

RBC Debt Capital Markets

Canadian Public Sector Debt Market Update

December 2022

STRICTLY PRIVATE AND CONFIDENTIAL

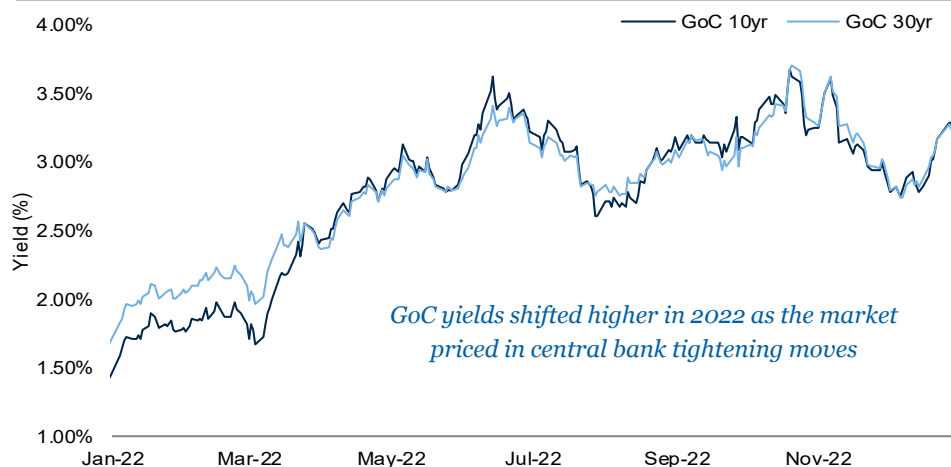


Capital
Markets

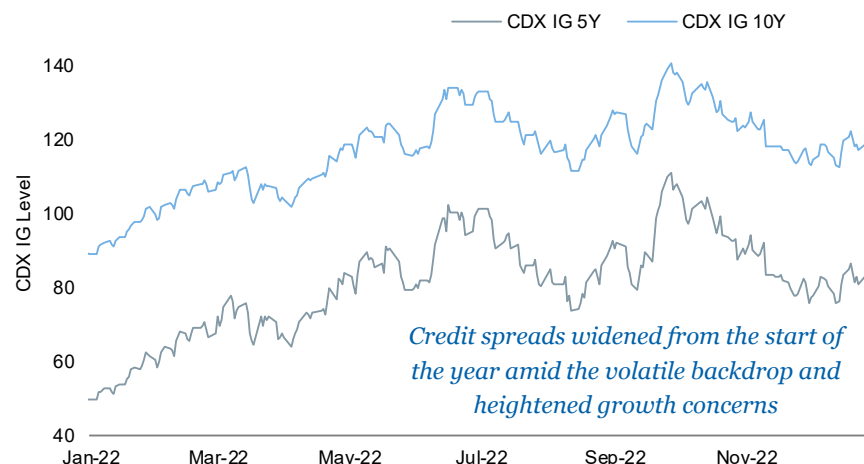
2022 Market Snapshot

- The focus of 2022 was largely on central bank tightening programs which saw the FOMC and BoC hike rates 425bps and 400bps respectively though the year
- Rates shifted higher in early 2022 as the market began to price in not only rate hikes, but the quantitative tightening that occurred as central banks began to roll off their pandemic related bond purchase programmes
- Equity markets posted significant declines, with the S&P 500 closing the year ~19% lower while the TSX was down ~9% as markets contended with higher rates, rising inflation, heightened energy prices, geopolitical concerns in Ukraine, and the threat of a COVID-19 resurgence
- Despite the turbulent backdrop we saw oil prices rise at the beginning of 2022 with WTI hitting levels not seen since 2011 as strong economic growth clashed with Russian energy sanctions and limited production increases from OPEC; prices have since levelled off after hitting local highs as growth concerns come into focus
- The Canadian dollar meanwhile deteriorated in the latter half of the year after oil prices declined from their recent highs

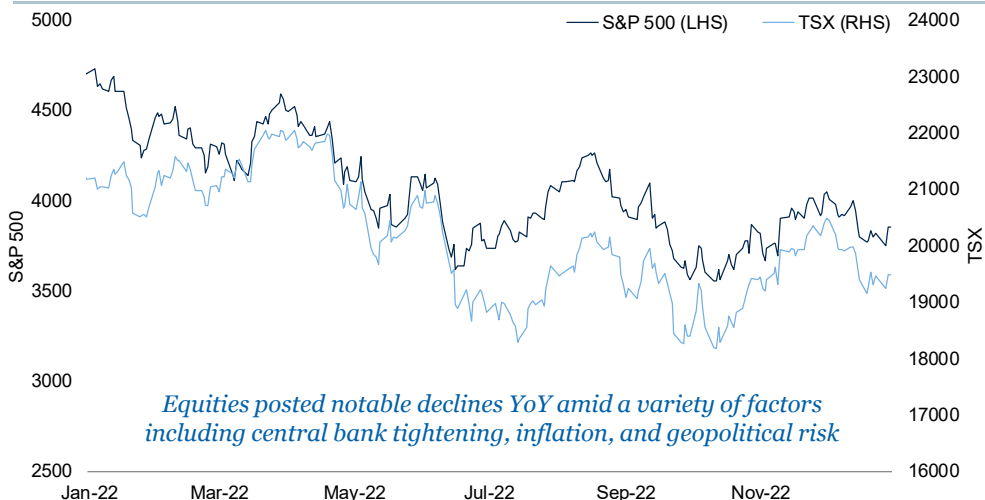
Rates



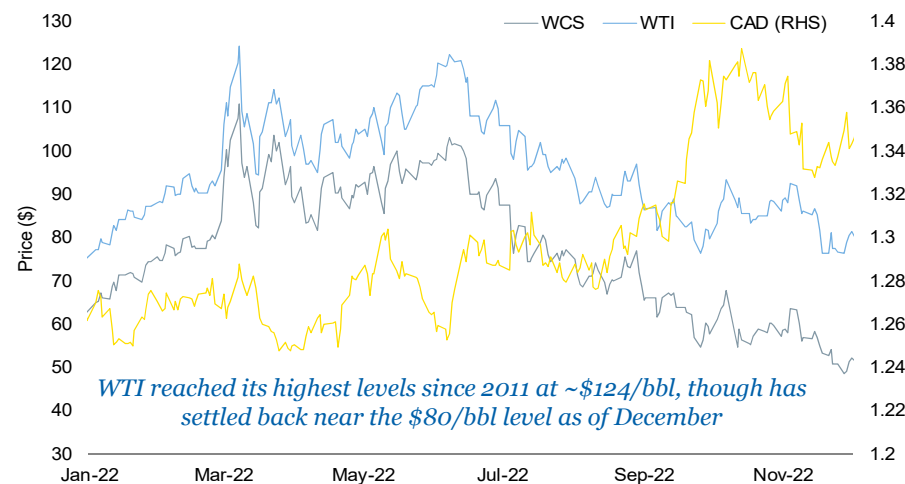
Credit Markets



Equity Markets



Commodities & Currency

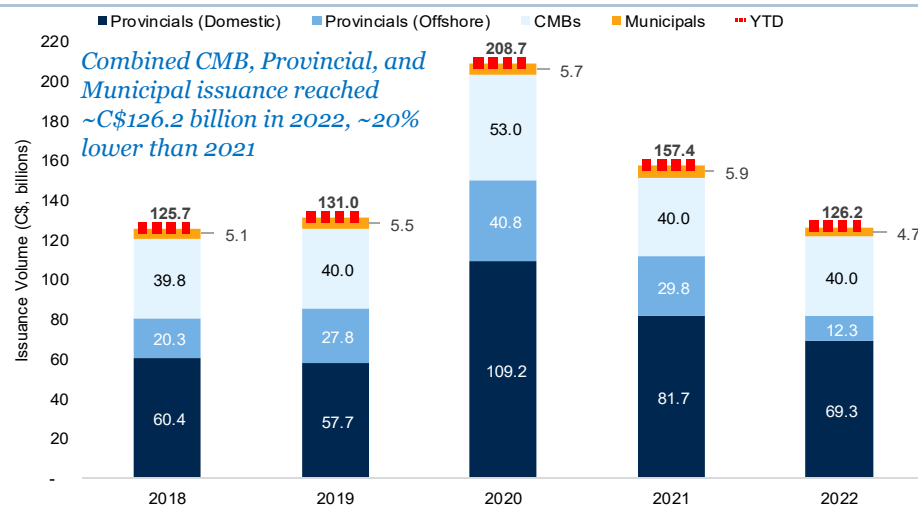


Combined Issuance Volumes

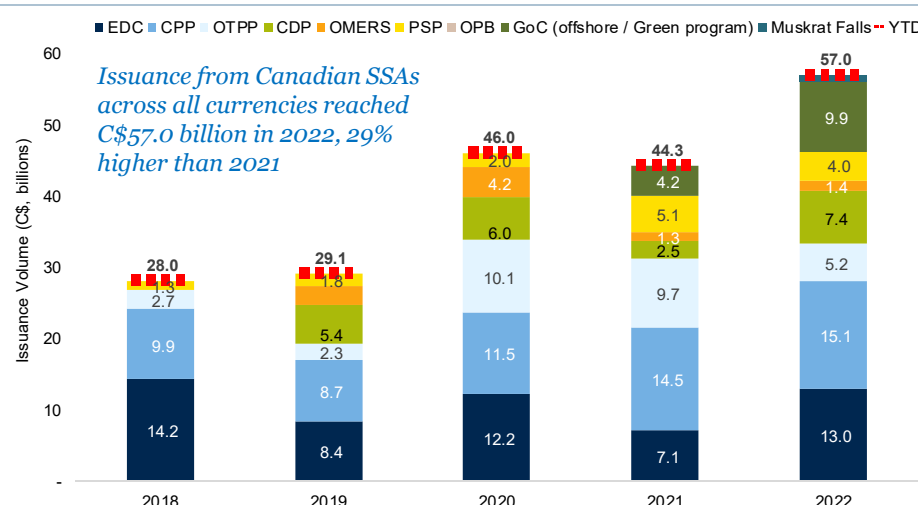
Aggregate Public Sector Issuance Volumes End ~10% Below 2021 Equivalent

- Issuance across all sectors and currencies reached C\$189.3 billion in 2022, ~10% below levels seen in 2021
- Combined CMB, Provincial, and Municipal issuance across currencies reached C\$126.2 billion, approximately 20% below prior year levels, while Maple SSA issuance was 37% below 2021 levels at C\$6.2 billion
- Meanwhile, Canadian SSA issuers posted a record year, combining for C\$57.0 billion of issuance, 29% ahead of 2021 volumes

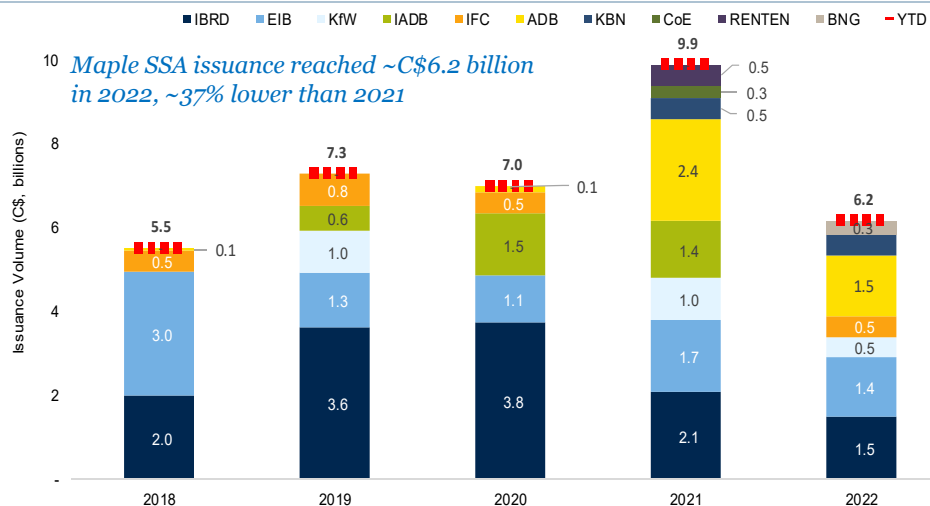
CMB, Municipal, and Provincial Total Issuance (All Currencies)



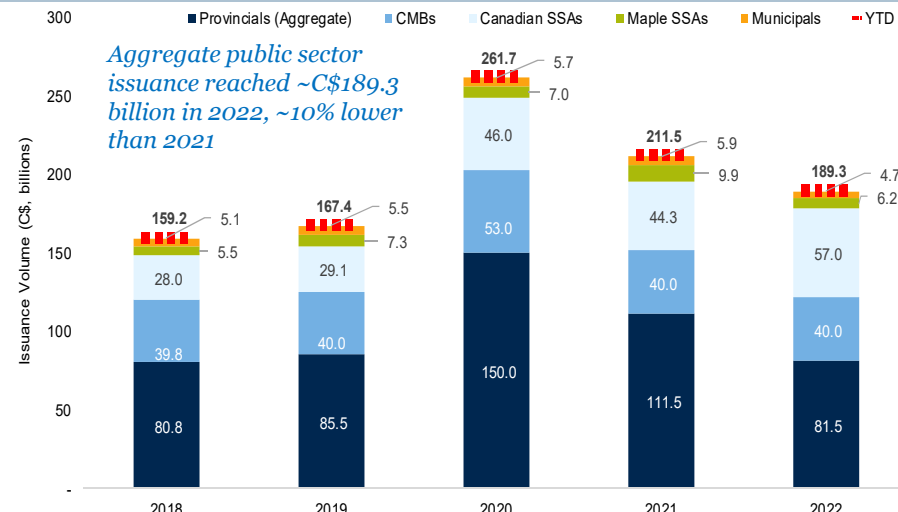
Canadian SSA Total Issuance (All Currencies)



Maple SSA Total Issuance (CAD)



Aggregate Public Sector Total Issuance (All Currencies)

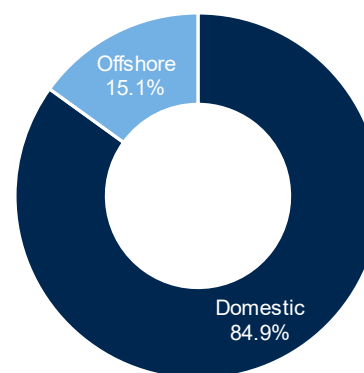


2022 Provincial Borrowing Overview

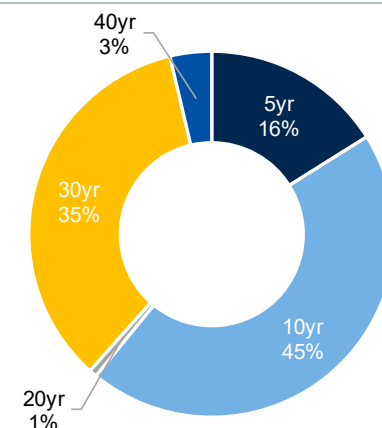
Provincial Borrowing Highlights of 2022

- Issuance for the calendar year:** ~C\$81.5bn in total across offerings in CAD, USD, EUR, GBP, CHF, NZD, and AUD
- Domestic vs Offshore:** 84.9% of issuance was domestic, amounting to C\$69.25bn vs. C\$12.3bn equiv. completed in offshore markets. This marked the lowest level of offshore issuance on an absolute and percentage basis since 2013
- Offshore Currencies issued:** A total of C\$12.3 billion, including US\$4.75 bn across 3 transactions, €2.6bn across 6 transactions, GBP 1.25bn across 2 transactions, AUD 258 million across 4 transactions, CHF100 million across 1 transaction and an NZD 130 million offering
- Concentration:** Provincial issuance was highly concentrated in January, May, June, and November as issuers continued to navigate volatility as well as seasonal factors

