MONTRÉAL EXCHANGE

LGB®: A Primer for CGB® Users

The initial launch of the 30-Year Government of Canada Bond Futures (LGB) brought a much-anticipated liquidity point to the futures curve in Canada. Recent changes to the contract specifications make the instrument very similar to the 10-Year Government of Canada Bond Futures (CGB); users of CGB should be able to quickly adapt to the new contract. In this paper, we point out some characteristics of the LGB contract that users of CGB may want to note before trading the 30-year contract.

Very Long Term to Maturity

The revised LGB contract delivery basket consists of only a single Canadian bond maturing in more than 29 years but less than 32 years, which is the current Canadian benchmark long bond, as determined (in advance of the contract) by Montréal Exchange. It should go without saying that this means the contract is a good substitute for many long maturity bonds: the current benchmark long bond in the cash market, the previous benchmark, or even the auction bond. With the benchmark long bond as the sole cheapest-to-deliver issue, there should be no shortage of bonds to deliver.

For the December 2026 (LGBZ26) contract, the first contract with adjusted delivery rules, the delivery bond is the Canada 3.5% December 2057, which has been the benchmark long bond in the Canadian cash market since March 2026. The June 2059, the current auction bond, will probably take benchmark status in the spring of 2028 (about 18 months), an event that normally occurs after the final auction of the bond, which is difficult to predict in advance as the auction schedule, normally stable, is subject to future government spending and revenue needs.

Infrequent and Minimal Extension Tension

The bond used as the long-term benchmark in the Canadian cash bond market reflects the federal government's financing needs and the bond issuance policy driven by those needs. In the past 30 years, that policy has changed infrequently. The government used to issue a new bond every two years, then changed to a new bond maturity every four years, then was reduced to every three years, and is currently back to creating a new bond maturity at the long end of the yield curve every two years. Additionally, recent tweaks to the auction methodology have created bonds that mature in June rather than the previous standard, where all long bond issues matured in December.

Although we cannot anticipate the federal government's funding needs, especially amid economic uncertainty, we have continued the existing policy into the future to create Figure 1, which calculates the term to maturity of existing and hypothetical Canadian long bonds and when they are likely to become the cheapest-to-deliver for LGB contracts. In this scenario, the LGB delivery basket (just a single bond that is the current benchmark) will change every two years, with approximately 24 months between bond maturities, which is the current auction policy of the Bank of Canada[1]. Besides the delivery basket change from September 2026 to December 2026, driven by changes in contract specifications, the next change in the basket (and cheapest-to-deliver) will probably be when the LGBM28 gives up active contract status to the LGBU28 in late May 2028. On that date, the cheapest-to-deliver will probably change from the December 2057 to the June 2059 bond, an extension of 18 months, since the 2059 bond will probably have taken benchmark status in the cash market during the spring of 2028. If funding policy is unchanged, the event would repeat itself in May 2030 for the LGBU30 contract and again in May 2032 for the LGBU32 contract. Figure 1 shows the hypothetical progression of likely CTD bonds for each contract.

1 Notwithstanding the 18 months maturity difference between the December 2057 and June 2059 issues, the June maturity being a very recent development.

FIGURE 1

		EXISTING BOND MATURITY DATES					HYPOTHETICAL BOND MATURITY DATES	
CONTRACT	FIRST DAY OF DELIVERY MONTH	01-DEC-51	01-DEC-53	01-DEC-55	01-DEC-57	01-JUN-59	01-JUN-61	01-JUN-63
LGBU26	01-Sep-26	25.3	27.3	29.3	31.3	32.8	34.8	36.8
LGBZ26	01-Dec-26	25.0	27.0	29.0	31.0	32.5	34.5	36.5
LGBH27	01-Mar-27	24.8	26.8	28.8	30.8	32.3	34.3	36.3
LGBM27	01-Jun-27	24.5	26.5	28.5	30.5	32.0	34.0	36.0
LGBU27	01-Sep-27	24.3	26.3	28.3	30.3	31.8	33.8	35.8
LGBZ27	01-Dec-27	24.0	26.0	28.0	30.0	31.5	33.5	35.5
LGBH28	01-Mar-28	23.8	25.8	27.8	29.8	31.3	33.3	35.3
LGBM28	01-Jun-28	23.5	25.5	27.5	29.5	31.0	33.0	35.0
LGBU28	01-Sep-28	23.3	25.3	27.3	29.3	30.8	32.8	34.8
LGBZ28	01-Dec-28	23.0	25.0	27.0	29.0	30.5	32.5	34.5
LGBH29	01-Mar-29	22.8	24.8	26.8	28.8	30.3	32.3	34.3
LGBM29	01-Jun-29	22.5	24.5	26.5	28.5	30.0	32.0	34.0
LGBU29	03-Sep-29	22.3	24.3	26.3	28.3	29.8	31.8	33.8
LGBZ29	03-Dec-29	22.0	24.0	26.0	28.0	29.5	31.5	33.5
LGBH30	01-Mar-30	21.8	23.8	25.8	27.8	29.3	31.3	33.3
LGBM30	03-Jun-30	21.5	23.5	25.5	27.5	29.0	31.0	33.0
LGBU30	02-Sep-30	21.3	23.3	25.3	27.3	28.8	30.8	32.8
LGBZ30	02-Dec-30	21.0	23.0	25.0	27.0	28.5	30.5	32.5
LGBH31	03-Mar-31	20.8	22.8	24.8	26.8	28.3	30.3	32.3
LGBM31	02-Jun-31	20.5	22.5	24.5	26.5	28.0	30.0	32.0
LGBU31	01-Sep-31	20.3	22.3	24.3	26.3	27.8	29.8	31.8
LGBZ31	01-Dec-31	20.0	22.0	24.0	26.0	27.5	29.5	31.5
LGBH32	01-Mar-32	19.8	21.8	23.8	25.8	27.3	29.3	31.3
LGBM32	01-Jun-32	19.5	21.5	23.5	25.5	27.0	29.0	31.0
LGBU32	01-Sep-32	19.3	21.3	23.3	25.3	26.8	28.8	30.8

