FTSE Russell
An LSEG Business

Fixed Income Insights

MONTHLY REPORT - **OCTOBER 2023 | JAPAN EDITION**

FOR PROFESSIONAL INVESTORS ONLY

BoJ seeks "higher for longer" inflation with easing policies, while yen suffers

G7 yield curves dis-inverted modestly in September, as long yields rose sharply, despite central bank policy pauses, and higher energy prices. The JGB curve steepened again after the yield cap lift, but the BoJ resisted rapidly increasing longer yields with additional bond buying. Chinese and EM bonds outperformed.

Chart 1: Real and nominal yields rose sharply in the G7 (ex UK), as markets showed acceptance of the higher for longer narrative.

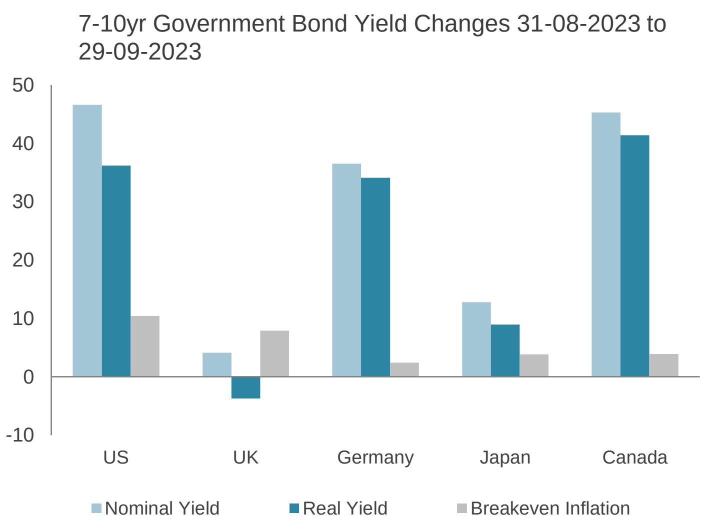
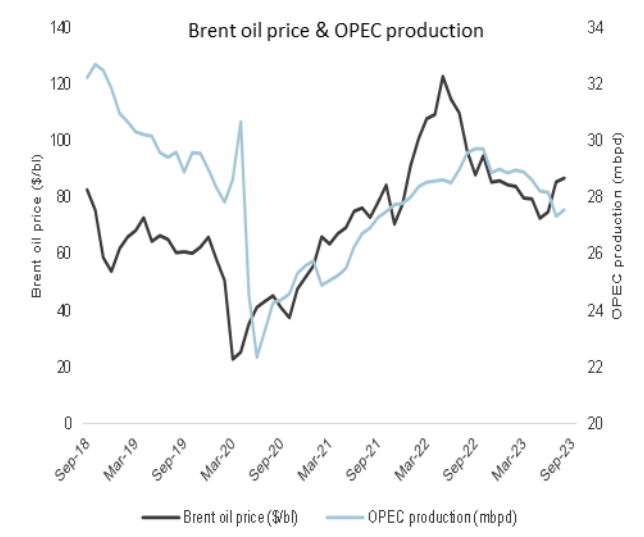


Chart 2: Oil prices have generally been demand-driven since Covid, but recent OPEC supply cuts drove a price rebound.



Source: FTSE Russell. All data as of September 30, 2023. 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

G7 growth generally remains weak, after the policy tightening in 2022-23, although robust consumers and high levels of employment have enabled soft landings to date. European growth is weaker, as central banks and energy prices squeeze growth. Fiscal policy may become more active in 2023-24, even if debt levels reduce room for manoeuvre.

IMF growth forecasts have been upgraded modestly in 2022/23, largely due to consumer spending, as consumers ran down Covid windfalls, led by the US (Chart 1). But higher rates, the rebound in oil prices, de-globalisation and weak Chinese growth are major headwinds for global growth post-Covid. Japan's growth is largely driven by exports and tourism, with consumer spending lagging.

Chart 2 shows a mixed inflation picture in August, on less favourable base effects and higher energy prices, with the "easy" disinflation gains complete (from base effects and lower energy prices). Japan's core inflation, excluding fresh food, stayed at 3.1% y/y in August, but domestic demand may need to strengthen, to sustain higher inflation. Chinese deflation risks eased modestly.

Debt/GDP ratios are higher than ideal for the G7, after Covid support drove sharp increases in debt levels (Chart 3). Higher inflation rates have at least reduced the real value of debt burdens. With monetary policy focused on restoring inflation to 2% target levels, more active fiscal policy is likely, to enhance infrastructure, and to prevent recessions, like the US Inflation Reduction Act.

