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CGF Five-Year Government of Canada Bond Futures

CGB Ten-Year Government of Canada Bond Futures

M19 - U19 Roll Update

Quarterly Roll Summary

CGBM19 appears cheap due to aggressive buying of futures basis over the past month or so. We expect an active roll period in both CGF and CGB and have observed some relative value opportunities already.

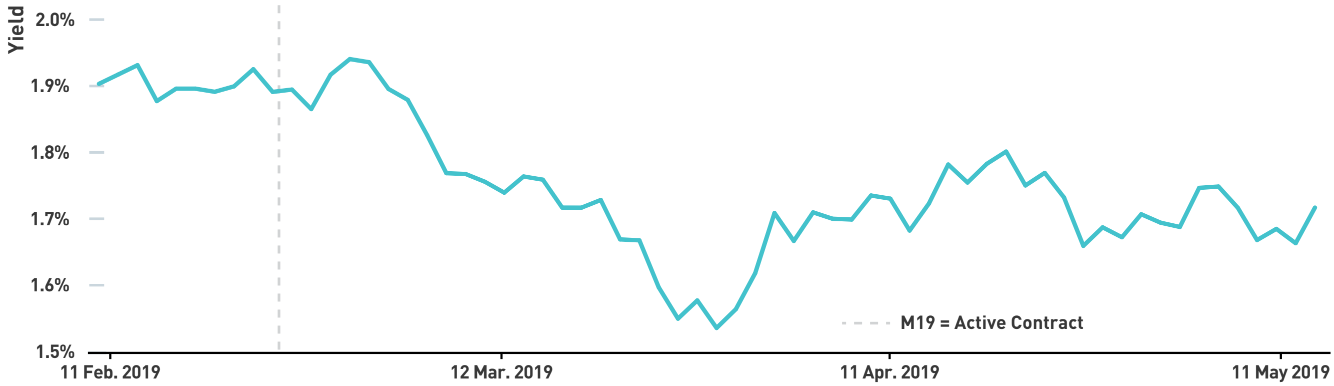
Significant roll activity in both CGF and CGB contracts will likely begin on May 24th rather than the more normal date of May 27th due to anxiety that sometimes exists when a weekend precedes the normal roll start as well as an urgency to complete the CGB roll due to the annual cheapest-to-deliver (CTD) change in that contract. Long positions that can't risk delivery are advised to close their M19 positions by May 28th in the CGB as those contracts will almost certainly be delivered early again this quarter due to the negative carry for a fully hedged short CGBM19 position.

Positioning

Speculative positions may be light this quarter due to a significant reversal midway into the life of the June contracts. Figure 1 charts the 10-year bond yield in Canada during the M19 contract and shows a trend towards lower rates early in the contract interrupted by a reversal strong enough to reduce positions for trend following models. Although open interest is high in both CGB and CGF, we don't believe the large positions are a result of these speculative models building positions.

FIGURE 1

10y Bond Yield, past 3 months



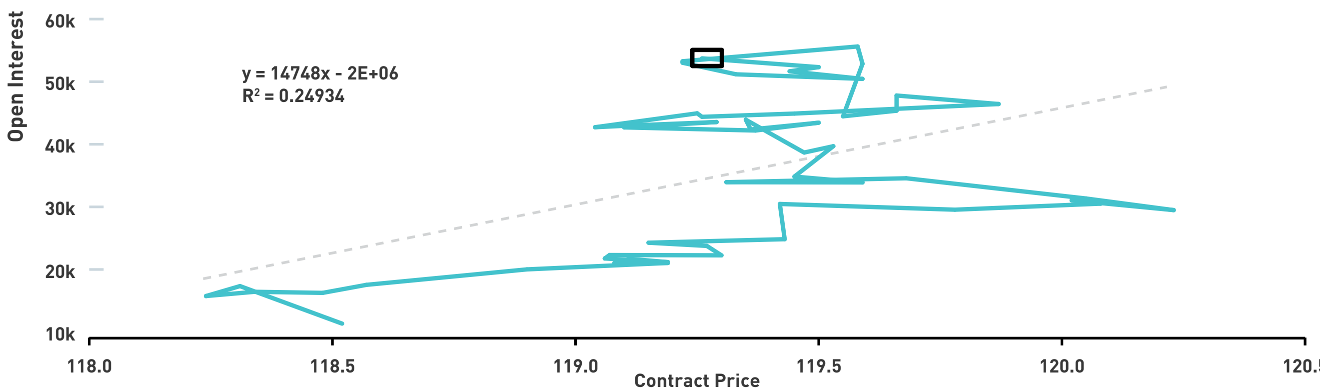
Source: BMO Capital Markets[i] Fixed Income Sapphire database

Correlation between price and open interest was insubstantial for the CGB and CGF contracts this quarter; confirmation of our initial belief that speculative positions were not built as a trend emerged.

