

U19-Z19 Roll Update

Quarterly Roll Summary

Mid-August pricing suggests both CGF and CGB U19 long positions may choose to wait for some richening of their position during the roll as relative value measures currently point to U19 being cheap (for CGF) or Z19 being quite rich (for CGB).

As usual this quarter, there will be no change in the delivery basket for the CGB contract but there will be a change of CTD for the CGF contract going from the U19 to the Z19. Record open interest on CGF and the hint of new entrants in recent weeks could lead to some relative value opportunities which active traders should monitor.

First Notice on the U19 contracts is August 29th so the most significant active days of the contract roll should begin in both CGF and CGB contracts on August 26th with the possibility that, since the prior day is a weekend, some clients skittish about their position may try to begin on the prior Friday (August 23rd). Although of no consequence to clients that can't risk delivery under any circumstances, the positive carry of a long basis position in both U19 contracts means early delivery is unlikely.

Bank of Canada policy appears to be back in play and the Z19 contract life will span three fixed announcement dates; September 4th, October 30th, and December 4th.

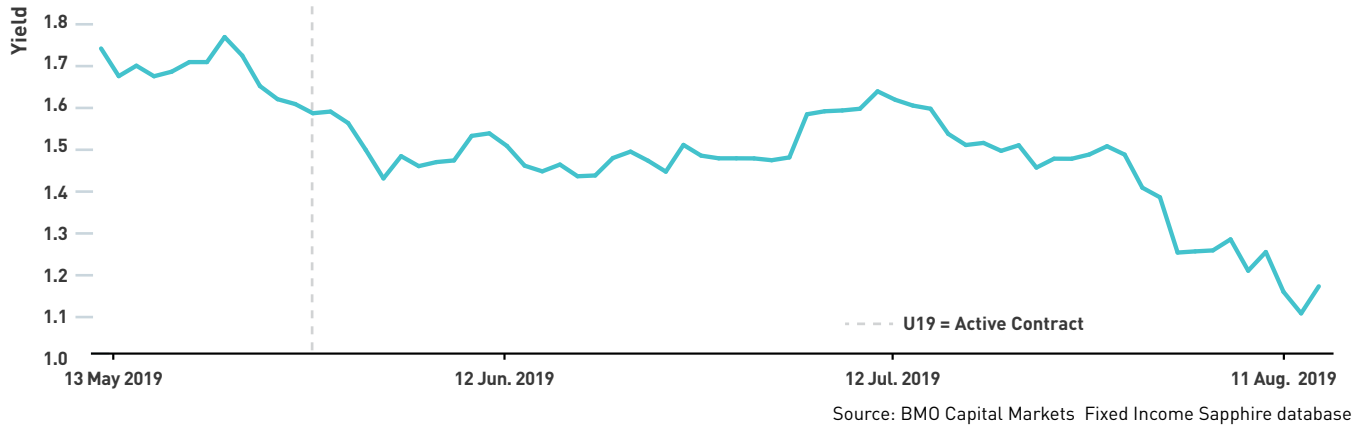
Positioning

CGB

Figure 1 charts the 10-year bond yield in Canada during the life of the U19 contract. Although rates declined significantly during the period, it only began in earnest around mid-July with 10-year rates range bound for the first two months of the contract. This may be key to the light positioning in CGB speculative contracts that we examine below.

FIGURE 1

10y Bond Yield, past 3 months



Rather oddly for such a sustained trend in interest rates, correlation between price and open interest was insubstantial for the CGB contract this quarter with contract open interest hovering around 625,000 contracts despite the strong trend established after mid-July. Perhaps risk had been reduced during the choppy markets of the prior few months such that additional exposure was not needed.

