

USING EURIBOR[®] FUTURES STRIPS TO HEDGE EURO SWAPNOTE[®]

Fast Facts

What is it?

Euro Swapnote[®] is an on-exchange futures contract referenced to the European interbank curve.

Who is it for?

Euro Swapnote[®] futures are for anyone who wishes to gain or hedge exposure to the European interest rate swaps curve via a centrally cleared contract.

What does it provide?

Euro Swapnote[®] provides an open and efficient means of gaining euro swap market exposure in a contract that already meets new regulatory requirements.

The quarterly delivery cycle of Short Term Interest Rate (STIR) futures is often used as an effective means of hedging the cash flows of longer term instruments such as bonds and swaps.

Bonds and swaps of a particular maturity can be matched using a “strip” of STIR futures covering a similar term. Likewise, Euro Swapnote[®] futures positions can be hedged using Euribor futures.

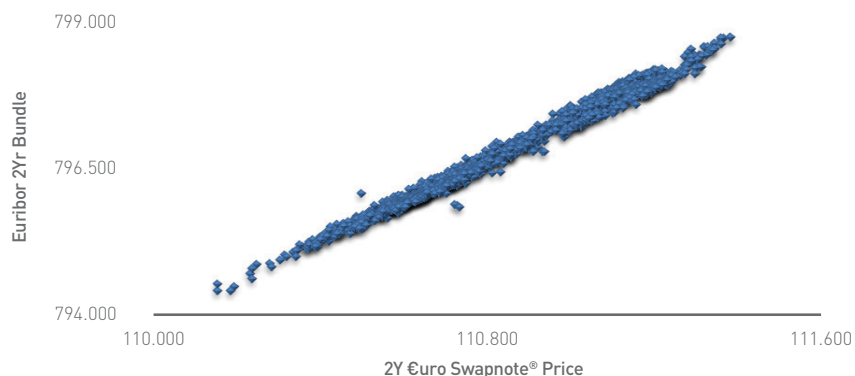
Like all STIR futures, Euribor futures have a fixed basis point value (BPV).

- Euribor Notional Value €1,000,0000
- Tenor 3 months
- Quotation 100 — Rate
- BPV €1,000,000 x 0.01% x 3/12 = €25 per lot

Like all bond futures and swaps, Euro Swapnote[®] futures BPV is a function of modified duration and modified duration is a function of yield. Consequently Euro Swapnote[®] futures BPV will change with changes in yield. As a broad measure, the BPV of 2 Year € Swapnote[®] is typically around €20 per lot.

Given that Euribor futures have a BPV of €25 and 2 Year € Swapnote[®] futures have an approximate BPV of €20, the hedge ratio is 4:5 respectively. Using this 4:5 hedge ratio one Euribor strip (8 quarterly Euribor futures) will hedge ten 2 Year € Swapnote[®] futures.

2Y Euro Swapnote® vs 2Y Euribor Bundle



For example, a liquidity provider wishes to make markets in 2 Year € Swapnote® futures, using Euribor futures (Two Year Bundles) as a hedge. He sells 100 Swapnote® futures, so needs to buy 80 Euribor (or 10 Two Year Bundles).

On 3 April 2012, market values are as follows:

2 Year € Swapnote® futures price:	109.665
Q1 Euribor futures price:	99.320
Q2 Euribor	99.315
Q3 Euribor	99.270
Q4 Euribor	99.220
Q5 Euribor	99.155
Q6 Euribor	99.085
Q7 Euribor	98.990
Q8 Euribor	98.905

Aggregate strip price (sum of leg prices): 793.260

Two months later yields have fallen, and futures prices have risen. On 4 June 2012, market values are as follows:

2 Year € Swapnote® futures price:	110.210
Q1 Euribor futures price:	99.380
Q2 Euribor	99.450
Q3 Euribor	99.460
Q4 Euribor	99.470
Q5 Euribor	99.470
Q6 Euribor	99.455
Q7 Euribor	99.410
Q8 Euribor	99.365

Aggregate strip price (sum of leg prices): 795.460

The liquidity provider's return on the short Swapnote® position is calculated as:

- Return = No. of Contracts x (Entry Price – Exit Price) x Tick Value / Tick Size
- Return = 100 x (109.665 – 110.210) x €5 / 0.005 = **-€54,500**

The return on the Euribor hedge is calculated as:

- Return = No. of Strips x (Exit Price – Entry Price) x Tick Value / Tick Size
- Return = 10 x (795.460 – 793.260) x €12.5 / 0.005 = **€55,000**

Another approach is to trade an outright month in Euribor, using the 4:5 ratio i.e. 4 outright contracts for five 2 Year Swapnote® contracts. The fifth quarterly contract exhibits very strong correlation based on 60 minute intraday data from Nov-12 to Oct-13.

