Futures Flash Series
ARTICLE 9

MONTRÉAL EXCHANGE

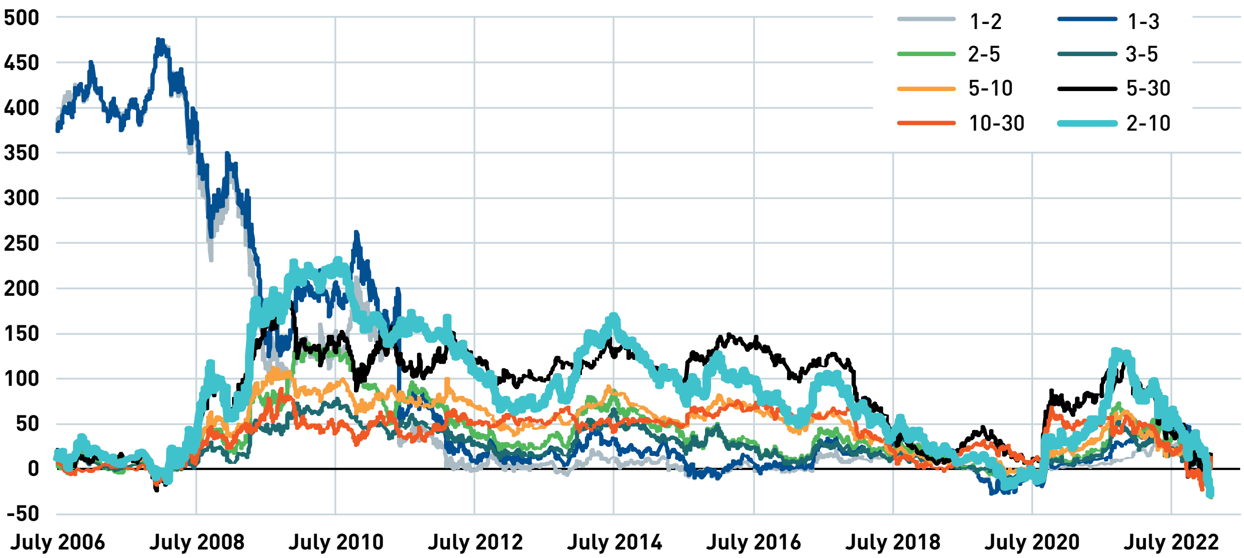
August 2022

2-10 Yield Curve Inversion: How Low Will It Go?

As economists and portfolio managers know, the slope of the 2-10 yield curve[1] in Canada inverted in mid-July and has continued to fall to levels not observed in the past 15 years or longer. This large flattening of the yield curve has occurred in many different segments, from 1-2 to 2-10 with only (so far) the 5-10 and segments incorporating the longest of bond maturities[2] at positive levels on the final trading day of July. Many of these segments of the yield curve have now reached levels flatter (more inverted, usually) than observed in the approach to the 2008 financial crisis, the intervening years of low yields and slowly recovering economies in both Europe and North America, and the 2020 market panic at the onset of the global COVID-19 pandemic. Various segments of the Canadian yield curve slope are shown in Figure 1.