CGF

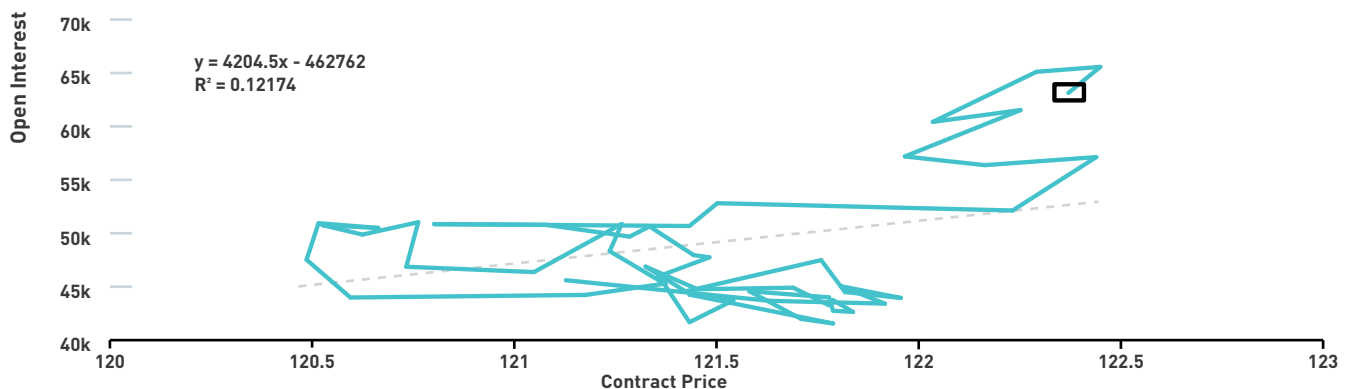
Figure 2 regresses open interest versus price for the CGFU19 contract during its life. While no positioning conclusions can be drawn over the entire life of the contract, we do observe a substantial rise in open interest during the strong bond rally of the two weeks prior to August 16th. This new correlation between prices and open interest for CGF could have two explanations¹:

1. Investors may have begun to recognize the CGF as a liquid 5-year instrument to trade quickly and efficiently now that open interest is roughly 65,000 contracts.
2. We may be observing the first hints of speculative algorithm models utilizing CGF in their portfolios in a way that they have not done so before.

In any event, we can certainly applaud the CGF contract for the recent surge above 65,000 open interest in a time of stress in the bond market and conclude that new positions were being opened as bond prices were rising.

FIGURE 2

CGFU19 Price versus Open Interest



Source: Montréal Exchange

1 Besides the obvious potential for spurious correlation.

No Switch Potential

For many quarters now, we have concluded that almost no potential for a switch of cheapest-to-deliver (CTD) bond existed in both CGF and CGB during the lifespan of a given active contract. That is now even more true with lower rates and flat curves. With no potential for a switch, the quality option and end-of-month options² should be essentially worthless. Wildcard options retain their usual difficult-to-quantify but modest value since they don't require a CTD switch to be profitably exercised³.

The timing option remains important as the current Bank of Canada target rate is just 25 basis points below the coupon rate on the CGBZ19 CTD and is above the coupon rate on the CGFZ19 CTD. Roughly speaking, a coupon rate below the target rate means that carry will be negative during the delivery period and that PMs long the CTD basis⁴ will have an incentive to exercise their timing option and deliver early for the Z19 contract. The follow-on effect is that Gross Basis should be negative for CGFZ19, just as it was negative for the CGB contracts between U18 and M19.

For completeness, we show the yield/slope combinations that would result in a CTD switch for the CGFZ19 and CGBZ19 contracts in Figure 3 and Figure 4.

In fact, a switch in the CTD for CGFZ19 is not just incredibly remote but currently impossible since there is only one bond in the delivery basket as of mid-August. A new bond will be auctioned soon, although at an undetermined date, and could build to a size which qualifies it for the CGFZ19 delivery so we have modeled a CAN 1.25% March 1, 2025 bond and included it in the delivery basket for this analysis⁵. Even including the theoretical new bond, it would take an 80 basis point selloff combined with an unheard of 40 basis point steepening in the next three months to cause a switch in the CTD for CGFZ19.