Domestic vs. Offshore

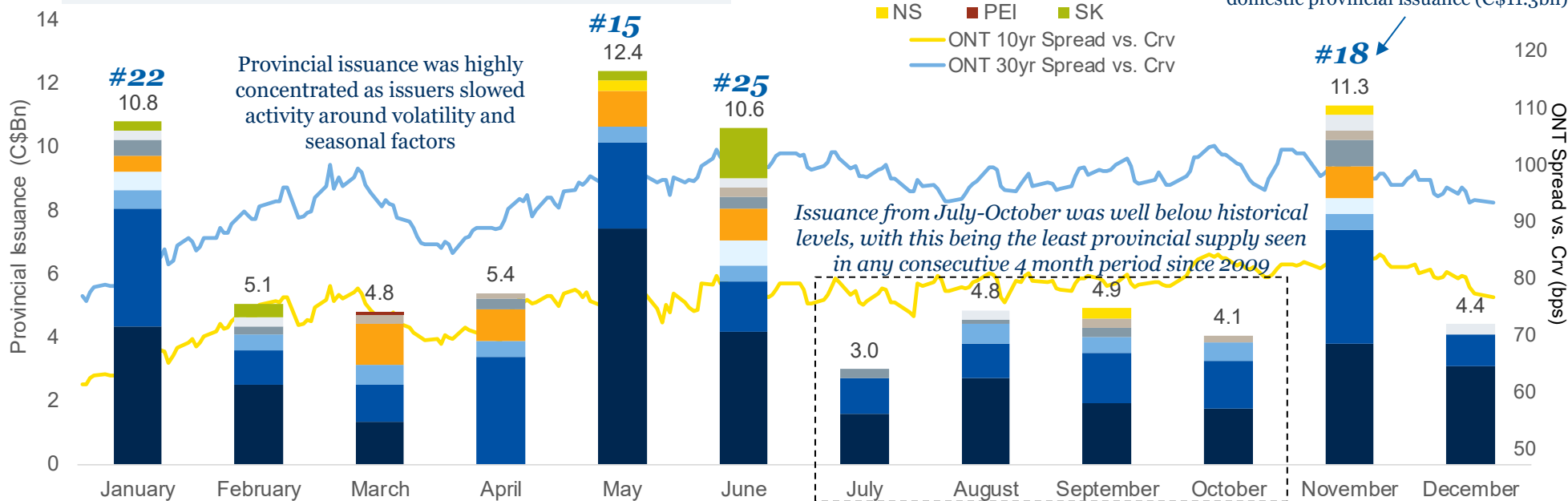


Issuance by Term (All Currencies)



Issuance Volume (All Currencies) by Month vs Spread moves to GoC

Provincial issuance volumes across all currencies moderated from pandemic-era levels, though November marked the 3rd most active month on record for domestic provincial supply



Canadian Public Sector Market Update

Market Update

Issuance Update

Offshore Borrowing

SSA & Maple Supply

Municipal Supply

Spreads & Ratings

Rates & Timing

Appendix

Domestic Public Sector Issuance (December 2022)

Ontario spreads tighter in December

Provincial credit spreads were 3.5bps tighter in 10-years and unchanged in 30-years

Domestic issuance of C\$9.7 billion

3% higher than December 2021 issuance

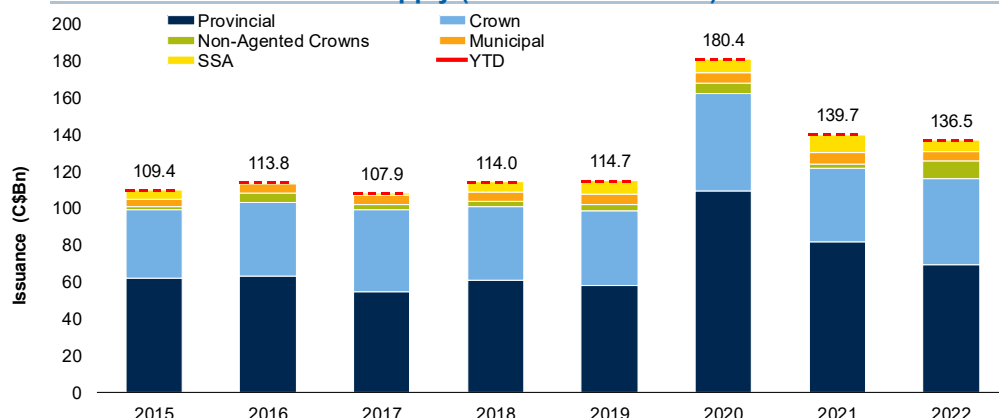
10-year term of preference in 2022

10s accounted for ~40% of provincial supply in 2022

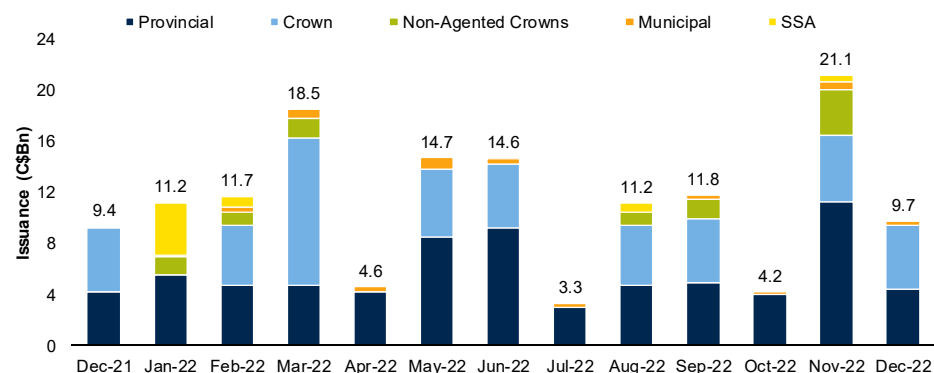
December adds C\$9.7 billion to bring 2022 total to C\$136.5 billion

- December saw 5 separate issuers complete C\$9.7 billion across 9 trades to bring the 2022 domestic funding total to C\$136.5 billion
- The C\$136.5 billion of domestic funding across all public sector issuers in 2022 represents a decrease of 2.3% from the C\$139.7 billion seen in 2021, though remains well above issuance levels of the pre-pandemic years
- December's issuance total was bolstered heavily by Canada Housing Trust which completed a C\$5.0 billion 5-year trade to bring its 2022 total borrowing to C\$40.0 billion
- Provincial issuers completed C\$4.4 billion of issuance across 7 trades during December
 - Ontario was the most active province, completing C\$3.1 billion across 4 offerings, one of which was a C\$750 million 4-year auction – this marked the Province's first auction offering since December 2021
 - Quebec completed C\$1.0 billion across two C\$500 million re-openings of its December 2055 maturity
 - Newfoundland and Labrador meanwhile issued a C\$300 million new 30-year benchmark due October 2054
- The municipal market saw one offering during the month as TransLink issued a C\$300 million new 30-year Green Bond offering
- Looking ahead, the new issue market is expected to be active at the beginning of the new year as provincial issuers will look to round out their 2022/23 borrowing programs while issuers in other sectors are likely to remain opportunistic subject to market conditions

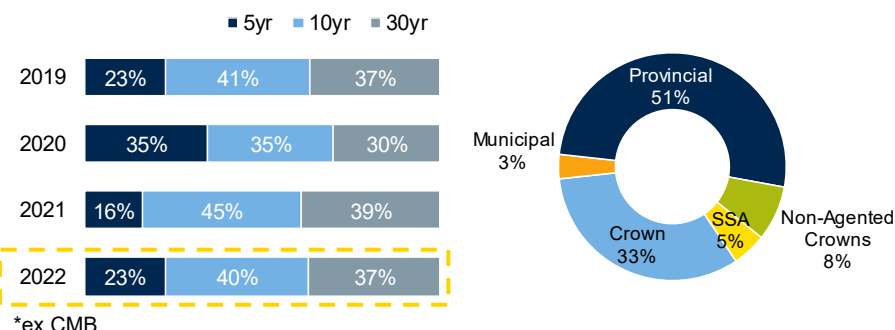
Public Sector New Issue Supply (Domestic Issuance)



Domestic Public Sector Issuance (Monthly)



Domestic Term Structure and Sector Supply (2022)



Domestic Public Sector Issuance List (December 2022)

#	Trade Date	Issuer	Ratings (D/M/S)	Size (C\$m)	Term Bucket	Maturity	Spread	Coupon
1	01-Dec-22	Province of Ontario	AA (Low)/Aa3/A+	850	10	02-Jun-32	GoC+77.5	3.750%
2	01-Dec-22	Province of Quebec	AA (Low)/Aa2/AA-	500	33	01-Dec-55	GoC+92.5	4.400%
3	05-Dec-22	TransLink	AA/Aa2/-	300	30	12-Dec-53	GoC+131.5	4.150%
4	06-Dec-22	Province of Ontario	AA (Low)/Aa3/A+	750	30	02-Dec-53	GoC+97.0	3.750%
5	12-Dec-22	Province of Newfoundland & Labrador	A (Low)/A1/A	300	32	17-Oct-54	GoC+135.5	4.100%
6	14-Dec-22	Province of Quebec	AA (Low)/Aa2/AA-	500	33	01-Dec-55	GoC+91.5	4.400%
7	14-Dec-22	Canada Housing Trust	AAA/Aaa/AAA	5,000	5	15-Dec-27	GoC+27.0	3.600%
8	15-Dec-22	Province of Ontario	AA (Low)/Aa3/A+	750	10	02-Jun-32	GoC+75.5	3.750%
9	19-Dec-22	Province of Ontario	AA (Low)/Aa3/A+	750	4	08-Sep-26	GoC+15.9	1.350%
Total:				9,700				

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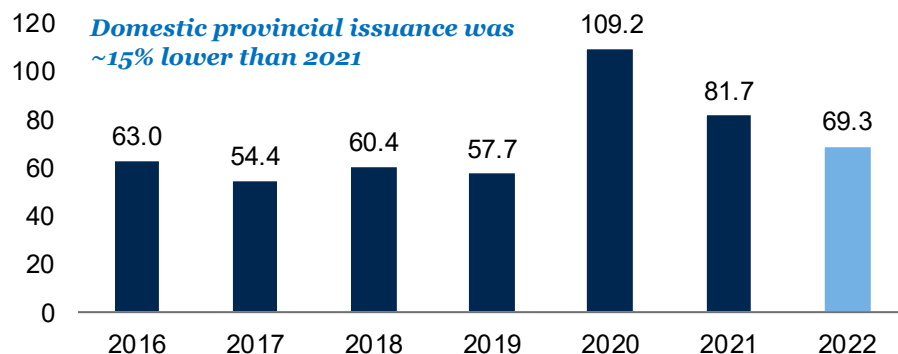
Spreads & Ratings

Rates & Timing

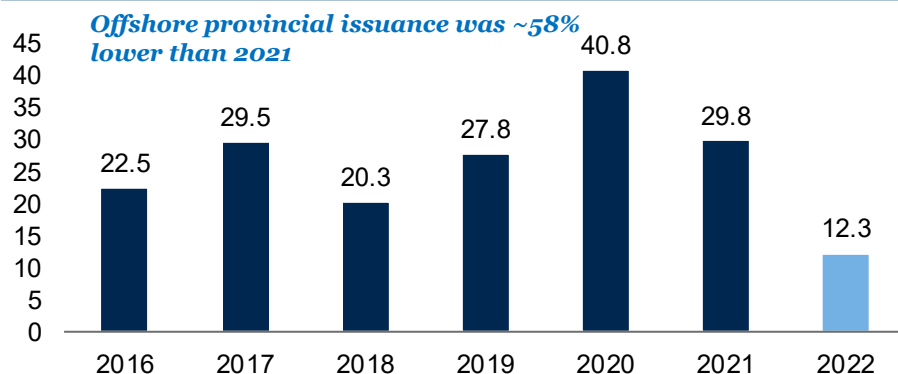
Appendix

Provincial Borrowing Update

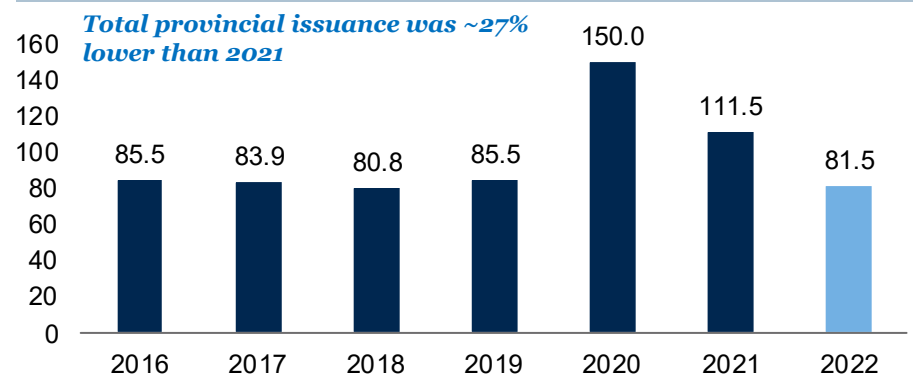
Provincial Domestic Issuance (January-December)



Provincial Offshore Issuance (January-December)



Total Provincial Issuance (January-December)

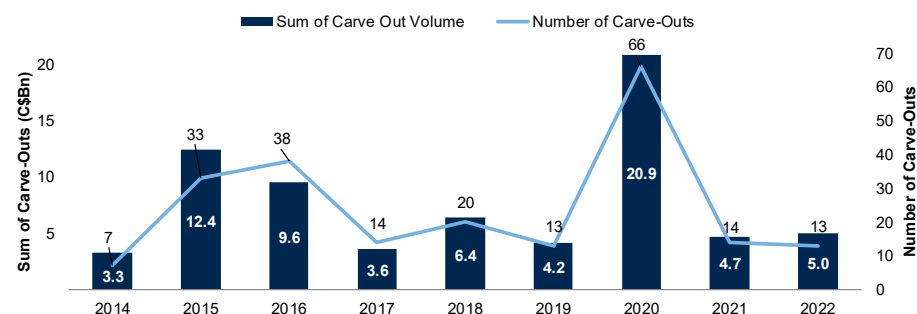


Provincial Carve-Out Update

- There were no carve-outs during December
- In total there were 13 carve-outs for C\$4.95 billion during 2022
 - This is largely in line with the C\$4.65 billion completed across 14 carve-outs in 2021
 - The most active month for carve-outs in 2022 was November which saw C\$1.25 billion across 4 trades; this is followed by August which had C\$900 million across 2 trades

	2022		2021		2020		2019	
	(C\$MM)	# Carve Outs	(C\$MM)	# Carve Outs	(C\$MM)	# Carve Outs	(C\$MM)	# Carve Outs
Ontario	4,300	10	3,200	7	6,750	16	2,300	5
Quebec	-	-	-	-	650	2	-	-
Alberta	-	-	400	2	4,860	17	1,300	4
British Columbia	300	1	300	1	5,260	12	-	-
Manitoba	150	1	400	1	1,350	7	550	3
Newfoundland & Lab	200	1	150	1	700	4	-	-
New Brunswick	-	-	-	-	700	3	-	-
Saskatchewan	-	-	200	2	600	5	-	-
Hydro Quebec	-	-	-	-	-	-	-	-
MFABC	-	-	-	-	-	-	-	-
Grand Total	4,950	13	4,650	14	20,870	66	4,150	12

