

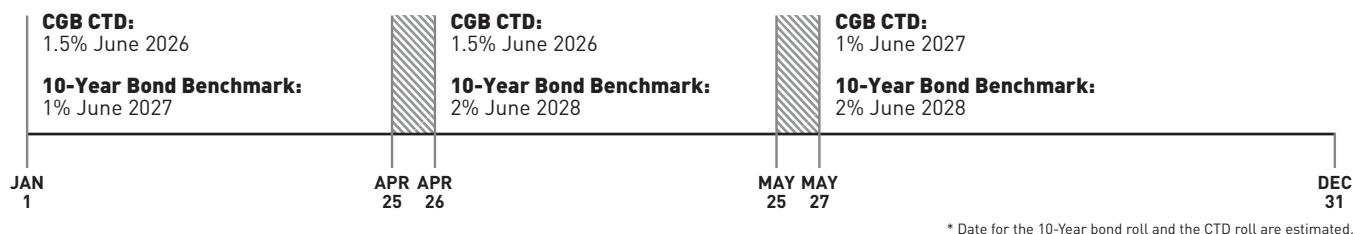
MONTREAL EXCHANGE

Preview: 2018 Annual CTD Switch for CGB

Summary

We find that the incoming cheapest-to-deliver (CTD) bond for the CGB® (Sept 2018 - CGBU18) contract, the 1% June 2027, will probably create substantial opportunities for nimble, active, investors who can exploit emerging rich/cheap opportunities as the Canada 10-year benchmark changes in April followed shortly afterwards by the CGBM18/U18 roll. The record-high DV01 of futures contracts should ensure an active roll period filled with relative value opportunities as various investors seek to re-hedge positions and adjust their bond holdings.

2018 10-Year Bond Events



Jun/Sep CGB Event

Each year in late May, the roll from June to September expiry for the active 10-year futures contract in Canada (CGB) brings some market posturing and potential opportunities as it is the only quarterly contract roll in CGB that results in a change in the cheapest-to-deliver (CTD) bond¹.

Beginning around May 25th this year, the 1% June 2027 bond will become the CTD for the active contract while the 1.5% June 2026 will begin a slow fade into triple and quadruple off-the-run status, shedding its liquidity premium for several years to come.

The Jun/Sep contract roll creates transactions as positions of all kinds that are hedged with CGB contracts are adjusted to the new CTD bond before the 2026s begin to slowly lose the liquidity associated with their CGB status. Some examples of common positions that should be adjusted are CGB basis positions, substitution trades where CGB is purchased instead of the CTD bond to generate inexpensive leverage in a cash bond portfolio, and various relative value positions in credit, provincial bonds², and off-the-run bonds in the 10-year sector that are hedged with futures³ or the CTD. Additionally, older 10-year bonds may attract additional VaR or risk oversight if they are allocated to less attractive liquidity buckets.

1. Unless interest rates move much higher, the CTD has almost no chance of switching mid-contract.
 2. For a complete discussion of this strategy, refer to *CGB-Driven Leverage and Credit Overlay* published by MX in February 2018.
 3. Even unhedged positions generate CTD transactions as the counterparty will often hedge the closing CGB position with a bond transaction

Liquidity Theory

In general, one would expect a bond that has CTD status to carry a liquidity premium (i.e. have a higher price, lower yield) as two-way activity in the bond increases due to hedging of futures contract trades. Further, the CGB contract serves as a substitute for the CTD when switch risk is limited so the liquidity of the futures contracts should, through relative value arbitrage, increase the liquidity of the CTD.

In Canada, a bond that is exiting the basket of deliverable securities will spend the next several years as an illiquid bond, neither a proper 10-year exposure, nor a 5-year exposure, and will even be sold by some accounts that focus on the long end of the yield curve.

10y Bond Roll

A complicating factor in Canada is the fact that the bond that will become the cheapest-to-deliver in May, the 1% June 2027 is currently the 10-year benchmark bond which is the most liquid bond at the 10-year point on the yield curve. Typically the 10-year benchmark bond will change to a new bond of one year longer maturity before the CGB roll in May and there is no reason to expect otherwise in 2018. One should expect the 2% June 2028 to become the 10-year benchmark after the next Canada 10-year auction on April 25th which will bring the outstanding notional of 2028s to \$12 billion; sufficient for a 10-year benchmark.