FIGURE 3

	Sep24 Yield															
SLOPE	0.38%	0.58%	0.78%	0.98%	1.18%	1.38%	1.58%	1.78%	1.98%	2.18%	2.38%	2.58%	2.78%	2.98%	3.18%	3.38%
-10.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24
-8.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24
-6.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24
-4.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24
-2.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24
-0.1	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24
10.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24
20.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24
30.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Mar25	Mar25
40.0	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Sep24	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25
50.0	Sep24	Sep24	Sep24	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25	Mar25

A CTD switch is similarly unlikely for CGBZ19, requiring a highly improbable steepening between the yield of June 2028 and June 2029 bond of almost 50 basis points as shown in Figure 4.

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.
 3 For an examination of a successful Wildcard option play and notes on Wildcard potential in the Z19 contracts, refer to "CGB Case Study: Wildcard Option Exercise" published in July 2019.
 4 A long CTD basis trade is a risk neutral trade where the investor simultaneously buys the cash bond and sells the futures contract in equivalent risk amounts.
 5 The maturity date is known but the coupon is uncertain at this time.

FIGURE 4

	Jun28 Yield															
SLOPE	0.13%	0.38%	0.63%	0.88%	1.13%	1.38%	1.63%	1.88%	2.13%	2.38%	2.63%	2.88%	3.13%	3.38%	3.63%	3.88%
-10.0	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
-7.9	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
-5.8	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
-3.8	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
0.4	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
10.3	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28
20.2	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun29	Jun29
30.2	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun28	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29
40.1	Jun28	Jun28	Jun28	Jun28	Jun28	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29
50.0	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29	Jun29

Relative Value

Figure 5 plots the swap spread butterfly⁶ 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 U19 became the active contract.

Unsurprisingly given the quite steady open interest, lack of correlation to rates this quarter, and identical delivery basket for the Z19 contract, the CTD for the CGBU19 contract, the Jun28, remained in a close range of plus or minus 1 basis point versus neighbour bonds when measured via swap spread butterfly for much of this quarter. However, as shown in Figure 5, the Jun28 bond began to richen roughly when the very large rally in bonds began, shown above in Figure 1. At that time, it appears, liquidity demands to purchase the 10-year point began to overwhelm the ability of the futures market alone to offset the risk which in turn began to richen the cash bond deliverable into the contract relative to its neighbors.

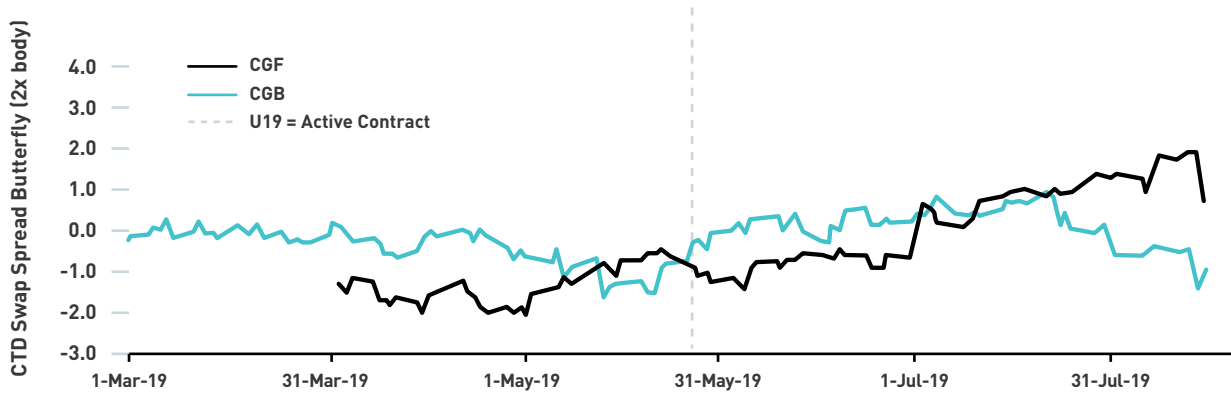
The CTD for the CGB contract remains at almost the richest level observed in six months and, since both the CGBU19 and CGBZ19 will be identical assets to the Jun28 bond at delivery, the owner of the contracts is long an asset that may cheapen relative to other similar instruments in future. However, since the two contracts have the same CTD, the relative value of the delivery bond will have no discernable effect on the timing or pricing dynamic of the U19/Z19 roll.

