

# MONTREAL EXCHANGE

## The Collapse of Long-Term Forward Yields

Since the latest decline in government bond yields began nearly worldwide in mid-February, forward yields in Canada have fallen precipitously to levels never seen before, including some long-term forwards that appear to indicate that the COVID-19 pandemic will last for decades and/or that the Canadian economy's future long-term inflation experience will be completely different from the past. Sophisticated investors may choose to forego the low implied long-term forward yields by shortening the maturity profile of cash holdings or targeting specific implied forward rates using Five-Year and/or Ten-Year Government of Canada Bond Futures contracts (CGF and/or CGB).

### Yield Collapse

Every reader will be familiar with Figure 1, which shows the decline of various Canadian bond yields since 2003, followed by a precipitous decline to new lows in 2020. We note from that figure only that yields from 2-10 years to maturity have fallen nearly equally in the latter period, while 30-year yields have followed to new lows of about 1%.

**FIGURE 1**  
**Canada Yields, since 2003**



Source: BMO Capital Markets' Fixed Income Sapphire database

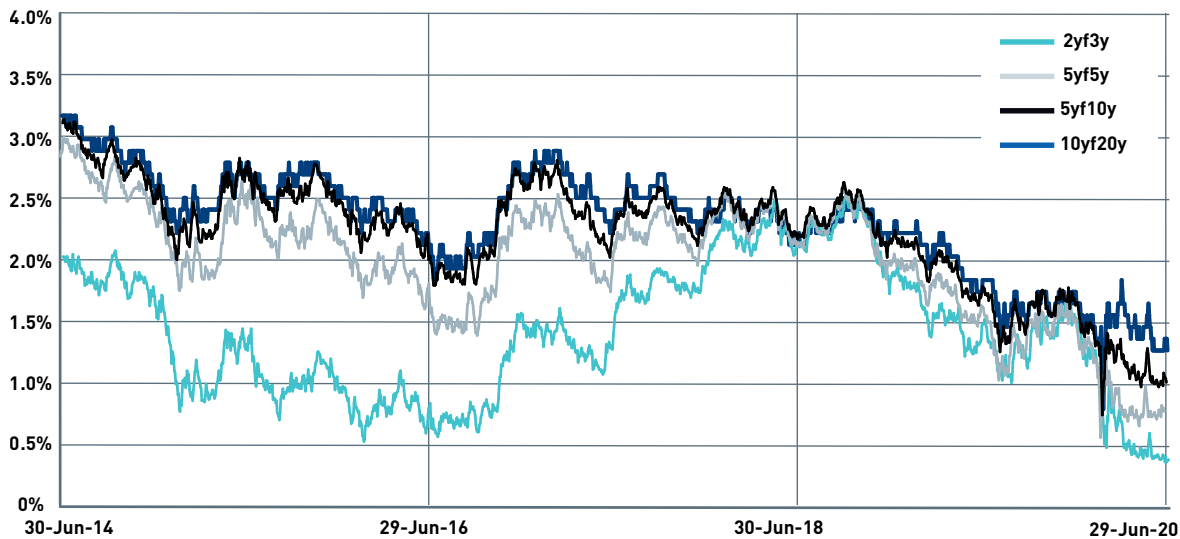
More interesting is the result of the synchronized decline in yields to new low and flat curve levels which has forced forward yields to extremely low levels<sup>1</sup>. A sample of today's<sup>2</sup> forward rates<sup>ii</sup> is presented in Figure 2 and they are hundreds of basis points lower than those observed during the Great Financial Crisis (GFC) in 2008 and the follow-on panic of European Union instability in the years that followed. While the pandemic economy is certainly damaged and one could perhaps justify the very low level of front-end rates given the Bank of Canada's (BoC) willingness to further ease monetary policy<sup>3</sup>, we take some issue with the implications of long-term forward rates so far below what should be reasonable levels.

