

**MONTRÉAL EXCHANGE EDUCATIONAL SERIES**

# **Short-Term Interest Rate Futures BAX and CRA**

Introduction to strips



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# Agenda

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\* MX: Montréal Exchange

# What are strips, packs and bundles?

A **futures strip** is the buying or selling of equally weighted futures contracts in successive delivery months, traded as a single instrument.

- A strip of four consecutive contracts is often referred to as a **pack** (e.g. red pack)
- A strip of two or more Packs is often referred to as a **bundle** (e.g. a 2-year bundle)

Typically used to lock in a specific price for a targeted time-frame.

Futures strips are usually bought/sold in **1-year**, **2-year** or **3-year** combinations.

The Montréal Exchange (MX) trading platform and its Central Limit Order Book (CLOB) currently offers:

**Short-Term Interest Rate Futures strips** for series of **BAX**<sup>®</sup> (Three-Month Canadian Bankers' Acceptance Futures) or **CRA**<sup>™</sup> (Three-Month CORRA Futures) contracts, which expire on a quarterly basis.

# What does the MX offer for strip trading?

The MX strip strategies are quoted on an "average net change" basis from the previous day's settlement price (example later in the presentation).

All contracts in the quarterly BAX<sup>®</sup> or CRA<sup>™</sup> strip are traded simultaneously in a single transaction.

The three years of quarterly BAX<sup>®</sup> or CRA<sup>™</sup> expirations provide market participants with six standardized strips per product:

<b>1-year strip</b> (4 contracts)	For closest 4 expiries (white), 4 mid expiries (red), or 4 furthest expiries (green)
<b>2-year strip</b> (8 contracts)	4 closest expiries (white) + 4 mid expiries (red), or 4 mid expiries (red) + 4 furthest expiries (green)
<b>3-year strip</b> (12 contracts)	All 12 expiries for <u>BAX</u> <sup>®</sup> or <u>CRA</u> <sup>™</sup> contracts

# What does the MX offer for strip trading?

## The MX can offer other non-standard strip denominations such as:

- 6-month (2 contracts)
- 18-month (6 contracts)
- 30-month (10 contracts)

should there be client demand for more time granularity.

The MX also offers **inter-group strip spreads** between the BAX<sup>®</sup> and CRA<sup>™</sup> Futures where clients can buy all 4 contracts of a 1-year BAX<sup>®</sup> strip and sell all 4 contracts of a CRA<sup>™</sup> strip having same contract months for all 4 expiries.

# The MX strip symbology

Market Information Summary:11

▲ Symbol	BidSize	BidPrice	AskPrice	AskSize	LastPrice	NbOfTra	Status
BAXH2104	0	0.0000	0.0000	0	0.0000	0	Open
BAXM2104	0	0.0000	0.0000	0	0.0000	0	Open
BAXU2104	0	0.0000	0.0000	0	0.0000	0	Open
BAXZ2004	0	0.0000	0.0000	0	0.0000	0	Open
BAXZ2008	0	0.0000	0.0000	0	0.0000	0	Open
BAXZ2012	0	0.0000	0.0000	0	0.0000	0	Open
CRAU2004	0	0.0000	0.0000	0	0.0000	0	Open

## Characters

<b>First 3</b> (letters)	Class Symbol of all strip components
<b>4<sup>th</sup></b> (letter)	Reference Month code of the Anchor contract of the strip
<b>5<sup>th</sup> - 6<sup>th</sup></b> (numeric)	Reference year of the Anchor contract of strip; e.g. 21 = 2021
<b>7<sup>th</sup> - 8<sup>th</sup></b> (numeric)	Total number of contracts in the strip; e.g. 1-year = 4 2-year = 8 3-year = 12