While Figure 2 shows a modest correlation between open interest and contract price for the CGF contract this quarter, we continue to reject this correlation as spurious. Recall that MX launched an extensive liquidity program for CGF late last autumn which has resulted in a ten-fold increase in open interest. The fall in interest rates at the same time seems less causal than the extensive push to raise awareness of the CGF contract via client discussions, new publications and multiple launch events, particularly given that this contract is not (yet) a tool utilized by trend following strategies. The fact that Figure 3, the same study for CGB, shows no correlation between bond prices and open interest this quarter tends to confirm our view.

FIGURE 2

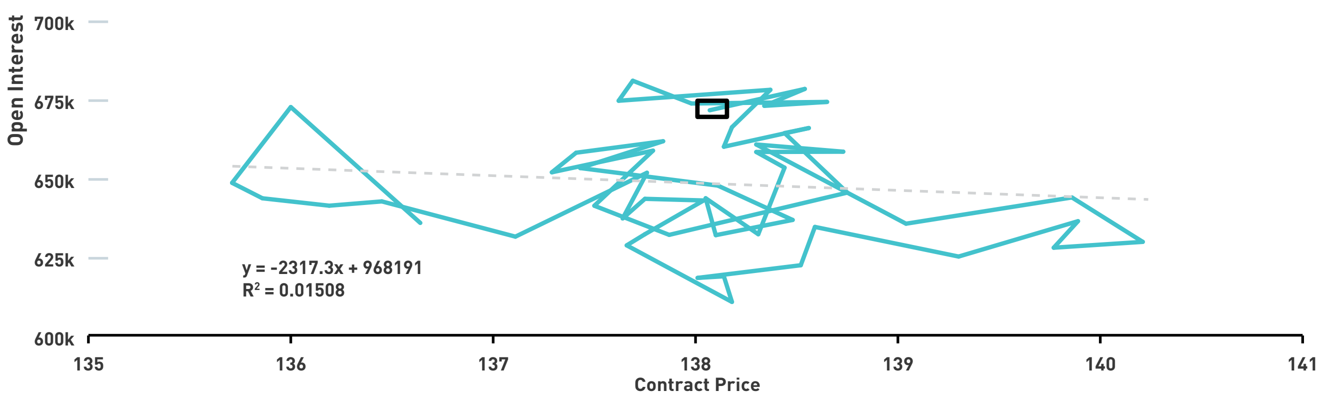
CGFM19 Price vs Open Interest



Source: Montréal Exchange

FIGURE 3

CGBM19 Price vs Open Interest



Source: Montréal Exchange

No Switch Potential

The curve in Canada is now so flat and yields are so low that it seems unimaginable that a switch could occur in either CGF or CGB September contracts. While possible, of course, anyone paying[1] more than fractions of a cent for the optionality embedded in CGFU19 and CGBU19 contracts is likely to be very disappointed. Given the change to the CTD for the CGB contract, even the early delivery option probably has no value this quarter, unlike the past four contracts when delivering early was beneficial to short positions.

1. The short position owns the options so the price of the embedded option is a lower selling price than would be fair for the contract if the option didn't exist.

Figure 4 and Figure 5 show the yield and slope combinations that would result in a CTD switch for the CGFU19 and CGBU19 contracts respectively. With some effort, we've managed to adjust the maximum yield and slope of the 10-year segment to ensure that at least one scenario appears in Figure 5 where Jun29 is the CTD...but it wasn't easy and we don't consider the 75 basis points of steepening and nearly 400 basis points of selloff required to achieve that scenario plausible.

Since CGF and CGB will both carry positively during the delivery period, the timing option[2] - the option to deliver early and thus avoid potentially negative carry on a short futures position hedged with a long CTD bond position - which was valuable for the CGB (but not the CGF) will cease to be a factor when U19 becomes the active contract.

