

# Fixed Income Insights

MONTHLY REPORT - JANUARY 2023 | CANADA EDITION

FOR PROFESSIONAL INVESTORS ONLY

## BoC caution in December; early signs of a policy pivot?

The Bank of Canada's December policy statement highlighted the stalling economy, and decline in three-month core inflation, suggesting a pause in tightening. 2022 performance returns showed high grade credits held up well, and Canadian government bonds outperforming G7 peers, but still suffering negative returns.

### Growth and inflation expectations – BoC signals possible policy pause, but central bank caution remains in place

2023 forecasts, inverted curves highlight recession risk. QT shows 21% reduction in BoC govt bond holdings already. (page 2)

### Canadian govts and credit – Canadian spreads tighten on possible BoC pivot

Possible BoC pivot drove Canadian spreads tighter. Stable break evens suggest little fear of a higher inflation regime. (pages 3-4)

### Global yields and spreads – Most G7 sovereign yields fell in Q4, despite the back-up in December

G7 yields spiked up in December, after the November rally, following synchronized central bank rate rises. (pages 5-6)

### Performance – Long gilts, WGBI, Treasuries and inflation-linked bonds suffered deep losses in 2022 (in CAD)

Despite the Q4 rally, long G7 bonds suffered big losses in 2022. Canadian bonds held up well versus G7 peers. (pages 7-9)

### Sovereign and climate bonds – Climate WGBI outperformed WGBI in Q4, despite losses in December

Despite gains in Q4, Climate WGBI and WGBI ended 2022 with negative returns, notably in longer-dated maturities. (Page 10)

## Appendix

Canadian & Global bond market returns, historical bond yields, durations and market values and foreign exchange returns.

Chart 1: Peaking? YoY inflation has been easing in the US, Canada and China, but not in Japan, and very modestly so in the Eurozone and UK.

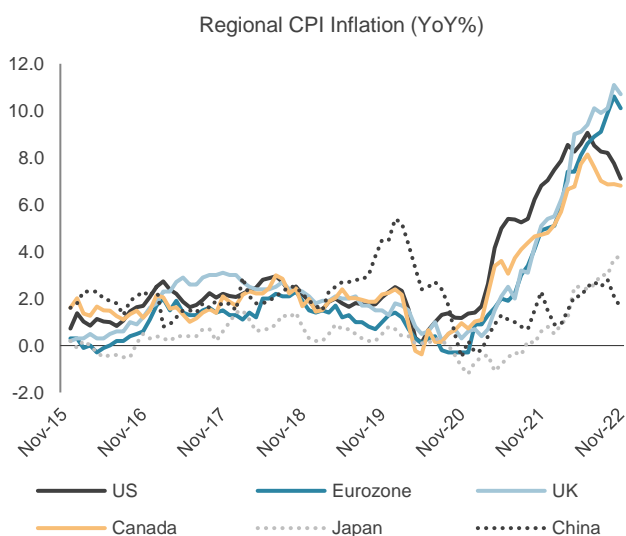
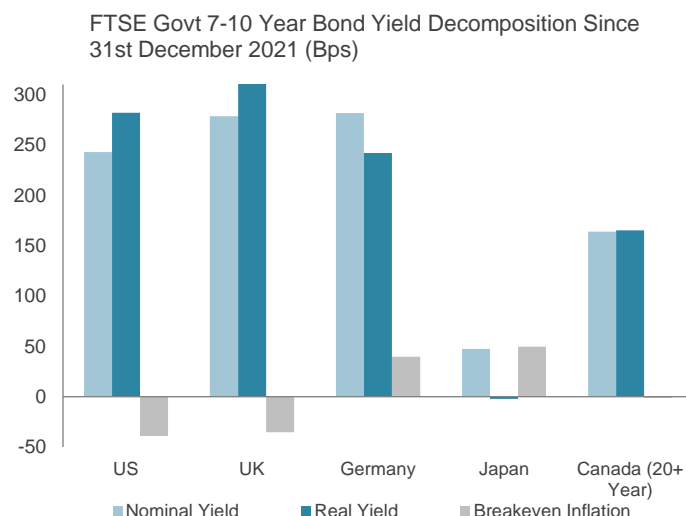


Chart 2: Real yields have been pushing up nominal yields in the US, UK, Canada, and mostly in Germany. Japan is the outlier.



Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. This report should not be considered 'research' for the purposes of MIFID II. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix for list of indices used for each market.

# Macroeconomic Backdrop – Growth and Inflation Expectations

2023 Consensus growth forecasts reflect the monetary squeeze and energy price shock, notably in Europe, even if energy prices eased in Q4 2022. The regional dispersion in inflation remains a key feature, driving divergent policies. The fall-out from releasing Covid lockdowns creates an uncertain Chinese outlook, making it difficult for the PBoC to tighten policy.

Consensus estimates show a very weak global growth in 2023, after the 2022 policy tightening and energy shock. The BoC raised the overnight rate by another 50bp to 4.25% and noted in its December statement that it believes growth has now stalled. (Chart 1).

Canadian CPI inflation modestly eased to 6.8% in November, suggesting a BoC pause in tightening, even if the Bank of Canada also noted that inflation is “still too high” and short-term inflation expectations “elevated” (Chart 2).

The PBoC and BoJ avoided policy rate increases in 2022, as regional inflation and policy divergence increased in Europe and the US, with Asia. The BoC broadly matched Fed moves in 2022, facing similar inflation risks from tight labor markets (Chart 3).

The Bank of Canada's balance sheet contraction, or QT, is further advanced than the Fed's and the C\$200bn program is scheduled to run until 2024/25, though quantifying the impact is difficult. The US Fed (June 2022) estimated a \$2.5trn reduction is worth about an extra 50bp on Fed Funds, suggesting the BoC program might be worth 50bp on rates (adjusting for size of the balance sheet).

\*Crawley, Edmund, Etienne Gagnon, James Hebden, and James Trevino. 2022. "Substitutability between Balance Sheet Reductions and Policy Rate Hikes: Some Illustrations and a Discussion." FEDS Notes. Washington: Board of Governors of the Federal Reserve System (June 2022).

Chart 1: Consensus 2023 GDP growth expectations in December were in keeping with those of November, with forecasts of contraction in the UK & Eurozone, and weak growth elsewhere.

Latest Consensus GDP Forecasts (% December 2022)			
	2021	2022	2023
US	5.6	1.9	0.3
UK	7.2	4.4	-0.9
Eurozone	5.2	3.2	-0.1
Japan	1.6	1.6	1.1
China	8.1	3.2	5.0
Canada	4.7	3.2	0.8

Chart 2: Inflation forecasts for G7 countries remain well above target, despite steep rate increases. China and Japan are exceptions, with inflation much closer to their targets.

Consensus Inflation Forecasts (% December 2022)				
	2022	Change Since Jan-22 (Bps)	2023	Change Since Jan-22 (Bps)
US	8.1	340	4.1	170
UK	9.1	460	7.4	520
Eurozone	8.5	550	6.0	430
Japan	2.8	190	1.8	110
China	2.2	0	2.3	20
Canada	6.8	330	3.6	140

Chart 3: Central bank policy rate increases were the main drivers of the tightening in G7 financial conditions in 2022. The BoC noted after the December rate increase that a pause may be appropriate.

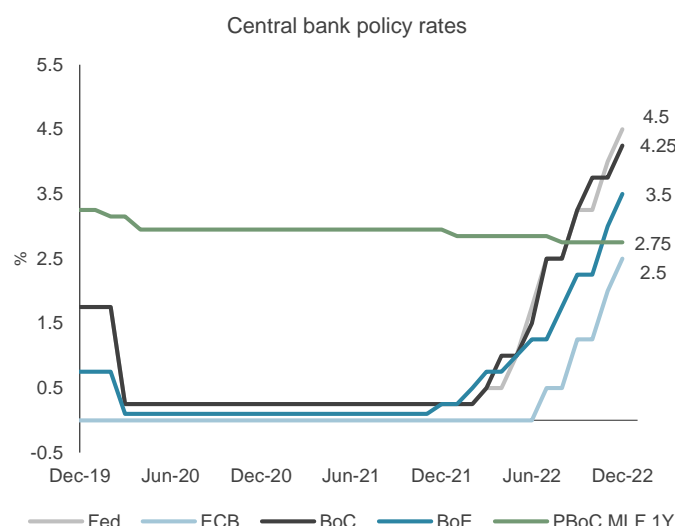
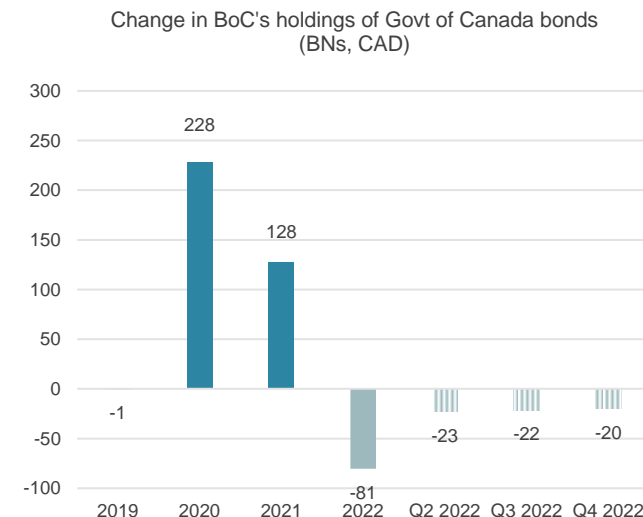


Chart 4: Canada's QT program is well underway. The BoC's bond holdings, the largest balance sheet item, peaked at C\$435bn in December 2021, and had fallen 19% to C\$354bn in Q4 2022.



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# Canadian Corporate Bonds

Chart 1: Both 10s/2s and 20s/2s disinverted slightly in December, as short yields dipped after the BoC's more dovish policy statement. But both curves suggest high recession risks in 2023.

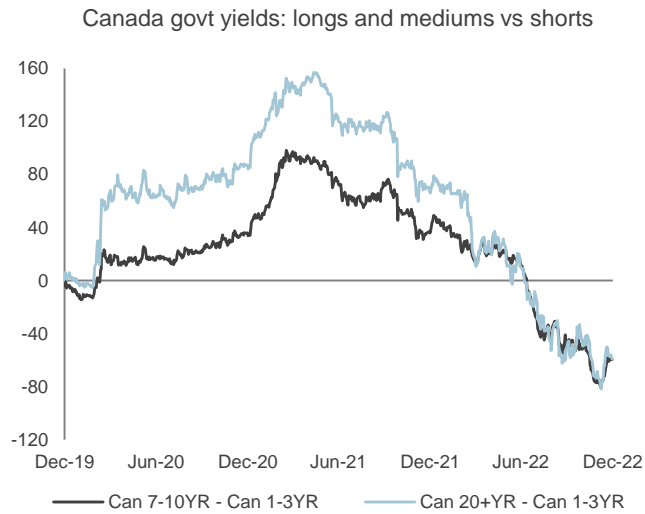


Chart 2: Canadian 7-10-year gov spreads tightened towards 2022 lows versus Germany and Japan, after the ECB signaled more policy tightening in December, and the BoJ loosened curve control.

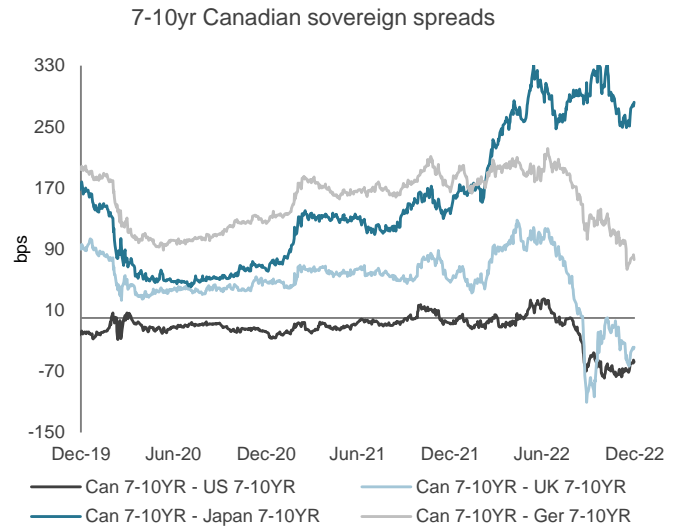


Chart 3: Longer dated Canadian nominal and real yields continued to track closely, reflecting stable long-run inflation breakevens. Only during the early stages of Covid did yields decouple sharply.

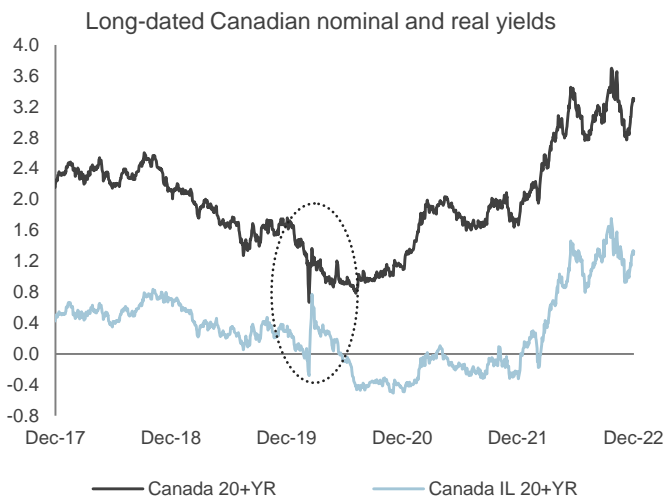


Chart 4: Despite the inflation surge, longer run Canada breakevens remain stable, after the BoC tightening in 2022, and more so than the US and UK, with less evidence of a Ukraine spike.