Historical Number of Carve-Outs and Sum of Volumes

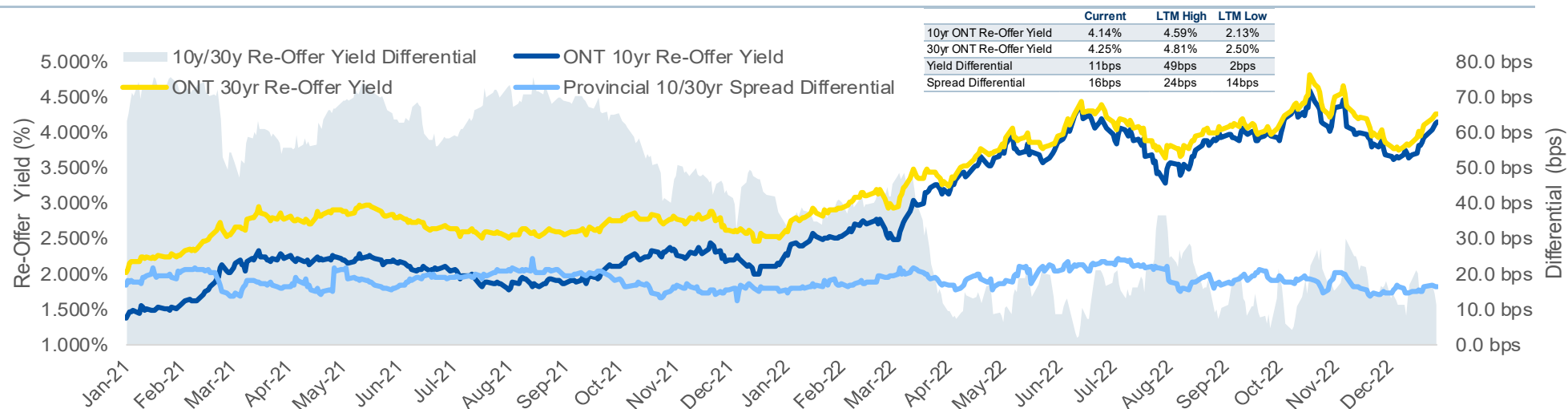


CMB & Provincial Re-Offer Yields

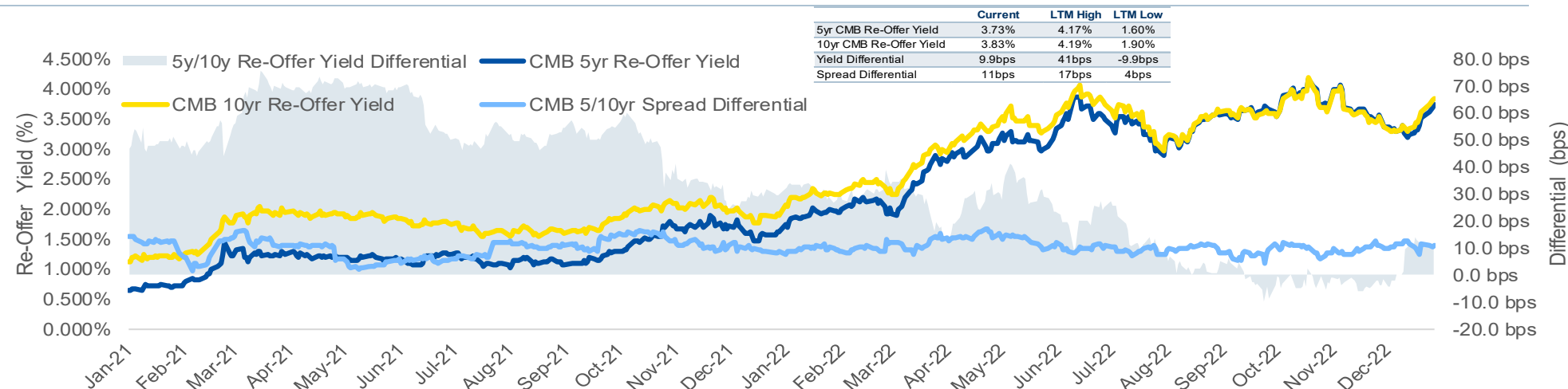
Provincial and CMB Curves Remain Flat Amid GoC Inversion

- The Provincial 10 and 30-year yield curve saw modest steepening into the middle of the month, reaching as much as ~20bps as the underlying Canada curve re-steepened. However, the provincial 10s/30s yield curve ended the month just ~11bps apart as the 10s/30s GoC curve re-inverted. The Provincial 10s/30s credit box remained relatively stable during the month with a modest widening bias
- While the provincial curve remained exceptionally flat, the 5s10s CMB yield curve steepened through December as the inversion of the underlying 5s10s GoC curve went from being ~24bps inverted at the beginning of the month to just ~8bps inverted by December 30th. The CMB 5s/10s credit box was largely unchanged month-over-month

Provincial Re-Offer Yields



CMB Re-Offer Yields

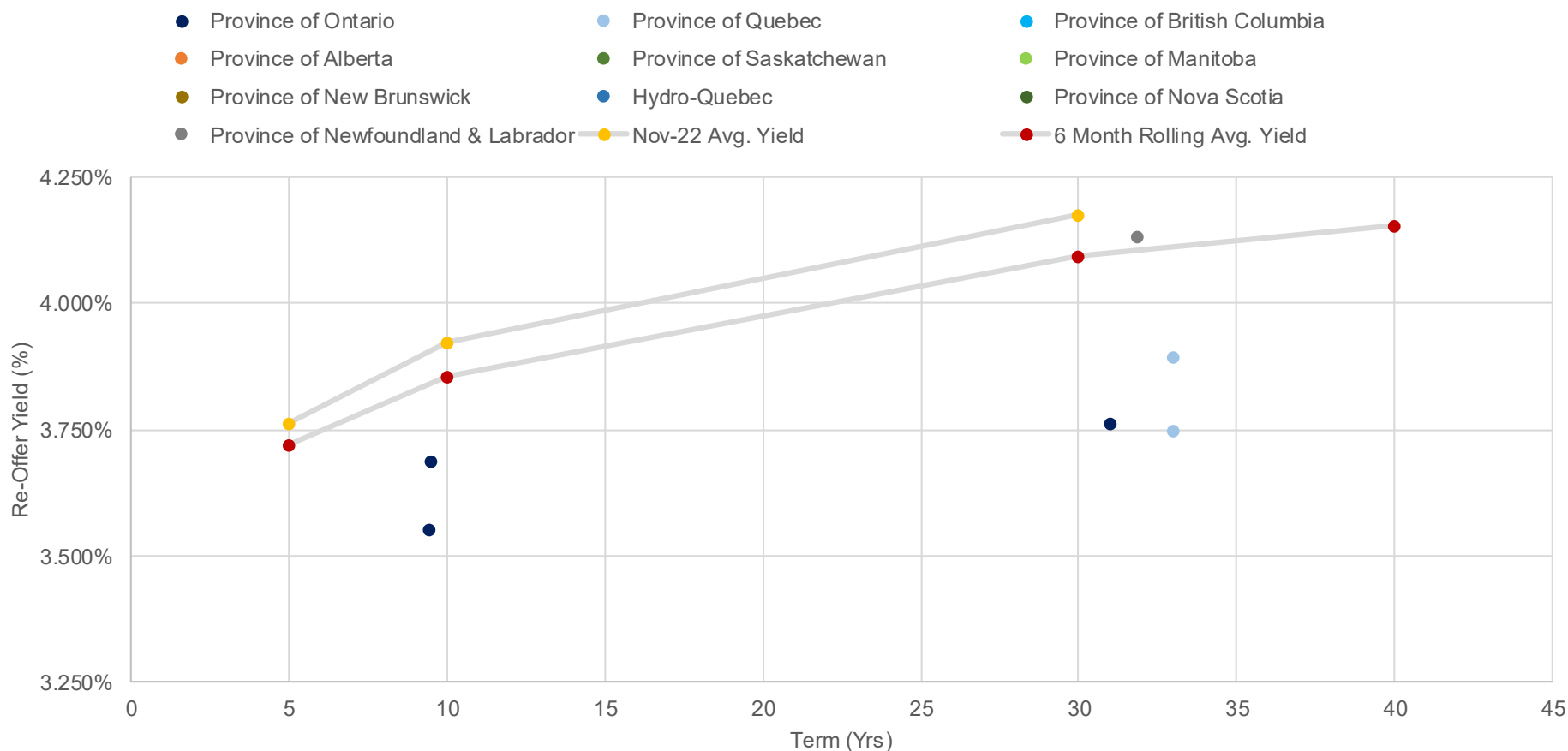


Provincial Issuance Re-Offer Yield Dot-Plot

Re-Offer Yields Shift Lower Once Again

- Re-offer yields on provincial offerings shifted lower once again alongside dip in GoC yields during the early stages of the month
- Ontario was the only province to access the market in multiple terms, with the long end favoured by other issuers as the 10s/30s GoC curve remained exceptionally flat and briefly inverted
 - The re-offer yield differential between Ontario's 10-year on December 1st and its 30-year offering on December 6th was just 7.2bps
- In all, most provincial issuers during the month achieved yields well below both the November average and the 6-month rolling average
- For all of 2022, the average 10-year provincial re-offer yield was 3.47%, while the average 30-year yield was 3.86%
- Note that the table below excludes auction offerings

Provincial Issuance Re-Offer Yield Dot-Plot (December 2022)

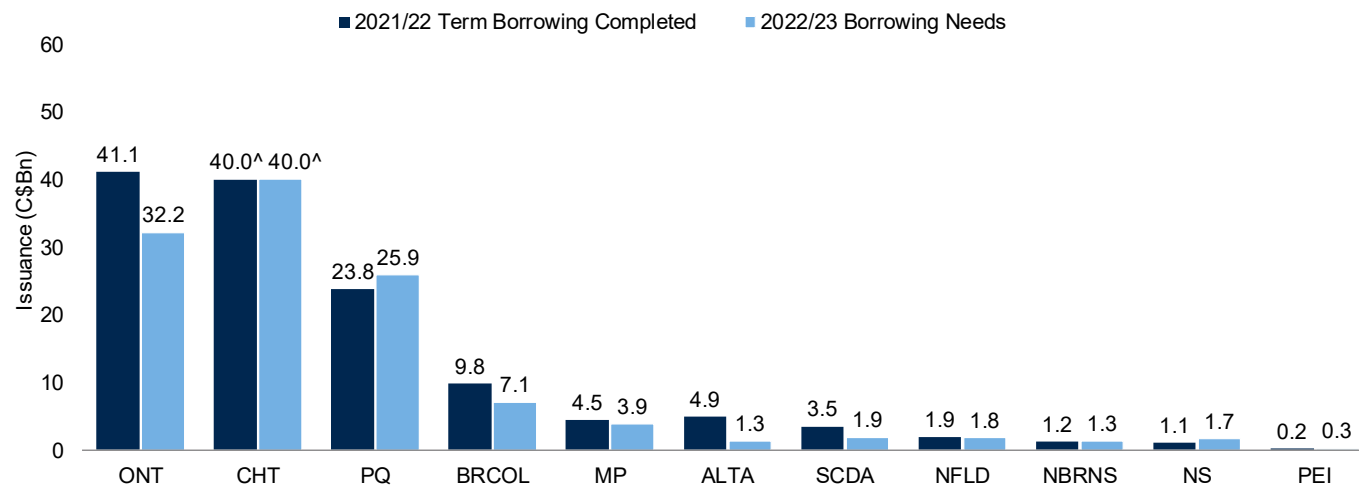


Domestic Public Sector Issuance (New Borrowing Needs)

Borrowing Needs Continue to Trend Lower

- The final round of provincial mid-year fiscal updates were released in December, and continued to show downward pressure on borrowing requirements
- RBC has created the chart and table to the right which includes budgeted figures from provinces with reported borrowing needs, as well as estimates for Canada Housing Trust ("CHT") on the chart
- Key changes to borrowing needs included:
 - Quebec:** revised borrowing to C\$25.9 billion in their mid-year fiscal update, down from C\$27.6 billion
 - Manitoba:** revised borrowing down C\$800 million to ~C\$3.9 billion
- Ontario and Québec maintain the largest borrowing programs of all the provinces at C\$32.2 billion and C\$25.9 billion, respectively.

Public Sector Borrowing Requirements vs. 2021/22 Term Borrowing Completed



Public Sector Borrowing Requirements^{1, #}

Canadian Provincial Borrowing Programme Projections GFY 2022/23

Issuer	GY21/22 Program (C\$B)	GY 21/22 Completed (C\$B)	New Stated Program 2022/23 (C\$B) [†]	% Change	Change (\$B)	Completed Borrowing (C\$B)	Completed Borrowing (%)	Remaining Borrowing (C\$B)
Ontario	41.0	41.1	32.2	(-21.5%)	(-8.8)	25.3	78.5%	6.9
Québec	22.9	23.8	25.9	+13.1%	+3.0	16.7	64.4%	9.2
British Columbia	9.0	9.8	7.1	(-21.8%)	(-2.0)	6.0	85.7%	1.0
Alberta	4.5	4.9	1.3	(-71.3%)	(-3.2)	1.3	100.0%	0.0
Manitoba	4.9	4.5	3.9	(-20.9%)	(-1.0)	2.2	57.1%	1.7
Saskatchewan	3.5	3.5	1.9	(-46.7%)	(-1.6)	1.9	100.3%	0.0
Newfoundland	1.2	1.9	1.8	+50.3%	+0.6	1.4	77.8%	0.4
Nova Scotia	1.1	1.1	1.7	+50.0%	+0.6	0.9	54.5%	0.8
Prince Edward Island	0.2	0.2	0.3	+25.0%	+0.1	0.0	0.0%	0.3
New Brunswick	1.9	1.2	1.3	(-31.7%)	(-0.6)	1.3	102.9%	0.0
Total:	90.2	91.9	77.2[†]	-14.5%	Net: (-13.0)	57.0		20.2

1. Completed borrowing amounts are based on transaction settlement dates

*RBC estimate, [†]Program amounts net of pre-borrowing, ^CHT's reporting period runs on a calendar year basis (2021/22 refers to 2021, 2022/23 refers to 2022), #Deltas are 2021/22 Stated Program vs. 2022/23 Stated Program

*Newfoundland's borrowing requirements do not include funding for Newfoundland Hydro, and New Brunswick's borrowing requirements do not include funding for New Brunswick Municipal Finance Corporation

Canada Mortgage Bonds Update

CHT Issues C\$40.0 billion in 2022

- Canada Housing Trust ("CHT") completed its 8th trade and final trade of the year in December, bringing program borrowing to C\$40.0 billion in 2022
- On December 14, 2022 CHT priced a C\$5.0 billion 5-year 3.60% fixed rate re-opening maturing December 15, 2027 at CAN 2.75% 1Sep27 +27.0bps
 - The issue saw broad global distribution with 88 investors participating on a final book size in excess of C\$5.5 billion and making the offering 1.12x oversubscribed
 - The offering experienced strong support across geographies from Canada (77.5%), US (14.3%), Asia/Other (5.5%), and Europe (2.7%)
- CHT is expected to begin its 2023 borrowing program in February of this upcoming year with a benchmark-sized dual-tranche offering consisting of a 5-year FRN and a 10-year fixed rate bond