FIGURE 1

Canada Slope Levels, Since 2006



Source: BMO Capital Markets' Fixed Income Sapphire database

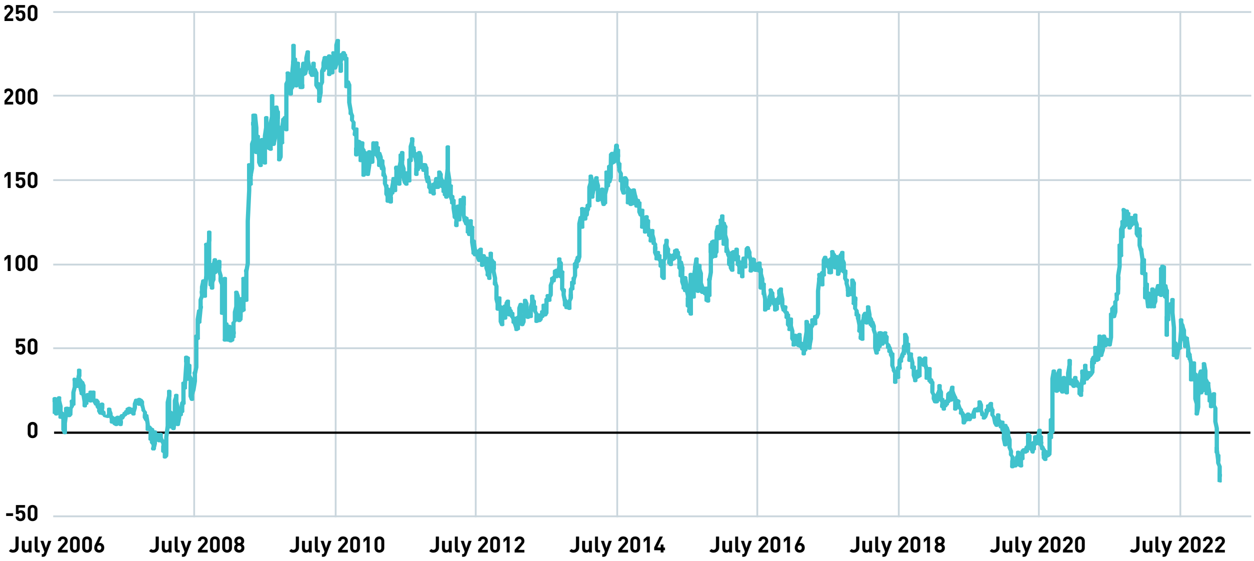
Readers can observe more easily the ultra-low level of the 2-10 portion of the yield curve in Figure 2 which shows that the current inversion, a level of -29 basis points as of the final trading day in July, is more inverted than at any time in the prior 15 years. Although the same measure in US treasuries is inverted roughly by the same amount, summer liquidity issues may be affecting both markets as July and August are often characterized by slow markets and lesser liquidity that can result in measures of relative value reaching extremes.

1 The 2-10 yield curve is the yield of the 10-year bond less the yield of the 2-year bond, expressed in basis points. We use this nomenclature throughout the article so, for example, 1-5 slope or 1-5 yield curve refers to the basis point difference in yield to maturity between the 5-year bond and 1-year bond.

2 5-30 and 10-30 were inverted before the latest flattening of the yield curve but are now positively sloped.

FIGURE 2

Canada 2-10 Slope, Since 2006



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

Economic Meaning

Inversions in the slope of the yield curve, especially in the 2-10 slope, are generally viewed as indications of a coming recession, or at least are a closely watched indicator of such. In brief, the elevated level of the 2-year bond relative to the 10-year bond indicates that market participants believe, and are voting with their investment dollars, that the restrictive level of 2-year interest rates will slow the economy to a point where some degree of recession or economic slowdown forces the Bank of Canada to reduce overnight rates[3] in the future.

