

Evolving BAX Curve: October 2019 Update

Virtually no market participant can have missed the evolution of Canada's BAX futures and the reversion of the Canada/US yield spread since April of this year. After the twin bias shifts of the Bank of Canada (BoC) and Federal Reserve Open Market Committee (FOMC) on October 30th, we may be seeing another opportunity for reversion trades in Canada/US spreads.

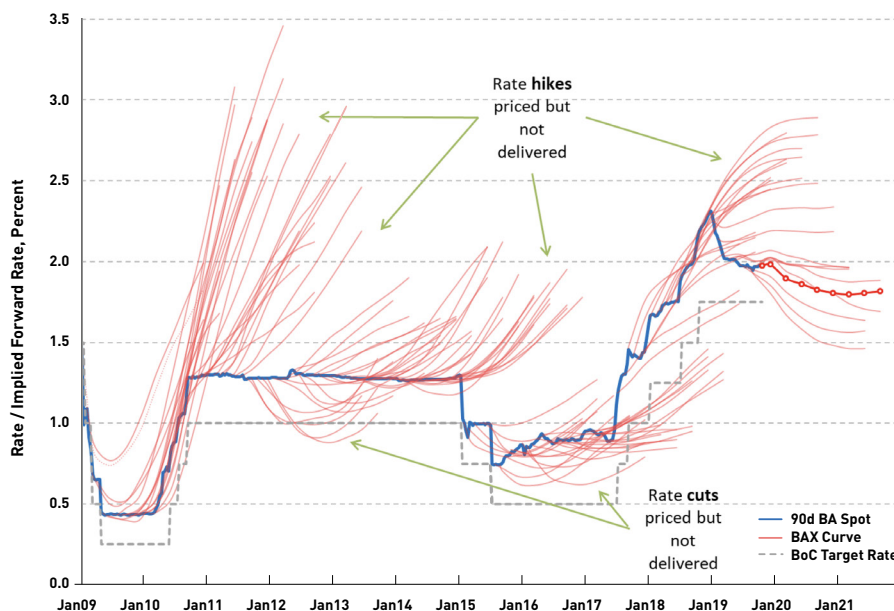
Update to BAX Curve

In mid-2017, we identified the systemic hawkish bias that had been priced into BAX contracts for almost a decade and asked whether that could be a turning point on the eve of a Bank of Canada hiking cycle¹. Having already taken on a tightening bias at that time, the Bank proceeded to deliver on that bias by hiking five times between July 2017 and November 2018, before pausing.

As the Bank has again taken on a bias in late October 2019, this seems like a good time to update the long-term dynamics of the evolving BAX curve and update market participants on the hawkish bias exhibited by that curve since the financial crisis of 2008.

Figure 1 shows an update of the "spaghetti" plots that were utilized in the original BAX study to demonstrate how hawkish the rates implied by BAX contracts have been historically. Briefly, when the red lines are above the blue, BAX contracts had priced in BoC tightening that was not delivered while observing the red lines below the blue line indicates that BAX contracts were pricing less aggressive policy tightening or even rate cuts that eventually weren't delivered².