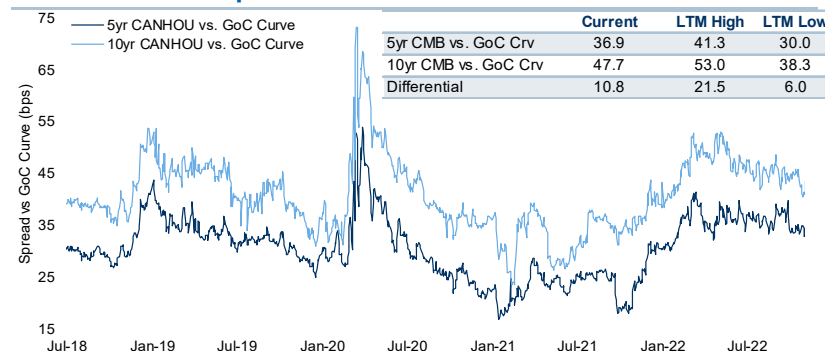
Recent CMB Offerings

Trade Date	Bond Description	Term	Size	Benchmark Spread
15-Dec-22	CANHOU 3.60% 15Dec27	5yr	C\$5.0bn	CAN 2.75% 1Sep27 +27.0bps
15-Nov-22	CANHOU FRN 15Mar28	5yr	C\$1.25bn	CORRA +33bps
15-Nov-22	CANHOU 3.55% 15Sep32	10yr	C\$3.50bn	CAN 2.0% 1Jun32 + 48bps
15-Sep-22	CANHOU 3.60% 15Dec27	5yr	C\$1.25bn	CAN 1.25% 1Mar27 + 29bps
17-Aug-22	CANHOU FRN 15Sep27	5yr	C\$1.00bn	CORRA + 37.5bps
17-Aug-22	CANHOU 3.55% 14Sep32	10yr	C\$3.75bn	CAN 2.0% 1Jun32 + 47.5bps
14-Jun-22	CANHOU 3.80% 15Jun27	5yr	C\$5.00bn	CAN 1.25% 1Mar27 + 37.5bps
18-May-22	CANHOU 3.55% 15Sep32	10yr	C\$3.75bn	CAN 1.5% 1Dec31 + 53.5bps
18-May-22	CANHOU FRN 15Sep27	5yr	C\$1.50bn	CORRA + 30bps
15-Mar-22	CANHOU 2.35% 15Jun27	5yr	C\$5.50bn	CAN 1% 1Dec31 + 42.5bps
15-Feb-22	CANHOU 2.45% 15Dec31	10yr	C\$3.75bn	CAN 1.50% 1Jun31 + 54.5bps
15-Feb-22	CANHOU FRN 15Mar27	5yr	C\$1.00bn	3mCDOR -12.3bps

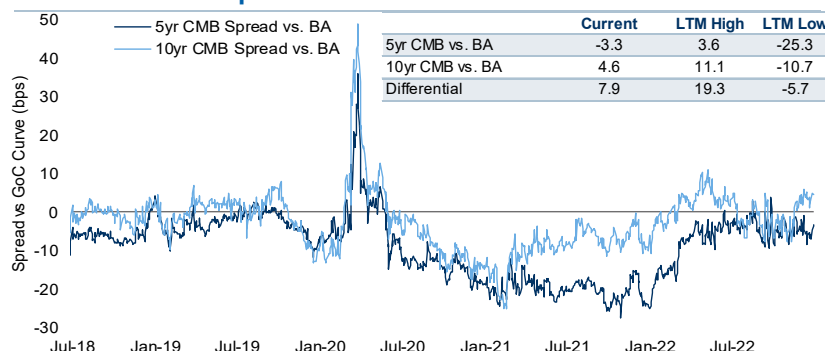
CMB Issuance Calendar (2022)

Term	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5yr Fxd			C\$5.5bn			C\$5.0bn			C\$5.0bn			C\$5.0bn
5yr FRN		C\$1.0bn			C\$1.5bn			C\$1.0bn			C\$3.5bn	
10yr Fxd		C\$3.75bn			C\$3.75bn			C\$3.75bn			C\$1.25bn	

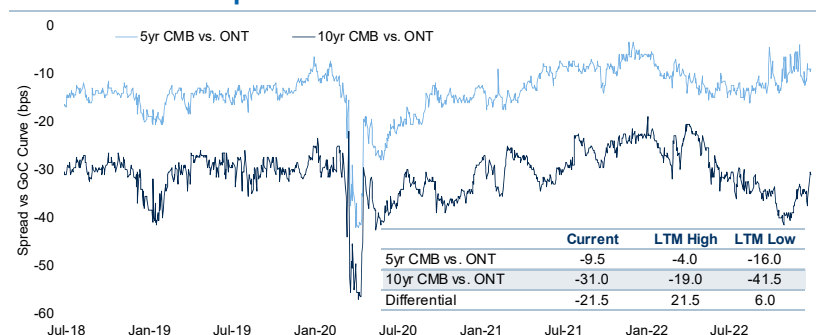
Historical CMB Spread vs. GoC



Historical CMB Spread vs. BA



Historical CMB Spread vs. ONT

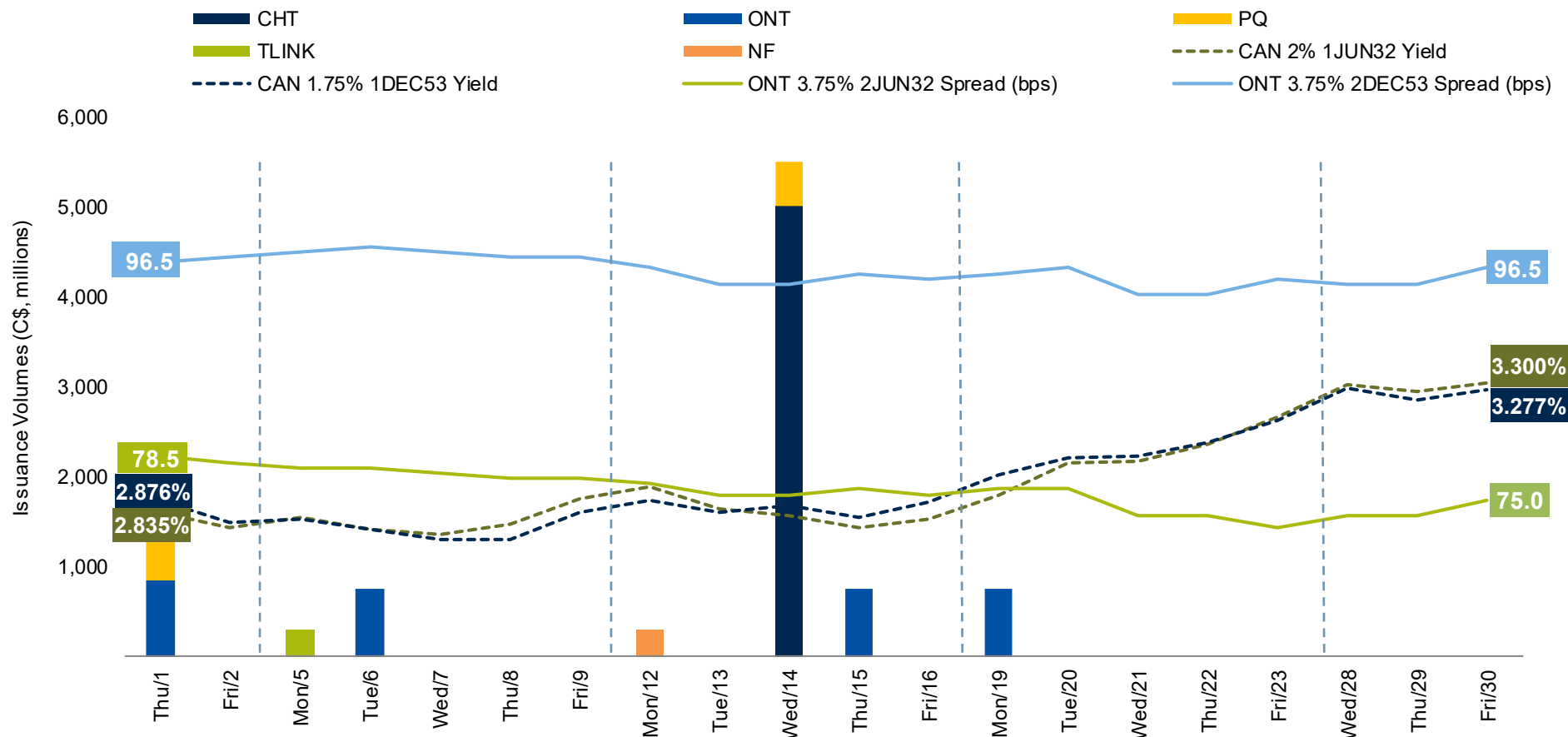


Domestic Issuance Trends

Provincial 10-Year Spreads Tighten Into End of Year

- Provincial 10-year credit spreads performed well in December, tightening 3.5bps, while the 30-year part of the curve closed out the month unchanged
- Issuance during the month was largely concentrated in the front-half as issuers looked to avoid the traditional holiday slowdown
- Total issuance in December reached C\$9.7 billion, marking the 8th most active month of 2022
 - Issuance in December was spread across 5 separate issuers, down from the 18 seen in November
 - Ontario was the most active issuer during the month, completing four trades for C\$3.1 billion, though CHT completed the largest offering with a C\$5.0 billion 5-year

Issuance Volumes and Spread Performance



Canadian Public Sector Market Update

Market Update

Issuance Update

Offshore Borrowing

SSA & Maple Supply

Municipal Supply

Spreads & Ratings

Rates & Timing

Appendix

Provincial Offshore Issuance Update

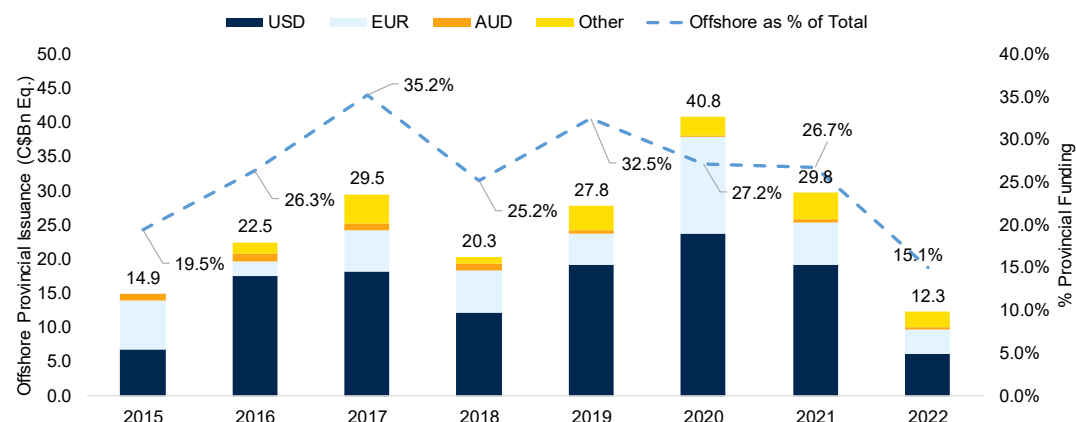
No New Provincial Offshore Supply in December

- There were no new provincial offshore trades in December, leaving total supply for the year at C\$12.3 billion equiv.
- The C\$12.3 billion equiv. completed in 2022 marks the lightest year for offshore provincial issuance since 2013 when just C\$10.1 billion equiv. was completed
- Offshore issuance as a percent of total borrowing also reached its lowest level since 2013, comprising just 15.1% of provincial borrowing in 2022
- We expect Canadian public sector issuers will continue to monitor international markets for potential funding opportunities

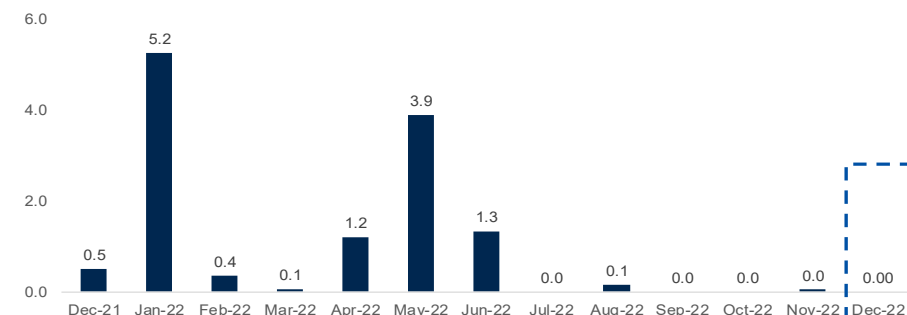
Recent Provincial Offshore Transactions

Trade Date	Issuer	Ratings (D/M/S)	Deal Size	Currency	Term	Maturity	Issue Spread (bps)
15-Nov-22	Province of Manitoba	A (High)/Aa2/A+	35	EUR	14.5	07-Jun-37	-
11-Aug-22	Province of Manitoba	A (High)/Aa2/A+	112	EUR	18.0	25-Jun-40	-
28-Jun-22	Province of Manitoba	A (High)/Aa2/A+	50	EUR	15.0	06-Jul-27	-
01-Jun-22	Province of Saskatchewan	AA (low)/Aa1/AA	1,000	USD	5.0	08-Jun-27	MS+55
25-May-22	Province of British Columbia	AA (High)/Aaa/AA+	100	EUR	17.0	09-Jun-39	-
17-May-22	Province of Ontario	AA (Low)/Aa3/A+	500	GBP	4.0	26-May-26	UKT+85
12-May-22	Province of Ontario	AA (Low)/Aa3/A+	2,250	USD	5.0	19-May-27	UST+30.4
28-Apr-22	Province of Quebec	-/Aa2/AA-	750	GBP	5.0	15-Sep-26	UKT+74
30-Mar-22	Province of Quebec	-/Aa2/AA-	60	AUD	11.0	06-Apr-33	ACGB +86.4
14-Feb-22	Province of Saskatchewan	AA (low)/Aa1/AA	100	CHF	10.0	01-Mar-32	MS flat
27-Jan-22	Province of Manitoba	A (High)/Aa2/A+	36	AUD	11.0	03-Feb-33	-
27-Jan-22	Province of Manitoba	A (High)/Aa2/A+	36	AUD	10.0	03-Feb-32	-
24-Jan-22	Province of Manitoba	A (High)/Aa2/A+	70	EUR	15.0	02-Feb-37	-
18-Jan-22	Province of Quebec	-/Aa2/AA-	2,250	EUR	10.0	25-Jan-32	MS+18
13-Jan-22	Province of Ontario	AA (Low)/Aa3/A+	1,500	USD	10.0	21-Jan-32	SOFR MS+60
14-Dec-21	Province of Saskatchewan	AA (low)/Aa1/AA	120	EUR	20.0	16-Dec-41	-
14-Dec-21	Province of British Columbia	AA (High)/Aaa/AA+	135	EUR	21.0	22-Dec-42	-
03-Dec-21	Province of Ontario	AA (low)/Aa3/A+	36	AUD	10.0	10-Dec-31	ACGB +93.2
03-Dec-21	Province of British Columbia	AA (high)/Aaa/AA+	78	AUD	11.0	14-Dec-32	ACGB +92.75
03-Dec-21	Province of Ontario	AA (low)/Aa3/A+	36	AUD	11.0	10-Dec-32	ACGB +94.3
30-Nov-21	Province of Ontario	AA (Low)/Aa3/A+	75	EUR	25.0	09-Dec-41	-
23-Nov-21	Province of Ontario	AA (Low)/Aa3/A+	160	EUR	25.0	03-Dec-46	-
16-Nov-21	Province of Manitoba	A (High)/Aa2/A+	160	EUR	20.0	25-Nov-41	-
05-Nov-21	Province of Manitoba	A (High)/Aa2/A+	35	AUD	11.0	17-Nov-32	-
05-Nov-21	Province of Manitoba	A (High)/Aa2/A+	35	AUD	10.0	17-Nov-31	-
05-Nov-21	Province of British Columbia	AA (High)/Aaa/AA+	70	AUD	10.5	16-May-32	-
14-Oct-21	Province of Manitoba	A (high)/Aa2/A+	1,000	USD	7.0	25-Oct-28	MS +20
06-Oct-21	Province of Ontario	AA (low)/Aa3/A+	1,000	USD	10.0	14-Oct-31	MS +31
09-Sep-21	Province of Alberta	AA (low)/Aa3/A	128	NZD	20.0	16-Sep-41	-
13-Jul-21	Province of British Columbia	AA (high)/Aaa/AA+	2,500	USD	5.0	20-Jul-26	MS +4
13-Jul-21	Province of Ontario	AA (low)/Aa3/A+	35	AUD	7.0	12-Oct-28	-
01-Jun-21	Province of Ontario	AA (low)/Aa3/A+	1,000	EUR	10.0	09-Jun-31	MS +20
25-May-21	Province of Quebec	AA (low)/Aa2/AA-	250	CHF	10.0	18-Jun-31	-
11-May-21	Government of Canada	AAA/Aaa/AAA	3,500	USD	5.0	19-May-26	UST +6
28-Apr-21	Province of Quebec	AA (low)/Aa2/AA-	2,500	EUR	10.0	05-May-31	DBR +50.2
21-Apr-21	Province of Ontario	AA (low)/Aa3/A+	250	CHF	12.0	12-May-33	MS -8

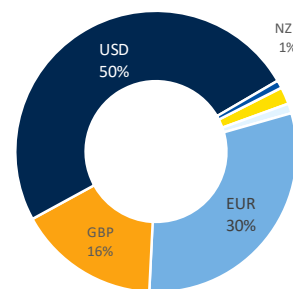
Provincial Offshore Funding Activity (C\$ Equiv.)⁽¹⁾



Offshore Provincial Issuance Activity (C\$ Equiv.)