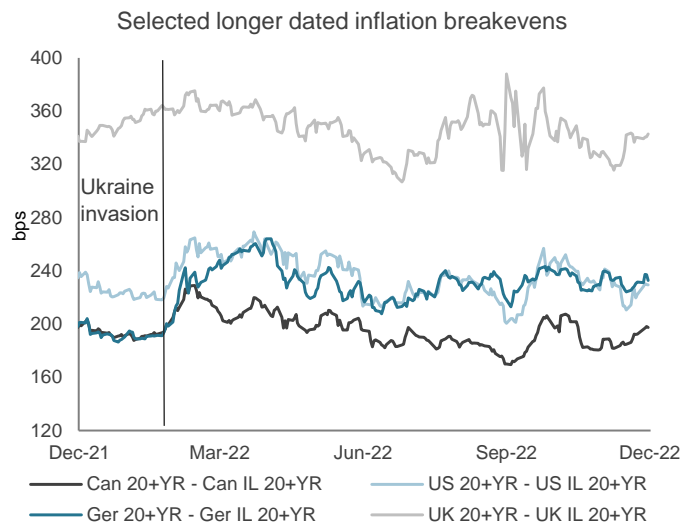


Chart 5: Provincial spreads have normalized though are higher vs Canadian govts than pre-Covid. Alberta spreads are at multi-year lows versus other provinces, despite recent falls in energy prices.

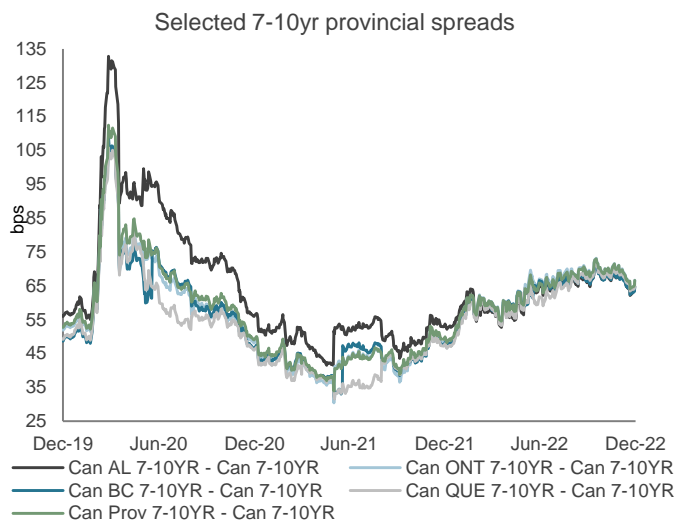
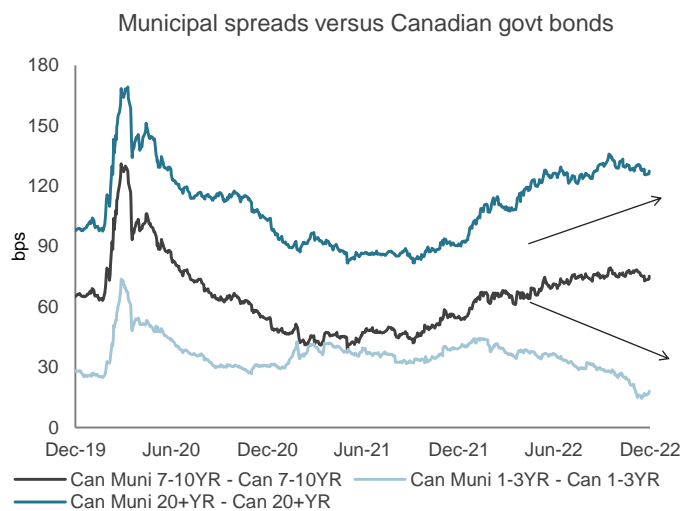


Chart 6: Convergence of short-dated muni spreads towards govt yields continued, taking spreads below pre-Covid levels. But longer municipal spreads have widened, despite some narrowing in Dec.



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# Canadian Corporate Bonds

Chart 1: The corporate high yield spikes in 2015 and after Covid put the 2022 moves into historical context. However, IG yield moves were greater in 2022, with yields pulled higher by govt yield moves.

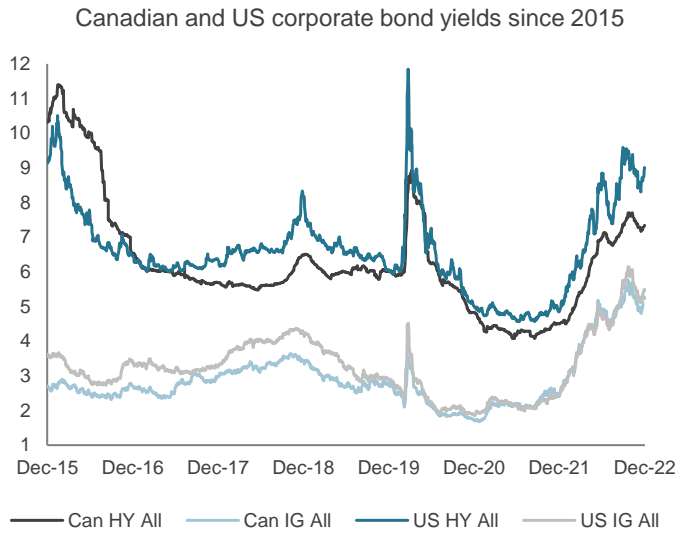


Chart 2: Infrastructure credit spreads have been the most stable, and have fallen, since Covid. Financial sector spreads proved the most sensitive to the inversion of the yield curve (see Chart 6).

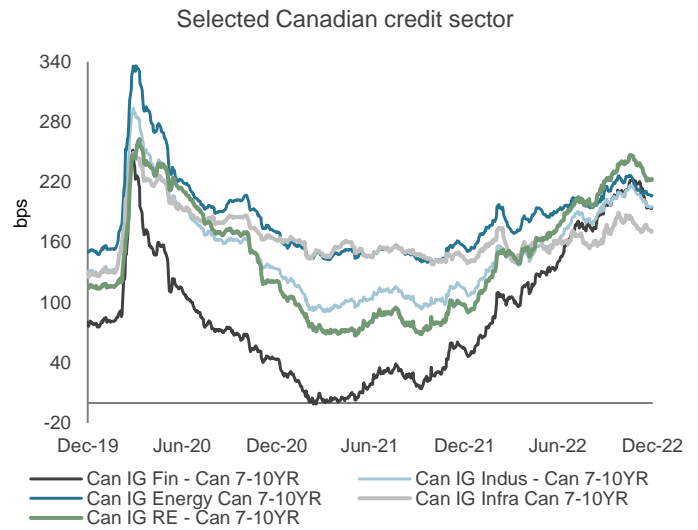


Chart 3: Canadian high yield spreads have moved less than the US during the upswing in yields in 2022, reflecting the higher energy weighting in Canadian high yield.

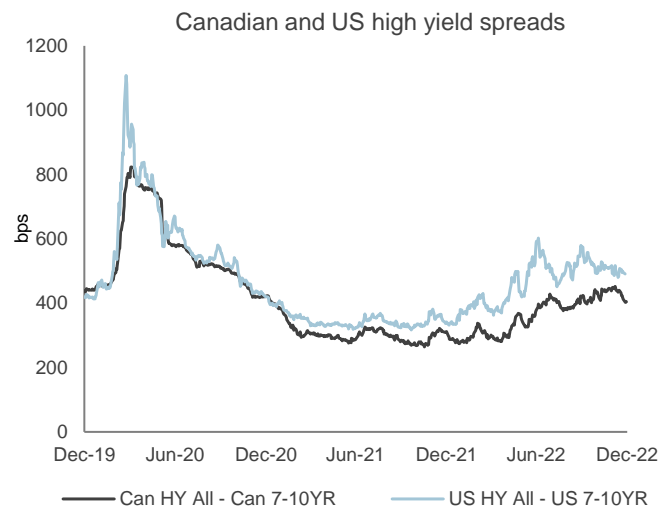


Chart 4: Impact of QT? The rise in corporate bond yields was greater in 2022, than after the post Covid shock in 2020, and has barely discriminated between credit quality buckets.

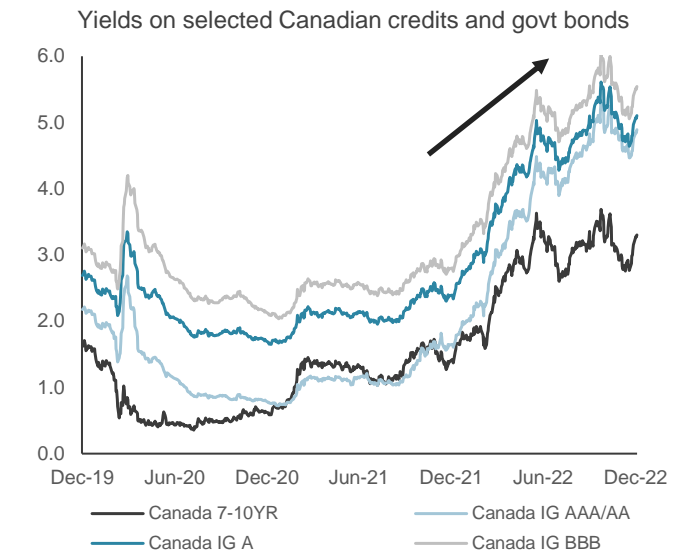


Chart 5: BBB spreads rose 30bp less than AAA peers since pre-Covid, despite predictions of a spike in downgrades to sub-investment grade. This may reflect more defensive agency ratings since the GFC.

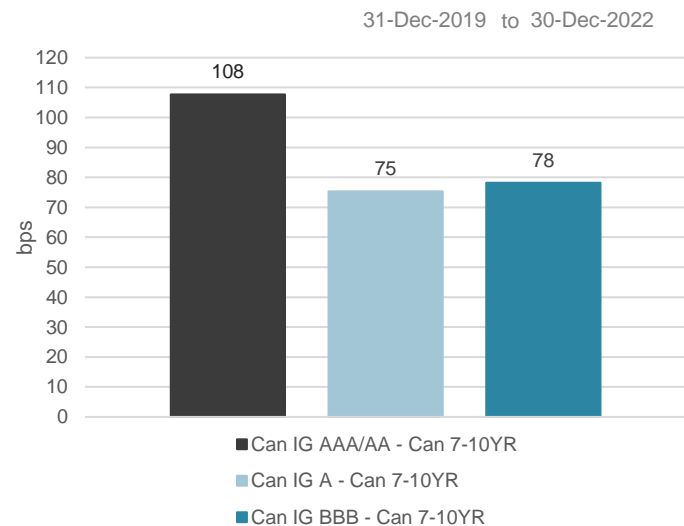
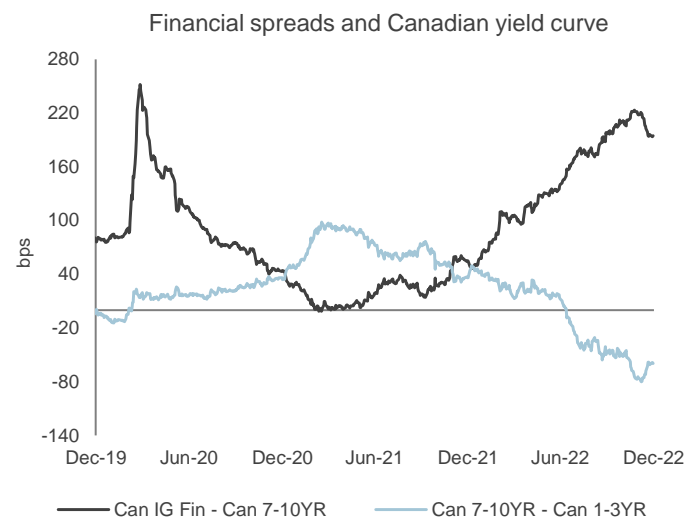


Chart 6: Financial sector spreads remain sensitive to the 10s/2s yield curve, narrowing during the post-Covid reflation trade, before widening as the curve inverted and recession risks grew.



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# Global Yields, Curves and Spread Analysis

Chart 1: G7 conventional yields spiked up in December after the November rally, following a series of rate rises and after cautious central bank messaging. JGB yields reached newly-raised band.

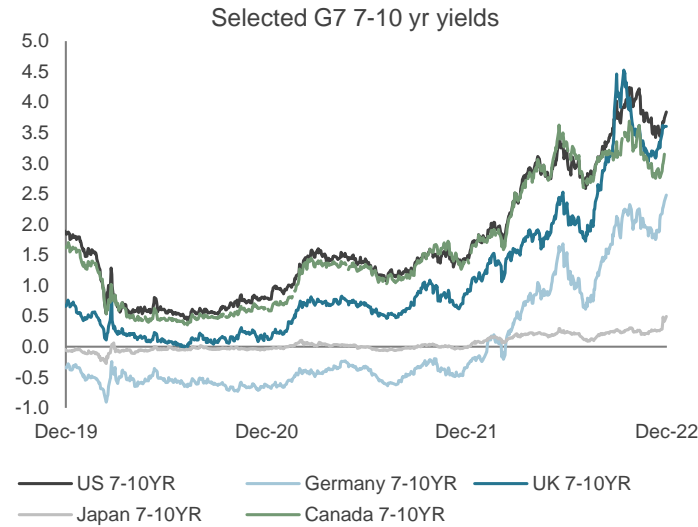


Chart 3: Except for Japan, G7 10/2s yield curves remained inverted in December, despite spiking up as central banks implemented rate increases. JGBs ticked up as BoJ widened its curve control bands.