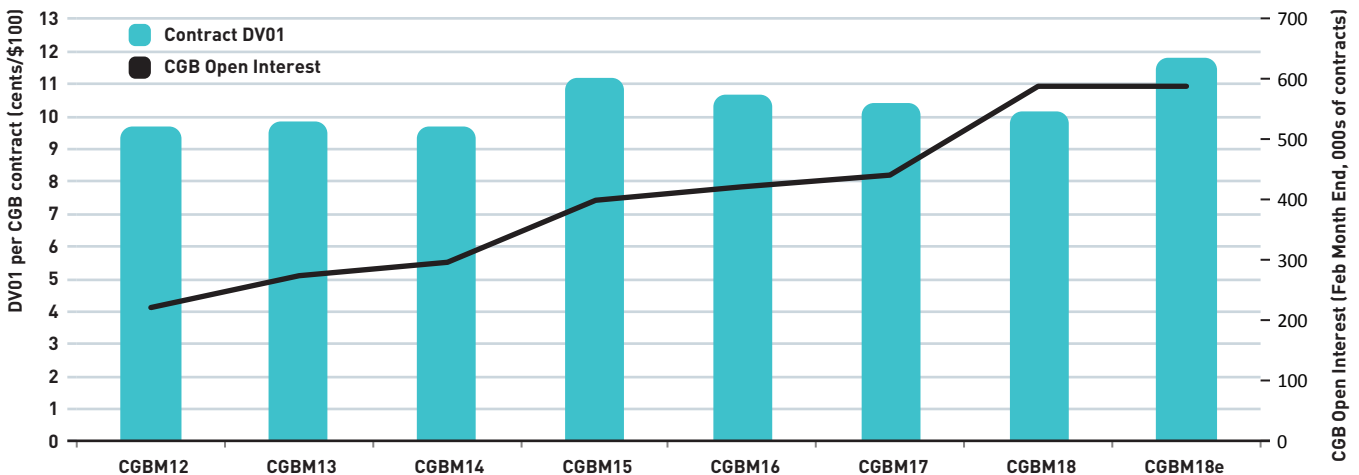
This event just a month before⁴ the CGB roll may also create short-term opportunities as market participants switch 2027s and 2028s as their 10-year benchmark for hedging bond and curve positions as well as swap positions at dealers.

2018 DV01 Issue

Another potential complicating factor in 2018 is the high DV01 per contract that will accompany the CGBU18 contract as the coupon on the deliverable reaches a historic low of just 1%. This will not likely be repeated as the ultra-low coupons on 10-year bonds that were issued during the era of low interest rates won't be repeated for at least the next few years, barring a surge in bonds over the next several months⁵.

To illustrate this phenomenon, we show in Figure 1 the DV01 per contract and open interest for CGB contracts over the past six years. The CGBU18 contract will have a DV01 of around 11.8, higher than any other contract. Figure 1 also shows the consistent increase in open interest on the CGB contract that has led to its liquidity success in recent years.

FIGURE 1
Contract DV01 and Open Interest since June 2012



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

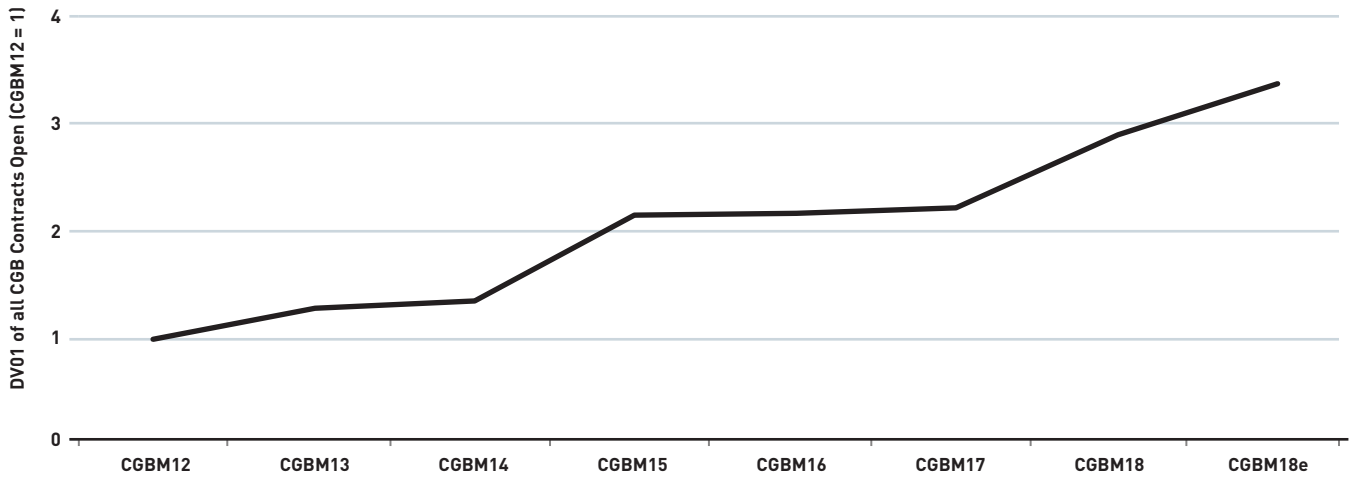
When we combine the high DV01 due to a record low coupon with the expected high open interest⁶ for the CGBU18 contract, we can calculate the relative increase of DV01 for all June CGB contracts since 2012 which is shown in Figure 2. In that figure, the total DV01 represented by CGBU18 contracts is expected to be about 3.25 times the total DV01 of CGBM12 contracts six years ago. That increase should translate into a very active roll period associated with some market distortions in the 2026, 2027, and even 2028 Canada bonds.