Offshore Provincial Currency and Term Breakdown (2022) (C\$ Equiv.)



Currency	3yr	5yr	7yr	10yr	15-25yr	30yr
AUD	-	-	-	0.2	-	-
CHF	-	-	-	0.1	-	-
EUR	-	-	-	3.2	0.5	-
GBP	0.8	1.2	-	-	-	-
USD	-	4.2	-	1.9	-	-
NZD	-	-	-	-	0.1	-
Total:	0.8	5.4	-	5.5	0.6	-

Provincial offshore borrowing totaled C\$12.3 billion equiv. in 2022

Canadian Public Sector Market Update

Market Update

Issuance Update

Offshore Borrowing

SSA & Maple Supply

Municipal Supply

Spreads & Ratings

Rates & Timing

Appendix

Canadian SSA Issuers

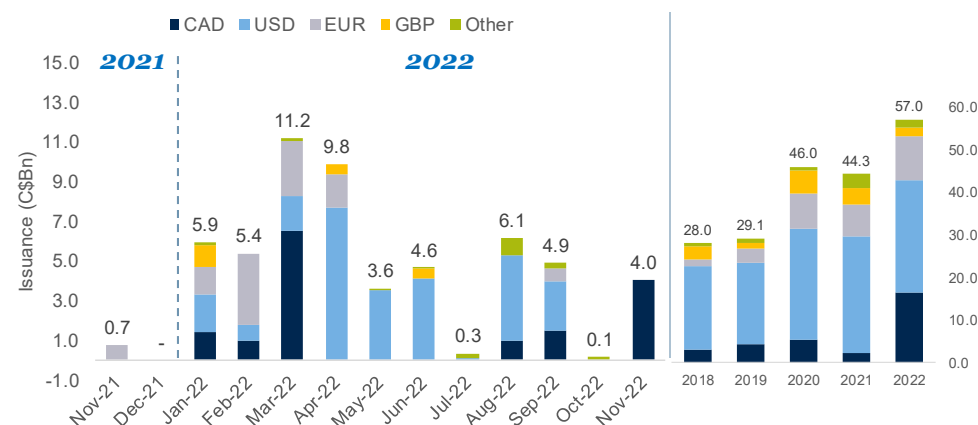
Canadian SSA Market Quiet in December to Close Out Record Year

- The Canadian SSA market saw no new trades in December, marking the first month this year with no activity in the sector
- Total borrowing for the Canadian SSA market reached a record C\$57.0 billion in 2022 as issuers took advantage of additional leverage capabilities and the Government of Canada completed multiple targeted transactions
- CPPIB was the most active issuer on the year, completing a total of C\$15.1 billion equiv., while EDC was close behind at C\$13.0 billion equiv.
- Issuance was well diversified across currencies, with USD accounting for 46.6% of volumes, followed by CAD (28.8%), EUR (17.9%), GBP (3.5%), and AUD (1.9%)
- RBC expects that the Canadian SSA market will remain highly active in 2023 as crown issuers continue to expand their issuance base and the Government of Canada looks to further the development of their Green Bond program

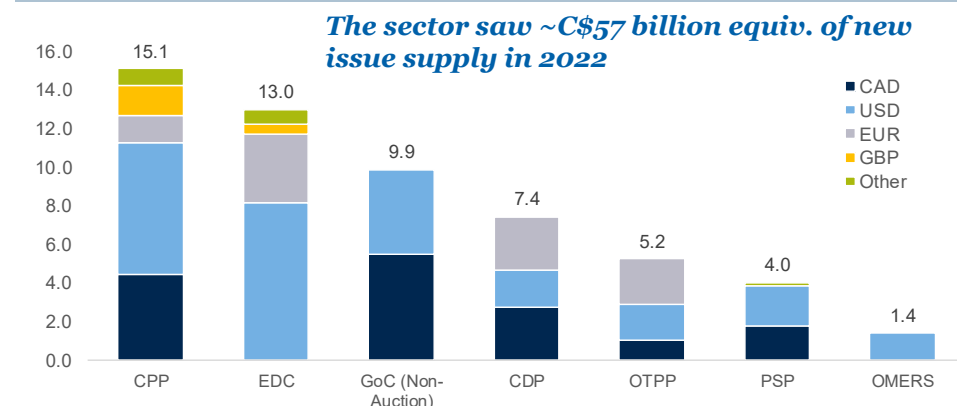
Recent Canadian SSA¹ Transactions

Issue Date	Issuer	Currency	Size (Local Currency MM)	Size (CAD MM)	Maturity Date	Term (yrs)	Issue Spread to Benchmark (bps)	Coupon (%)
Bullets								
29-Nov-22	CPPIB Capital Inc.	CAD	500	500	08-Sep-25	3	GoC+27	3.950%
29-Nov-22	Government Of Canada	CAD	500	500	24-Aug-27	5	GoC+3	3.245%
22-Nov-22	PSP Capital Inc.	CAD	750	750	15-Jun-29	7	GoC+74	3.750%
17-Nov-22	CDP Financial Inc.	CAD	1,250	1,250	02-Jun-27	5	GoC+56	3.800%
08-Nov-22	Ontario Teachers' Finance Trust	CAD	1,000	1,000	02-Jun-32	10	GoC+100	4.450%
04-Oct-22	Export Development Canada	TRY	2,000	146	13-Oct-23	1	-	40.000%
26-Sep-22	Ontario Teachers' Finance Trust	EUR	500	660	05-Oct-29	7	MS+32	3.300%
22-Sep-22	Export Development Canada	HKD	300	52	03-Oct-23	1	-	3.935%
22-Sep-22	Export Development Canada	USD	50	67	03-Oct-23	1	-	4.450%
16-Sep-22	Export Development Canada	USD	15	20	26-Sep-23	1	-	4.230%
16-Sep-22	Export Development Canada	USD	50	66	27-Sep-24	2	-	4.200%
15-Sep-22	CDP Financial Inc.	CAD	1,500	1,500	01-Sep-29	7	GoC+79	3.950%
14-Sep-22	CPPIB Capital Inc.	USD	1,750	2,304	20-Oct-24	2	MS+25	4.125%
08-Sep-22	Export Development Canada	COP	50,000	15	07-Sep-23	1	-	11.550%
01-Sep-22	Export Development Canada	CNY	1,000	190	13-Sep-25	3	-	2.720%

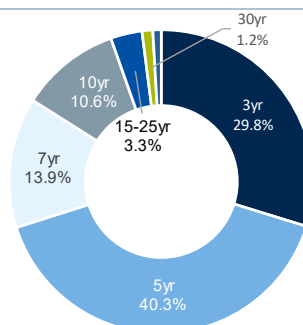
Historical Issuance Volumes (C\$ Equiv.)



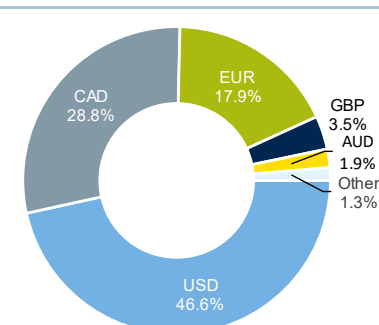
Top Canadian SSA Issuers (2022) (C\$ Equiv.)



Issuance Term (2022)



Issuance by Currency (2022)



Canadian Public Sector Market Update

Market
Update

Issuance
Update

Offshore
Borrowing

SSA &
Maple
Supply

Municipal
Supply

Spreads &
Ratings

Rates &
Timing

Appendix

Maple SSA Issuance

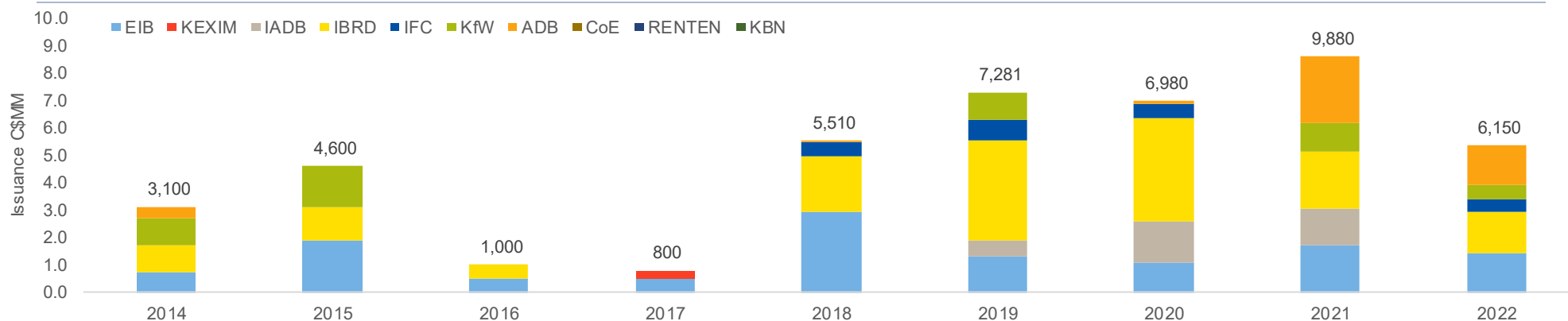
SSA Maple Market Ends Year on Quiet Note

- The Maple SSA market saw no new trades in December, with supply ending the year a C\$6.15 billion
- Total supply for the sector was down 37.8% from the record C\$9.9 billion seen in 2021
- Though supply declined on a year-on-year basis it remained relatively in line the three year average from 2018-2020 (C\$6.59 billion)
- We expect that the Maple SSA market will be active once again in 2023, and anticipate a strong start to the year with January and February typically representing an active window for the market

Maple Offerings (2020-2022 YTD)

Year	#	Trade Date	Issuer Name	Ratings	Size (C\$MM)	Coupon	Maturity	Spread	ESG
2022	1	30-Nov-22	KBN	-/Aaa/AAA	500	3.800%	07-Dec-27	MS +19.0 bps	✓
2022	2	31-Aug-22	ADB	AAA/Aaa/AAA	700	3.800%	12-Sep-25	MS -11.0 bps	✓
2022	3	08-Feb-22	KfW	AAA/Aaa/AAA	500	1.750%	17-Mar-25	MS -25.0 bps	✓
2022	4	01-Feb-22	BNG	-/Aaa/AAA	300	1.800%	10-Feb-25	MS -21.0 bps	✓
2022	5	14-Jan-22	ADB	AAA/Aaa/AAA	750	1.625%	28-Dec-25	MS -30.0 bps	✓
2022	6	13-Jan-22	IFC	AAA/Aaa/AAA	500	1.850%	28-Jan-27	MS -15.0 bps	✓
2022	7	11-Jan-22	EIB	AAA/Aaa/AAA	1,400	1.900%	22-Jan-25	MS -31.0 bps	✓
2022	8	06-Jan-22	IBRD	-/Aaa/AAA	1,500	1.800%	19-Jan-27	MS -16.0 bps	✓
Grand Total:					6,150				
2021	1	14-Oct-21	CoE	-/Aa1/AAA	300	1.000%	21-Oct-24	MS -24.0 bps	✓
2021	2	13-Oct-21	RENTEN	-/Aaa/AAA	500	1.000%	21-Oct-24	MS -26.0 bps	✓
2021	3	07-Oct-21	KBN	-/Aaa/AAA	500	1.000%	18-Oct-24	MS -24.0 bps	✓
2021	4	13-Jul-21	IBRD	-/Aaa/AAA	600	1.200%	22-Jul-26	MS -17.0 bps	✓
2021	5	07-Jul-21	ADB	AAA/Aaa/AAA	350	1.500%	04-May-28	MS -8.0 bps	✓
2021	6	25-Jun-21	EIB	AAA/Aaa/AAA	600	1.900%	22-Jan-25	MS -24.0 bps	✓
2021	7	25-Jun-21	EIB	AAA/Aaa/AAA	100	1.750%	30-Jul-24	-	✓
2021	8	15-Jun-21	IADB	-/Aaa/AAA	750	1.000%	29-Jun-26	MS -18.0 bps	✓
2021	9	14-May-21	ADB	AAA/Aaa/AAA	30	1.860%	02-Jun-31	-	✓
2021	10	20-Apr-21	ADB	AAA/Aaa/AAA	750	1.500%	04-May-28	MS -6.0 bps	✓
2021	11	09-Feb-21	KfW	-/Aaa/AAA	1,000	0.750%	19-Feb-26	MS -15.0 bps	✓
2021	12	02-Feb-21	ADB	AAA/Aaa/AAA	1,250	0.750%	10-Feb-26	MS -15.0 bps	✓
2021	13	27-Jan-21	ADB	AAA/Aaa/AAA	50	1.166%	01-Jun-30	-	✓
2021	14	14-Jan-21	EIB	AAA/Aaa/AAA	1,000	1.000%	28-Jan-28	MS -8.0 bps	✓
2021	15	12-Jan-21	IADB	-/Aaa/AAA	600	0.875%	27-Aug-27	MS -9.0 bps	✓
2021	16	05-Jan-21	IBRD	-/Aaa/AAA	1,500	0.625%	14-Jan-26	MS -13.0 bps	✓
Grand Total:					9,880				
2020	1	30-Sep-20	IADB	-/Aaa/AAA	400	0.750%	15-Oct-25	MS -6.0 bps	✓
2020	2	17-Sep-20	IBRD	-/Aaa/AAA	750	0.875%	28-Sep-27	GoC +50.6 bps	✓
2020	3	16-Sep-20	EIB	AAA/Aaa/AAA	600	1.750%	30-Jul-24	MS -9.0 bps	✓
2020	4	01-Sep-20	IFC	-/Aaa/AAA	500	0.625%	16-Sep-25	MS -4.0 bps	✓
2020	5	27-Aug-20	IADB	-/Aaa/AAA	600	0.750%	15-Oct-25	MS -4.0 bps	✓
2020	6	13-Aug-20	IADB	-/Aaa/AAA	500	0.875%	27-Aug-27	MS +5.0 bps	✓
2020	7	10-Jun-20	IBRD	-/Aaa/AAA	1,500	0.750%	02-Jul-25	MS +3.0 bps	✓
2020	8	17-Apr-20	ADB	AAA/Aaa/AAA	130	1.330%	30-Apr-35	-	✓
2020	9	08-Jan-20	EIB	AAA/Aaa/AAA	500	1.900%	22-Jan-25	MS +1.0 bps	✓