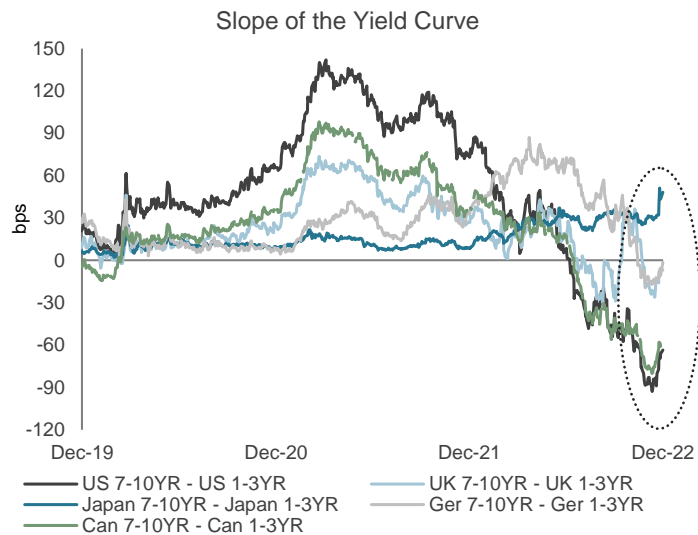


Chart 5: Besides the UK, regional breakevens have stabilized after the 2021 rise during the reflation trade and brief spike after the Ukraine invasion. Fiscal consolidation reduced UK b/evens in Q4.

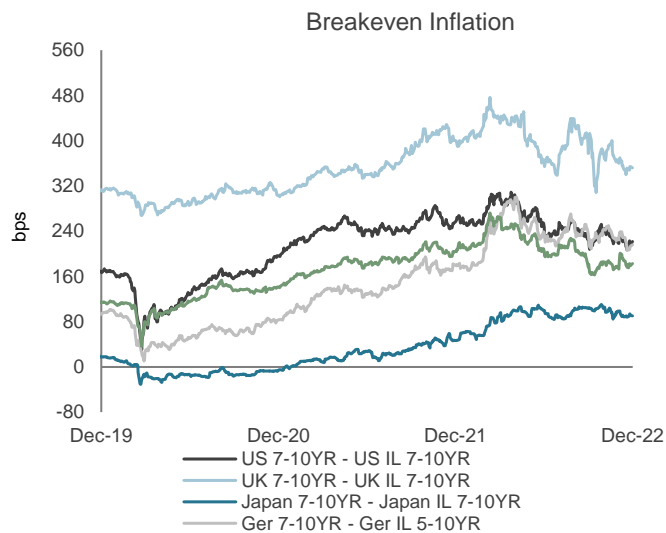


Chart 2: Inflation-linked bond yields have mostly risen in 2022, though there was an initial, short-lived, decline post the Ukraine invasion shock, as investors sought inflation protection.

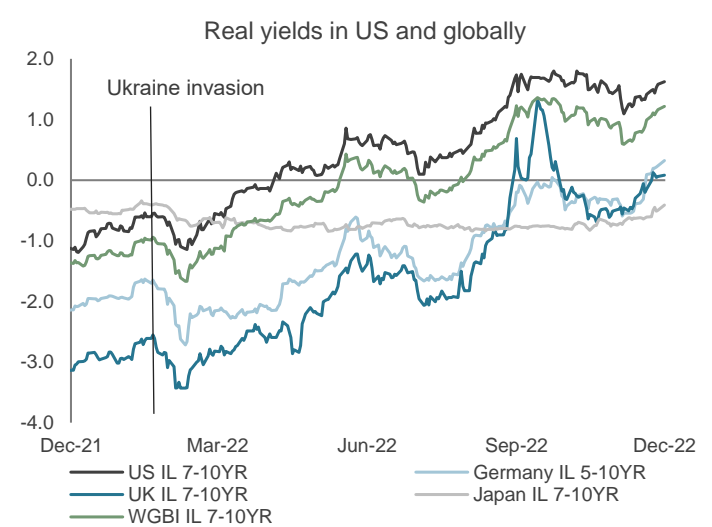


Chart 4: A similar story applies to the long end, where only the JGB curve has resisted the big flattening trend, due to BoJ curve control. Note the degree of curve flattening since policy tightening began.

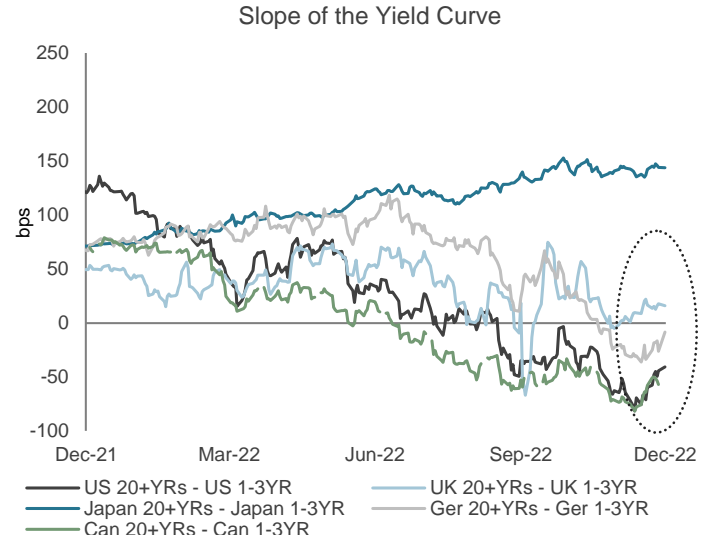
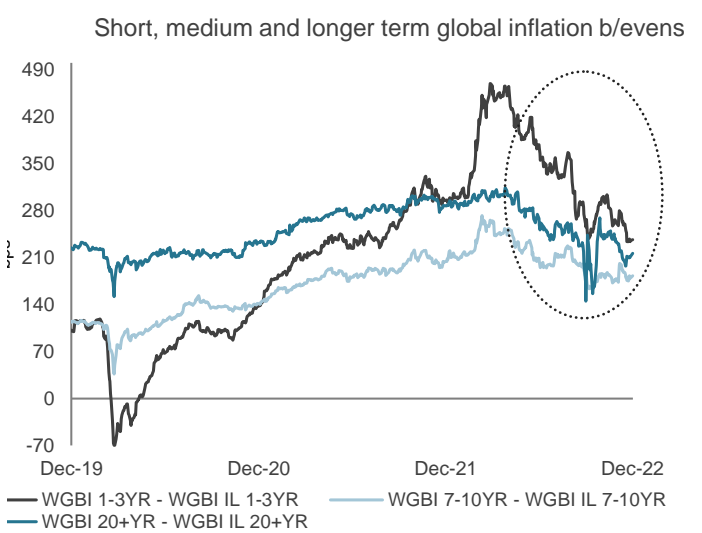


Chart 6: Short breakevens globally led longer ones lower since the Ukraine spike, as commodity prices fell. Short breakevens were often below long during the pre-Covid, low inflation era.



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# Yield Spread and Credit Spread Analysis

Chart 1: US sovereign spreads proved pro-cyclical in 2020/22, collapsing with US yields on Covid before increasing in the reflation trade as the Fed tightened. Recent moves augur a repeat?

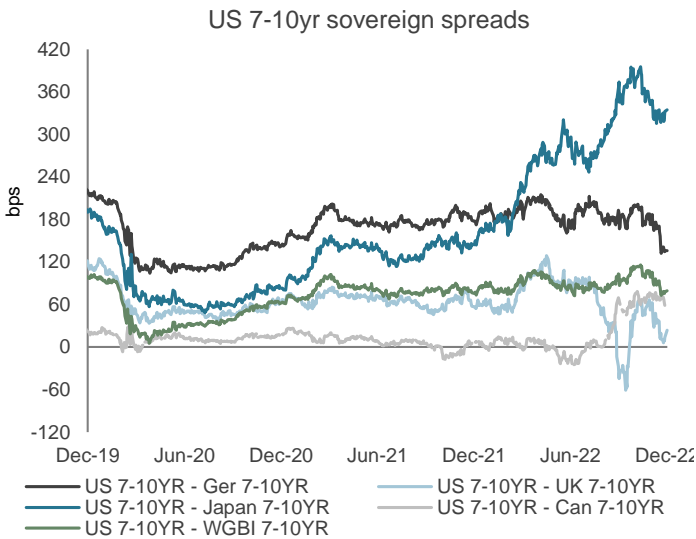


Chart 2: Despite support from ECB market operations, Italian sovereign spreads have been volatile in 2022 as systematic risk increased with the Ukraine invasion shock and rising rates.

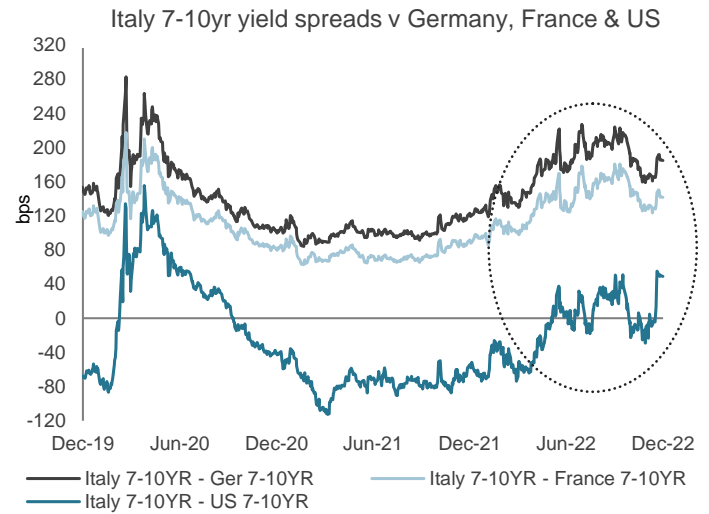


Chart 3: Crisis, what EM crisis? EM sovereign spreads have collapsed during 2022 versus their 7-10-year G7 peers, thanks to official support and divergences in economic cycles (i.e., China).

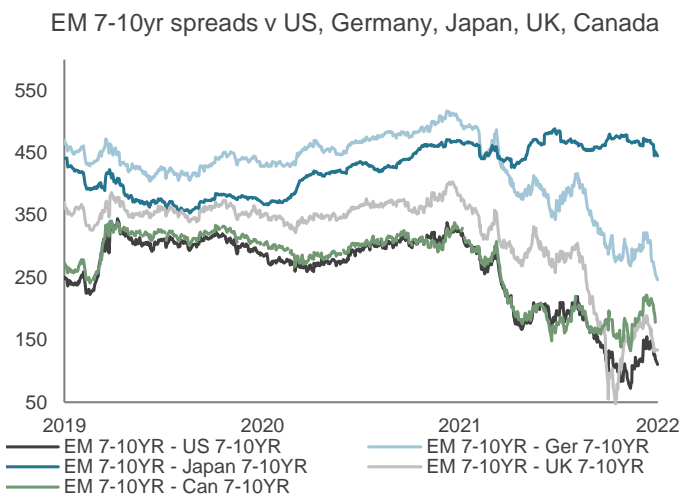


Chart 4: China sovereign spreads have fallen sharply in 2022 versus the G7, and less so vs Japan, where the BoJ retained curve control. China's correlation to the G7 financial cycle remains low.

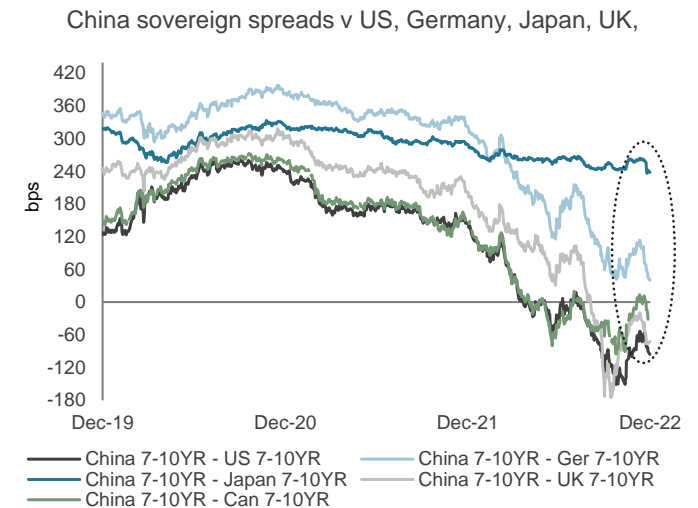


Chart 5: Euro and US credit spreads have declined in Q4 2022, with those in high yield credit seeing the largest moves on revival of risk appetite, and despite heightened recession fears.

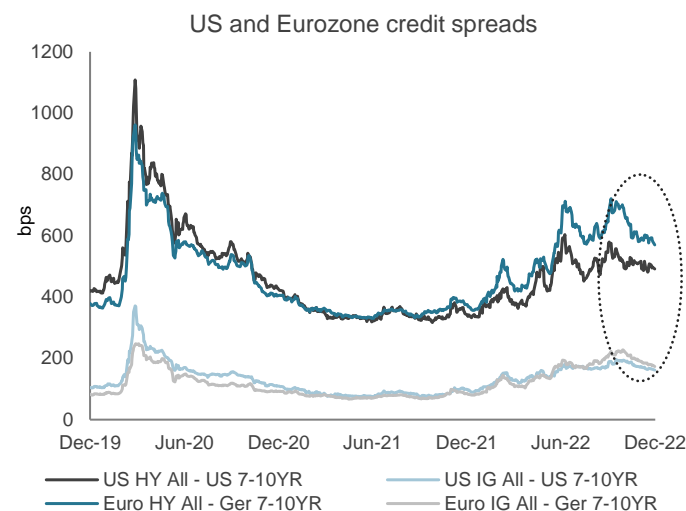


Chart 6: Chinese \$ high-yield spreads tightened further to about 4000bp in December, after support measures for the property sector and the US HY rally, but stayed higher than pre-Covid levels.