**FIGURE 2**

Implied Forward	Yield
2yf3y	0.387%
2yf5y	0.476%
5yf5y	0.765%
5yf10y	0.989%
10yf20y	1.338%

A short history of forward yields is graphed in Figure 3, where we show the 2yf3y (a 3-year interest rate starting in 2 years), which is justifiably extremely low, as well as longer forward interest rates such as the 5yf5y and 10yf20y, which have also fallen to levels well below 1.5% for the first time in at least 20 years<sup>4</sup>.

**FIGURE 3**  
**Canada Forward Yields, since 2014**



Source: BMO Capital Markets' Fixed Income Sapphire database

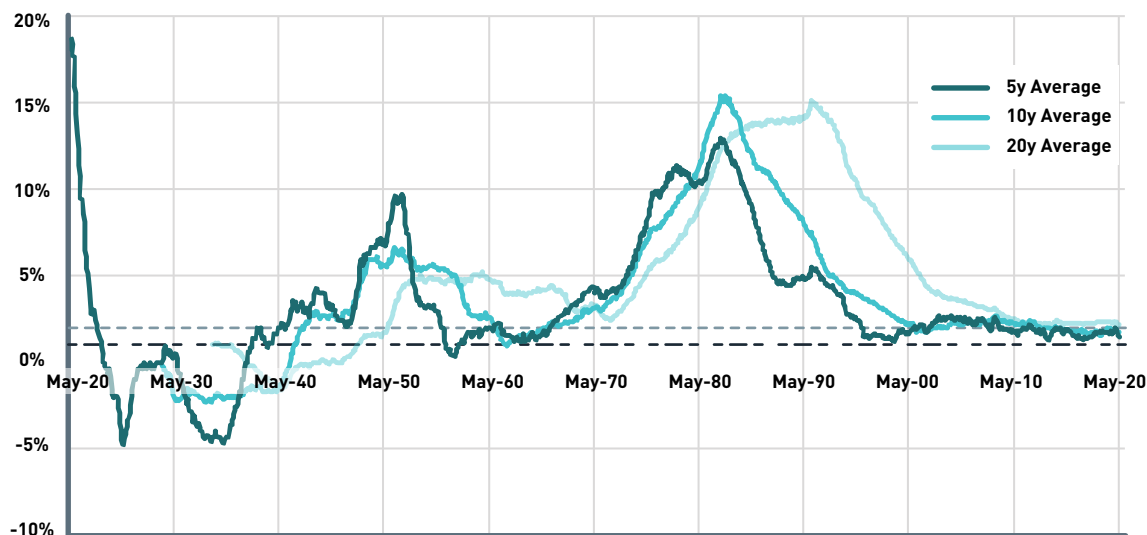
1. We approximate forward yields using unadjusted constant maturity bond yields. Farther out the curve there is a convexity difference and a completely accurate method would adjust longer maturity yields higher to account for the positive value of owning convexity. For those interested, the linear approximation formula is presented in the endnotes.
2. July 14<sup>th</sup>, 2020
3. A good summary of new and innovative monetary policy measures, including the large scale asset purchase programs, implemented to protect the Canadian economy in 2020 can be found here: <https://www.bankofcanada.ca/markets/market-operations-liquidity-provision/covid-19-actions-support-economy-financial-system>
4. More likely 50+ years given the high inflation and yields of the 1970s, although we have not verified this.

## Inflation Implications of Low Forward Yields

From an inflation anticipation perspective, one must question what a 5yf10y (the 10-year bond yield starting 5 years from today) of 1% means for the buyer. Given that the Bank of Canada has been remarkably adept at achieving its long-term 2% target<sup>5</sup> for Canadian inflation, a buyer of long-term bonds in Canada seems to be comfortable betting that the central bank will not be able to achieve its target despite potentially unlimited monetary stimulus.

We show 100 years of Canadian inflation in Figure 4, where we have calculated the average inflation rate for 5, 10, and 20 year lookback periods and plotted those time series on the y-axis along with horizontal dashed lines at 1% and 2% for reference. Of note for longer dated forward yields, 20-year average annual inflation in Canada has not fallen below 2% except in the period 1935 to 1945, a period where the 20-year lookback includes the entire Great Depression.