# The MX strip symbology

## Inter-group strip spread between CRA™ and BAX®:

	Symbol	BidSize	BidPrice	AskPrice	AskSize	LastPrice	SettlementPrice	NetChange V
1	CRAZ2004BAXZ2004	0	0.0000	0.0000	0	1.0100	0.0000	0.0000
2	CRAZ20	200	99.7800	99.7900	251	0.0000	99.7850	0.0000
3	CRAU21	1	99.7850	99.8150	1	0.0000	99.7700	0.0000
4	CRAM21	200	99.7850	99.7950	5	0.0000	99.7850	0.0000

### Characters

<b>First 3</b> (letters)	Class Symbol of the CRA™ strip components
<b>4<sup>th</sup></b> (letter)	Month Code of the Anchor contract of the CRA™ strip
<b>5<sup>th</sup> - 6<sup>th</sup></b> (numeric)	Reference year of the Anchor contract of the CRA™ strip; e.g. 20 = 2020
<b>7<sup>th</sup> - 8<sup>th</sup></b> (numeric)	Total number of contracts in the first strip; e.g. 1-year = 4 2-year = 8 3-year = 12
<b>9<sup>th</sup> - 16<sup>th</sup></b>	Is the same as the 1 <sup>st</sup> - 8 <sup>th</sup> characters but for the BAX® strip



# Pricing & rounding of a strip

## Real order pricing and trades in the CLOB:

The real pricing algorithm will allow the input and matching of orders via First in First out (FIFO) standard matching algorithm the same as any other MX derivative where:

### Strip Trade Price

= Net Change that will be applied to all contracts in the strip

If a strip trades in the CLOB, the matching engine will assign the traded price between the Previous Day's Settlement for the strategy strip trade price, and will price each contract using a contract price algorithm:

The first contract uses its previous Settlement +/- Average Net Price (Strip Trade Price / "n" number of contracts), and then the formula is repeated for each contract.

# Pricing & rounding of a strip

## Implied order pricing (derived from leg CLOB):

The implied pricing algorithm will generate Implied Market Bid/Ask Orders on the BAX<sup>®</sup> and CRA<sup>™</sup> strips based on their outright contracts.

These are called the **Implied Inbound Orders**.

The Implied algorithm will also generate Implied Market Bid/Ask Orders on the others outright underlying constituents with the BAX<sup>®</sup> and CRA<sup>™</sup> strip orders.

These are called the **Implied Outbound Orders**.

# Pricing & rounding of a strip

## Implied order pricing (derived from leg CLOB):

If the order trades against an implied price, trades executed through a strip order will not have the same variation on each leg component.

Conversely, in a real order pricing scenario, the variation will be the same when an order trades against an opposing order.

All strip orders that trade implied will have the trade price reported on execution notices on all post-trade feeds and reports at the strategy instrument level, and will be rounded to the nearest 1/10th cent value. It therefore may not reflect the actual trade price with all decimals.

# Strip pricing example:

## Implied in (1)

### A 1-year white quarterly BAX® strip implied in

Contract	Bid size	Bid price	Ask price	Ask size	Settlement price	Net change bid	Net change ask
BAXZ20	150	98.75	98.755	350	98.73	0.02	0.025
BAXH21	300	98.765	98.77	250	98.72	0.045	0.05
BAXM21	275	98.74	98.745	325	98.69	0.05	0.055
BAXU21	175	98.715	98.72	415	98.66	0.055	0.06
					<b>Sum price</b>	0.17	0.19
					<b>Average price (/4)</b>	<b>0.0425</b>	<b>0.0475</b>

### Implied price disseminated

BAX strip	Bid size	Bid price	Ask price	Ask size	Implied bid size	Calculated implied bid*	Calculated implied ask*	Implied ask size
BAXZ2004	50	0.04	0.05	50	150	0.042	0.048	250

1. Vendor feed for BAX® only supports 3-decimals so it is rounded, but actual trades and allocations send to the clearinghouse will have the real values
2. Disseminated prices are rounded down for the bid price and rounded up for the ask price

# Strip pricing example:

## Implied in (2)

Order: Sell 100 BAXZ2004 @ MARKET: Filled at 0.0425, Broadcasted on the HSVF Feed and Post Trade at 0.043\*

