MONTRÉAL EXCHANGE

OCR Strategies

TMX

Table of Contents

Interest Rate Cap **3**

Scenario 1: Rise in interest rates 3

Scenario 2: Drop in interest rates 4

Scenario 3: Interest rates remain unchanged 5

Interest Rate Floor **5**

Scenario 1: Decrease in interest rates 6

Scenario 2: Increase in interest rates 7

Scenario 3: Interest rates remain unchanged 7

Interest Rate Collar **8**

Scenario 1: Rates rise beyond maximum 9

Scenario 2: Rates decrease slightly remaining within collar 9

Scenario 3: Rates decrease below minimum 10

This document has been prepared solely for information purposes to the intent of persons interested in Options on the Three-month CORRA futures contract (OCR). It has not been designed as a comprehensive document.

For further information on Options on the Three-month CORRA futures contract (OCR) and other Montréal Exchange derivative products, please consult our suite of products.

1. Interest Rate Cap

At mid-January, a treasury manager needs to borrow funds on the short-term markets on March 14. The funding cost is based on the newly created Three-month Term CORRA rate[1] plus a fixed spread. The manager seeks protection against a rise in interest rates while maintaining the potential benefits of falling rates. This can be achieved with an interest rate cap created by purchasing the required number of OCR put contracts.

INITIAL DATA

Date	January 15
CORRA	2.90%
March CRA futures price	97.00
97.00 OCR March Put	0.10 or $250 (0.10 x 2,500) per contract

The contracts are held until expiry, March 14.

We will consider three possible scenarios:

- An increase in short-term interest rates
- A decrease in short-term interest rates
- Short-term interest rates remain the same

Scenario 1: Short-term interest rates have risen to 3.80%

CORRA rate	3.80%
March CRA futures price	96.20
97.00 OCR March Put	0.80 or $2,000 (0.80 x 2,500) per contract

As feared, short-term rates are higher, hence a profit is made on the put contracts. The funds can still be borrowed at an effective rate of 3.10% (plus the fixed spread) because the proceeds are used to reduce the interest cost of the loan.

Profit	= Put premium at expiration - Initial put premium
	= 0.80 - 0.10
	= 0.70 or $1,750 (0.70 x 2,500) per contract

1 More information on Term CORRA can be found on the CanDeal website. Term CORRA complements CORRA as a replacement for CDOR in certain products, including loans, trade finance, and any associated derivative hedges.

Effective rate	= CORRA rate - Put premium at expiration + Initial put premium
	= 3.80 - 0.80 + 0.10
	= 3.10%

Scenario 2: Short-term interest rates have fallen to 2.00%

CORRA rate	2.00%
March CRA futures price	98.00
97.00 OCR March Put	0.00

Since short-term rates have fallen below 2.90%, the puts expire out-of-the-money and are worthless. The resulting effective rate becomes 2.10% (plus the fixed spread) when the cost of the initial put premium is added. It is important to understand that the funds will be borrowed at a rate of 2.00% (plus the fixed spread) but the loss on the put contracts creates an added interest charge, thus increasing the effective borrowing rate to 2.10%.

Loss	= Initial put premium
	= 0.10 or $250 per contract

Effective rate	= CORRA rate - Put premium at expiration + Initial put premium
	= 2.00 - 0.00 + 0.10
	= 2.10%

Scenario 3: Short-term interest rates remain unchanged at 2.90%

Implied 3M CORRA rate	2.90%
March CRA Futures price	97.10
97.00 OCR March Put	0.00

In this case, the puts expire at-the-money. Once again, the puts expire worthless and the initial premium becomes an added interest cost, increasing the borrowing rate. The effective borrowing rate is now 3.00%.

Loss	= Initial put premium
	= 0.10 or $250 per contract
Effective rate	= CORRA rate - Put premium at expiration + Initial put premium
	= 2.90 - 0.00 + 0.10 = 3.00%

In contrast to the above hedge strategy, a lender could achieve an interest rate floor by purchasing the appropriate amount of OCR calls.

2. Interest Rate Floor

The treasurer of ABC Inc. expects to receive a significant cash flow in three months. The treasurer anticipate interest rates may be lower when the time comes to invest the funds. To ensure a minimum investment rate, the decision is made to buy OCR slightly out-of-the-money calls.

INITIAL DATA

Date	March 15
CORRA rate	3.00%
June CRA futures price	97.05
97.125 OCR June Call	0.10

By purchasing OCR call options with a strike price of 97.125, this will secure at least a 2.875% return on the expected funds (minus the premium, assuming investment at this term rate) while maintaining the possibility of higher yields. If interest rates rise above 2.875% at maturity, the calls will expire worthless since there is no reason to lock in the funds at 2.875% when better rates are available (the initial premium becomes the insurance cost). Depending on how volatile the treasurer perceives the market to be, different strike prices may be chosen. Remember, the higher the volatility, the higher the premiums.

The call contracts are held until expiration, June 17.

Three possible scenarios will be considered:

- Short-term rates decrease
- Short-term rates increase
- Short-term rates remain unchanged

Scenario 1: As expected, short-term interest rates have decreased to 2.25%

CORRA rate	2.25%
June CRA futures price	97.75
97.125 OCR June Call	0.625

Since short-term rates have dropped to 2.25%, the calls can be exercised and the funds invested at an effective rate of 4.775% or if the funds didn't come in, receive the call premium.