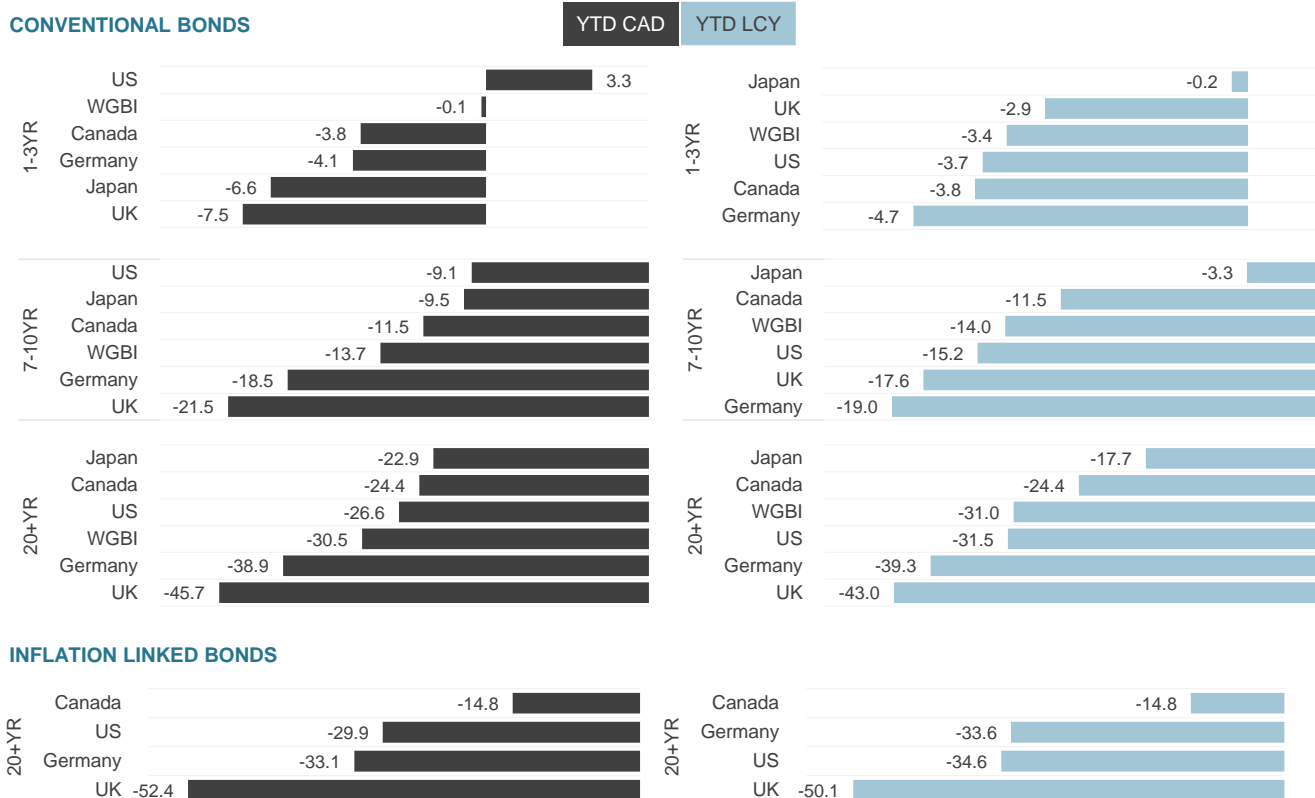
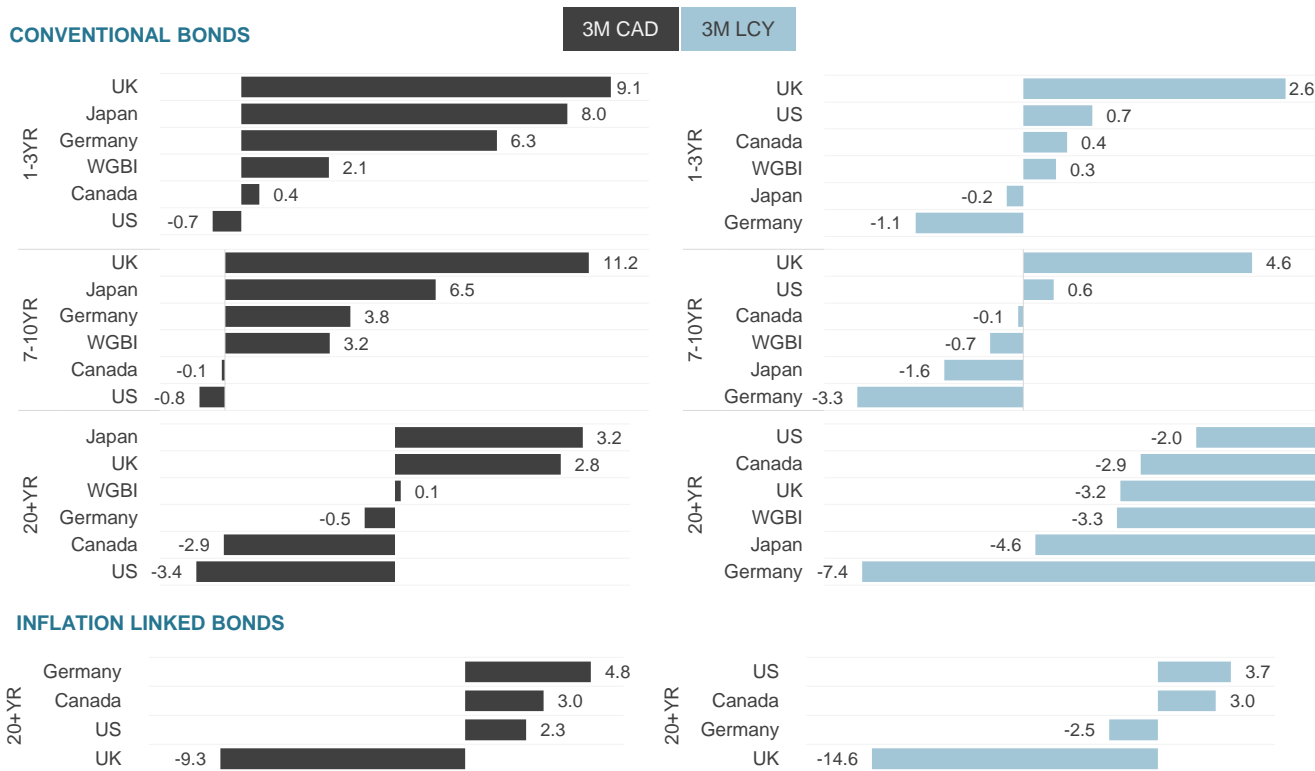
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# Global Bond Market Returns – 3M & YTD % (CAD, LCY) as of December 31, 2022

The global bond rally lost steam in December after central banks implemented further rate rises. However, softer economic data revived hopes future central bank tightening measures may be more modest in 2023. Gilts, JGBs and Bunds were boosted by their stronger currencies. Returns for Canadian government bonds were flat, or lower in Q4, but remained deeply negative YTD.

The Q4 rally lost steam in December, as central banks cooled expectations of early pivots. UK gilts saw their best performances in shorter bonds, with gains of 9-11% in Canadian dollar terms, after UK fiscal consolidation restored calm to the market, and weakness in the Canadian dollar in Q4, versus sterling, 2022.

Long-dated WGBI, Canadian real returns and conventional bonds, gilts, Tips and Treasuries suffered losses of 23-52% in 2022.



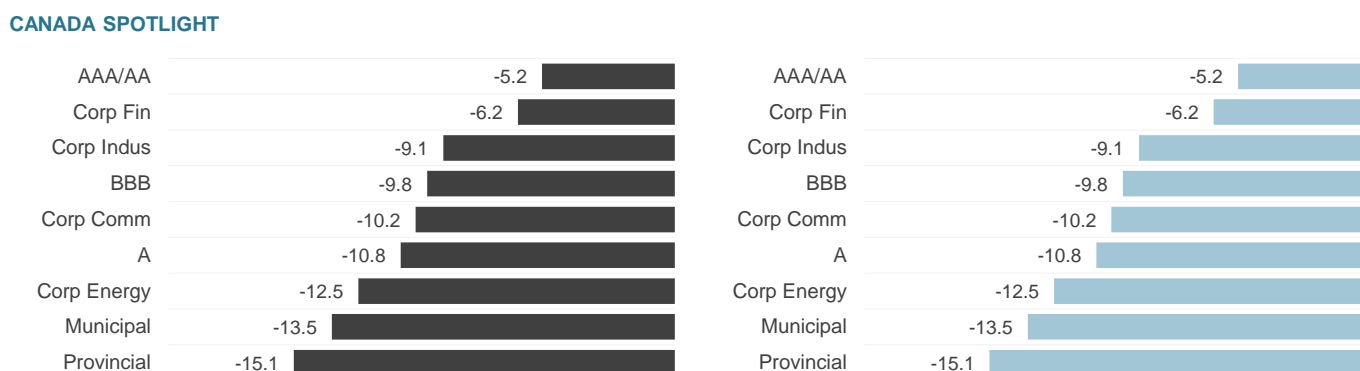
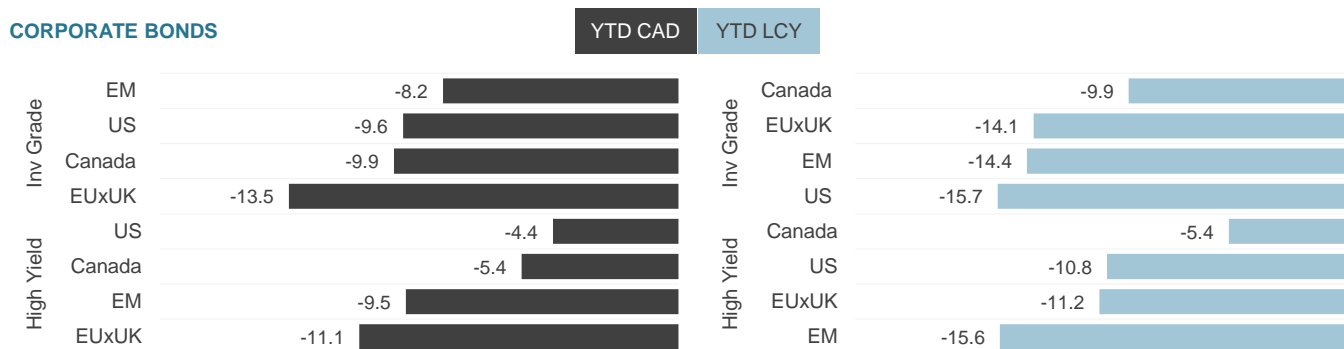
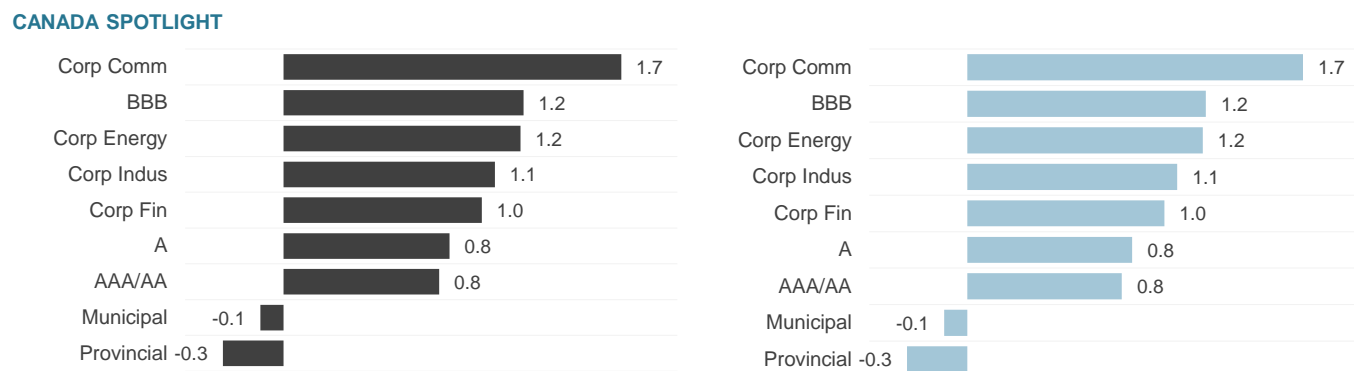
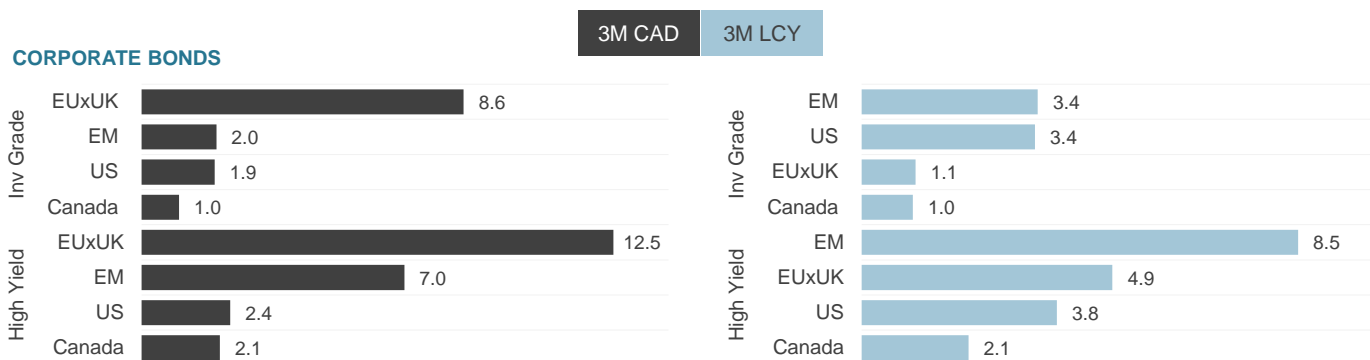
Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

# Corporate Bond Returns – 3M & YTD % (CAD, LC, TR) as of December 31, 2022

Most corporates rallied further in December, led by EM high yield, though gains were modest, leaving losses of 4-14% for 2022 in Canadian dollars. Canadian corporates also lost 5-15%, with Provincial bonds the worst performers.