Unlike the CGB contract, relative value in the CGFU19 contract may affect the roll this quarter. As shown in Figure 5, the Mar24 has cheapened steadily versus its neighbors which probably reflects a steady richening of the Sep24 which became the benchmark on July 4th. Presumably the August 21st Bank of Canada auction of Sep24 will be the last before moving to a new bond, a speculation confirmed, at least in theory, by the recent reversal and richening of the Mar24 asset swap butterfly. Since the Mar24 is CTD for the U19 but not the Z19, one could expect market participants to balk at the cheapness of the Mar24 CTD putting pressure on longs to wait until nearer the end of the roll period in the hopes of a mean reversion that richens their asset.

⁶ 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.

FIGURE 5

U19 CTD Swap Spread Butterflies



Source: BMO Capital Markets' Fixed Income Sapphire database

Key Metrics & Expectations

The Key Metrics that may interest a Portfolio Manager with a position in U19 contracts who is contemplating his/her roll strategy this week are shown in Figure 6 and Figure 7. We used closing prices on August 16th.

CGFU19 to CGFZ19

Although previous CGF rolls have been somewhat uneventful, there are several factors that may cause market volatility and make the U19/Z19 roll more interesting than usual. First, the futures market will welcome back negative gross basis after a short hiatus. This time, barring an unlikely emergency Bank of Canada rate cut between now and the roll, CGFZ19 will initially trade at a negative gross basis, similar to the CGB contracts between U18 and M19. This is a result of the low 1.5% coupon on the CTD for the CGFZ19 which is, at least for now, lower than the target rate resulting in negative carry for a long basis position. One consequence of this will be that early delivery will be probable, assuming the target rate doesn't change, and the correct date to assess Net Basis and Implied Repo to is the First Delivery date, not the Last Delivery date.

A second consideration is the success of the CGF contract as of late and the new record open interest of about 65,000 contracts. Although still only 50% of the notional amount of the CTD, open interest is becoming sizable enough that algorithmic clients may become interested; finally drawing price insensitive, speculative and delivery-wary clients into the mix of CGF users.

Currently the 1.75% implied repo to Final Delivery on the U19 makes the futures contract slightly cheap to bonds and, if we recall the Relative Value section above, the CTD bond for CGFU19 is also a bit cheap compared to neighbour bonds. Rather than sell an instrument that is currently cheap, long positions may choose to wait for a relative move that richens their position, assuming they have the luxury of waiting to roll.

Further evidence of a relatively rich Z19 contract lies in the Implied Repo and Net Basis for that contract. Using August 16th closes, the Implied Repo to First Delivery was 1.76% with an associated Net Basis, assuming a 1.75% repo rate, of -7.8 cents (not shown). A PM could buy the basis and deliver on First Delivery and make 8 cents, assuming Net Basis converges to zero as it should. He/she would additionally own the possibly valuable Wildcard and Timing options (plus the mostly worthless Quality and End-of-Month options).

Assuming current pricing holds into the liquid roll period, nimble PMs would be advised to monitor the roll for opportunities to enter good Z19 positions, thus putting cheapening pressure on Z19 relative to U19.

7 Although the BoC may cut rates, at this time the optimal delivery date for a short futures position is the First Delivery date, not the Last.