FIGURE 4

	Mar24 Yield															
SLOPE	0.61%	0.86%	1.11%	1.36%	**1.61%**	1.86%	2.11%	2.36%	2.61%	2.86%	3.11%	3.36%	3.61%	3.86%	4.11%	4.36%
-10.0	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24
-7.8	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24
-5.6	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24
-3.4	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24
-1.2	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24
0.9	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**	**Mar24**
5.8	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24
10.6	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24
15.4	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24
20.2	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Sep24
25.0	Mar24	Mar24	Mar24	Mar24	**Mar24**	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Mar24	Sep24	Sep24

FIGURE 5

	Jun28 Yield															
SLOPE	0.32%	0.67%	1.02%	1.37%	**1.72%**	2.07%	2.42%	2.77%	3.12%	3.47%	3.82%	4.17%	4.52%	4.87%	5.22%	5.57%
-15.0	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
-11.7	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
-8.3	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
-5.0	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
-1.7	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
1.6	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**	**Jun28**
16.3	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
31.0	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
45.7	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
60.3	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
75.0	Jun28	Jun28	Jun28	Jun28	**Jun28**	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun29	Jun29

2. For a full discussion of the embedded options in physical delivery bond futures in Canada, please refer to "Embedded Options in CGF and CGB" published in November 2018: **https://m-x.ca/f_publications_en/cgf_cgb_embedded_options_en.pdf.**

Relative Value

CGF and CGB will both have different CTD bonds for the U19 contract versus the M19 contract. While usually less significant for the CGF contract, this quarter marks the most important roll period of the year for CGB since the delivery basket only presents a new CTD once per year.

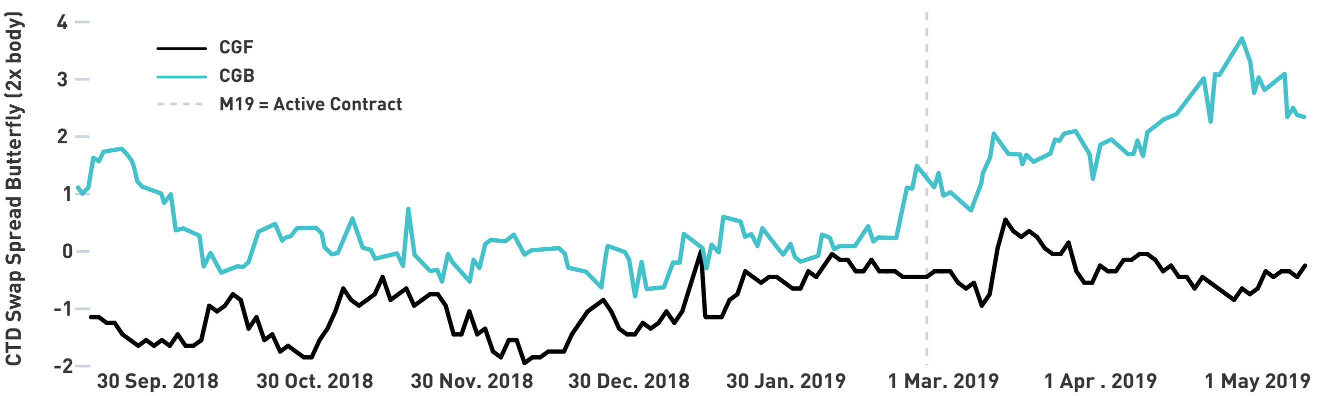
Figure 6 plots the swap spread butterfly[3] for the CTD of both the CGF and CGB contracts this quarter. A move lower on the chart indicates that the CTD became more rich relative to its closest neighbour bonds while a move towards the top of the chart indicates the CTD became cheaper relative to neighbour bonds. The vertical grey line is the date on which M19 became the active contract.

In Figure 6 we can see that the relative value of the CGFM19 CTD (2% Sep23) has remained quite constant through the life of the M19 contract, trading within about a half basis point of zero for at least the last three months.

The story in Figure 6 is rather different for the CTD of CGBM19 (1% Jun27) as it will soon drop out of the deliverable basket for CGB and become another less-liquid old 10-year bond. As such, the M19 CTD cheapened relative to its neighbors through most of the contract life. In a similar vein, the CTD of the U19 contract (2% Jun28) richened using the same swap spread butterfly measure by about a basis point (not shown) during the last four weeks despite losing its status as the 10-year benchmark bond in late April.