Figure 1: 90d BA³ Spot and Monthly BAX Curve, Jan 2009 to Present

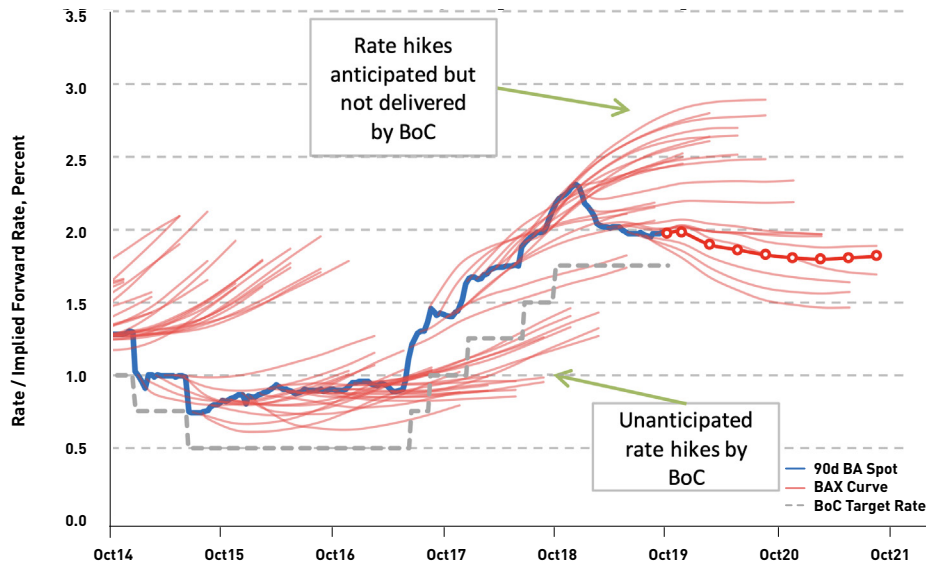


Source: Montréal Exchange, Bank of Canada, BMO Capital Markets' Fixed Income Sapphire database

1. [Evolving BAX: Nearly a Decade of Easy Roll-down](#)
 2. See Appendix for a more detailed explanation of how to interpret this chart
 3. Bankers' Acceptance

A cursory glance at Figure 1 reveals the natural bias to higher rates and is the basis for the systematic rolldown trade identified in mid-2017. In Figure 2, we look more closely at just a 5-year history in order to examine the period since the latest hiking cycle began. As we can see, there were two distinct periods over the past two years; one where BAX failed to adequately anticipate the magnitude of rate hikes delivered by the Bank, and one where BAX continued to price rate hikes by the Bank that either were not delivered or appear to have no chance of being delivered now.

Figure 2: BAX Curves, 5-year History



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

Systematic Rolldown

The original observation was that an investor could earn 31 basis points on average by simply buying the 5th BAX contract each month and then holding that contract to settlement. A minorly enhanced strategy of entering that trade ONLY when rolldown was positive in order to avoid periods of negative rolldown was shown to improve the profit potential by a handful of basis points and elevated the “hit ratio” to 80% for the strategy. Obviously, much more complex strategies can be concocted but this simple rule seemed good enough given the historical hawkish bias reflected in BAX.

Given the period between June 2017 and March 2018 where BAX were a poor estimate of the hiking cycle, one would expect that a systemic rolldown type of strategy would not perform well, and it didn't⁴. Since mid-2017, the passive strategy would have traded 30 times and averaged a gain of just 12 basis points, as shown in Figure 3. A dozen basis points is ok, but far less than the 30ish basis points that were achievable via rolldown between 2009 and 2017. The results were somewhat improved, again, by entering the trade only when the spot-BAX5 slope was positive. That result, shown in Figure 4 is a gain of 19 basis points on average and a 73% win rate BUT the strategy didn't even result in a trade in over 25% of the months it was evaluated. Anyone with yearly P(L) targets wouldn't have achieved much by continuing the passive BAX strategy. Moreover, the strategy of entering only when the BAX curve is upwardly sloped has triggered only one trade entry point since February, which would test the commitment of even the most patient of Portfolio Managers.

Figure 3: July 2017 Onward: Long BAX5 Every Month, Hold to Settlement

	COUNT	PERCENT	GAIN (bps)
Total Trades	30	100%	12
Wins	19	63%	36
Losses	11	37%	-30

⁴ To some extent, time will tell. Trades where the 5th BAX contract was purchased but where it has not settled yet are simply marked-to-market at the current price. A handful of the most recent trades entry points have not yet reached the settle price for the contract.

Figure 4: July 2017 Onward: Long BAX5 if Rolldown Positive, Hold to Settlement

	COUNT	PERCENT	GAIN (bps)
Total Trades	22	100%	19
Wins	16	73%	41
Losses	6	27%	-38

Although the recent performance has been modest at best, the strategy may indeed continue to perform and, realistically, the lack of trade entries during the recent period of inverted BAX curves is by design since it saves the strategy from making some bad trades. Investors may want to keep the strategy in mind until it becomes less dormant after the BoC executes (or doesn't) its new bias toward easing.