**FIGURE 4**  
**Canadian Annual CPI, 100 Years**



Source : Statistics Canada

An investor willing to accept extremely low yields on long bonds, and the resulting low forward yields that those bond prices imply, likely believes that inflation will not rise for 30 or 40 years to levels high enough to erode the purchasing power of his/her principal. Over a 30-year period, 14% of purchasing power will be eroded by a mere 50 basis points of inflation greater than an instrument's yield. Given the plot of inflation over multiple generations above, and even discounting the high inflation of the 1970-1980 period, it seems improbable that inflation would remain so low for multiple generations.

Of course, we do not contest that inflation has fallen precipitously over the 50 years leading up to today, nor the technology advances, globalization trends<sup>6</sup>, and demographics that have driven down prices. One can accept that yields to the 5-year point appear appropriate given the damage the pandemic has done to the economy and Bank of Canada comments at the July 15<sup>th</sup> fixed announcement date. One can postulate that inflation and overnight rates will be extremely low for at least a few years, regardless of how or when the pandemic is resolved. However, it remains hard to believe that COVID-19 has impacted the economy in such a long-term manner – for example, crushing price level increases for the next couple of generations.

Students of economic history will recall that, post-Depression, the Canadian government (and others, of course) introduced into the economy extensive automatic stabilizers; essentially government spending that increases when private spending falls. In Canada, that took the form of employment insurance in 1940, income assistance later in the 40s, tax incentivized savings plans in the late 50s, the Canada Pension Plan in 1965, Medicare in the mid-60s, Old Age Security supplements in 1985, as well as maintaining a system of progressive taxation for both corporations and individuals, which reduces the tax burden as both earn less money. All these programs, in their unique ways, ensure that spending is shifted from the private economy to the public in times of economic stress. None of these programs existed during the Depression while the central bank was only established midway through that downturn.

5. Midpoint of the range which is reviewed every five years.

6. Less certain than the technological advances in today's political climate.

## A Catch-22 Scenario for Government Spending?

We wonder if extremely low long-term forwards introduce a Catch-22<sup>7</sup> into the macroeconomic puzzle. If we assume a scenario where all of the macroeconomic stabilizers fail completely or simply don't provide enough counterbalance to a private sector damaged for decades from the pandemic, does that not imply that the government and the central bank can no longer provide payments and stimulus? Doesn't that scenario presume a government unable to borrow? If so, what would government bonds be worth? Low long-term bond forwards imply an extraordinarily strong borrowing position for government, decades of extreme monetary policy, and, simultaneously, a severely weakened economy unable to generate even 1% inflation over two generations. We understand how this could be sustained for a few years, or even half a decade or more, but question how a government can spend more, collect less revenue and create currency via extreme monetary policy, but still remain in a very good position to borrow with a strong<sup>8</sup> currency more than three decades later.

Investors may have briefly recognized this conundrum of macroeconomic thought with the most recent debt management update. Bonds sold off heavily that day on the recognition that the cost of huge economic intervention is much higher debt issuance and a less fiscally sound government budget<sup>9</sup>.

## Implications

For most Portfolio Managers, we suspect, this conundrum of extremely low long-dated forwards is a case of trying to get inside someone else's head; rarely worth dwelling on since it is impossible. In a mostly efficient market, even counting the actions of the central bank, the price of bonds is simply the price of bonds.

However, those that come to believe that bonds can no longer generate a return to protect against future inflation erosion, may choose to forego the 5yf25y yield implied in the 30-year bond today and simply wait out the low rates of the pandemic by shortening the maturity of a portion of their portfolio. One could do so by selling 30-year bonds and investing the same notional amount<sup>10</sup> in 5-year bonds. Those who decide the 10yf20y or 10yf30y is too low to meet their needs could sell 30-year or 40-year bonds respectively and invest the notional amounts in 10-year bonds.

For both of the above, the investor ends up short the long-dated forward<sup>11</sup>, of course, but should also be aware that some adjustments to the trade would be needed from time to time as the shorter maturity bond would quickly become an off-the-run bond. This could be avoided by using the 5-year or 10-year Government of Canada bond futures (CGF or CGB) which, although requiring a roll to the active contract each quarter, remain liquid, easy, and inexpensive to trade. For instance, an investor who parted with his/her 30 year bonds and replaced them with the equivalent notional of CGB contracts rolled to the active contract each quarter, would maintain or improve liquidity and lower trading costs relative to the original position with no fear of the 10-year bond becoming an illiquid off-the-run in coming years.