Annual Maple Issuance



Municipal Market Update

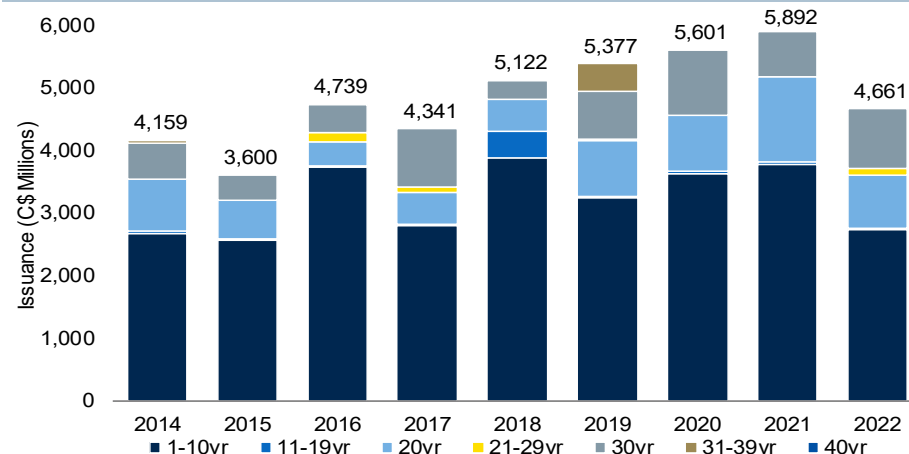
Municipal Market Sees One Trade in December; Lightest Year Since '17

- The municipal market saw one offering for C\$300 million during the month
 - TransLink** completed a C\$300 million 30-year Green Bond offering due December 12, 2053 which marked TransLink's return to the market since June 2020. The offering was extremely well received with the final orderbook in excess of C\$550 million across 35 accounts
- Supply in the municipal market (ex. Quebec) reached just C\$4.7 billion during 2022, marking the lowest supply total for the market since 2017 when supply reached just C\$4.3 billion
- The decline in supply was attributable in part due to lighter borrowing needs from larger municipal issuers including MFABC and Montreal, while Region of York paused issuance in 2022 for the first time since 2018
- RBC expects that the municipal market will be active in 2023, with supply likely to pick up around the typical spring issuance window beginning in late February or early March

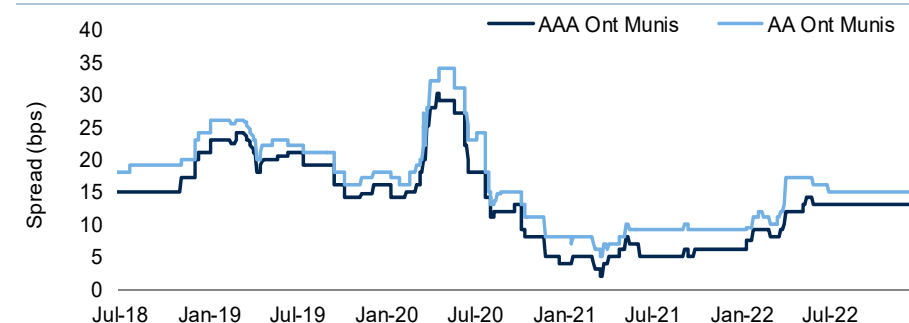
Recent Municipal Offerings ^{1, 2}

Price Date	Issue Description	Size (C\$MM)	Term (yrs)	Spread vs. Bench (bps)	Spread vs. ONT	Re-Offer Yield (%)	Coupon
Bullets							
05-Dec-22	TransLink 12Dec53	300	30	131.5	35	4.166%	4.15%
28-Nov-22	City of Toronto 13Dec42	300	20	134.5	35	4.419%	4.40%
01-Nov-22	MFABC 1Jun27	330	5	49.5	5	3.882%	3.35%
13-Oct-22	City of Vancouver 28Oct32	120	10	88.5	7	4.330%	3.70%
14-Sep-22	MFABC 8Apr32	360	10	83	6	4.014%	3.30%
11-Jul-22	City of Toronto 27Jul42	235	20	133	32	4.565%	4.55%
23-Jun-22	City of Montréal 1Sep30	300	20	129.5	31	4.728%	4.70%
26-May-22	City of Ottawa 6Dec52	200	30	127.5	32	4.115%	4.10%
18-May-22	MFABC 1Jun27	325	5	52.5	7.5	3.385%	3.35%
17-May-22	City of Toronto 1Jun52	365	30	130	33.5	4.312%	4.30%
11-Apr-22	Region of Waterloo 2May42	18.3	20	121	36.5	3.940%	3.90%
01-Apr-22	City of Toronto 20Apr32	300	10	83.5	16	3.299%	3.25%
25-Mar-22	MFABC 8Apr32	310	10	80	9.5	3.314%	3.30%
23-Mar-22	City of Montreal 1Sep31	350	10	93	20	3.288%	2.00%
07-Mar-22	City of Sudbury 15Mar47	103	25	141	43	3.457%	3.46%
23-Feb-22	FNFA 1Jun32	354	10	89.5	12	2.863%	2.85%
20-Jan-22	City of Ottawa 30Jul53	86	31	100	19.5	3.083%	4.20%
02-Dec-21	City of Toronto 21Dec31	150	10	74	7	2.238%	2.20%
08-Nov-21	City of Toronto 23Nov41	200	20	95.5	18.5	2.880%	2.85%
25-Oct-21	City of Vancouver 5Nov31	100	10	66	2	2.305%	2.30%
21-Oct-21	City of Ottawa 11May51	225	30	89.5	16	2.967%	2.50%
Serials							
22-Sep-22	Regional Municipality of Waterloo	32	1-10	25-97	12.5-19	4.055%	
07-Jul-22	Regional Municipality Of Niagara	45.906	1-10	15-95	13-17	3.945%	
22-Jun-22	Regional Municipality of Durham	57.875	1-20	12.5-135	7-36	4.446%	
10-Jun-22	City of Barrie	22.8	1-10	26-95.5	11-17	4.098%	
27-May-22	Regional Municipality Of Halton	30.592	1-10	17-92.5	3-14	3.422%	

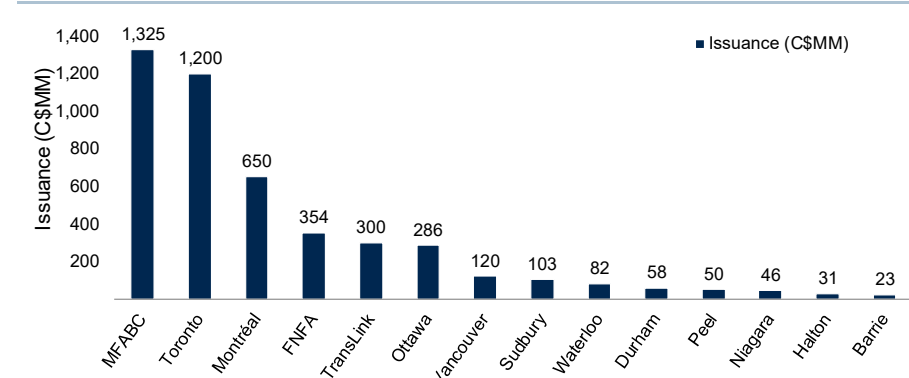
Annual C\$ Municipal Issuance



Municipal 10-year Spreads (vs. ONT) ²



Municipal Issuers (2022) ²



14 1. Excludes Quebec municipal auctions

2. Spreads and issuance levels as of December 30, 2022

Ratings, Fiscal Updates, and Spread Relativities

- On December 8, 2022 the Province of Quebec released its mid-year fiscal update which showed a deficit projection of C\$4.8 billion, an improvement from the C\$6.5 billion forecast in the spring budget. The improvement in fiscal standing comes on the back of improvements in own-source revenues, with personal income tax and corporate taxes posting notable increases. On the expenditure side, the government earmarked C\$13.0 billion for its 'Anti-Inflation Shield' Program. The Province's borrowing program was little impacted, down just C\$1.7 billion to C\$25.9 billion for the current fiscal year.
- On December 20, 2022 the Province of Manitoba released its mid-year fiscal update which showed an improved deficit forecast of C\$193 million for the current fiscal year, better than the C\$548 million originally forecast in the spring budget. The government benefitted from higher than anticipated individual, corporate, and retail tax revenue as well as a one-time Canada Health Transfer. Borrowing for the province has decreased by approx. C\$800 million to ~C\$3.875 billion for 2022/23 with approximately C\$2.2 billion completed to date.
- On December 20, 2022 the Province of Nova Scotia released its mid-year fiscal update which showed an improved deficit projection of C\$142.6 million for 2022/23, an improvement of C\$363.6 million from the initial C\$506.2 million deficit forecast in the spring budget. The change in the budgetary position is attributed to anticipated increases in revenue of C\$1.3 billion, which is comprised of an increase of C\$1.1 billion in provincial tax revenue, a C\$29.3 million increase in investment income, and a C\$70.2 million increase in Federal Revenue Sources. This is offset by increases in expenditures of C\$1.0 billion, largely driven by increases in departmental expenses.
- On December 21, 2022 the Province of Prince Edward Island released its mid-year fiscal review which showed a forecast deficit of C\$94.8 million for the current fiscal year, a modest increase of C\$1.9 million from initial budget projections. Provincial revenues increased by C\$238.6 million primarily due to increases in tax revenues of C\$138 million, though this is offset by increases in expenditures of C\$240.5 million which is reflective of additional spending of C\$170 million provided to fund inflationary response initiatives and reimbursements from Hurricane Fiona.

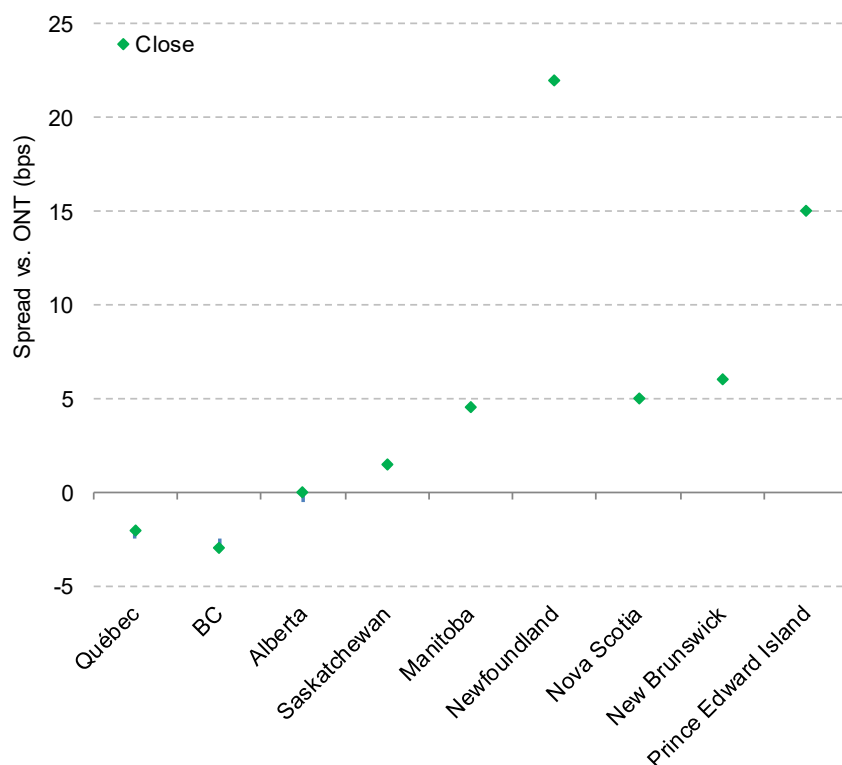
Crowns	Ratings			Spread vs. GoC Curve		
	DBRS	Moody's	S&P	5-Year	10-Year	
Canada Housing Trust	AAA (stb)	Aaa (stb)	AAA (stb)	+31.0 bps CDOR -3.5 SOFR +33.5	+47.0 bps CDOR +3.0 SOFR +47.0	
Provincials	Ratings			New Issue Spreads (Straight Maturities) / Relativities vs. Ontario		
	DBRS	Moody's	S&P	5-Year	10-Year	30-Year
Ontario	AA(L) (stb)	Aa3 (stb)	A+ (stb)	+46.5 bps CDOR +6.0 SOFR +43.5	+78.5.0 bps CDOR +35.5 SOFR +80.0	+95.0 bps CDOR +58.5 SOFR +124.0
Québec	AA(L) (stb)	Aa2 (stb)	AA- (stb)	(1.0) bps	(2.0) bps	(1.0) bps
British Columbia	AA(H) (stb)	Aaa (stb)	AA+ (stb)	(2.0) bps	(3.0) bps	(2.5) bps
Alberta	AA(L) (stb)	Aa3 (pos)	A+ (stb)	(0.0) bps	(0.0) bps	(0.0) bps
Manitoba	A(H) (stb)	Aa2 (stb)	A+ (stb)	+2.0 bps	+4.5 bps	+12.0 bps
Saskatchewan	AA(L) (stb)	Aa1 (stb)	AA (stb)	Flat	+1.5 bps	+2.0 bps
New Brunswick	A(H) (stb)	Aa2 (pos)	A+ (stb)	+4.0 bps	+6.0 bps	+11.0 bps
Nova Scotia	A(H) (stb)	Aa2 (stb)	AA- (stb)	+1.5 bps	+5.0 bps	+10.5 bps
Newfoundland and Labrador	A(L) (stb)	A1 (stb)	A (stb)	+11.0 bps	+22.0 bps	+39.0 bps
Prince Edward Island	A (stb)	Aa2 (stb)	A (stb)	+7.0 bps	+15.0 bps	+24.0 bps

Spread Performance and Ratings

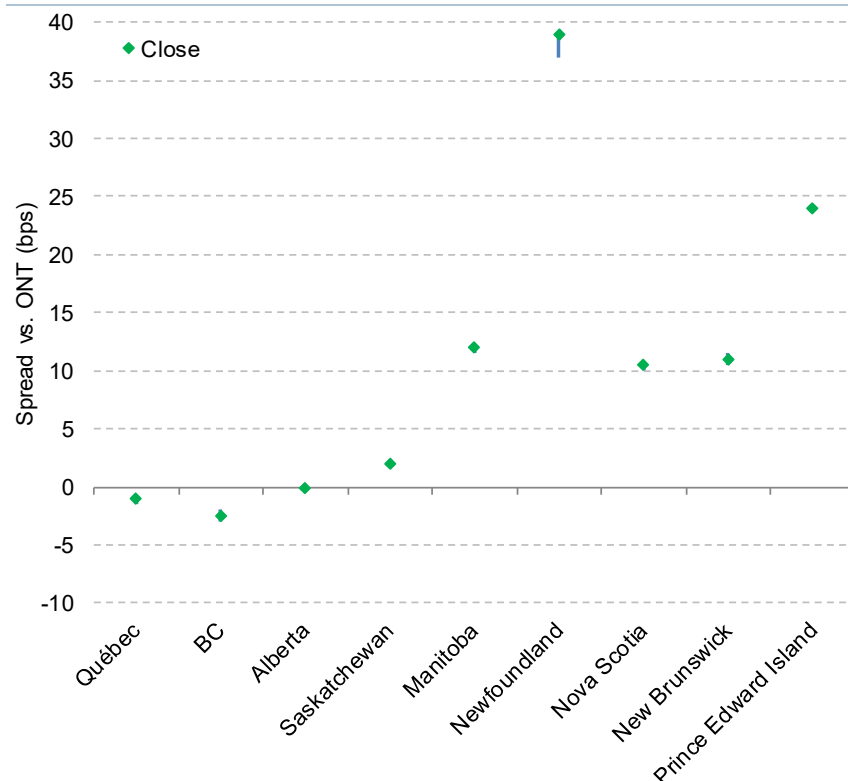
Inter-Provincial Relativities Small Wider to End 2022

- There were some very modest widening moves in the 10-year part of the curve with Quebec and Alberta both experiencing a 0.5bp move
 - The only province to see tightening in 10s was British Columbia which tightened 0.5bp during the month
- The long-end of the curve saw modest widening pressure with Newfoundland relativities shifting 2bps wider, while Alberta, Manitoba, Nova Scotia and New Brunswick each widened 0.5bp
- On the year, we saw the following movements in provincial relativities (Jan-Dec)
 - Quebec: +3bps (10s) / +3bps (30s)
 - British Columbia: +1bps (10s) / +2bps (30s)
 - Alberta: -6.5bps (10s) / -9.5bps (30s)
 - Saskatchewan: -1.5bps (10s) / -6.5bps (30s)
 - Manitoba: +1.0bps (10s) / +3.5bps (30s)
 - Newfoundland: +5bps (10s) / +1.0bps (30s)
 - Nova Scotia: +2.5bps (10s) / +2.5bps (30s)
 - New Brunswick: +1.0bps (10s) / +2.0bps (30s)
 - Prince Edward Island: +6.0bps (10s) / +9.0bps (30s)

