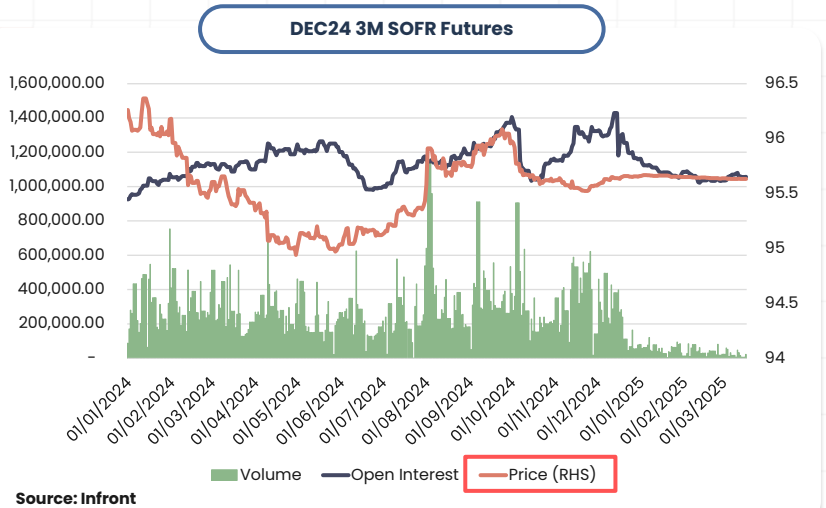
FUTURES PRICE

Price is more **volatile**, reacting to shifts in rate expectations

Each new SOFR fixing is **locked** into the final average. There is **less and less to speculate** on

Most of the **price risk is gone**

Traders **shift their attention** to newer, more active expiries



Source: Infront

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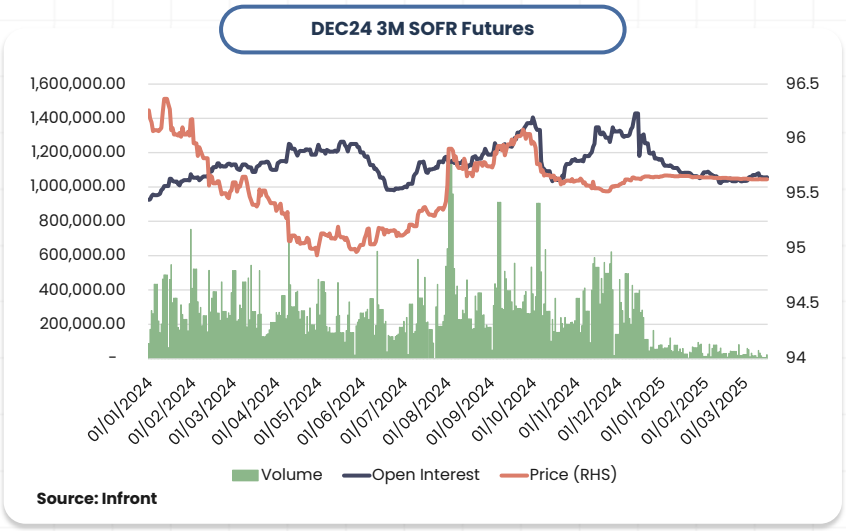
How SOFR futures behave as they approach expiry

Open interest **stays high** into expiry, reflecting **held positions**

Volume drops once the reference period begins, as **price sensitivity declines**

Price volatility shrinks as more SOFR fixings are known and the **final settlement rate** is increasingly **locked in**



Source: Infront

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