### Leg fill prices

Contract	Trade volume	Implied trade price	Settlement price	Contract price	Trade price rules
BAXZ20	100	0.0425	98.73	98.75	Actual Contract Bid Price (Hit Bid via Implied)
BAXH21	100	0.0425	98.72	98.765	
BAXM21	100	0.0425	98.69	98.74	
BAXU21	100	0.0425	98.66	98.715	
<b>Total volume</b>	<b>400</b>				

**Total Trade Volume is =**  
**400 for the White Pack** which is  
 100 per each contract expiry

\* Vendor feed for BAX® only supports 3-decimals so it is rounded, but actual trades and allocations send to the clearinghouse will have the real values

# Strip pricing example:

## Strategy vs strategy (1)

Contract	Bid size	Bid price	Ask price	Ask size	Settlement price	Net change bid	Net change ask
BAXZ20	<b>150</b>	98.75	98.755	<b>250</b>	98.73	0.02	0.025
BAXH21	300	98.76	98.77	350	98.72	0.04	0.05
BAXM21	275	98.74	98.75	325	98.69	0.05	0.06
BAXU21	175	98.71	98.73	415	98.66	0.05	0.07
					<b>Sum price</b>	0.16	0.205
					<b>Average price (/4)</b>	<b>0.04</b>	<b>0.05125</b>

### Real book and implied price disseminated

BAX strip	Bid size	Bid price	Ask price	Ask size	Implied bid size	Calculated implied bid*	Calculated implied ask*	Implied ask size
BAXZ2004	<b>200</b>	<b>0.045</b>	0.055	50	<b>150</b>	<b>0.04</b>	<b>0.0513</b>	<b>250</b>

1. Vendor feed for BAX® only supports 3-decimals so it is rounded, but actual trades and allocations send to the clearinghouse will have the real values
2. Disseminated prices are rounded down for the bid price and rounded up for the ask price

# Strip pricing example:

## Strategy vs strategy (2)

Order: Sell 100 BAXZ2004 @ MARKET: Filled at 0.045

### Leg fill prices

Contract	Trade volume	Implied trade price	Settlement price	Contract price	Trade price rules
BAXZ20	100	0.045	98.73	98.775	(Prev Settlement Price) + Strip Trade Price
BAXH21	100	0.045	98.72	98.765	
BAXM21	100	0.045	98.69	98.735	
BAXU21	100	0.045	98.66	98.705	
<b>Total volume</b>	<b>400</b>				

**Total Trade Volume is =**  
**400 for the White Pack** which is  
 100 per each contract expiry

# Limitations to strip pricing

## (Real + Implied)

A STIR strip calculation is based on the previous day's settlement price and is valid for the full trading session. Therefore, orders executed after the settlement period\*, whether implied or not implied, will continue to be based on the previous day's settlement price and not the new settlement price.

Duration order types, such as GTC and GTD, will be accepted on strips and will not be automatically cancelled by the system at the end of the trading day. If the GTC or GTD order is matched on a subsequent day, the leg prices will be set according to the prevailing previous day settlement price at the time the order is matched, not the one that was in effect when the strategy order was originally entered.

\*See M-X.ca website for market hours and early closure times



# Live Demo from MX Sola Market Watch

MX STIR CONTRACT and STRIPS									
Symbol	BidSize	BidPrice	AskPrice	AskSize	LastPrice	SettlementPrice	NetChange	Volume	Status
BAXM21	6587	99.5250	99.5300	435	99.5250	99.5200	0.0050	24231	Open
BAXU21	6241	99.5200	99.5250	411	99.5250	99.5150	0.0100	11538	Open
BAXH21	4626	99.5250	99.5300	48	99.5300	99.5300	0.0000	11004	Open
BAXZ20	10078	99.5200	99.5250	846	99.5200	99.5250	-0.0050	5361	Open
BAXH2104	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
BAXM2204	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
BAXU2104	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
BAXU2204	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
BAXZ2004	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
BAXZ2008	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
BAXZ2012	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
BAXZ2104	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
CRAU2004	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open
CRAU22	0	0.0000	0.0000	0	0.0000	99.6800	0.0000	0	Open
CRAZ2004	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0	Open