FIGURE 6

M19 CTD Swap Spread Butterflies



Source: BMO Capital Markets[i] Fixed Income Sapphire database

Key Metrics & Expectations

The Key Metrics that may interest a Portfolio Manager with a position in either CGFM19 or CGBM19 who is contemplating his/her roll strategy this week are shown in Figure 7 and Figure 9. We used prices on May 10th and both new contracts had already seen a few trades already.

CGFM19 to CGFU19

We believe the CGF roll will receive attention again this quarter due to record open interest[4] that has been observed in the contract recently, although plenty of bonds are available to cover delivery, if needed. As with the roll to CGFM19, the roll to CGFU19 will be widely watched as a bellwether of success for the new liquidity program. Like February, we expect no real relative value opportunities to arise in the CGF contracts which both appear fairly valued at this time.

3. A common measure of relative value, a swap spread butterfly is constructed by calculating the spread to swaps for the closest similar bonds with maturities before and after the CTD. One then multiplies the spread of the CTD by two and subtracts the spread of the nearest comparator bonds to construct the butterfly. A lower value indicates the CTD (or body of the butterfly) is rich relative to its nearest neighbour (or wing) bonds.
4. Open interest peaked at over 55,000 for CGFM19 versus just over 4,500 for CGFZ18.

FIGURE 7

CGF Key Metrics

10-May-2019	FRONT (Jun19)	BACK (Sep19)	Change
Closing Price	119.23	120.35	-1.12
Cheapest-to-Deliver (CTD)	CAN 2.000% Sep 2023	CAN 2.250% Mar 2024	
Delivery Years	4.2	4.4	0.2
Conversion Factor	0.8518	0.8540	
CTD Clean Price	101.5860	102.9320	
CTD Yield	1.616%	1.612%	-0.004%
Gross Basis (cents)	2.6	15.3	
Net Basis (Final Delivery, cents)	2.6	15.1	12.6
Implied Repo (Final Delivery)	1.76%	1.77%	0.004%
DV01/100 of CTD	4.2	4.7	0.5
Open Interest	53,731	295	
CTD Outstanding (millions)	12,000	12,000	0
Multiple of Outstanding	0.4x	0.4x	0.0x

Source: CanDeal, Montreal Exchange, Bank of Canada, TD Securities

Note in Figure 7 that the implied repo for the front and back contracts is nearly identical to the overnight rate of 1.75% which is also consistent with a 1.75% Overnight Index Swap market to both of those dates (not shown). These contracts are both priced to reflect no change to Bank of Canada monetary policy. The fair value roll between the contracts should be within a cent or two of -1.12 unless policy expectations change drastically prior to the roll period or relative value opportunities between the contracts will be evident.

Given the larger open interest this quarter and without any insight into how speculative accounts are positioned, we would expect all positions in CGF to test the roll market earlier than has historically been normal. Once again for CGF this quarter, both long and short positions can take some assurance in an unlikely early delivery given the positive carry for a hedged short position in CGFM19 during the delivery period.

CGBM19 to CGBU19

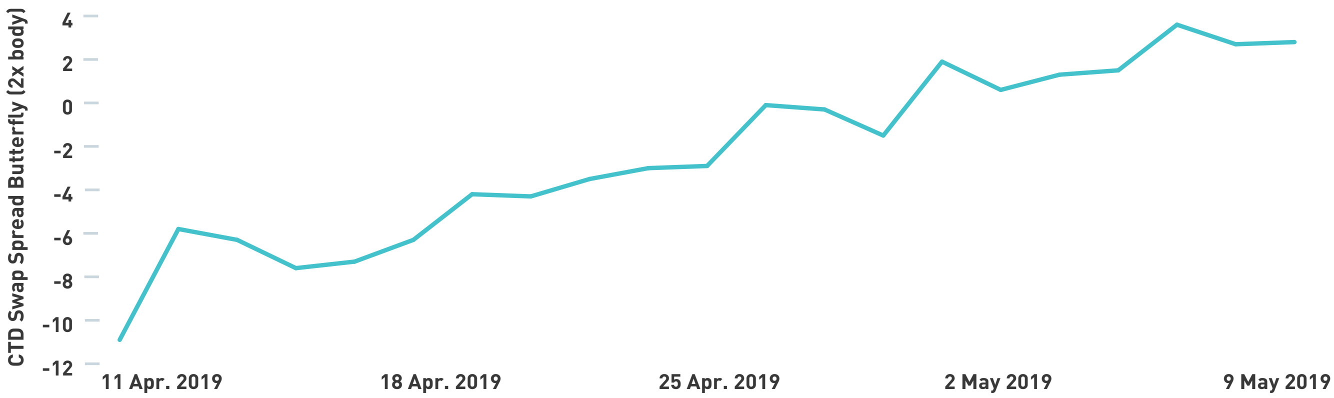
A new CTD for CGBU19 will finally send the "negative basis" to the dustbin after four consecutive contracts of gross basis being quoted as a negative. The cause, which may have surprised some, was the negative carry during the delivery period of the very low coupon CTD; a situation which will revert to the normal positive carry with the higher coupon on the new CTD.