Both Canadian provinces and munis rallied a little in Q4 but suffered losses of 14-15% in 2022, as government bonds dragged them lower, and spreads widened.

Canadian credit suffered a similar fate, with high quality AAA/AA credits losing 5%, while BBB and A credit lost 10-11% in 2022.



Indices used: FTSE Canada Corporate Bond Index (AAA/AA, A, BBB, Financial, Communication, Industrial, Energy, Overall), FTSE Canada High Yield Bond Index, FTSE Canada Provincial Bond Index, FTSE Canada Municipal Bond Index.

Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.



## Top and Bottom Bond Returns – 3M & YTD % (CAD, TR) as of December 31, 2022

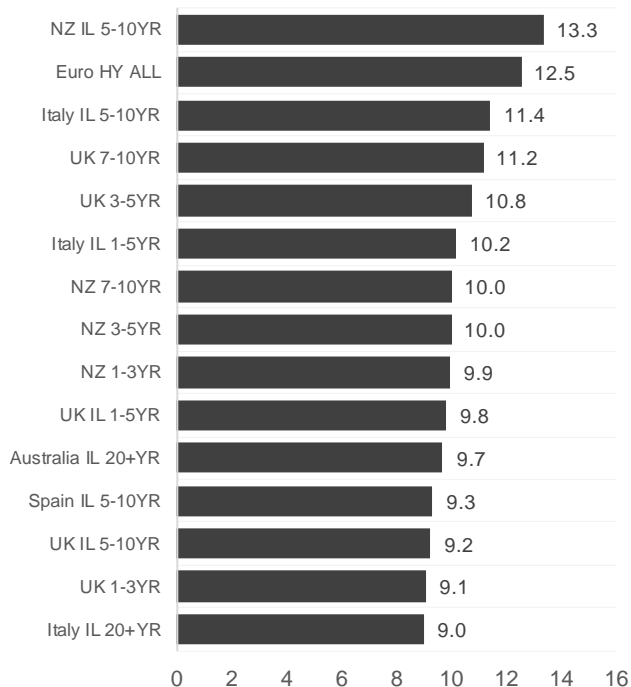
The Q4 bond rally saw long-dated New Zealand and Australian inflation-linked bonds, peripheral European sovereigns IL, euro high yield credit and recovering gilts take up the lead, but it was EM inflation-linked bonds which have returned the most in 2022.

Revival for risk appetite in Q4 saw peripheral European sovereigns gained 9-11% in Canadian dollars, though long-dated New Zealand inflation-linked bonds outperformed with a 13% return, followed closely by European high yield credit.

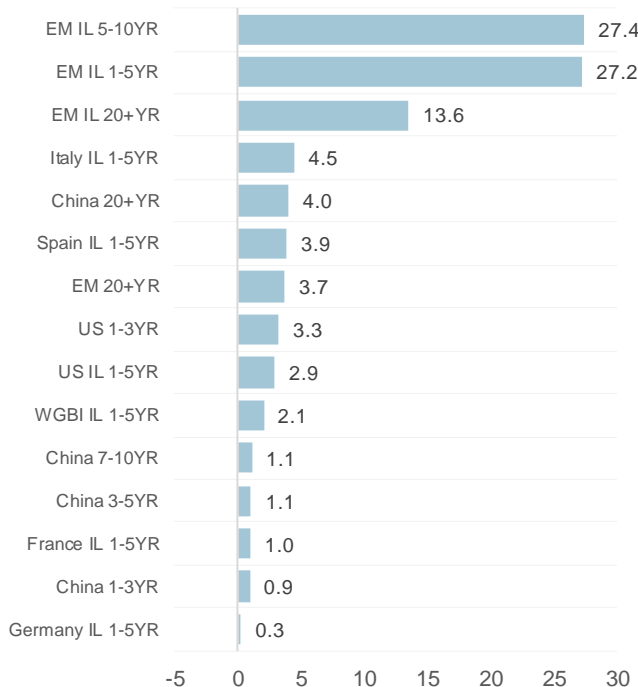
EM inflation-linked bonds have maintained their lead in 2022, with returns of 14-27% in Canadian dollars. Long-dated gilts have underperformed the most, with returns of minus 46-52%.

3M CAD YTD CAD

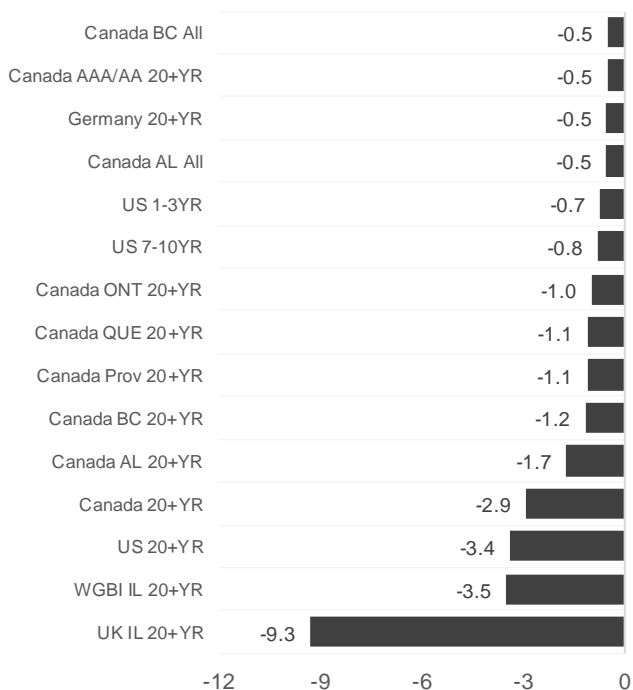
### Top 15



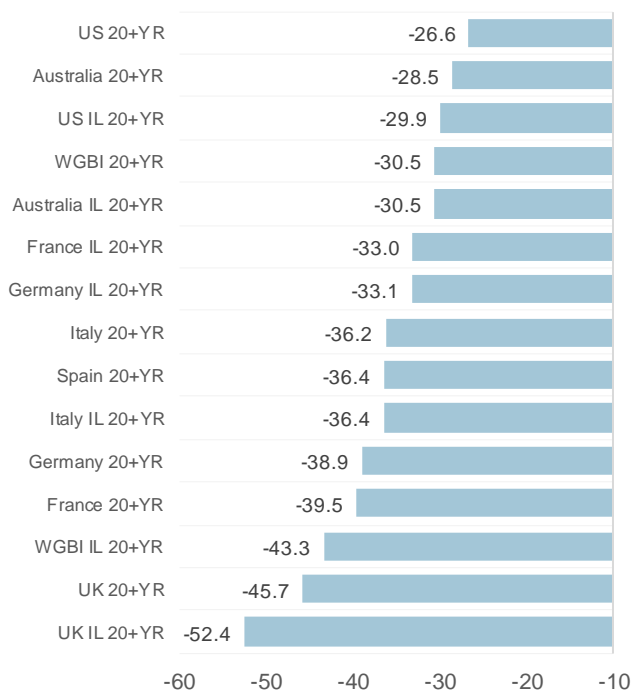
### Top 15



### Bottom 15



### Bottom 15



Source: FTSE Russell. All data as of December 31, 2022. This analysis is taken from 130+ FTSE Russell sub-indices. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

# Sovereign and Climate Bonds Analysis

Chart 1: Climate WGBI reversed its gains vs WGBI in December, returning to levels last seen in early Q4, amid a volatile period.

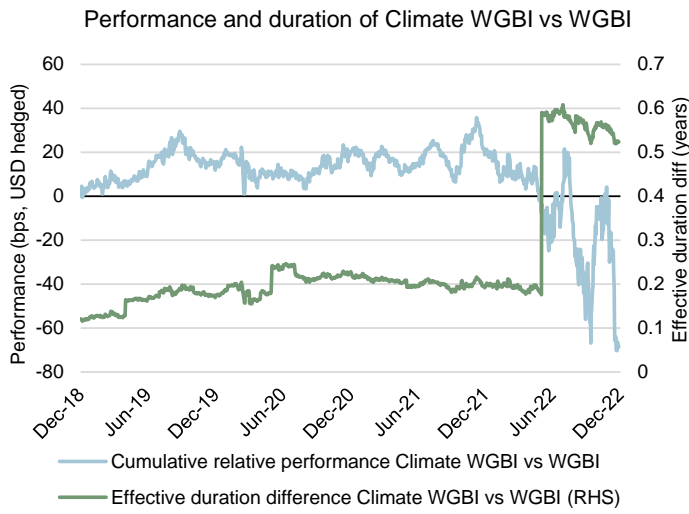


Chart 2: Overweights in the UK and Italy helped relative performance of Climate WGBI but the US underweight did not.

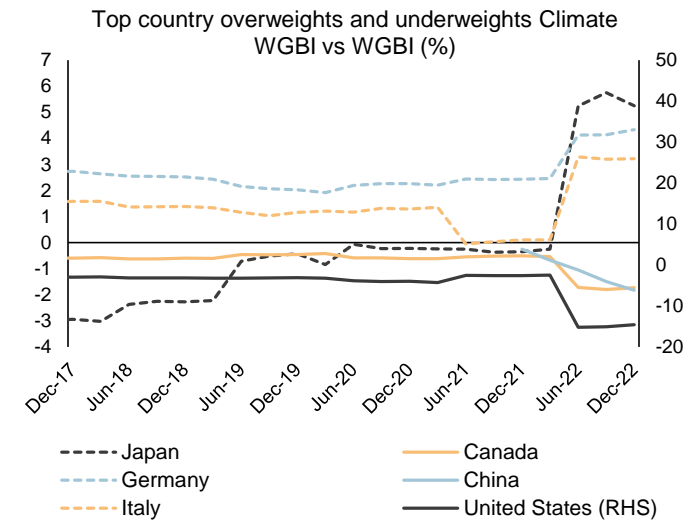


Chart 3: Climate WGBI has a lower yield to maturity versus WGBI, reflecting the higher weight of lower yield European issuers.

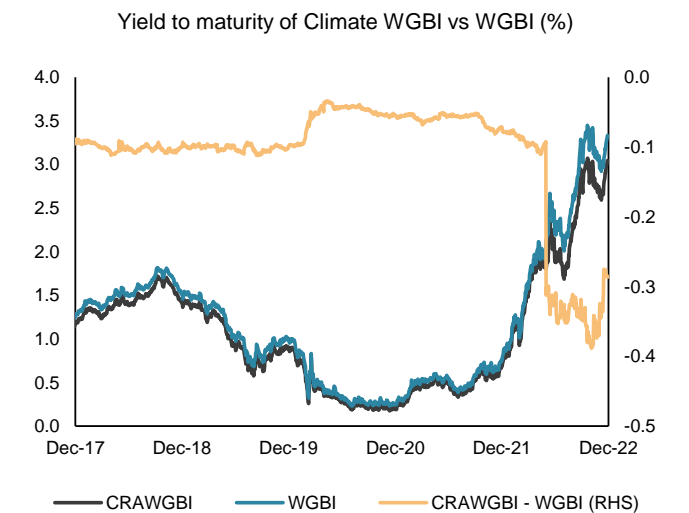


Chart 4: Big differences in Credit Quality: Climate WGBI has a lower weight in AA and a higher weight in AAA, A & BBB vs WGBI.

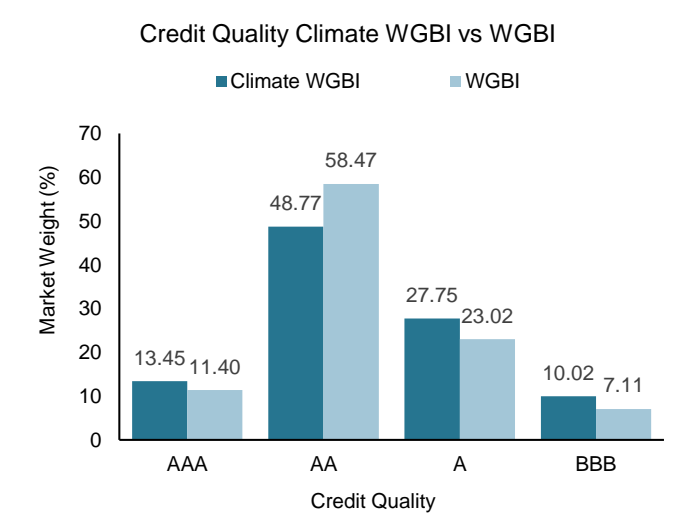


Chart 5: Yield differentials between 20yr+ Climate WGBI and WGBI have widened in 2022 compared to previous years.