4. Virtually the same thing happened in 2017 when the 10-year bond changed about a month before the Jun/Sep CGB roll.

5. The 2028s have a 2% coupon and a new 10-year issued today would have a 2.25% coupon, both far above the 1% coupon of the 2027s, meaning the duration of the CGB CTD will fall after the M19 contract next year.

6. We assume the U18 will have the same open interest as the M18 today.

FIGURE 2
DV01 of CGB Open Interest Relative to CGBM12



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

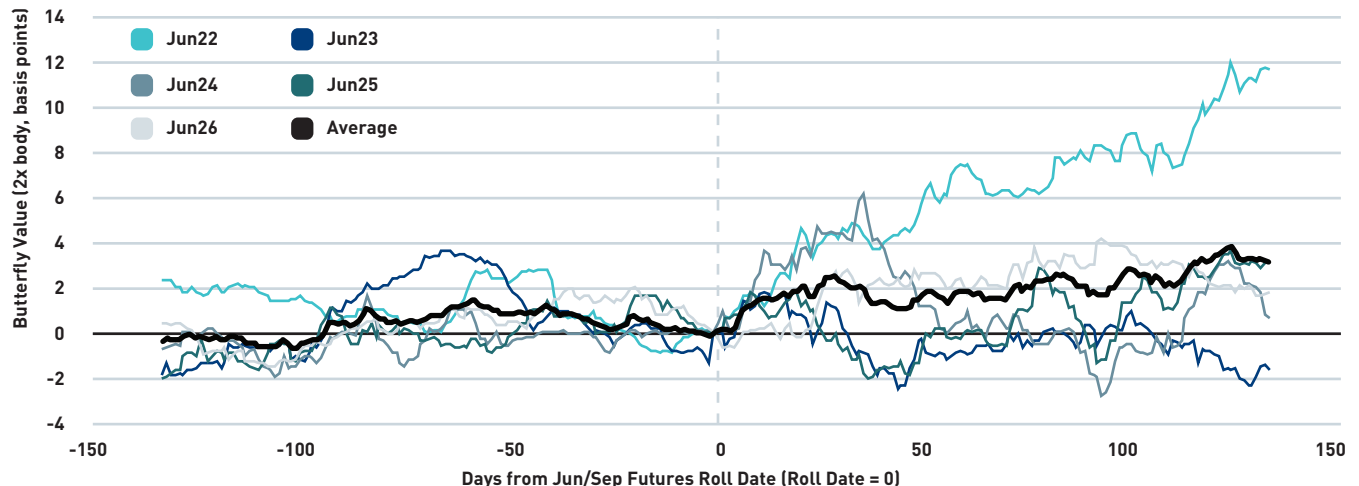
Empirical Evidence

We can measure the relative price fluctuations of the incoming CTD bond around the Jun/Sep roll by creating near-neighbour butterflies⁷ for each CTD over the past several contracts and re-indexing the dates such that the start of the contract roll period is day zero. We have constructed these re-indexed butterfly time series for both yield butterflies and swap spread butterflies which are shown in Figure 3 and Figure 4 respectively. In these charts, day zero is the start of the roll between June and September CGB contracts each year. A lower value for the butterfly indicates that the incoming CTD is more expensive relative to its near-neighbour 10-year bonds.

In both figures, we can see that each of the CTD bonds has tended to richen relative to its neighbours by approximately one basis point in the 30-50 business days preceding the start of the annual CTD change for the CGB contract. While that is interesting and certainly significant enough for a modest trade strategy, the behavior of the bond after the liquidity demands of the roll period are met is rather more significant.