FIGURE 6

CGF Key Metrics

16-Aug-2019

	FRONT (Sep19)	BACK (Dec19)	Change
Closing Price	122.420	124.510	-2.090
Cheapest-to-Deliver (CTD)	CAN 2.250% Mar 2024	CAN 1.500% Sep 2024	
Delivery Years (Last delivery)	4.4	4.7	0.3
CTD Conversion Factor	0.8540	0.8164	
CTD Clean Price	104.5840	101.5610	
CTD Yield	1.207%	1.179%	-0.027%
Gross Basis (cents)	3.7	-8.9	
Net Basis (Final Delivery, cents)	3.7	-8.8	-12.5
Implied Repo (Final Delivery)	1.75%	1.70%	-0.05%
DV01/100 of CTD	4.5	4.9	0.4
Open Interest	67,020	0	
CTD Outstanding (millions)	12,000	12,000	0
CTD Notional of Front OI	6,702	6,702	
Front OI Multiple of CTD	0.6x	0.6x	0.0x

Source: BMO Capital Markets' Fixed Income Sapphire database, Montreal Exchange, Bank of Canada

CGBU19 to CGBZ19

CGB will likely be an eventful roll this quarter as well, despite no change to the deliverable basket. CGB open interest is always high and a lot of trading needs to occur during the short window of liquidity. Carry is positive for a long basis position so early delivery is unlikely on the U19 contracts and long futures positions can afford to be patient.

On August 16th, implied repo for U19 to Last Delivery was 1.55% but the overnight index swap market reflected a rate of 1.71% making U19 almost 3 cents cheap. Further, implied repo for the Z19 contract to final delivery was about 10 basis points too high, indicating that the Z19 contract was priced 4.5 cents too expensive. If the roll between U19 and Z19 reflected these levels, long positions would be inclined to wait patiently for some reversion to fair value as opportunistic PMs take advantage of the Z19 pricing to establish short positions. Long positions in U19 should be patient and wary of selling their position early if these observations are still valid during the roll period.

FIGURE 7

CGB Key Metrics

16-Aug-2019

	FRONT (Sep19)	BACK (Dec19)	Change
Closing Price	146.760	145.540	1.220
Cheapest-to-Deliver (CTD)	CAN 2.000% Jun 2028	CAN 2.000% Jun 2028	
Delivery Years (Last delivery)	8.7	8.4	-0.3
CTD Conversion Factor	0.7307	0.7367	
CTD Clean Price	107.2750	107.2750	
CTD Yield	1.127%	1.127%	0.000%
Gross Basis (cents)	3.7	5.6	
Net Basis (Final Delivery, cents)	3.7	5.5	1.8
Implied Repo (Final Delivery)	1.55%	1.71%	0.16%
DV01/100 of CTD	8.7	8.7	0.0
Open Interest	639,805	0	
CTD Outstanding (millions)	13,500	13,500	0
Bond Equivalent Notional	63,981	63,981	
Multiple of Outstanding	4.7x	4.7x	0.0x

Source: BMO Capital Markets' Fixed Income Sapphire database, Montreal Exchange, Bank of Canada

Medium Term Observations

- Negative basis in CGF (if it happens) means the threshold to exercise Wildcard options in CGFZ19 will be lower than before. A long basis position (therefore short futures) exercises the Wildcard option only if more profits can be obtained by exercising than by holding the long basis position to delivery. If carry is negative each day, the Wildcard owner (short position in CGFZ19) has a low threshold to exercise. Short basis positions should be wary of being suddenly delivered and having to deal with their delivery tail between First Delivery and Last Trade day for this contract.
- CGF open interest is again at a record level. At some point, trend following strategies will embrace the product and/or it will attract serious 5-year hedging activity which may have significant rich/cheap implications for the contract. The Z19 contract should continue to grow in open interest as acceptance of the product becomes universal.
- With the dive in 10-year rates, the coupon on the new Jun30 bond is only 1.25%. With such a low coupon, the U20 to M21 contracts will have basically zero chance of a switch since high coupons and shorter maturities are favored by CTD math. Further, the U21 to M22 contracts may, depending on what the Bank of Canada delivers for monetary policy, become negative carry for long basis positions, meaning the market will have to get used to negative basis on CGB again in just two years. A similar phenomenon will probably occur for CGF contracts, barring more than 50 basis points of stimulus from the Bank of Canada, when the Bank auctions off a 1% or 1.25% coupon Sep24 bond in the latter half of 2019.



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