Since negative gross basis quotations were a result of negative carry, it makes little sense to us that the gross basis for M19 contracts has recently turned positive under aggressive basis buying[5], in advance of the roll period as we can observe in Figure 8. The negative carry that existed for M19 and previous contracts still exists today and the potential for a switch in CTD is essentially zero. Short positions are likely to deliver at their first opportunity, or shortly thereafter, as the negative carry of a hedged short futures position continues to bite after first notice on May 30th. The notion that a seller is willing to pay for embedded options with no chance of a CTD switch seems unlikely, although there have been a few reports in past delivery periods of small profits made by nimble dealing desks exercising the end-of-day option.

5. A buyer of the futures basis buys the CTD bond and sells a similar risk amount of the futures contract.

FIGURE 8

CGBM19 Gross Basis, 1 month History



Source: BMO Capital Marketsi Fixed Income Sapphire database, Montreal Exchange

Given all the above, we view CGBM19 as underpriced relative to bonds and believe that, given the near certainty of early delivery, gross basis should still be negative and net basis will approach zero by May 30th making the CGBM19 contract about 1.5¢ cheap to fair value at the time of writing. Portfolio Managers able to exploit this anomaly in their portfolios can buy futures and sell the CTD[6] (sell the futures basis) in an exchange-for-physical trade and wait for delivery. Existing short positions are incentivized to roll as soon as possible to capture the cheapness of CGBM19.

The M19 to U19 roll period should be busy and may present additional relative value opportunities as longs and shorts jockey for opportunities to close their sizeable positions. Since CGBM19 appears quite cheap with a positive gross and even net basis[7], short positions will likely attempt to roll early by buying the underpriced CGBM19 and selling the more fairly valued CGBU19. Except to avoid delivery, we see no reason a long position would find the relatively low price for CGBM19 attractive at this time and we would expect long positions to remain patient for a higher price later in the roll period.

6. Or other bonds near the same maturity in their existing cash portfolios.
7. And the associated low implied repo rate.

FIGURE 9

CGB Key Metrics

10-May-2019	FRONT (Jun19)	BACK (Sep19)	Change
Closing Price	138.00	139.99	-1.990
Cheapest-to-Deliver (CTD)	CAN 1.000% Jun 2027	CAN 2.000% Jun 2028	
Delivery Years (1st delivery)	7.9	8.7	0.7
Conversion Factor	0.6860	0.7307	
CTD Clean Price	94.6770	102.3580	
CTD Yield	1.711%	1.718%	0.007%
Gross Basis (cents)	0.9	6.7	
Net Basis (Final Delivery, cents)	1.0	6.7	5.7
Implied Repo (Final Delivery)	0.99%	1.79%	0.80%
DV01/100 of CTD	7.3	8.5	1.2
Open Interest	671,935	4,246	
CTD Outstanding (millions)	15,000	13,500	-1,500
Multiple of Outstanding	4.5x	5.0x	0.5x

Source: CanDeal, Montreal Exchange, Bank of Canada, TD Securities

Kevin Dribnenki writes about fixed income derivatives and opportunities in Canadian markets. He spent over 10 years managing fixed income relative value portfolios as a Portfolio Manager first at Ontario Teachers' Pension Plan and then BlueCrest Capital Management. During that time he managed domestic cash bond portfolios as well as international leveraged alpha portfolios and has presented at several fixed income and derivatives conferences. He received a BA in Economics from the University of Victoria, an MBA from the Richard Ivey School of Business, and holds the Chartered Financial Analyst designation.

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