Provincial 10-year Relativity Performance (December 2022)



Provincial 30-year Relativity Performance (December 2022)



Rates Outlook

Canadian Rates

BoC Delivers 50bp Hike in December But Policy Statement Suggests End of Tightening Era is Near

- On December 7th, the Bank of Canada increased the overnight rate by 50bps to 4.25%, above the 25bps anticipated by the broader market
 - The move represented the 7th consecutive rate hike this year, continuing the bank's most aggressive monetary policy tightening campaign on record with 400bps of tightening since the start of the year
 - Though the move itself was hawkish, the policy statement was less so, with the Bank of Canada providing guidance that the Governing Council will be considering whether the policy interest rate needs to rise further
- The tone of the policy statement suggests that larger increases have likely concluded with any futures hikes seen as more fine-tuned adjustments which are data dependent
- The next meeting for the Bank of Canada on January 25, 2023 is expected to be framed as a decision between 0 and 25bps. RBC currently does not project any further increases from the BoC in 2023

US Rates

Fed Delivers 50bp Hike in December As It Slows Tightening Pace

- On December 14th the Federal Reserve administered a 50bp hike to bring the target range to 4.25-4.50%, as was largely anticipated by the market. This marked a step back from the past four 75bps rate moves
- The committee refrained from softening forward guidance, stating that ongoing increases in the target range will be appropriate. Indeed, the dot plot showed that the vast majority of members now see the fed funds rate rising above 5% next year, pointing to at least 75bps of further hikes
- In his press conference Chair Powell re-iterated that policy will need to remain tight for some time in order to bring inflation back down to target and avoid inflation expectations from becoming entrenched. The Fed's dot plot supports this narrative, and shows 100bps of cuts in 2024, while the market has been pricing in cuts beginning in the second half of next year
- The next FOMC decision is due on February 1, 2023. RBC projects 50bps of hikes from the Fed in Q1-2023

RBC Economics Interest Rate Forecasts

RBC Interest Rate Forecasts

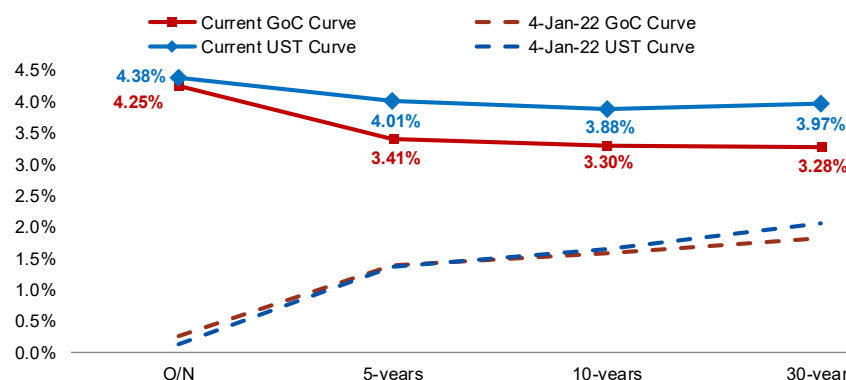
Government of Canada Rates Forecast

Term	Current	Q1/23	Q2/23	Q3/23	Q4/23	Q1/24
BoC Overnight	4.25%	4.25%	4.25%	4.25%	4.25%	3.75%
5-Year GoC	3.41%	3.05%	2.95%	2.85%	2.75%	2.70%
10-Year GoC	3.30%	2.85%	2.80%	2.75%	2.70%	2.65%
30-Year GoC	3.28%	2.90%	2.90%	2.85%	2.85%	2.85%



Term	Current	Q1/23	Q2/23	Q3/23	Q4/23	Q1/24
Fed Funds Target	4.38%	4.88%	4.88%	4.63%	4.38%	4.13%
10-Year UST	3.88%	3.75%	3.65%	3.55%	3.45%	3.35%
30-Year UST	3.97%	4.00%	3.90%	3.90%	3.85%	3.80%

North American Yield Curves



Bank of Canada Rate Decision Recap

BoC Meeting Date	Rate Action
January 26, 2022	0.25%
March 2, 2022	0.50%
April 13, 2022	1.00%
June 1, 2022	1.50%
July 13, 2022	2.50%
September 7, 2022	3.25%
October 26, 2022	3.75%
December 7, 2022	4.25%

Canadian Public Sector Market Update

Market
Update

Issuance
Update

Offshore
Borrowing

SSA &
Maple
Supply

Municipal
Supply

Spreads &
Ratings

Rates &
Timing

Appendix

January Calendar



January 2023 Calendar & Key Dates

Key global events in January include:

- Can Manf. PMI & US Manf. PMI (Jan 3)
- FOMC Meeting Minutes (Jan 2)
- US Trade Balance & US Jobless Claims (Jan 3)
- CAN Jobs Report, US Non-Farm Payrolls, and US Durable Goods (Jan 6)
- US Wholesale Inventories (Jan 10)
- US CPI & US Jobless Claims (Jan 12)
- CAN CPI & BoJ (Jan 17)
- US Retail Sales & US PPI (Jan 18)
- US Housing Starts & US Jobless Claims (Jan 19)
- CAN Retail Sales & US Existing Home Sales (Jan 20)
- US Manf. PMI (Jan 24)
- Bank of Canada (Jan 25)
- US GDP, US Jobless Claims, US Durable Goods, US New Home Sales (Jan 26)
- CAN GDP (Jan 31)

Market Closures:

- Please note both the CAN & US bond markets are closed on Jan 2 for New Year's Day
- Please also note that the US Market is closed on Jan 16 for MLK Day

January 2023						
SUN 1	MON 2	TUES 3	WED 4	THUR 5	FRI 6	SAT 7
1	 2	3	4	5	6	7
	New Year's Day	CAN Manf. PMI US Manf. PMI	FOMC Meeting Minutes	US Trade Balance US Jobless Claims	CAN Jobs Report US Non-Farm Payrolls US Durable Goods	
8	• 9	10	11	12	13	14
		US Wholesale Inv.		US CPI US Jobless Claims		
15	 16	17	18	19	20	21
	MLK Day	CAN CPI BoJ	US Retail Sales US PPI	US Housing Starts US Jobless Claims	CAN Retail Sales US Existing Home Sales	
22	 23	 24	 25	 26	 27	28
		US Manf. PMI	BoC	US GDP US Jobless Claims US Durable Goods US New Home Sales		
29	30	31				
		CAN GDP				
Legend: Canadian Data US Data AUS/EU/UK Data						

Appendix I

Canadian Sustainable Debt
Market



RBC Capital Markets

Canadian Debt Capital Markets

Market Update

Issuance Update

Offshore Borrowing

SSA & Maple Supply

Municipal Supply

Spreads & Ratings

Rates & Timing

Appendix

Canadian Sustainable Debt Market

~C\$30.8 billion of Supply in 2022

2022 marks yet another record year of supply, surpassing the C\$26.2 billion seen in 2021

Public Sector Issuers Active in ESG in 2022

In 2022, 74% of total ESG issuance was from the Public Sector (C\$22.7bn), while 26% was from Corporate issuers (C\$8.1bn)

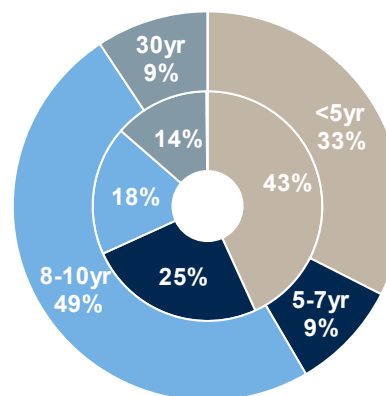
Healthy Inaugural Corporate ESG Issuance

Growing pool of capital dedicated to ESG with some offerings achieving price advantages ("greenium") of 2-7 bps

69 Unique Issuers, 36 in 2022

of the 36 unique issuers in 2022, 7 were inaugural ESG issuers and 5 were inaugural in CAD. There are a total of 69 unique ESG issuers in Canada as of November 2022

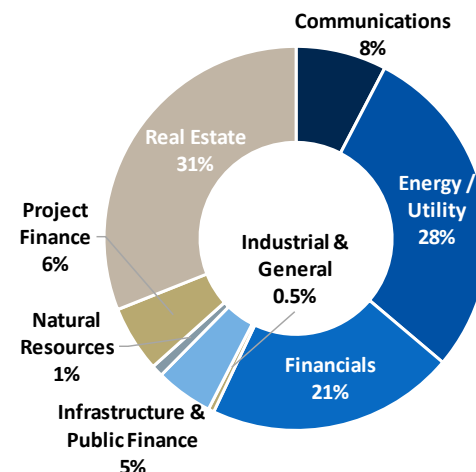
Issuance by Tenor



Inside: 2021

Outside: 2022

Issuance by Type (Corps only)

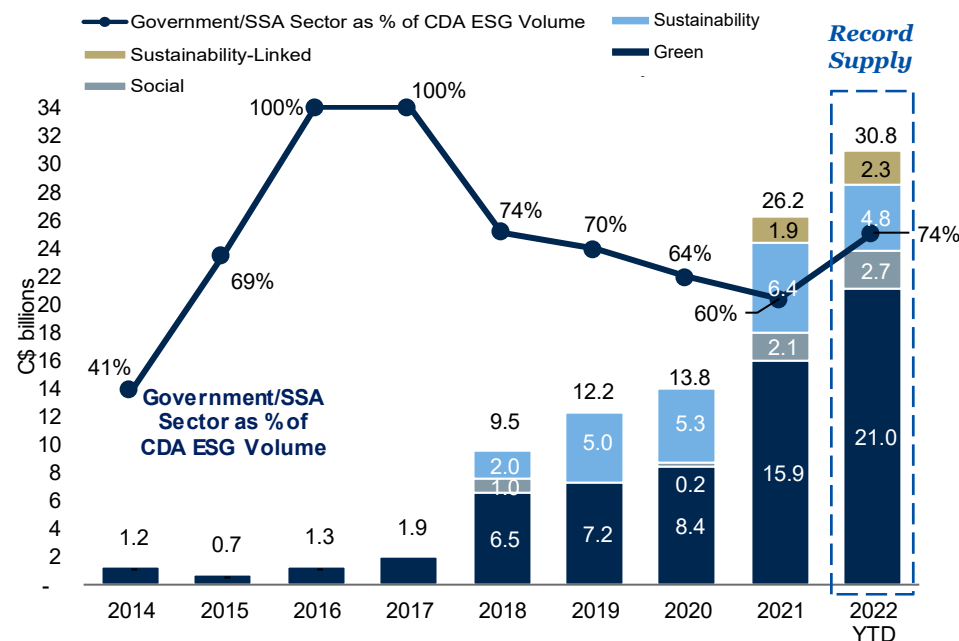


*Corporate clients that have issued GSSS bonds in 2011-2022

Select Recent RBC-Led CAD ESG Bonds

 C\$1.25 billion 3.80% Inaugural CAD Green Bond due 2027 Joint Lead & B&D November 16, 2022	 C\$900 million 6.1% New SLB due 2032 as part of a C\$2bn offering Lead Left Bookrunner November 7, 2022	 C\$1.1 billion 5.25% SLB due 2032 as part of C\$2bn offering Joint Bookrunner September 8, 2022	 C\$700 million 3.80% Gender Bond due 2025 Joint Bookrunner August 31, 2022
 C\$350 million 7.95% Inaugural Green Hybrid 60NC10 Joint Bookrunner August 18, 2022	 C\$5.0 billion 2.25% Inaugural Green Bond due 2029 Joint Lead March 22, 2022	 C\$1.0 billion 2.600% Inaugural Green Bond due 2032 Joint Bookrunner February 17, 2022	 C\$200 million 7.25% 5.25NC2.25-Year Inaugural SLB Joint Bookrunner February 2, 2022

CAD Sustainability-Related Issuance



Green



Social



Sustainability



Sustainability-Linked

Appendix II

Corporate Funding Highlights



RBC Capital Markets

Canadian Debt Capital Markets

Market Update

Issuance Update

Offshore Borrowing

SSA & Maple Supply

Municipal Supply

Spreads & Ratings

Rates & Timing

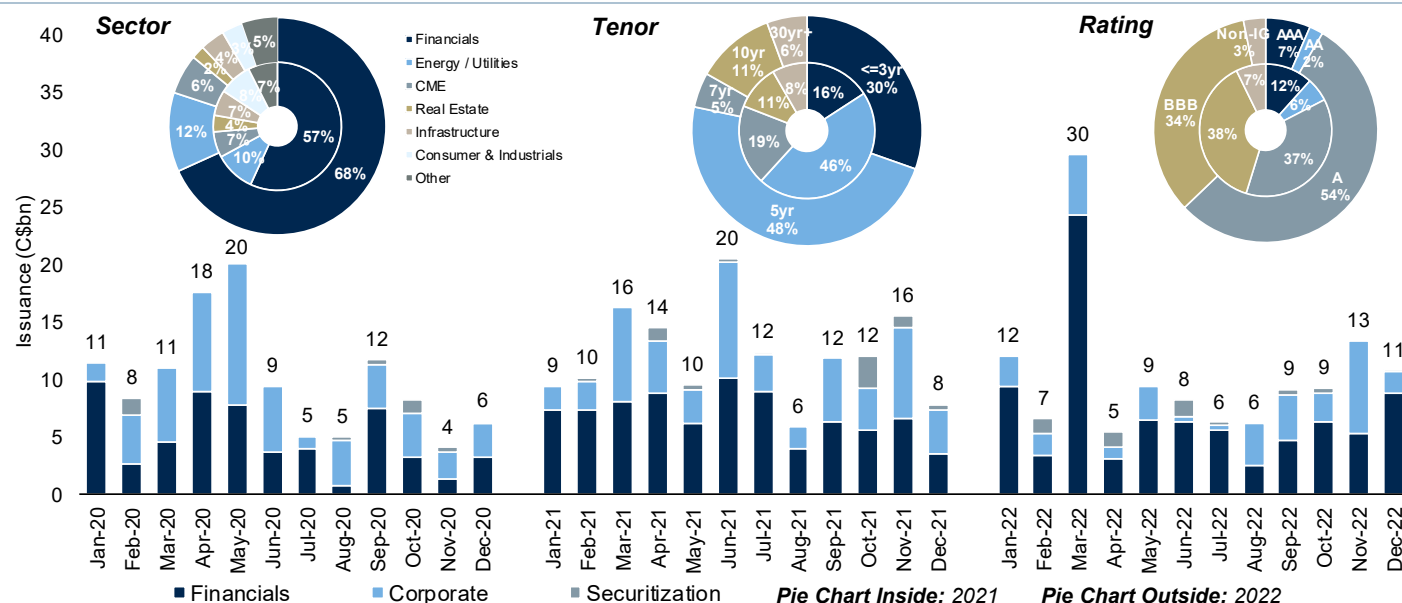
Appendix

Corporate Primary Market Overview⁽¹⁾

Supply Highlights in 2022

C\$125.9 bn (-13% Y/Y)	C\$85.6 bn (+4% Y/Y)
Total Supply	Financial Supply
\$34.8 bn (-38% Y/Y)	C\$8.1 bn (19 deals)
Corporate Supply	ESG-focused Supply
C\$62.9 bn (44 deals)	C\$4.2 bn (13 deals)
Major 6 Canadian Banks	Inaugural Offerings