  

Market Depth of BAXZ2004 - Filter applied					
Level	BidSize	BidPrice	AskPrice	AskSize	UpdateTime
1	0	0.0000	0.0000	0	23:59:59.000
2	0	0.0000	0.0000	0	23:59:59.000
3	0	0.0000	0.0000	0	23:59:59.000
4	0	0.0000	0.0000	0	23:59:59.000
5	0	0.0000	0.0000	0	23:59:59.000
A	4626	0.0000	0.0050	482	10:43:01.222

**Results for Bid Z20 Pack =**

Z20 (99.52-99.525) + H21(99.525-99.53) +  
M21(95.525-99.52) + U21 (99.52-99.515) =  
**0.00 SUM, divided by 4 =**  
**0.00 broadcasted to the BID of the Pack**

**Results for Ask Z20 Pack =**

Z20 (99.525-99.525) + H21 (99.53-99.53) +  
M21(95.53-99.52) + U21 (99.525-99.515) =  
**0.02 SUM, divided by 4 =**  
**0.005 broadcasted to the ASK Pack**

# Example of MX strips in Trading Technologies

Market Grid											
SIMULATION											
Contract	Description	NetChg	WrkBuys	BidQty	Bid	Ask	AskQty	WrkSells	Last	Vol	Settle
☐ BAX Dec20 4mo Strip	Three-Month Canadian Bankers' Acceptance			880	0.0000	0.0050	2191			0	
☐ BAX Dec20 8mo Strip	Three-Month Canadian Bankers' Acceptance			148	-0.0050	0.0050	72			0	
☐ BAX Dec20 12mo Strip	Three-Month Canadian Bankers' Acceptance			12	-0.0100	0.0050	58			0	
☐ BAX Mar21 4mo Strip	Three-Month Canadian Bankers' Acceptance			880	-0.0050	0.0050	1332			0	
☐ BAX Jun21 4mo Strip	Three-Month Canadian Bankers' Acceptance			148	-0.0050	0.0050	1332			0	
☐ BAX Sep21 4mo Strip	Three-Month Canadian Bankers' Acceptance			148	-0.0050	0.0050	423			0	
☐ BAX Dec21 4mo Strip	Three-Month Canadian Bankers' Acceptance			148	-0.0050	0.0000	72			0	
☐ BAX Mar22 4mo Strip	Three-Month Canadian Bankers' Acceptance			12	-0.0100	0.0000	58			0	
☐ BAX Jun22 4mo Strip	Three-Month Canadian Bankers' Acceptance			12	-0.0100	0.0000	58			0	
☐ BAX Sep22 4mo Strip	Three-Month Canadian Bankers' Acceptance			12	-0.0150	-0.0050	58			0	
☐ BAX Dec22 4mo Strip	Three-Month Canadian Bankers' Acceptance			12	-0.0150	0.0000	58			0	

# Example of MX strips in Fidessa ION

Montage Depth [BAX Pack Dec20 Mar21 Jun21 Sep21 (MON)]

BAX Pack Dec20 Mar21 Jun21 Sep21 (MON)

MON BAX Pack Dec20 Mar21 Jun21 Sep21 CAD

Open: 0.0550 High: 0.0550 Low: 0.0500 Close: 0.0000

Count	Size	Price	Price	Size	Count
1	45	0.0500	0.0550	79	3
1	35	0.0450	0.0600	125	1
1	21	0.0400	0.0650	161	1
1	11	0.0350	0.0700	1	1
2	4	0.0300	0.0750	1	1
2	6	0.0250	0.0800	1	1
1	1	0.0200			

Full Price + Attrib Price

# Questions?

Send to:

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