

## MONTREAL EXCHANGE

# Hedging of future borrowing costs

### Situation

If a borrower thinks that interest rates will increase in the near future, it is possible for him to lock in a financing rate using Government of Canada Bond Futures. This technique calls for a hedge against negative interest rates movement for the period preceding the date of the actual loan. Since bond prices decrease during rising interest rate periods, the borrower will need to sell a certain number of futures contracts. In the present strategy, we will look at the case of a treasurer, whose company is going to finance future investment activities with a \$20,000,000 bond issue. The treasurer strongly believes interest rates will increase prior to issuance.

### Objective

Lock in borrowing rate before any increases in interest rates.

### Strategy

#### Initial data

Bond issuance face value:	\$20,000,000
Desired coupon rate:	3.5%
Coupon paid semi-annually	
Date of bond issuance:	December 18, 2019
Maturity of the bond issue:	December 18, 2029
CGB price:	140.51
Cheapest-to-deliver bond:	Can 2.0% June 1, 2028
CGB BPV:	0.1112 or \$111.20 per \$100,000 of face value
Conversion factor:	0.7367

Determining the number of contracts to sell:

First, let us determine the BPV on the coupon interest:  
 $0.0001 \times \$20,000,000 = \$2,000/\text{year}$  or  $\$1,000/\text{semester}$

Since  $\$1,000$  represents a semi-annual payment, we must determine the present value of the 20 semi-annual payments. To calculate the present value, we will assume an interest rate of 1.75% (3.5%/2). Using the present value of an ordinary annuity formula, we obtain:

$$\frac{\text{Present Value}}{\text{Payment}} = \left( \frac{1}{i} = \frac{1}{i + (1 + i)^n} \right)$$

Where:

$i = 1.75\%$

$n = 20$

$= 1,000 \times 16.7529 = \$16,759$

Hence, every basis point above 3.5% will result in an increase of  $\$16,759$  in interest payments.

Therefore, the number of contracts will be:  $16,759/111.20 = 150.71$  or 151 contracts.

Since the treasurer expects yields to increase, he understands that the yield spread between Government of Canada bonds and corporate bonds will also increase. The number of contracts must be adjusted to reflect this widening of the yield spread. For an increase of 1% in Government of Canada bond yields, he thinks the yield of corporate bonds to increase to 1.2%. This gives us a ratio of 1.2 (1.2/1).

The total number of contracts to sell will then be:  $151 \times 1.2 = 181$

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### On December 18, 2019

Interest rates (coupon):

4.1%

CGB price:

134.96

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The rise in interest rates will cost:

$(0.041 - 0.035) / 0.0001 \times \$16,759 = \$1,005,540$

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Profit on the CGB contract:

$(140.51 - 134.96) \times 1,000 \times 181 = \$1,004,550$

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## Results

In the present strategy, the hedge has given excellent results, compensating for almost 99% of the increase in rates. Changes in the actualization rate or the government of Canada and corporate yield spread expectation can make a difference to the performance of the hedge. However, the futures position may be dynamically adjusted as the view on the market evolves. This results in the hedge always being adapted to the forecast interest rate context.