During each of the last five Jun/Sep contract rolls, the roll period has served as the catalyst for a distinct cheapening of the new cheapest-to-deliver bond relative to the old CTD and the 10-year benchmark bond⁸. This finding is contrary to the expectations described above where we theorized that the CTD bond should retain a liquidity premium (i.e. remain expensive relative to its neighbours) during the time it was the CTD of the active contract. Instead, the end of the roll period appears to result in a two basis point cheapening of the new CTD relative to its near-neighbours within about 35 business days.

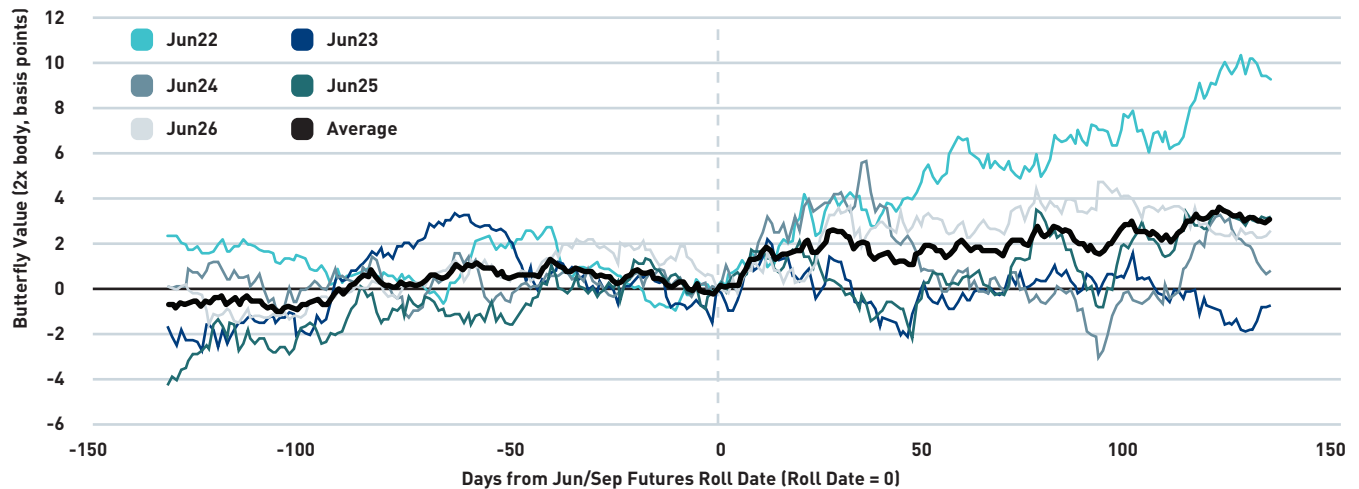
FIGURE 3
Closest Neighbour 10y Yield Butterflies



Source: BMO Capital Markets' Fixed Income Sapphire database

7. Butterfly time series are calculated by doubling the yield (or swap spread) of the CTD and subtracting the yield of the 10-year bonds with one year less and one year more to maturity. Butterfly analysis compensates for the general level of interest rates (or swap spreads) and the slope of the curve.
 8. The old CTD and the 10-year benchmark bond are the "wings" of the closest-neighbour butterflies

FIGURE 4
Closest Neighbour 10y ASW Butterflies



Source: BMO Capital Markets' Fixed Income Sapphire database

One explanation for this behavior may be that the liquidity needs of both buy and sell sides of the street during the roll, are both extreme and well-anticipated such that, once met, the normal liquidity premium on the CTD appears smaller. Another could be that the near-neighbour butterflies are inordinately affected by the richening of the new 10-year benchmark bond but that the market fails to richen the 10-year benchmark until after the CGB roll is out of the way.

Conclusion

Notwithstanding the disagreement between empirical evidence and theory, it appears a high-probability trade could be constructed around the roll dates for both leveraged and non-leveraged Portfolio Managers.

Specifically, one should come out of the CGB roll period in late May short (underweight) the Canada 2027 relative to both Canada 2026 and Canada 2028. If 2018 is similar to previous years, the 2027 will lose up to two basis points of its liquidity premium within a month or two after the roll. Given the large open interest and very large DV01 of the total outstanding CGB contracts at this time, we would expect 2018 to be similar to or even more exacerbated in terms of liquidity demands than previous years.

Analysis Issues/Risks

One serious risk to contend with is the recent tendency for high volume and directional markets to drive the rich/cheap of the CTD bond. For example, in the Mar/Jun roll update published mid-February this year, we noted that a sustained selloff in bonds had driven the relative value of the 2026s to cheap levels relative to its neighbours. With volatility of 10-year yields rising from a low reached in November 2017, market participants must be wary of volatile and/or directional yields which could potentially overwhelm the usual dynamics associated with the CGB roll.



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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Printed in Canada

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