

## Hedging open swap positions

A swap trader holds a plain vanilla interest rate swap for which the trader receives a fixed rate of 2.75% semi-annually for 30 years and pays a floating three-month BA rate on a notional amount of \$10 million. The trader can realize a profit of 30 basis points on the fixed-rate portion of the swap if the swap position can be immediately offset at the current swap rate of 2.45%. However, no counterparty with a satisfactory credit rating is available. The trader is concerned that a rise in interest rates will erode the profit margin of the swap position.

The trader can hedge the fixed-rate portion of the swap against a rise in interest rates by selling a specific number of LGB contracts. Receiving a fixed-rate on a swap is similar to buying a bond with the corresponding hedge consisting of selling bond futures contracts. Therefore, the trader's borrowing costs can be indexed to the yield of the 30-year Government of Canada benchmark bond. The trader can lock-in current borrowing levels by selling LGB contracts until an offsetting swap can be arranged.

### SETTING:

Price of the LGB contract	172.73
Price of the CTD Can 5% June 1, 2037 bond	151.948
Yield-to-maturity of the CTD bond	2.25%
Conversion factor	0.8718
DV01 of the CTD bond	\$248.81
DV01 of the LGB contract	\$285.40
DV01 of the fixed-rate portion of the 30-year swap per \$10,000,000 notional amount	\$21,600
Swap rate currently quoted in the market	2.45%

### Step 1

Determine the dollar value of a one-basis point increase for the 30-year fixed-rate portion of the swap. The trader determines that the DV01 of the fixed-rate portion of the 30-year swap is \$21,600.

### Step 2

Determine how many LGB contracts (hedge ratio) must be sold to hedge the fixed-rate portion of the swap:

$$\frac{\text{Swap DV01}}{\text{LGB contracts DV01}} = \frac{\$21,600}{\$285.40} \approx 75.48 \text{ contracts}$$

The swap trader effectively locked-in the lower cost of funds by selling an appropriate number of LGB contracts before offsetting the swap.