Holding Period

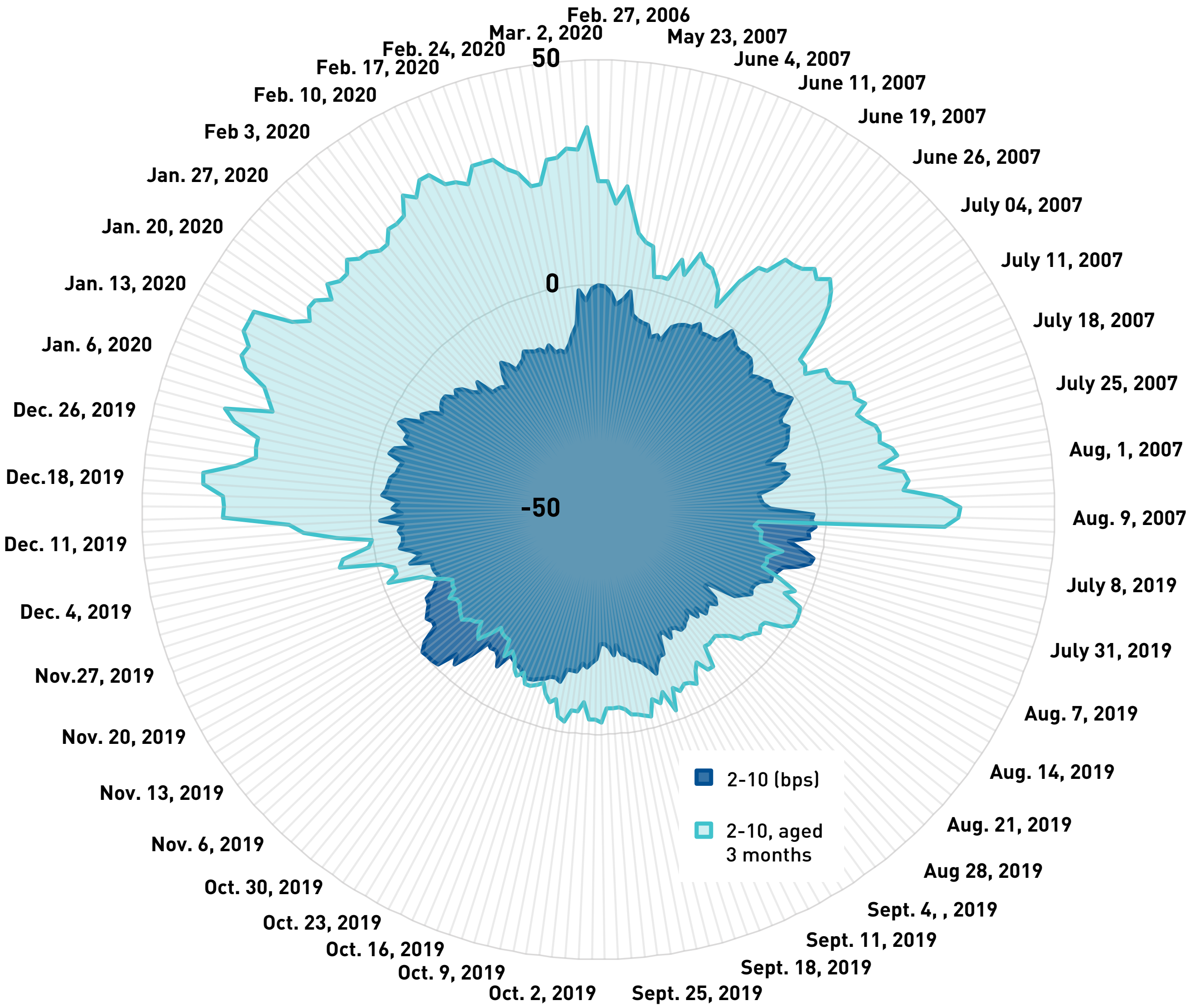
If one accepts the above explanation for the inversion of 2-10, it becomes a truism that an inversion is followed by a steepening of the curve. For example, if market participants are correct and the 2-10 inversion is followed by recession, the yield of 2-year bonds will usually fall by more than that of 10-year bonds in the following months, resulting in a steeper, positively sloped yield curve. If market participants are NOT correct, the realization of such should disproportionately affect the yield of 10-year bonds, driving them higher along with the slope of the 2-10 curve. All this reasoning is an oversimplification, of course, as an inversion can also be followed by more inverted levels of 2-10 causing interim losses that are too substantial to bear.

However, portfolio managers looking for "high probability" payoffs in portfolios that are risk-taking and able to withstand potential losses should note that, since 2006, 84% of all entries into a 2-10 steepener in Canadian bonds when the slope was inverted has resulted in profits within three months. In other words, aging 2-10 by three months when it has been inverted results in a higher slope level over 84% of the time and results in a lower slope level just less than 16% of the time. This result is graphically demonstrated in Figure 3 where the dark blue shaded area is all the observed dates where 2-10 in Canada was inverted since the beginning of 2006 and the teal shaded area is the level of 2-10 three months later. Points where the dark blue shaded area are not completely covered by the teal represent the few dates where a portfolio manager did not see a steepening of the 2-10 curve within three months.