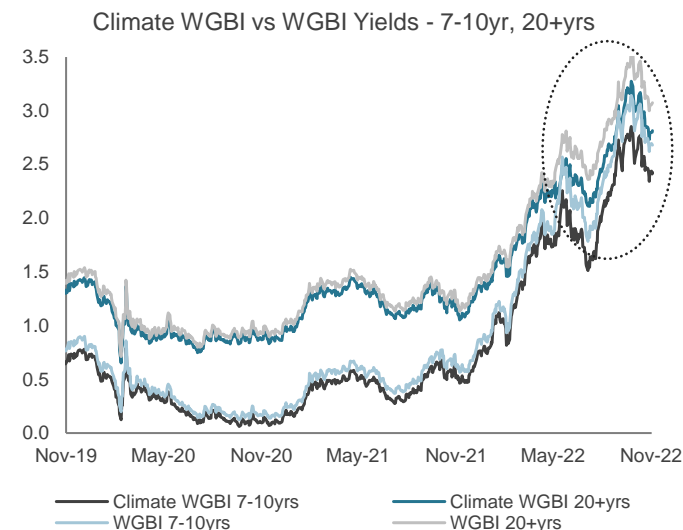
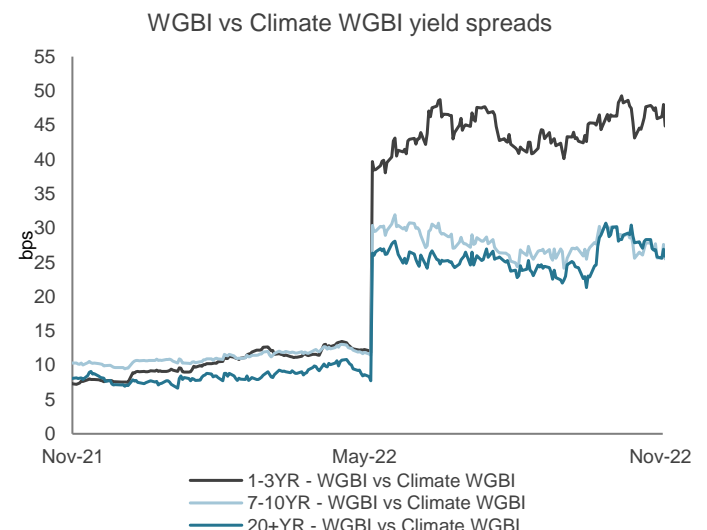


Chart 6: Longer-dated spreads between Climate WGBI and WGBI have remained relatively stable at around 25bp.



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## Appendix – Canadian Bond Market Returns % (CAD vs USD, TR)

### Government and corporate bond returns

Top 15% Bottom 15%

		3M		6M		YTD		12M	
		Local	USD	Local	USD	Local	USD	Local	USD
<b>Government</b>	1-3YR	0.44	1.66	-0.01	-4.81	-3.84	-10.36	-3.84	-10.36
	7-10YR	-0.10	1.12	0.81	-4.02	-11.53	-17.53	-11.53	-17.53
	20+YR	-2.91	-1.73	-1.10	-5.84	-24.41	-29.53	-24.41	-29.53
<b>Inflation-Linked</b>	20+YR	2.97	4.22	3.96	-1.03	-14.78	-20.56	-14.78	-20.56
<b>Corporate</b>	1-3YR	1.10	2.33	0.83	-4.00	-4.42	-10.89	-4.42	-10.89
	7-10YR	1.39	2.63	1.74	-3.14	-10.04	-16.13	-10.04	-16.13
	20+YR	0.51	1.73	1.74	-3.14	-18.69	-24.20	-18.69	-24.20
<b>AAA/AA</b>	1-3YR	0.79	2.02	0.48	-4.34	-3.52	-10.06	-3.52	-10.06
	7-10YR	0.94	2.17	1.09	-3.76	-9.95	-16.05	-9.95	-16.05
	20+YR	-0.51	0.71	1.16	-3.69	-23.91	-29.07	-23.91	-29.07
	All	0.79	2.02	0.61	-4.22	-5.24	-11.66	-5.24	-11.66
<b>A</b>	1-3YR	1.13	2.36	0.84	-4.00	-4.88	-11.32	-4.88	-11.32
	7-10YR	1.22	2.45	1.55	-3.32	-10.60	-16.66	-10.60	-16.66
	20+YR	0.18	1.40	1.33	-3.53	-19.38	-24.84	-19.38	-24.84
	All	0.84	2.07	1.06	-3.79	-10.83	-16.87	-10.83	-16.87
<b>BBB</b>	1-3YR	1.15	2.38	0.93	-3.91	-4.21	-10.70	-4.21	-10.70
	7-10YR	1.53	2.76	1.91	-2.98	-9.79	-15.91	-9.79	-15.91
	20+YR	1.00	2.22	2.33	-2.58	-17.61	-23.19	-17.61	-23.19
	All	1.22	2.45	1.55	-3.32	-9.79	-15.90	-9.79	-15.90
<b>Sectors</b>	Comm	1.71	2.95	2.02	-2.87	-10.24	-16.32	-10.24	-16.32
	Energy	1.20	2.44	1.86	-3.02	-12.50	-18.43	-12.50	-18.43
	Fin	1.01	2.24	0.79	-4.04	-6.19	-12.55	-6.19	-12.55
	Indus	1.07	2.30	1.43	-3.43	-9.15	-15.30	-9.15	-15.30
	Infra	0.27	1.49	1.09	-3.76	-15.92	-21.62	-15.92	-21.62
	RE	0.90	2.12	0.96	-3.89	-7.41	-13.68	-7.41	-13.68
	Secur	0.81	2.03	0.46	-4.36	-4.78	-11.23	-4.78	-11.23
<b>Provinces (All)</b>	1-3YR	0.58	1.81	0.38	-4.44	-3.81	-10.33	-3.81	-10.33
	7-10YR	0.35	1.57	1.36	-3.50	-9.71	-15.82	-9.71	-15.82
	20+YR	-1.09	0.11	0.46	-4.36	-22.31	-27.58	-22.31	-27.58
	All	-0.31	0.91	0.67	-4.16	-15.05	-20.81	-15.05	-20.81
<b>Ontario</b>	1-3YR	0.60	1.82	0.41	-4.41	-3.61	-10.14	-3.61	-10.14
	7-10YR	0.41	1.63	1.45	-3.42	-9.56	-15.69	-9.56	-15.69
	20+YR	-0.98	0.23	0.68	-4.15	-22.19	-27.46	-22.19	-27.46
	All	-0.20	1.02	0.78	-4.05	-14.18	-19.99	-14.18	-19.99
<b>Alberta</b>	1-3YR	0.56	1.79	0.44	-4.38	-4.06	-10.56	-4.06	-10.56
	7-10YR	0.27	1.49	1.28	-3.58	-9.47	-15.61	-9.47	-15.61
	20+YR	-1.70	-0.51	-0.51	-5.29	-23.02	-28.23	-23.02	-28.23
	All	-0.52	0.69	0.23	-4.58	-14.76	-20.54	-14.76	-20.54
<b>Quebec</b>	1-3YR	0.61	1.84	0.36	-4.45	-4.06	-10.56	-4.06	-10.56
	7-10YR	0.31	1.53	1.26	-3.60	-10.24	-16.32	-10.24	-16.32
	20+YR	-1.08	0.13	0.42	-4.40	-22.23	-27.50	-22.23	-27.50
	All	-0.35	0.86	0.66	-4.16	-16.12	-21.81	-16.12	-21.81
<b>BC</b>	1-3YR	0.34	1.57	0.17	-4.64	-3.95	-10.46	-3.95	-10.46
	7-10YR	0.30	1.52	1.43	-3.44	-9.90	-16.01	-9.90	-16.01
	20+YR	-1.16	0.05	0.49	-4.33	-23.17	-28.38	-23.17	-28.38
	All	-0.50	0.72	0.60	-4.22	-16.05	-21.74	-16.05	-21.74

Indices used: FTSE Canada Non-Agency Bond Index (Short, Mid, Long), FTSE Canada RRB Canada Index, FTSE Canada Corporate Bond Index (Short, Mid, Long, AAA/AA, A, BBB), FTSE Canada Provincial Bond Index, FTSE Canada High Yield Bond Index.

Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

## Appendix – Global Bond Market Returns % (CAD vs LC, TR)

### Government bond returns

Top 15% Bottom 15%

Green highlight indicates highest 15%, red indicates lowest 15%.

		1M		3M		YTD		12M	
		Local	CAD	Local	CAD	Local	CAD	Local	CAD
US	1-3YR	0.16	0.10	0.69	-0.71	-3.74	3.26	-3.74	3.26
	7-10YR	-1.45	-1.51	0.61	-0.79	-15.22	-9.06	-15.22	-9.06
	20+YR	-2.56	-2.62	-2.02	-3.38	-31.54	-26.57	-31.54	-26.57
	IG All	-0.46	-0.52	3.37	1.94	-15.68	-9.56	-15.68	-9.56
	HY All	-0.76	-0.81	3.80	2.36	-10.83	-4.35	-10.83	-4.35
UK	1-3YR	-0.08	0.87	2.64	9.06	-2.86	-7.46	-2.86	-7.46
	7-10YR	-3.45	-2.53	4.60	11.15	-17.61	-21.51	-17.61	-21.51
	20+YR	-9.44	-8.58	-3.24	2.82	-43.00	-45.70	-43.00	-45.70
EUR	IG All	-1.84	1.69	1.05	8.56	-14.09	-13.51	-14.09	-13.51
	HY All	-0.74	2.56	4.88	12.53	-11.17	-11.07	-11.17	-11.07
Japan	1-3YR	-0.11	5.58	-0.17	8.00	-0.23	-6.60	-0.23	-6.60
	7-10YR	-1.55	4.05	-1.59	6.46	-3.29	-9.46	-3.29	-9.46
	20+YR	-2.25	3.32	-4.60	3.20	-17.67	-22.92	-17.67	-22.92
China	1-3YR	0.21	2.91	0.30	0.89	2.65	0.95	2.65	0.95
	7-10YR	0.55	3.26	0.35	0.94	2.82	1.12	2.82	1.12
	20+YR	1.67	4.41	-0.16	0.42	5.77	4.02	5.77	4.02
EM	1-3YR	0.42	2.67	0.97	2.50	0.93	-0.03	0.93	-0.03
	7-10YR	0.70	2.52	2.03	3.17	-3.68	-5.24	-3.68	-5.24
	20+YR	1.44	3.52	1.78	3.02	3.41	3.73	3.41	3.73
	IG All	1.16	1.10	3.43	1.99	-14.39	-8.17	-14.39	-8.17
	HY All	3.44	3.38	8.49	6.98	-15.59	-9.45	-15.59	-9.45
Germany	1-3YR	-0.74	2.83	-1.08	6.26	-4.71	-4.08	-4.71	-4.08
	7-10YR	-4.56	-1.13	-3.34	3.84	-19.01	-18.46	-19.01	-18.46
	20+YR	-13.69	-10.59	-7.39	-0.51	-39.32	-38.91	-39.32	-38.91
Italy	1-3YR	-0.82	2.75	0.03	7.46	-4.23	-3.59	-4.23	-3.59
	7-10YR	-5.14	-1.74	-0.43	6.96	-19.91	-19.38	-19.91	-19.38
	20+YR	-12.99	-9.87	-4.57	2.52	-36.62	-36.20	-36.62	-36.20
Spain	1-3YR	-0.92	2.64	-0.83	6.53	-5.25	-4.62	-5.25	-4.62
	7-10YR	-4.84	-1.42	-2.17	5.09	-19.02	-18.48	-19.02	-18.48
	20+YR	-11.81	-8.64	-4.65	2.44	-36.83	-36.41	-36.83	-36.41
France	1-3YR	-1.01	2.55	-1.24	6.09	-5.21	-4.58	-5.21	-4.58
	7-10YR	-5.15	-1.74	-3.05	4.15	-18.78	-18.24	-18.78	-18.24
	20+YR	-13.47	-10.36	-5.43	1.59	-39.93	-39.52	-39.93	-39.52
Sweden	1-3YR	-0.57	1.71	-0.37	4.64	-3.59	-10.14	-3.59	-10.14
	7-10YR	-3.76	-1.56	-1.24	3.72	-15.32	-21.07	-15.32	-21.07
	20+YR					0.00	0.00	0.00	0.00
Australia	1-3YR	-0.36	0.84	0.85	4.89	-2.52	-2.46	-2.52	-2.46
	7-10YR	-3.68	-2.52	-0.24	3.76	-14.25	-14.21	-14.25	-14.21
	20+YR	-7.52	-6.40	-3.77	0.09	-28.52	-28.48	-28.52	-28.48
NZ	1-3YR	-0.15	1.62	-0.28	9.94	-1.76	-2.66	-1.76	-2.66
	7-10YR	-2.35	-0.62	-0.23	10.00	-11.78	-12.58	-11.78	-12.58
Canada	1-3YR	-0.15	-0.15	0.44	0.44	-3.84	-3.84	-3.84	-3.84
	7-10YR	-2.34	-2.34	-0.10	-0.10	-11.53	-11.53	-11.53	-11.53
	20+YR	-4.90	-4.90	-2.91	-2.91	-24.41	-24.41	-24.41	-24.41

Indices used: FTSE Canada Non-Agency Bond Index (Short, Mid, Long).

Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

## Appendix – Global Bond Market Returns % (CAD vs LC, TR)

### Inflation-Linked Bond Returns

Top 15% Bottom 15%

Green highlight indicates top 15%, red indicates bottom 15%.

		1M		3M		YTD		12M	
		Local	CAD	Local	CAD	Local	CAD	Local	CAD
<b>US</b>	1-5YR	-0.38	-0.43	1.23	-0.18	-4.04	2.93	-4.04	2.93
	5-10YR	-1.46	-1.52	1.89	0.47	-12.17	-5.79	-12.17	-5.79
	20+YR	-4.42	-4.47	3.75	2.31	-34.61	-29.86	-34.61	-29.86
<b>UK</b>	1-5YR	-0.34	0.61	3.34	9.81	3.55	-1.36	3.55	-1.36
	5-10YR	-2.71	-1.78	2.80	9.24	-9.35	-13.64	-9.35	-13.64
	20+YR	-8.54	-7.67	-14.63	-9.28	-50.08	-52.44	-50.08	-52.44
<b>EUxUK</b>	1-5YR	-1.77	1.76	0.17	7.61	-0.40	0.27	-0.40	0.27
	5-10YR	-3.84	-0.39	0.12	7.55	-8.91	-8.30	-8.91	-8.30
	20+YR	-14.06	-10.97	-2.48	4.77	-33.59	-33.15	-33.59	-33.15
<b>Japan</b>	1-5YR	-0.13	5.56	0.43	8.65	3.70	-2.92	3.70	-2.92
	5-10YR	-1.11	4.52	-0.51	7.63	3.35	-3.24	3.35	-3.24
<b>EM</b>	1-5YR	0.90	0.65	3.35	4.20	21.36	27.25	21.36	27.25
	5-10YR	1.60	1.37	5.36	6.51	23.64	27.43	23.64	27.43
	20+YR	-0.07	-0.08	2.34	4.53	2.17	13.56	2.17	13.56
<b>Germany</b>	1-5YR	-1.77	1.76	0.17	7.61	-0.40	0.27	-0.40	0.27
	5-10YR	-3.84	-0.39	0.12	7.55	-8.91	-8.30	-8.91	-8.30
	20+YR	-14.06	-10.97	-2.48	4.77	-33.59	-33.15	-33.59	-33.15
<b>Italy</b>	1-5YR	-1.24	2.31	2.56	10.18	3.77	4.47	3.77	4.47
	5-10YR	-4.39	-0.96	3.73	11.43	-7.27	-6.64	-7.27	-6.64
	20+YR	-19.02	-16.11	1.45	8.98	-36.84	-36.41	-36.84	-36.41
<b>Spain</b>	1-5YR	-0.84	2.72	0.89	8.39	3.20	3.89	3.20	3.89
	5-10YR	-3.41	0.06	1.75	9.31	-6.67	-6.05	-6.67	-6.05
<b>France</b>	1-5YR	-1.74	1.80	0.80	8.29	0.35	1.02	0.35	1.02
	5-10YR	-4.53	-1.10	0.70	8.18	-7.45	-6.83	-7.45	-6.83
	20+YR	-14.57	-11.50	0.03	7.46	-33.45	-33.01	-33.45	-33.01
<b>Sweden</b>	1-5YR	0.03	2.32	1.86	6.98	2.19	-4.75	2.19	-4.75
	5-10YR	-3.00	-0.78	0.26	5.30	-6.21	-12.58	-6.21	-12.58
<b>Australia</b>	1-5YR	-0.58	0.62	3.28	7.42	-0.07	-0.01	-0.07	-0.01
	5-10YR	-2.24	-1.06	3.43	7.57	-8.05	-8.00	-8.05	-8.00
	20+YR	-9.49	-8.40	5.46	9.69	-30.57	-30.54	-30.57	-30.54
<b>NZ</b>	5-10YR	0.11	1.88	2.80	13.35	-5.20	-6.07	-5.20	-6.07
	20+YR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Canada</b>	20+YR	-0.67	-0.67	2.97	2.97	-14.78	-14.78	-14.78	-14.78

Indices used: FTSE Canada RRB Canada Bond Index.

Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

# Appendix – Canadian Historical Bond Yields % as of December 31, 2022

## Canadian Bond Yields

Top 15% Bottom 15%

Green highlight indicates top 15%, red indicates bottom 15%.

		1-3YR	7-10YR	20+YR	All Mat
<b>Canada</b>	Current	3.90	3.30	3.31	
	3M Ago	3.65	3.19	3.13	
	6M Ago	3.08	3.21	3.18	
	12M Ago	1.01	1.37	1.67	
<b>IL</b>	Current			1.33	
	3M Ago			1.43	
	6M Ago			1.23	
	12M Ago			-0.32	
<b>Provincial</b>	Current	4.03	3.97	4.32	4.15
	3M Ago	3.87	3.88	4.19	4.03
	6M Ago	3.44	3.86	4.22	3.93
	12M Ago	1.34	1.87	2.46	2.06
<b>Ontario</b>	Current	4.05	3.97	4.32	4.15
	3M Ago	3.89	3.88	4.20	4.03
	6M Ago	3.45	3.88	4.24	3.92
	12M Ago	1.32	1.86	2.46	2.01
<b>Quebec</b>	Current	3.99	3.96	4.28	4.13
	3M Ago	3.85	3.86	4.16	4.02
	6M Ago	3.38	3.82	4.18	3.93
	12M Ago	1.32	1.85	2.40	2.07
<b>Alberta</b>	Current	3.99	3.95	4.29	4.11
	3M Ago	3.85	3.85	4.13	3.97
	6M Ago	3.46	3.86	4.14	3.86
	12M Ago	1.41	1.91	2.54	2.11
<b>BC</b>	Current	3.97	3.95	4.28	4.12
	3M Ago	3.87	3.86	4.15	4.00
	6M Ago	3.41	3.87	4.19	3.92
	12M Ago	1.33	1.85	2.41	2.05
<b>Municipal</b>	Current	4.08	4.05	4.58	4.29
	3M Ago	3.94	3.94	4.44	4.16
	6M Ago	3.45	3.92	4.45	4.01
	12M Ago	1.40	1.92	2.58	2.10
<b>Corporate</b>	Current	5.28	5.18	5.33	5.27
	3M Ago	5.18	5.18	5.24	5.20
	6M Ago	4.57	5.05	5.23	4.83
	12M Ago	1.86	2.57	3.28	2.45
<b>High Yield</b>	Current				7.34
	3M Ago				7.38
	6M Ago				6.98
	12M Ago				4.49

		1-5YR	5-10YR	20+YR	All Mat
<b>AAA/AA</b>	Current	4.94	4.70	4.78	4.89
	3M Ago	4.76	4.65	4.67	4.74
	6M Ago	4.08	4.46	4.71	4.17
	12M Ago	1.45	2.06	2.94	1.61
<b>A</b>	Current	5.16	4.92	5.06	5.10
	3M Ago	5.09	4.91	4.96	5.03
	6M Ago	4.52	4.74	4.96	4.68
	12M Ago	1.80	2.29	3.03	2.34
<b>BBB</b>	Current	5.55	5.38	5.73	5.54
	3M Ago	2.11	1.82	1.95	5.47
	6M Ago	-0.04	0.64	1.14	5.14
	12M Ago	-2.09	-1.02	-0.18	2.75
<b>Comm</b>	Current	5.18	5.78	5.31	5.42
	3M Ago	5.27	5.78	5.23	5.46
	6M Ago	5.05	5.81	4.62	5.16
	12M Ago	2.66	3.82	2.03	2.89
<b>Energy</b>	Current	5.31	5.35	5.42	5.37
	3M Ago	5.23	5.30	5.37	5.31
	6M Ago	4.62	5.30	5.36	5.13
	12M Ago	2.03	2.83	3.39	2.92
<b>Financial</b>	Current	5.26	5.10	5.45	5.25
	3M Ago	5.16	5.15	5.18	5.16
	6M Ago	4.55	4.91	5.22	4.61
	12M Ago	1.76	2.35	3.15	1.92
<b>Industrial</b>	Current	5.26	5.09	5.45	5.26
	3M Ago	5.14	5.06	5.39	5.18
	6M Ago	4.51	4.87	5.41	4.82
	12M Ago	1.98	2.42	3.43	2.51
<b>Infrastructure</b>	Current	4.83	4.80	5.10	5.01
	3M Ago	4.68	4.81	4.97	4.91
	6M Ago	4.08	4.65	4.96	4.80
	12M Ago	1.67	2.33	3.06	2.80
<b>Securitization</b>	Current	5.25			5.25
	3M Ago	5.02			5.02
	6M Ago	4.34			4.34
	12M Ago	1.60			1.60

Indices used: FTSE Canada Non-Agency Bond Index (Short, Mid, Long), FTSE Canada RRB Canada Index, FTSE Canada Corporate Bond Index (Short, Mid, Long, AAA/AA, A, BBB), FTSE Canada Provincial Bond Index, FTSE Canada High Yield Bond Index.

Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

# Appendix – Historical Bond Yields % as of December 31, 2022

## Global Bond Yields

Top 15% Bottom 15%

Green highlight indicates top 15%, red indicates bottom 15%.

		Conventional government bonds				Inflation-linked bonds			Inv Grade	High Yld
		1-3YR	3-5YR	7-10YR	20+YR	1-5YR	5-10YR	20+YR	All Mat	All Mat
US	Current	4.54	4.13	3.88	4.11	2.09	1.68	1.82	5.50	9.00
	3MAgo	4.31	4.18	3.83	3.95	2.11	1.82	1.95	5.72	9.55
	6MAgo	2.96	3.03	2.97	3.28	-0.04	0.64	1.14	4.74	8.86
	12MAgo	0.69	1.14	1.45	1.91	-2.21	-1.30	-0.45	2.41	4.87
UK	Current	3.50	3.65	3.69	3.92	-0.68	0.15	0.49		
	3MAgo	4.39	4.44	4.16	3.72	-0.88	0.08	-0.16		
	6MAgo	1.94	1.91	2.15	2.57	-2.66	-1.56	-0.70		
	12MAgo	0.60	0.89	1.10	1.25	-3.49	-2.94	-2.18		
Japan	Current	0.03	0.15	0.48	1.50	-1.22	-0.54			
	3MAgo	-0.07	0.01	0.26	1.27	-1.37	-0.78			
	6MAgo	-0.09	-0.02	0.24	1.12	-1.29	-0.73			
	12MAgo	-0.09	-0.06	0.06	0.65	-0.63	-0.61			
China	Current	2.28	2.53	2.85	3.26					
	3MAgo	2.06	2.42	2.79	3.21					
	6MAgo	2.19	2.53	2.87	3.36					
	12MAgo	2.35	2.43	2.79	3.39					
EM	Current	3.78	4.38	4.95	4.61	2.79	3.04	5.15	5.92	11.40
	3MAgo	3.70	4.31	5.05	4.78	2.51	3.42	5.19	6.09	13.35
	6MAgo	3.64	4.45	5.07	4.92	2.79	3.28	5.25	5.08	12.30
	12MAgo	3.39	3.73	4.69	4.70	3.13	3.41	4.79	2.71	7.95
Germany	Current	2.56	2.53	2.54	2.51	0.40	0.34	0.18		
	3MAgo	1.66	1.82	2.03	2.11	-0.52	-0.10	-0.07		
	6MAgo	0.56	0.93	1.26	1.61	-1.62	-0.95	-0.59		
	12MAgo	-0.65	-0.44	-0.18	0.12	-2.54	-1.94	-1.79		
Italy	Current	3.34	3.72	4.38	4.72	1.16	2.19	2.18		
	3MAgo	2.87	3.45	4.16	4.37	-0.14	2.02	2.10		
	6MAgo	1.34	2.12	3.04	3.60	-1.94	0.78	1.49		
	12MAgo	-0.16	0.67	1.38	2.21	-1.99	-0.44	0.48		
France	Current	2.85	2.82	2.97	3.30	0.15	0.44	0.77		
	3MAgo	1.91	2.12	2.46	2.99	-0.58	0.21	0.63		
	6MAgo	0.81	1.23	1.76	2.49	-2.85	-0.79	0.17		
	12MAgo	-0.57	0.05	0.47	1.12	-2.53	-1.52	-0.90		
Sweden	Current	2.80	2.65	2.37		-0.24	0.25			
	3MAgo	2.31	2.41	2.22		-0.72	-0.23			
	6MAgo	1.74	1.82	1.75		-1.30	-1.01			
	12MAgo	-0.18	0.43	0.65		-1.73	-1.51			
Australia	Current	3.43	3.62	4.01	4.37	0.60	1.45	1.88		
	3MAgo	3.44	3.64	3.87	4.10	0.80	1.58	2.01		
	6MAgo	2.92	3.30	3.62	3.86	-0.46	0.97	1.65		
	12MAgo	0.66	1.79	2.18	2.78	-1.06	-0.28	0.63		
NZ	Current	5.00	4.62	4.46	4.54	1.54	2.06			
	3MAgo	4.20	4.25	4.30	4.62	1.21	2.13			
	6MAgo	3.54	3.67	3.87	4.17	0.81	1.78			
	12MAgo	1.78	2.61	2.79	3.13	-0.13	0.60			
Canada	Current	3.90		3.30	3.31			1.33	5.27	7.34
	3MAgo	3.65		3.19	3.13			1.43	5.20	7.38
	6MAgo	3.08		3.21	3.18			1.23	4.83	6.98
	12MAgo	1.01		1.37	1.67			-0.32	2.45	4.49