Profit	= Call premium at expiration - Initial call premium
	= 0.625 - 0.10
	= 0.525 or $1,312.50 (0.525 x 2,500) per contract

Effective rate	= CORRA rate + Call premium at expiration - Initial call premium
	= 2.25 + 0.625 - 0.10
	= 2.775%

Scenario 2: Short-term interest rates have increased to 3.75%

CORRA rate	3.75%
June CRA futures price	96.25
97.125 OCR June Call	0.00

Since the short-term rates have increased above 2.875%, the calls are worthless. The loss on the premium represents the insurance cost, reducing the investment rate from 3.75% to 3.65%.

Loss	= Initial put premium
	= 0.10 or $250 (0.27 x 2,500) per contract
Effective rate	= CORRA rate + Call premium at expiration - Initial put premium
	= 3.75 + 0.00 - 0.10
	= 3.65%

Scenario 3: Short-term interest rates remain unchanged at 3.00%

CORRA rate	3.00%
June CRA futures price	94.50
97.125 OCR June Call	0.00

Even unchanged, the rates are above the 2.875% floor. Once again, the calls expire worthless and will reduce the effective rate from 3% to 2.90%.

Loss	= Initial call premium
	= 0.10 or $250 per contract
Effective rate	= CORRA rate + Call premium at expiration - Initial call premium
	= 3.00 + 0.00 - 0.10
	= 2.90%

3. Interest Rate Collar (Borrower)

On June 20, a treasury manager needs to borrow funds in September. The manager seeks insurance against a rise in rates, without paying too high of a premium. This can be achieved by purchasing a put and selling a call, both out-of-the-money. This type of strategy reduces the premium through the sale of a portion of the savings achievable if rates drop below a certain level.

INITIAL DATA

Date	June 15
CORRA rate	4%
September CRA	95.90
OCR Put Sept 95.75	0.15
OCR Call Sept 96.375	0.05
Initial cost of collar	Call premium (paid) - Put premium (received) 0.15 - 0.10 = 0.05

The collar combines the purchase of an interest rate cap with the sale of an interest rate floor. This strategy results in a maximum and a minimum borrowing rate with floating rates in between.

Maximum borrowing rate:

The position taken by the treasury manager guarantees a maximum borrowing rate calculated as follows:

= Initial cost of collar + (100 - put strike)

= 0.15 - 0.10 + 4.25

= 4.30%

Minimum borrowing rate:

The position may also benefit from lower rates, up to the minimum borrowing rate payable determined by the strike price on the short call and calculated as follows:

= Initial cost of collar + (100 - call strike)

= 0.15 - 0.10 + 3.625

= 3.675%

The position is held until expiration on September 16.

The three following scenarios will be considered:

- Rise in rates beyond maximum
- Slight decrease in rates
- Decrease in rates below minimum

Scenario 1: Short-term rates rise to 5%

CORRA rate	5%	**OCR Put Sept 95.75**	0.75
September CRA	95.00	**OCR Call Sept 96.375**	0.00

When short-term rates rise above the maximum insured by the collar, the profit made on the long puts will offset the increase in rates. The effective rate is calculated as follows:

Net profit	= Put Profit - Initial cost of collar
	= 0.75 - 0.05
	= 0.70

Effective rate	= CORRA rate - Net profit
	= 5.00 - 0.70
	= 4.30%

Scenario 2: Short-term rates drop slightly to 3.75%

CORRA rate	3.75%	**CRA Put Sept 95.75**	0.00
September CRA	96.25	**CRA Call Sept 96.375**	0.00

If interest rates rise or drop only slightly, remaining within the maximum and minimum ranges of the collar, both the long put and the short call expire worthless. In this case, the effective rate is obtained as follows:

Effective rate	= CORRA rate + Initial cost of collar
	= 3.75 + 0.05
	= 3.80%

Scenario 3: Interest rates drop below the minimum range of the collar to 3.25%

CORRA rate	3.25%	**CRA Put Sept 95.75**	0.00
September CRA	96.75	**CRA Call Sept 96.375**	0.375

When interest rates drop below the minimum range of the collar, the long put expires worthless and the value of the short call must be paid out. In this case, the effective rate is equal to the minimum borrowing rate of the collar and is calculated as follows:

Effective rate	= CORRA rate + Call premium at expiration + Initial cost of collar
	= 3.25 + 0.375 + 0.05
	= 3.675

Recap of scenarios

Collar on Interest Rate Borrower	Effective borrowing rate	CORRA rate at expiry	Long Put profit / loss	Short Call profit / loss	Cost of options strategy	Profit / Loss on options strategy
Scenario 1	4.30%	5.00%	0.75	0.00	0.05	0.70
Maximum borrowing rate	4.30%	4.25$	0.00	0.00	0.05	-0.05
Scenario 2	3.80%	3.75%	0.00	0.00	0.05	-0.05
Minimum borrowing rate	3.675%	3.625%	0.00	0.00	0.05	-0.05
Scenario 3	3.675%	3.25%	0.00	-0.375	0.05	-0.425

m-x.ca