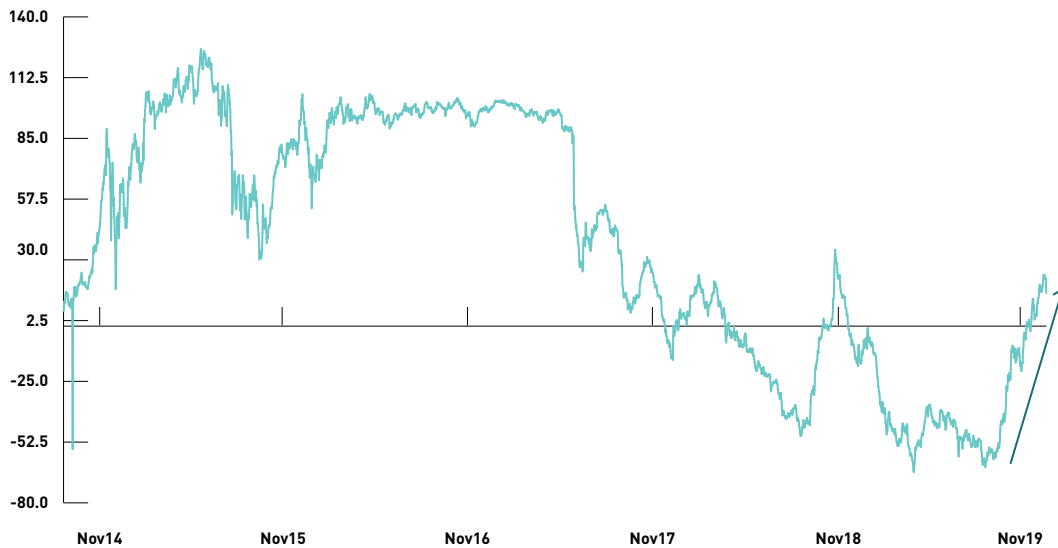
Canada/US Spread Attractive

Notwithstanding the fact that a systematic rolldown model in BAX is giving a signal to NOT be long the 5th contract, there is a good argument to be made that a 5th contract BAX-Eurodollar spread would be a good opportunity after the late October central bank meetings.

While the Bank of Canada seemingly moved to an easing bias (with plenty of caveats) the FOMC signaled a pause. For those that think the BoC simply follows what the FOMC does with a lag of six months, one could believe that the Canadian central bank will be cutting rates shortly, which is not fully priced. For those that believe the FOMC will be sidelined during the 2020 election campaign and that the BoC would have gone dovish earlier in the year if they didn't want to avoid potentially meddling in the Canadian election campaign, we can surmise that the Bank of Canada will act to ease policy more quickly than its US counterpart in coming quarters.

As we can see in Figure 5, the spread between Canada 1-year swap rates and the US dollar equivalent⁵ has had a significant move between mid-April 2019 and the end of October (green arrow). Having moved over 80 basis points in just 6 months, the spread is now near highs observed since the middle of 2015 when Canada began to suffer extreme economic effects from the plunging price of oil.

Figure 5: CAD 1-year CMS swap spread over USD 1-year CMS swap



Source: BMO Capital Markets' Fixed Income Sapphire database

5. We present the swap rates here in order to easily demonstrate the moves in the rate with a constant maturity. For many clients, a swap may not be a practical transaction, but the trade can be very closely replicated using exchange traded futures contracts.

One can enter a proxy for this mean reverting trade without using enormous amounts of balance sheet or notional amounts of short term bonds or swaps by executing a proxy trade in the futures market. For an approximation of the 1-year swap differential a Portfolio Manager (PM) could:

- Buy 1000 contracts December 2020 BAX
- Sell 760 contracts⁶ December 2020 Eurodollar
- For total exposure of \$25,000 CAD per basis point

Such a trade can be executed easily via your preferred futures broker, of course. As of today, the trade would carry (actually roll down the curve since BAX and Eurodollar futures have no accruals) completely flat, which isn't quite as good as being paid to wait for a mean reversion to happen but at least it isn't expected to cost the PM to stay in the trade every day.