2Y Euro Swapnote® vs 5th Quarterly Euribor

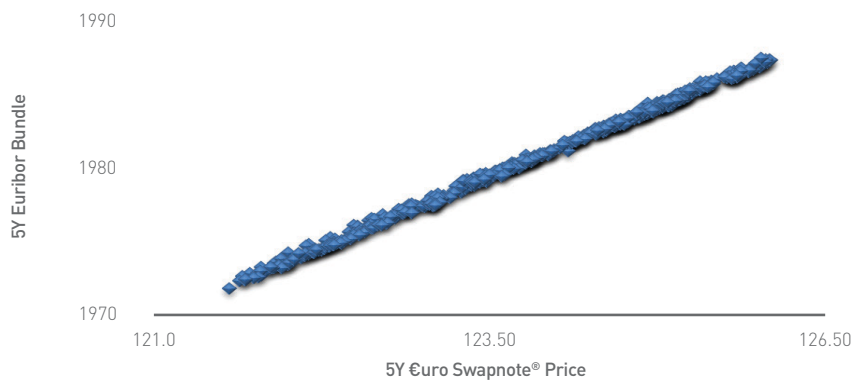


As an alternative to trading the 2 year strip or fifth quarterly contract, traders can consider other outright Euribor months or Euribor packs (4 consecutive quarterly months). The table below sets out the correlations of alternative proxies to the 2 Year strip, using market settlement prices for Jan '11 — Jan '14.

STRATEGY	Q4	Q8	WHITE PACK	RED PACK
CORRELATION	99.32%	97.92%	99.36%	98.35%

Similar strategies can be employed to hedge 5 Year € Swapnote® futures using the 5 year strip or the twelfth quarterly contract.

5Y Euro Swapnote vs 5Y Euribor Bundle



Further Information

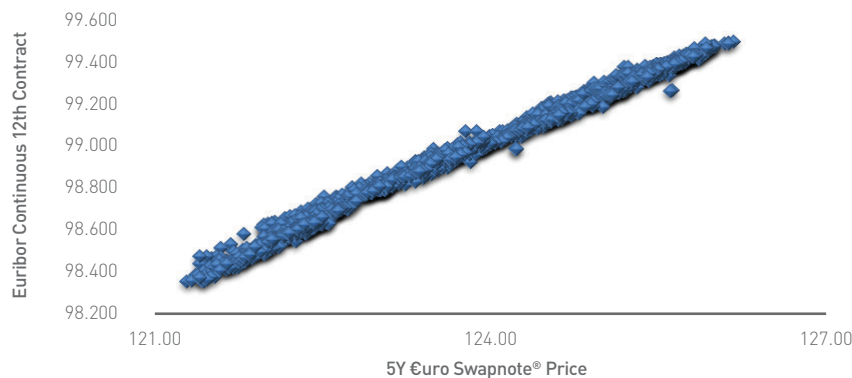
Interest Rate Derivatives

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5Y Euro Swapnote vs 12th Quarterly Euribor



There is an additional consideration that needs to be taken into account with longer dated STIR futures. There is a difference between STIR futures implied rates and forward rates due to their different settlement procedures. STIR futures are margined and their P&L is realised daily, whereas forward rates assume settlement at maturity. If interest rates were to rise, short position holders would receive a margin credit that could be invested at a higher rate. Conversely, if rates were to fall, margin payments can be financed at a lower rate. Consequently, STIR futures prices have a seller's bias, often termed as *Convexity Bias*. This effect is a function of interest rate volatility and small for shorter dated contracts (less than 2 years), but for longer dated contracts convexity bias needs to be taken into consideration when determining a hedge ratio.

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