Source: Author Calculations

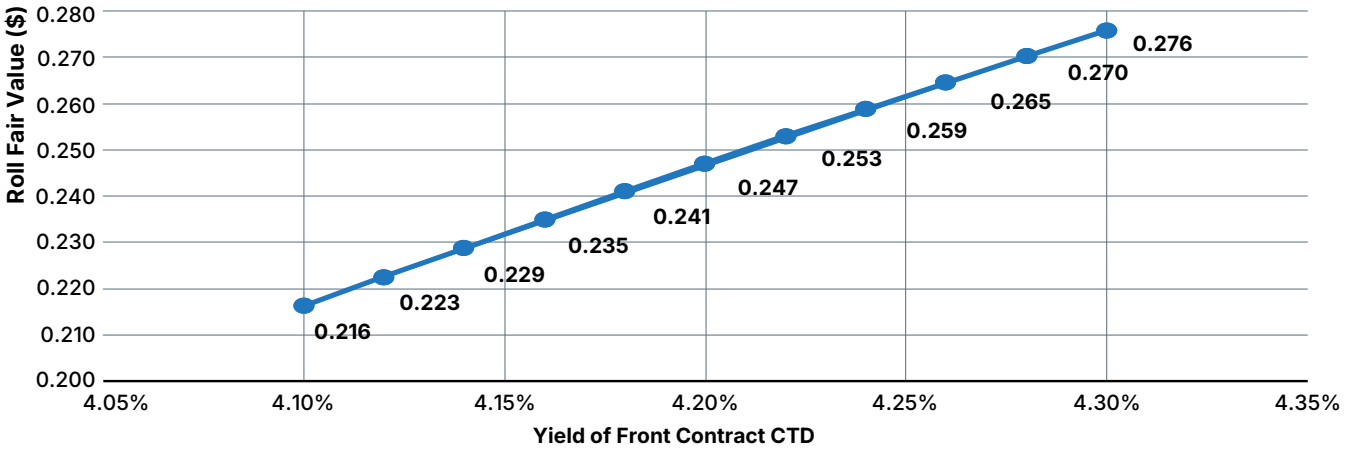
Despite the two-year maturity extension in the CTD[2], the resulting extension of DV01 of the CTD for the contract will probably be minimal between June and September LGB contracts, unlike the roll from June to September and from December to March contracts in CGB (the 10-year bond contract), which creates volatility and opportunities, except with much less frequency and potentially more impact. The next change in the cheapest-to-deliver is a good example. The DV01 extension from LGBM28 (June 2028) to LGBU28 (September 2028), assuming no change in the current yield curve, would result in a tiny DV01 extension of just 0.2 cents, from 16.9 to 17.1.

2 For the 2057 to 2059, the maturity extension is only 18 months due to the change from December to June maturity on the most recent long bond issue.

Given the assumptions stated above, Figure 2 demonstrates why rolling between contracts with a small difference in DV01 often results in stable roll periods[3]. As the yield curve fluctuates in a parallel manner, the roll's fair value changes slowly since the DV01 of the new contract is similar to the previous one. Investors who like to set a fair value bid or offer and wait for the market to come to them can safely do so, as fair value typically fluctuates minimally throughout the day. The resulting static order book brings deeper liquidity to the market during the essential three- or four-day roll period between contracts.

FIGURE 2

LGBM28/LGBU28 Roll Fair Value v. Rate Level, May 26/28



Source: Author Calculations

As illustrated, a range of 20 basis points (unlikely but not impossible) intraday can change the fair value of the roll between LGBM28 and LGBU28 by just 6 cents; barely more than the contract's minimum price increment. The same analysis for the now-defunct one-year maturity extension on CGBM21/U21, a contract that resulted in a volatile roll period, showed a change of about 40 cents for the roll on a DV01 extension of 19%.