Appendix: Interpreting the “Spaghetti Plot” of BAX

While the charts presented here can seem complex and overly busy, they attempt to convey a great deal of historical information in a relatively accessible manner. Generally, the charts show the term structure of the BAX curve every month for the past 10 years and give a good visual indication of whether the market has been an accurate predictor of Bank of Canada policy⁷.

To begin to interpret the “spaghetti” we can examine Figure 6 where we have accentuated the BAX curve on July 20th, 2011 relative to the other curves. Here, without as much noise from the other curves on different dates, we can see the bright red term structure of BAX forward rates emerging from the spot (blue) 90d BA rate. The first eight BAX contracts are all shown in the red line and represent the predicted (forward) 90d BA rate for the next two years starting at the expiry date of each contract. For example, the 5th BAX contract on July 20th, 2011 is shown in green.

One can readily determine that a buy-and-hold investor who bought that contract on July 20th, made roughly 60 basis points of profits if they held the contract to cash settlement because the contract yield fell (green arrow) from 1.8% to 1.2% (the spot rate 15 months later, blue line) over the life of the contract as rate rises that were priced into the term structure were not delivered by BoC policy.

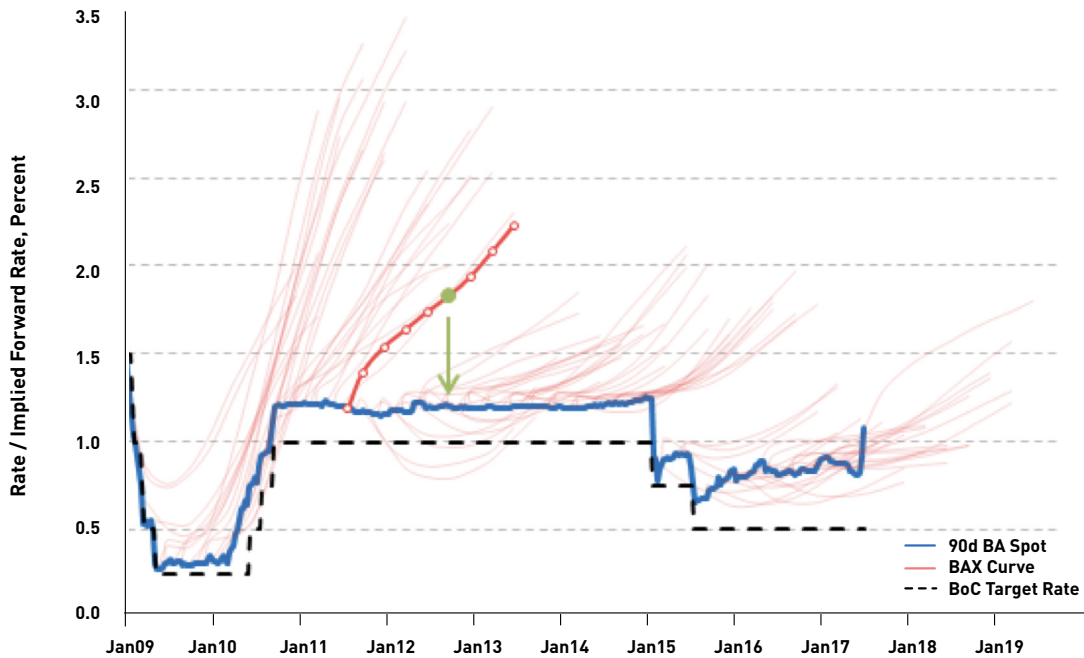
To speak more generally, when the red “spaghetti” is above the blue spot line, an investor made money by being long the BAX contracts in the term structure and profited from the passage of time as the forward rate rolled down to the spot rate. The multitude of red lines in Figure 6 are simply the BAX curve generated once per month for the past 10 years and plotted together on the same x-axis.

In some cases, the blue spot line is above or rises through the red BAX curve lines which indicates a period where being passively long the BAX contract was a money losing trade.

6. 1000 Eurodollar contracts would be \$25,000 USD of exposure but we only want to match the CAD DV01 so must divide the number of contracts by the current exchange rate of 1.315 CAD per USD.

7. Active managers hope for markets that are poor predictors of the future as that creates opportunities to add value by monetizing a market view different from the consensus.

Figure 6: Jul20/11 BAX Curve



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



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