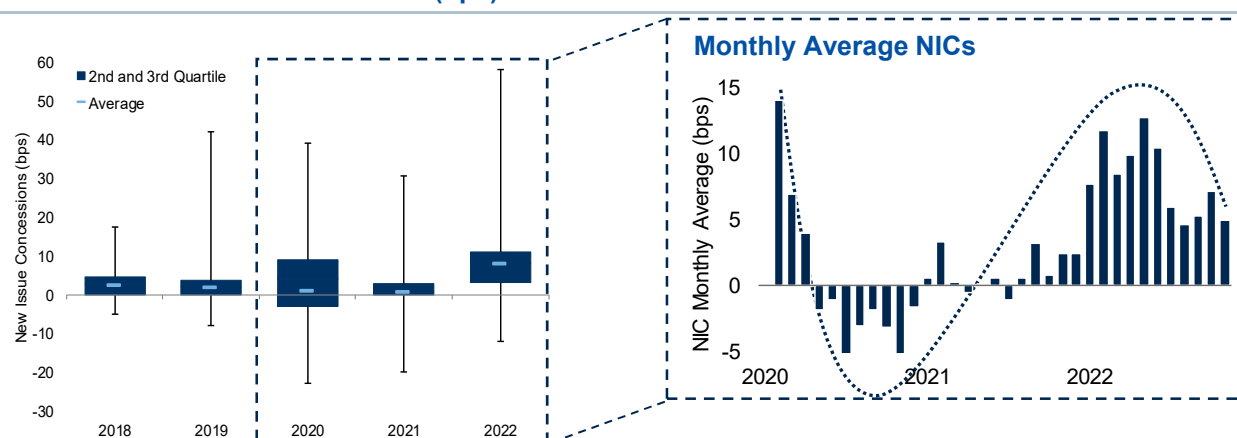
Historical Monthly New Issue Supply (C\$ billions)



Breakdown by Sector

Sector	2021		2022		Y/Y Change	
	C\$bn	% Tot	C\$bn	% Tot	C\$bn	Δ%
Banks	57.3	40%	76.7	61%	19.4	▲ +34%
Non-Bank Financials	25.2	17%	9.2	7%	(15.9)	▼ (63%)
Financials	82.5	57%	85.9	68%	3.5	▲ +4.2%
Energy / Utilities	14.8	10%	14.8	12%	0.0	▲ +0%
CME	9.5	7%	7.5	6%	(2.0)	▼ (21%)
Real Estate	6.1	4%	2.5	2%	(3.6)	▼ (59%)
Infrastructure	9.4	6%	4.6	4%	(4.8)	▼ (51%)
Consumer / Retail	4.7	3%	2.4	2%	(2.3)	▼ (49%)
Pension Realty	1.3	1%	1.0	1%	(0.3)	▼ (23%)
Natural Resources	2.7	2%	0.4	0%	(2.2)	▼ (84%)
Industrials	7.4	5%	1.6	1%	(5.9)	▼ (79%)
Non-FI Corporates	55.8	38%	34.8	28%	(20.9)	▼ (38%)
Securitization	6.8	5%	5.2	4%	(1.6)	▼ (24%)
Total Supply	145.0	100%	125.9	100%	(19.1)	▼ (13%)

Historical New Issue Concessions (bps)

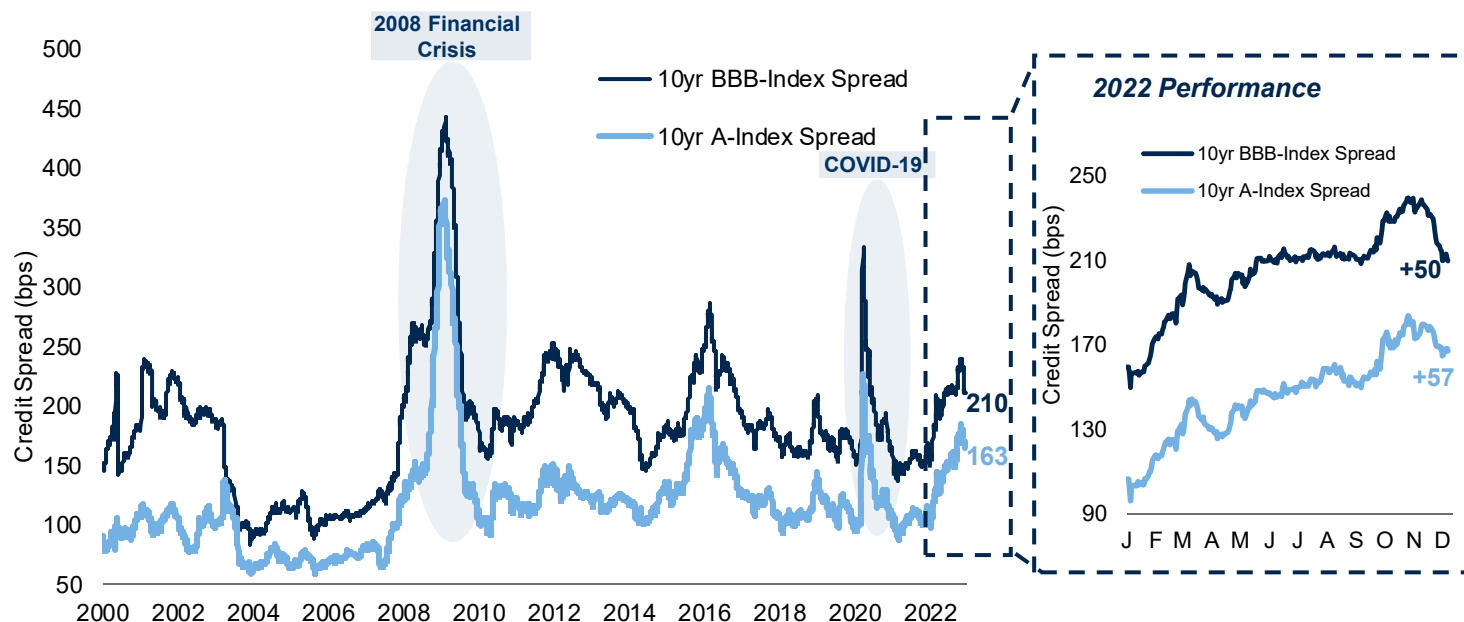


New Issue Concessions have slightly moderated in late 2022 despite elevated supply, showcasing a technical bid for credit and improving market backdrop

Healthy C\$125.9 billion of supply in 2022 was largely driven by Financial issuance as Non-FI Corporate supply remains constrained

Credit Spread Performance

Credit Spread Index Performance⁽¹⁾



Headwinds in H1 2022 proved to be challenging but improvement in market tone has tightened spreads in Q4 of 2022

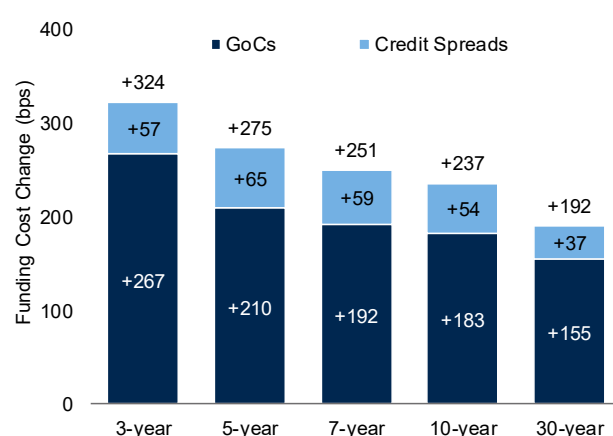
- Global markets navigated 2022 with higher funding costs driven by high inflation, monetary policy tightening across central banks, and recessionary fears
- Credit spreads have widened materially and are ahead of historical averages, although they continue to remain well below periods of market stress going back to the 2000s, which include the 2008 Financial Crisis and the onset of the COVID-19 Pandemic
- Looking ahead, any changes to central bank rhetoric and the economic outlook will drive rate volatility as terminal rate expectations become anchored, and investors assess credit conditions

Quarterly Spread Performance by Sector⁽²⁾

	Q1	Q2	Q3	Q4	2022
Oil & Gas	+17	+13	(12)	(3)	+15
Corporate Infrastructure	+19	+20	+5	(11)	+33
Power Generation	+26	+20	+10	(11)	+45
Utilities	+22	+17	+11	(10)	+40
Retail	+37	+25	(3)	(16)	+43
Telcos	+25	+24	+12	(28)	+33
Midstream and Pipes	+27	+33	+3	(15)	+48
Senior Bail-in	+36	+33	-	(17)	+52
Insurance	+37	+31	+9	(3)	+74
Captive Finance	+42	+34	+8	(18)	+66
Real Estate	+39	+42	+12	(14)	+79
Average Δ Spreads	+38	+27	+5	(13)	+43

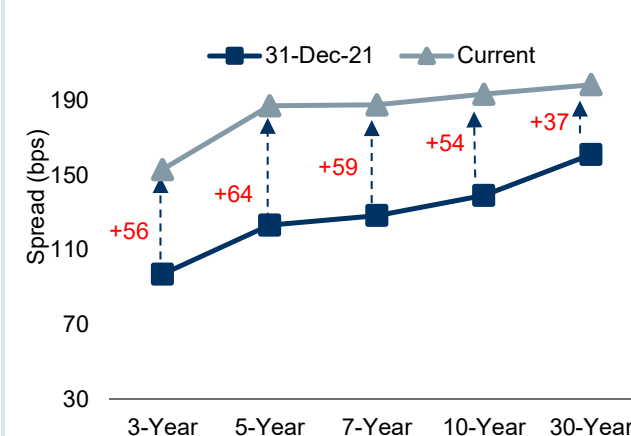
Credit spreads widened across all sectors in 2022, although Q4 saw a retracement as credit conditions improved

All-in Funding Cost Change in 2022 (by Tenor)⁽²⁾



All-in funding costs rose 192-324 bps across the curve with GoC yields impacting the front-end more profoundly

Shape of the Credit Curve (2022)⁽²⁾



The credit curve flattened ~27 bps between the 5s30s curve in 2022 as short-end supply outpaced longs given investor focus on short duration

Appendix III

Canadian and US Swap Market Update



RBC Capital Markets

Canadian and US Swap Market Update

- 2022 saw significant volatility in rate markets globally, driven by decade-high inflation and monetary policy tightening across central banks. Recession fears and doubts around achieving a soft-landing have added additional noise heading into 2023
- In Canada, swap rates rose 95 to 257 bps higher and the yield curve flattened significantly, while swap rates in the U.S. moved 128 to 348 bps higher, with recent policy divergence between the BoC and the Fed driving a greater spread differential between the two rate markets
 - Since the October meeting where the BoC dialed back to a 50 bp hike (from 75 bps hikes prior), there has been a pullback in CAD swap rates relative to the U.S. market. This dynamic is likely to persist with the market expecting the US Federal Reserve to be more aggressive in hiking rates in early 2023
 - CAD and U.S. swap rates retraced from recent highs as the Fed and BoC signaled the pace of tightening is set to slow, supporting the view that rates may have peaked
 - The market is currently pricing in a CAD terminal rate of 4.25% in Canada and 5% in the U.S. by end of 2023
- Thematically, persistent rate volatility this year allowed clients to be opportunistic and lock-in attractive levels on material swings and reversals, particularly as the long-end remained well-anchored and forward premiums became negative
 - More recently, a number of clients have employed option-based strategies to effectively subsidize swap rates in light of the elevated rate environment
- Looking ahead, any changes to central bank rhetoric, inflation and the growth outlook will continue to drive further rate volatility, with central banks reiterating the path of future tightening as being data driven

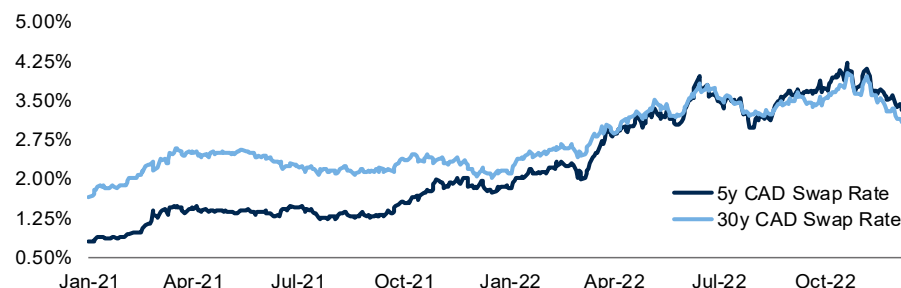
Thematic Activity Among Issuers

Hedging in an Elevated Rate Environment – ‘Paid to Wait’ Strategy

- Clients that are ‘waiting for rates to fall’ before hedging are using an option-based strategy to accomplish the same view, but are being ‘paid to wait’**
 - This is accomplished by first setting a target rate at which the client would be happy entering a hedge – for example, the current market level, minus 50 bps
- Issuer then “sells an option” to enter the hedge at that predetermined strike, at a predetermined date in the future (for example 3 months in the future)
 - On day 1, the issuer receives the cash premium for the value of the option
 - At expiry only (i.e. in 3 months), if rates < target rate: issuer is filled on the hedge and enters into a standard vanilla IRS at its target rate
 - Alternatively, if rates > strike, the option expires worthless, but the client benefited from receiving the upfront cash premium
- The issuer is then free to repeat the strategy to collect additional premium and use the funds to “buy down” to a lower interest rate
- Volatility is currently trading near recent highs, which makes selling an option very attractive to collect very elevated premiums**

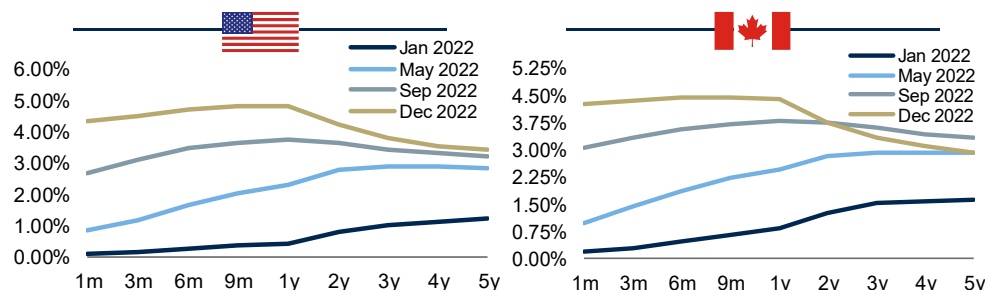
CAD Swap Curve Dynamics

The swap curve flattened and inverted in 2022 in response to aggressive rate hiking and doubts surrounding the BoC's ability to achieve a soft landing



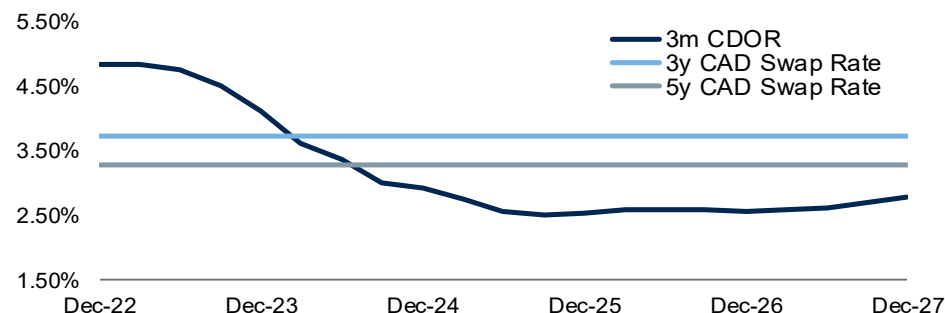
Market Implied Rate Hike Expectations – OIS Curves

OIS curves shifted materially higher in 2022, reflecting aggressive tightening; with implied pricing suggesting we are approaching peaks



Forward-Implied 3m CDOR Curve

The swap curve is pricing in a steep decline in CDOR in 2023, favoring term extension, blend and extension trades, and hedge restructures



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