5 Cents Minimum Price Fluctuation

The LGB contract has a minimum price increment of 5 cents per contract versus 1 cent per contract on CGB. For frequent traders of futures, this may seem like a large difference, but for investors experienced in trading the long end of the Canadian yield curve, a larger bid/offer relative to 10-year bonds will appear normal. In fact, when restated in basis points, the 1-cent price increment on a CGB contract is currently equal to 0.12 of a basis point, while the 5-cent increment on LGB is about 0.29 of a basis point due to the LGB contract's larger DV01. Net of the above, LGB trading is slightly more expensive than CGB transactions at the minimum price increment; trading LGB will be like trading CGB with a 2.4-cent minimum bid/ask spread, still reasonable by long-end Canada trading standards.

Implied 4% Coupon Rate & Follow-On Effects

Unlike the CGB, CGF® (5-year) and CGZ® (2-year) futures contracts in Canada, the LGB contract now has an implied 4% coupon rate, compared with an implied 6% coupon rate for the other contracts. The change from 6% to 4% has some important effects for this contract.

3 To investigate the opposite, an unstable roll period due to large DV01 extension, please refer to "Jun/Sep CGB Roll: A Roll Unlike the Others" published by Montréal Exchange in April 2021.

Conversion Factors

If the LGB contract had a 6% implied coupon, the resulting conversion factors used in delivery would be extremely low. With an implied 4% coupon, they are much more similar in magnitude to the conversion factors investors are familiar with in Canada. For the LGBZ26 contract, for example, the cheapest-to-deliver bond for the contract is the 3.5% December 2057, with a conversion factor of 0.9116, just a little higher than the conversion factors for bonds in the delivery basket for 5-year and 10-year futures contracts. Conversion factor values for LGB are now within the range that investors would consider "normal" for a futures contract, while a 6% coupon would lead to a conversion factor for the current CTD of 0.6509, far lower than that of any other Canadian futures contract.

"Long Bond-Like" DV01

Given the conversion factors for the deliverable bond on LGB contracts, the contract's DV01 is now roughly comparable to that of a long bond in Canada. For example, the contract's DV01 is the CTD's DV01 divided by the conversion factor (assuming no switch of CTD is possible and the contract trades at fair value). For the current LGBZ26 contract, the DV01 will be around 17.4 cents, which is comparable to the DV01 of the benchmark Canada 30-year bond, and about double the DV01 of the CGB contract; a ratio similar to the DV01 ratio between Canada long bonds and the 10-year benchmark. Importantly, with the recent contract specification changes, the DV01 of LGB contracts will no longer be considerably higher than that of the Canada ultra-long 2064 bond and will become comparable in magnitude to the Ultra 30-year U.S. Treasury contract that trades on CME[4].

"Normal" Contract Prices

Since the contract price is linked to the conversion factor for the cheapest-to-deliver bond and the price of the CTD at expiry, normal futures basis levels will result in contract prices within standard expectations for bond investors. In fact, the LGBZ26 contract trades at just over $96 given current interest rate levels, which is within the normal range of bond and futures prices and not nearly as high or abnormal as the contract would need to price if the implied coupon were 6% instead of 4%.

Switch Risk (Quality Option) Eliminated

With just a single bond in the deliverable basket, switch risk is completely eliminated in the LGB contract and cannot occur under any scenario. For this contract, investors will not need to be concerned with delivering, or being delivered, any bond except the pre-specified benchmark Canada long bond, the most liquid bond in the long end of the Canadian yield curve.

Since there is no switch risk, no scenario modeling of various yield and slope combinations that determine the optimal bond to deliver, or attempts to calculate probabilities of CTD switches before expiry of the futures contract, is necessary, even if yields approach the implied coupon for the contract[5]. The benchmark bond is, and will always be, the only bond that can be delivered to fulfill the contract terms.

4 For purposes of comparison and representativeness, the DV01 of the Ultra 30-year US Treasury contract was measured in USD and not converted to Canadian dollar equivalent.

5 As is the case today when long bond yields are 4.2%, very close to the 4% implied coupon on the futures contract.

Timing Options

With the return of a delivery window for the contract, the suite of timing options embedded in the other futures contracts returns to LGB. Short positions can choose to deliver anytime during the delivery period rather than suffer negative carry to the end of the month, or they can elect to wait until the end of the month to profit from positive carry. Shorts can speculate on CTD price increases in the cash market after the settlement price is established for LGB but before the delivery notice deadline at 5:30 p.m. to exercise a wildcard option[6]. But the high conversion factors will eliminate most of the value historically embedded in the LGB contract wildcard option. Although rarely discussed and of virtually no value ever, an end-of-month option exists in the LGB contract, as it does in other Canadian fixed income contracts that employ physical delivery settlement.

Each of the above embedded options exists in the LGB contract starting with the December 2026 contract because the holder of the short position can choose when to deliver bonds to fulfill their contract obligations.

Summary

In summary, the 30-year LGB contract shares almost all characteristics of the 10-year CGB contract, but investors should be aware of potential differences that may be important when trading LGB, depending on their investment guidelines and style of trading. Specifically, embedded timing options arising from the delivery window are identical to those of the CGB (and other contracts) but are likely to have very little value due to a high conversion factor for the deliverable bond, while the quality option is eliminated by the inclusion of only the benchmark long bond in the deliverable basket.

6 For a full description of how a Wildcard option exercise works, refer to "CGB Case Study: Wildcard Option Exercise" published by Montréal Exchange in July 2019.

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