3 Or that medium-term inflation is lower than short-term inflation, which is, for our purposes, essentially the same thing as the Bank of Canada reacts to or anticipates price levels.

FIGURE 3

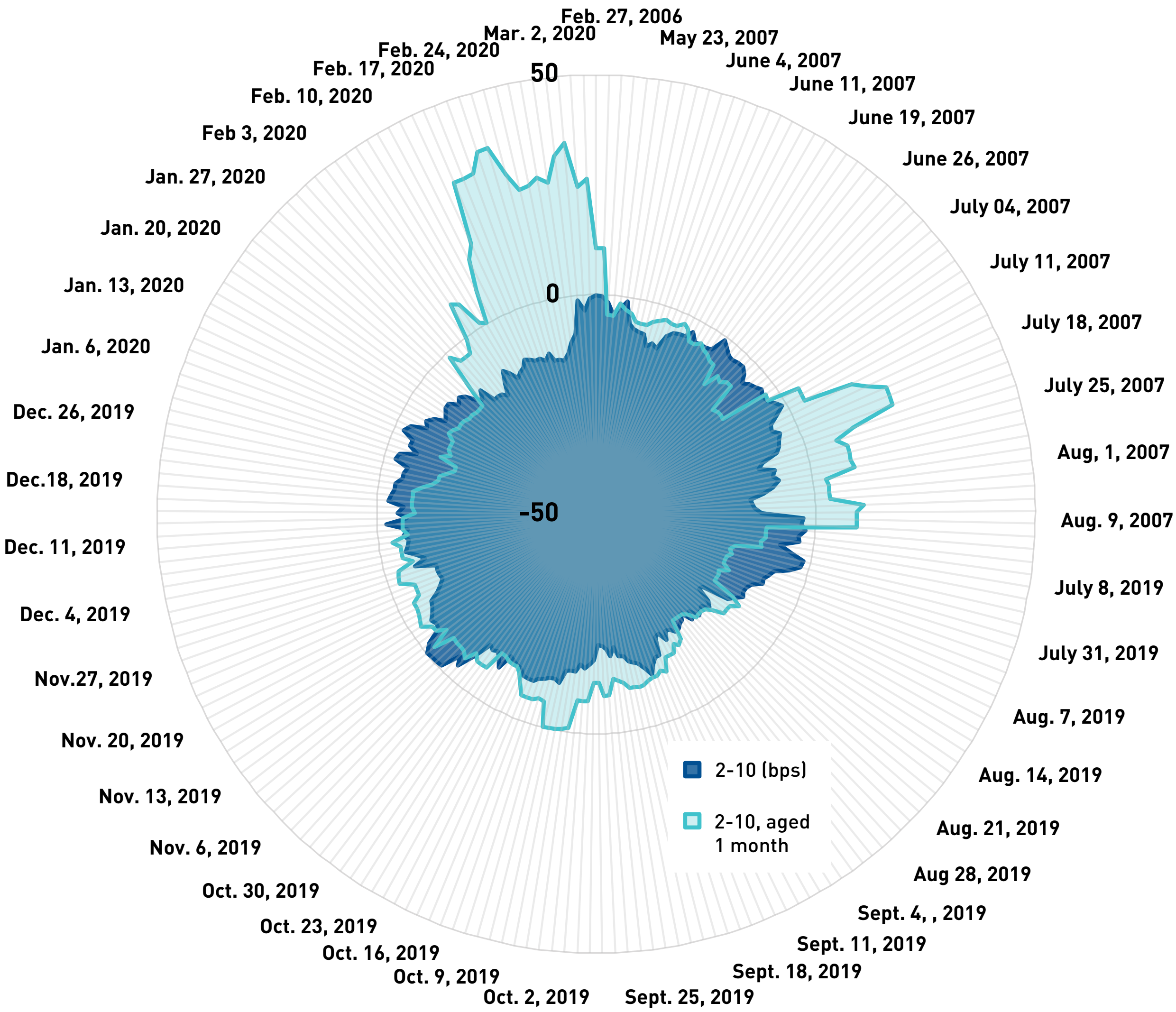
CAN 2-10 Slope, All Inversions Since January 2006