For leveraged investors looking at a very targeted approach, one may think the 75 basis points of the 5yf5y rate is too low. One could very efficiently transact the entire trade in futures by selling CGB and buying CGF in equal notional (in this case equal contracts) amounts. A leveraged relative value investor can reduce balance sheet usage by using contracts in both maturities, if available (for instance to construct the 5yf5y), thus avoiding time-consuming and costly financing transactions in the cash market.

7. A term originally associated with establishing sanity, an irony not lost on us!

8. i.e. A currency not debased by inflation which low bond yields imply will still be extremely low.

9. Fitch has already downgraded Canada albeit to a still stellar AA+ rating.

10. Equal notionals, not equal duration or DV01.

11. Relative to benchmark for cash benchmark portfolios.

i BMO Capital Markets is a trade name used by BMO Financial Group for the wholesale banking business of Bank of Montreal, BMO Harris Bank N.A. (member FDIC), Bank of Montreal Ireland plc., and Bank of Montreal (China) Co. Ltd and the institutional broker dealer businesses of BMO Capital Markets Corp. (Member SIPC) in the U.S., BMO Nesbitt Burns Inc. (Member Canadian Investor Protection Fund) in Canada and Asia and BMO Capital Markets Limited (authorized and regulated by the Financial Conduct Authority) in Europe and Australia. "BMO Capital Markets" is a trademark of Bank of Montreal, used under license.

ii We approximate government bond forward rates with constant maturity spot yields using the example formula:

"A 3-year yield starting in 2-years" =  $2yf5y = [(DV01_5 \times yield_5) - (DV01_3 \times yield_3)] / (DV01_5 - DV01_3)$



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.

## For more information:

**T** +1 514 871-3501  
**irderivatives@tmx.com**

**m-x.ca/futures**

i BMO Capital Markets is a trade name used by BMO Financial Group for the wholesale banking business of Bank of Montreal, BMO Harris Bank N.A. (member FDIC), Bank of Montreal Ireland plc., and Bank of Montreal (China) Co. Ltd and the institutional broker dealer businesses of BMO Capital Markets Corp. (Member SIPC) in the U.S., BMO Nesbitt Burns Inc. (Member Canadian Investor Protection Fund) in Canada and Asia and BMO Capital Markets Limited (authorized and regulated by the Financial Conduct Authority) in Europe and Australia. "BMO Capital Markets" is a trademark of Bank of Montreal, used under license.

Opinions expressed in this document do not necessarily represent the views of Bourse de Montréal Inc.

This document is made available for general information purposes only. The information provided in this document, including financial and economic data, quotes and any analysis or interpretation thereof, is provided solely for information purposes and shall not be construed in any jurisdiction as providing any advice or recommendation with respect to the purchase or sale of any derivative instrument, underlying security or any other financial instrument or as providing legal, accounting, tax, financial or investment advice. Bourse de Montréal Inc. recommends that you consult your own advisors in accordance with your needs before making decision to take into account your particular investment objectives, financial situation and individual needs. Neither Bourse de Montréal Inc. nor any of its affiliates, directors, officers, employees or agents shall be liable for any damages, losses or costs incurred as a result of any errors or omissions in this document or of the use of or reliance upon any information appearing in this document.

"BAX®", "OBX®", "ONX®", "OIS-MX®", "CGZ®", "CGF®", "CGB®", "LGB®", "OGB®", "SX0®", "SXF®", "SXM®", "SCF®", "SXA®", "SXB®", "SXH®", "SXY®", and "USX®" are registered trademarks of the Bourse. "OBW™", "OBY™", "OBZ™", "SXK™", "SXU™", "SXJ™", "SXV™", Montréal Exchange and the Montréal Exchange logo are trademarks of the Bourse. "TMX®" and "TMX Group®" are registered trademarks of TSX Inc.