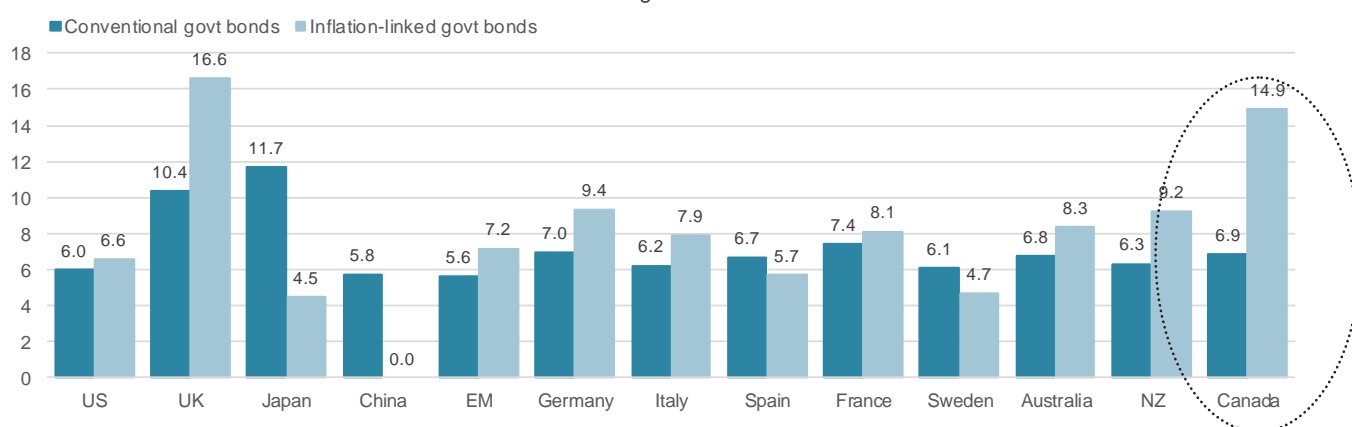
Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

## Appendix – Duration and Market Value (USD, Bn)

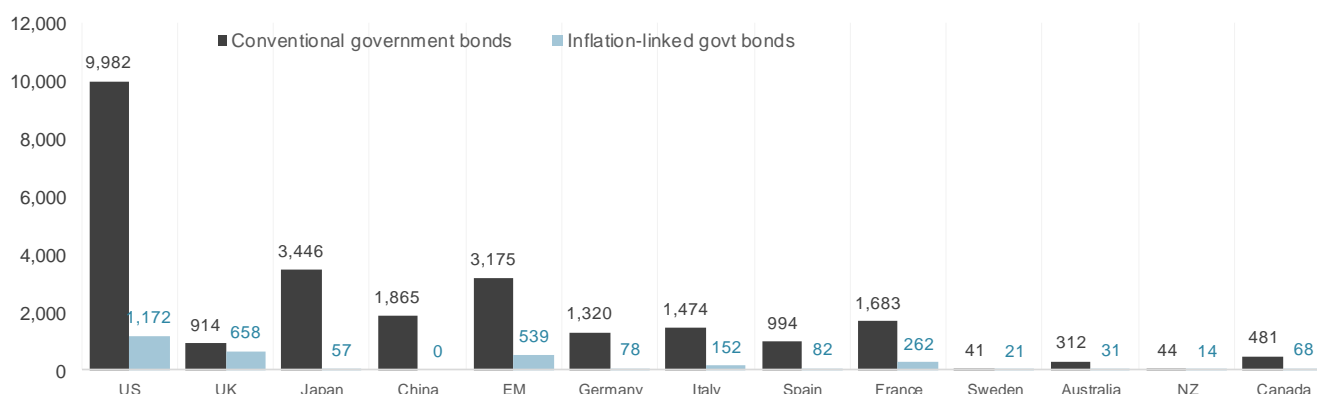
	Conventional government bonds								Inflation-linked government bonds					
	Duration				Market Value				Duration			Market Value		
	3-5YR	7-10YR	20+YR	Overall	3-5YR	7-10YR	20+YR	Total	5-10YR	20+YR	Overall	5-10YR	20+YR	Total
<b>US</b>	3.7	7.6	17.4	<b>6.0</b>	2,144.7	1,003.3	1,185.5	<b>9,981.6</b>	6.9	21.5	<b>6.6</b>	415.0	122.1	<b>1172.0</b>
<b>UK</b>	3.6	7.8	18.9	<b>10.4</b>	83.9	117.2	282.4	<b>913.6</b>	7.1	29.0	<b>16.6</b>	118.0	247.6	<b>657.7</b>
<b>Japan</b>	3.9	7.9	23.7	<b>11.7</b>	387.1	498.9	685.1	<b>3,445.7</b>	6.9		<b>4.5</b>	25.5		<b>56.6</b>
<b>China</b>	3.6	7.6	17.5	<b>5.8</b>	424.1	295.4	227.4	<b>1,865.1</b>						
<b>EM</b>	3.5	7.0	15.7	<b>5.6</b>	691.81	560.63	319.52	<b>3,175.2</b>	5.4	13.7	<b>7.2</b>	109.5	133.6	<b>539.0</b>
<b>Germany</b>	3.9	7.6	20.6	<b>7.0</b>	269.59	218.98	131.18	<b>1,319.5</b>	6.9	22.4	<b>9.4</b>	29.2	16.4	<b>78.1</b>
<b>Italy</b>	3.6	7.3	16.3	<b>6.2</b>	307.87	215.22	122.30	<b>1,474.5</b>	6.9	26.9	<b>7.9</b>	51.8	4.8	<b>152.5</b>
<b>Spain</b>	3.7	7.7	17.7	<b>6.7</b>	189.43	175.51	93.12	<b>994.0</b>	6.1		<b>5.7</b>	38.6		<b>81.7</b>
<b>France</b>	3.7	7.8	20.2	<b>7.4</b>	318.42	300.09	190.65	<b>1,682.8</b>	6.9	24.8	<b>8.1</b>	109.8	18.8	<b>262.4</b>
<b>Sweden</b>	3.7	8.2		<b>6.1</b>	7.58	9.02		<b>40.6</b>	6.0		<b>4.7</b>	12.5		<b>20.6</b>
<b>Australia</b>	3.7	8.0	17.8	<b>6.8</b>	54.86	85.31	14.73	<b>312.5</b>	7.7	22.9	<b>8.3</b>	9.1	2.6	<b>31.5</b>
<b>NZ</b>	3.6	7.9	17.6	<b>6.3</b>	8.40	6.26	2.21	<b>44.2</b>	6.8		<b>9.2</b>	3.1		<b>13.8</b>
<b>Canada</b>		7.5	18.1	<b>6.9</b>		161.50	85.10	<b>481.2</b>		14.9	<b>14.9</b>		68.0	<b>68.0</b>

	Investment grade bonds										High Yield	
	Duration					Market Value					Duration	MktVal
	AAA	AA	A	BBB	Overall	AAA	AA	A	BBB	Overall		
<b>US</b>	10.4	8.6	7.2	6.8	<b>7.1</b>	77.2	422.1	2,349.2	3,235.8	<b>6,084.3</b>	4.3	1,121.8
<b>Euro</b>	6.5	5.1	4.7	4.4	<b>4.6</b>	8.5	165.3	1,027.4	1,380.7	<b>2,581.9</b>	3.2	413.7
<b>EM</b>		5.7	4.8	5.1	<b>5.0</b>		37.20	211.57	353.0	<b>601.7</b>	3.6	209.1

Average Duration



Total Market Value (USD Billions)



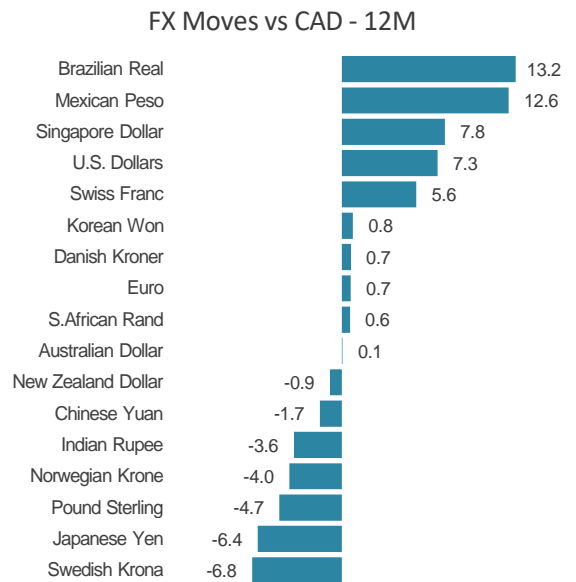
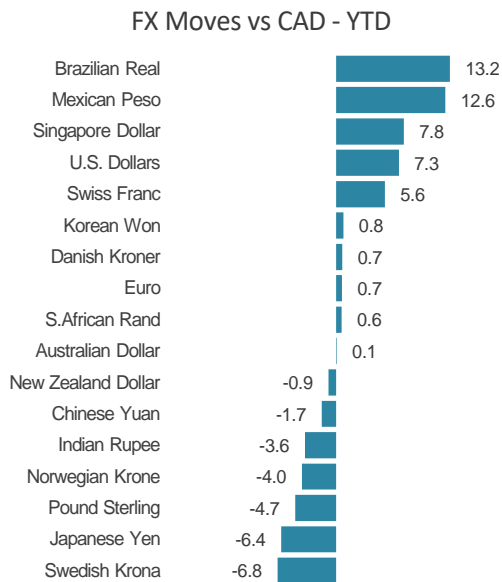
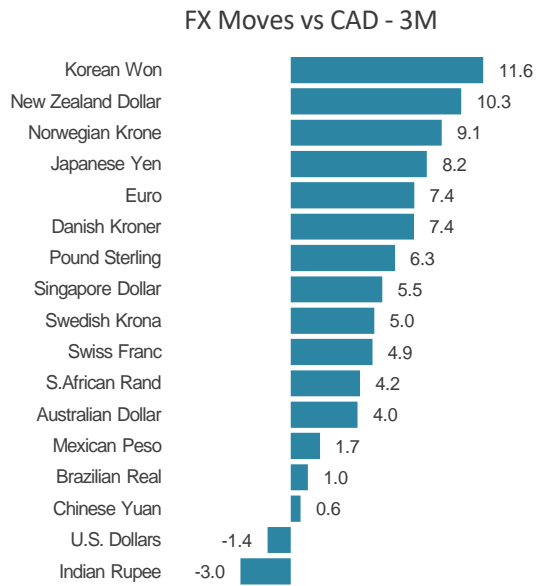
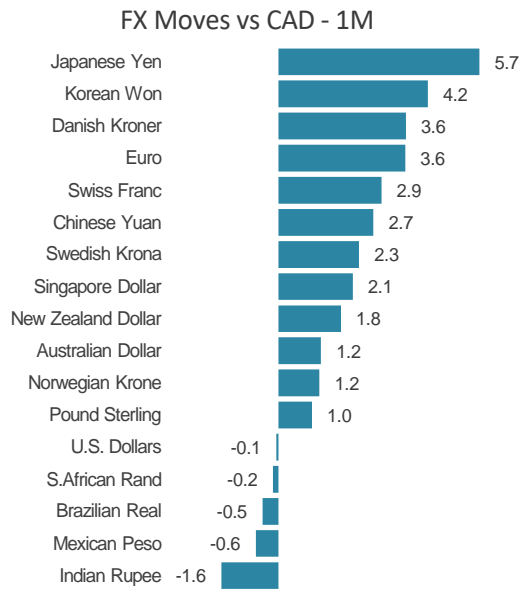
Data as of 2022-12-30

Indices used: FTSE Canada Non-Agency Bond Index (Mid, Long, Overall), FTSE Canada RRB Canada Bond Index.

Source: FTSE Russell. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indexes used for each market. For professional investors only.



## Appendix – Foreign Exchange Returns % as of December 31, 2022



Source: FTSE Russell and Refinitiv. All data as of December 31, 2022. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

## Appendix – Glossary

### Bond markets are based on the following indices:

FTSE Canada Universe Bond Index for all Canadian government and corporate bond markets\*

FTSE Canada High Yield Bond Index for the Canadian high yield market

FTSE Canada RRB Canada Index for the Canadian inflation-linked bond market

FTSE World Government Bond Index (WGBI) for all global government bond markets

FTSE World Inflation-Linked Securities Index (WorldILSI) for all global inflation-linked bond markets

FTSE US Broad Investment-Grade Bond Index (USBIG®) for the US corporate bond market

FTSE US High-Yield Market Index for the US high yield bond market

FTSE Euro Broad Investment-Grade Bond Index (EuroBIG®) for the Euro-denominated corporate bond market

FTSE European High-Yield Market Index for the European high yield market

FTSE Chinese Government and Policy Bank Bond Index (CNGPBI) for the Chinese government bond market

FTSE Emerging Markets Inflation-Linked Securities Index (EMILSI) for the emerging markets inflation-linked bond market

FTSE Emerging Markets Broad Bond Index (EMUSDBBI) for the emerging markets corporate bond market

### List of Abbreviations used in charts:

IL = Inflation-linked bonds

IG = Investment-grade bonds

HY = High-yield bonds

BPS = Basis points

EM = Emerging market

LC = Local currency

### \* FTSE Canada Bond Indexes

1-3YR = Short Term Bond Indices

7-10YR = Mid Term Bond Indices

20+ YR = Long Term Bond Indices

Total Returns

Growth/Inflation

Financial Conditions

Govt. Bonds

Corporate Bonds

Spreads

Inflation-Linked

Credit/Equities

Appendix



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