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

Of course, our three-month holding period in Figure 3 is an arbitrary trade horizon and the same figure can be constructed for a holding period of a single month (Figure 4) or even longer periods such as seven months (Figure 5).

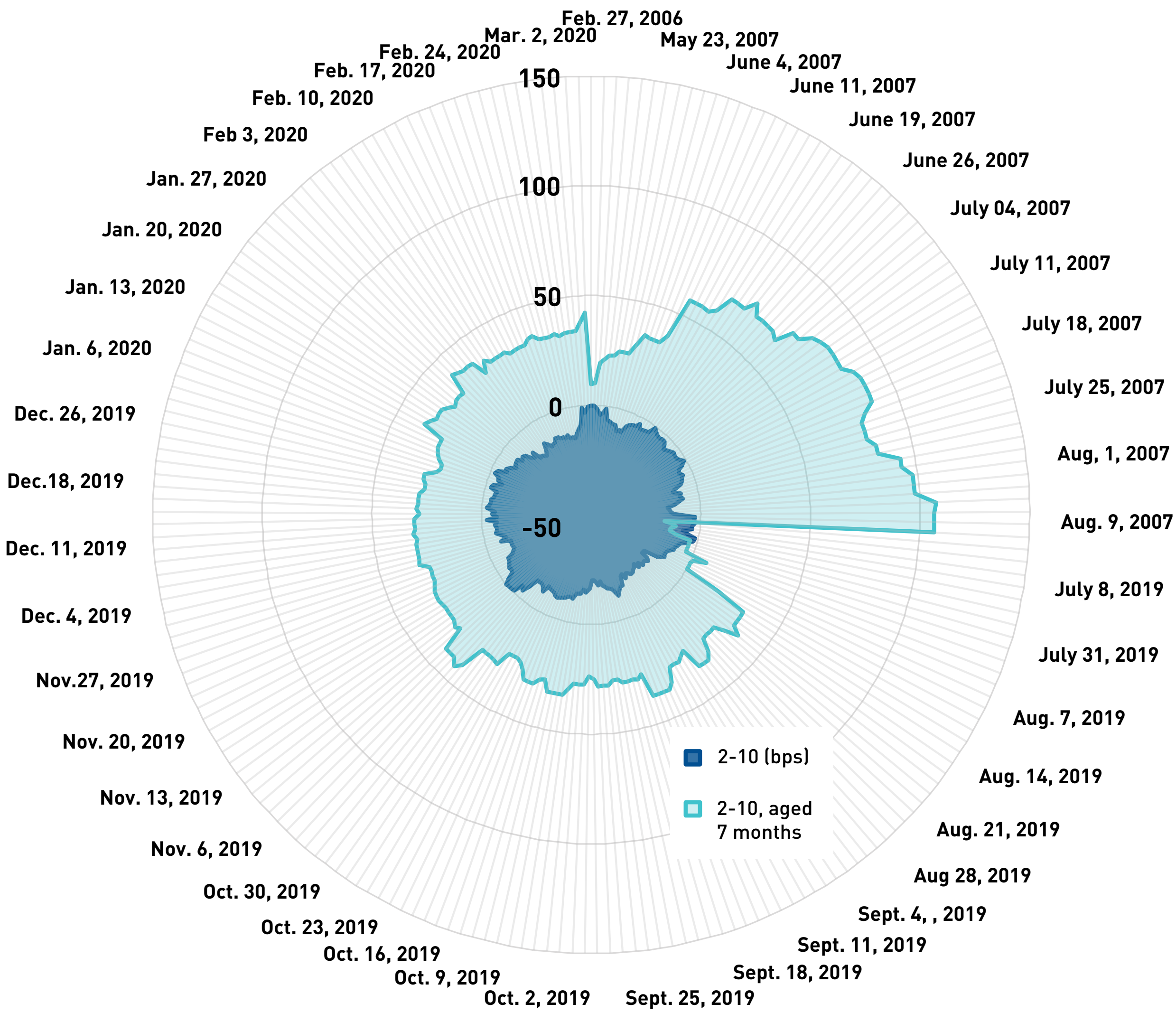
FIGURE 4
CAN 2-10 Slope, All Inversions Since January 2006



Source: BMO Capital Markets' Fixed Income Sapphire database

FIGURE 5

CAN 2-10 Slope, All Inversions Since January 2006



Source: BMO Capital Markets' Fixed Income Sapphire database

The table in Figure 6 summarizes the findings presented graphically above. Even with a short one-month holding period, an inverted 2-10 has resulted in profits more than half the time. The same figure shows some simple metrics related to potential loss and average profits, ignoring carry.

FIGURE 6

	3 MONTHS		1 MONTH		7 MONTHS	
Average Gain (bps)	17		5		47	
Min Gain (bps)	-13		-17		-14	
Max Gain (bps)	46		50		122	
Total Observations	217		217		217	
Winning Trades	183	**84.3%**	138	**63.6%**	210	**96.8%**
Losing Trades	34	**15.7%**	79	**36.4%**	7	**3.2%**

Source: BMO Capital Markets' Fixed Income Sapphire database

Trade Construction

Portfolio managers that are intrigued by the potential of 2-10 could transact in many ways to construct this trade. Even cash bond portfolios can participate by shortening maturities by eight years in their bond holdings[4]. In general, one would sell 10-year bonds and buy 2-year bonds in equal amounts of interest rate sensitivity (DV01). Transacting in futures can even be achieved via strategies which are listed on Montréal Exchange for a 2-10 yield curve package.

The construction of a 2-10 yield curve steepening trade in futures contracts - with September 2022 being the current active contracts - is shown in Figure 7 for $25,000 per basis point. The trade construction is expected to roll negatively by about 2 basis points per month at the present time and CGB™ (10-year) contracts are deemed cheap relative to bonds due to embedded options in the contract. Sellers of CGBU22 must be aware that they are buying several embedded options that have value: the wildcard, which is not expected to decline in value before delivery, the quality option or switch option[5] which should decline in value as time passes, and the timing option, which allows for the right to deliver on the first possible date to avoid negative carry costs during the delivery period. These options add complexity[6] to the trade in futures contracts and sophisticated managers could choose to sell 10-year bonds in lieu of futures contracts, and buy 2-year futures to avoid this relative value difference on the assumption they are uncomfortable with the options embedded in the sale of CGBU22.

FIGURE 7

29-JUL-22	**CGZU22**	**CGBU22**
Contract Price	104.99	130.45
Cheapest-to-Deliver Bond (CTD)	1.5% May 2024	0.5% Dec 2030
CTD Years to Maturity	1.74	8.33
Conversion Factor	0.9296	0.6462
CTD DV01	1.7	6.8
Contract DV01	1.8	10.5
Position (25k/bp of 2-10 Slope)	-1,399	238
Total DV01	-24,997	24,980

If investors wanted to execute this transaction in futures, a user-defined strategy exists on Montréal Exchange which automatically transacts a sale of one CGB contract versus a purchase of 6 CGZ™ contracts to create the steepening trade in a single transaction.

4 Probably not the best method given the transaction costs and difference in asset values. If possible, in these portfolios, a simple overlay structure in futures is likely less complex and easier to execute.

5 Specifically, it appears that the cheapest-to-deliver bond is currently the June 2031 rather than the December 2030.

6 However, the alternate strategy in bonds requires borrowing the bond and participating in the overnight financing market.

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