Japan's total cash earnings y/y growth declined further to 1.1% in July, reinforcing the case for the BoJ to retain its ultra-easy monetary policies for longer. Real wage growth was dampened by slower nominal wage growth and persistent inflation. Japan's unemployment rate stayed at 2.7% in August, consistently lower and less volatile than other G7 economies (Chart 4).

Chart 1: IMF growth forecasts have edged higher, despite more policy tightening. A further upgrade is likely in Q4, with the possible exception of China. Weaker Eurozone & UK growth also a feature.

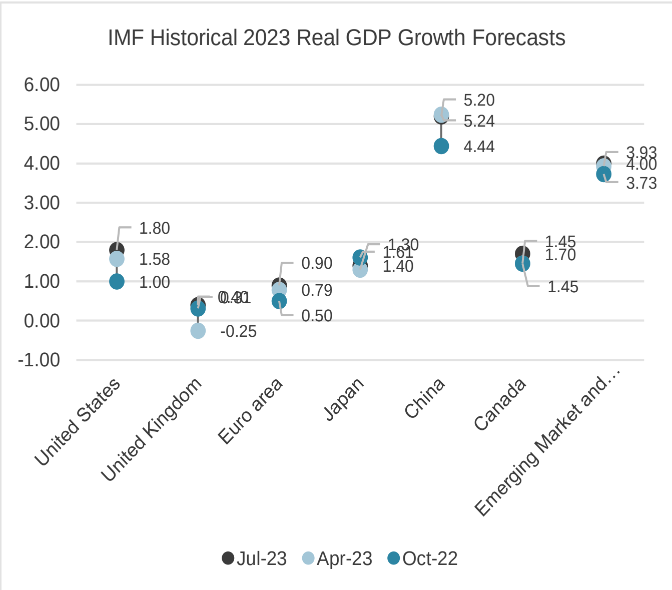


Chart 2: August inflation data was mixed, but higher energy prices and base effects caused higher inflation in US and Canada. Japan inflation held up well. Dispersion fell, but remains high.

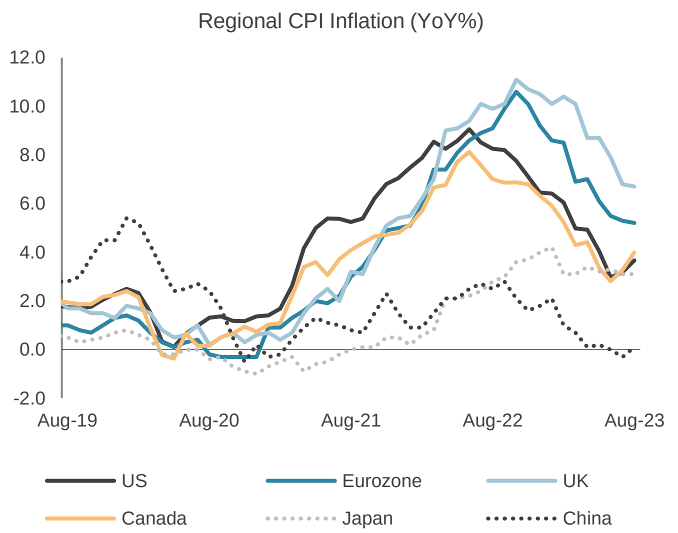


Chart 3: Debt/GDP ratios show the impact of Covid, govt furlough schemes, and fiscal support. But with monetary policy now locked on inflation control, more active fiscal policy may emerge.

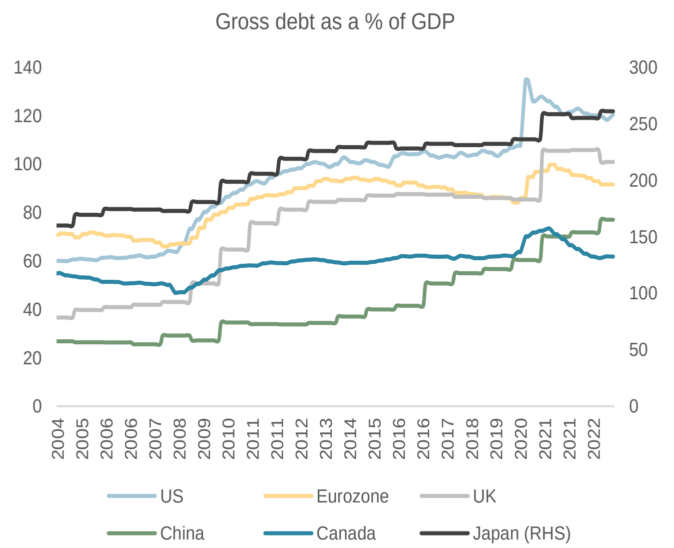


Chart 4: Slower wage growth and more stable inflation drove real wage growth lower in Japan, leading to a decline in household spending. Unemployment rate of 2.7% is lower than peers.

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Financial Conditions and Monetary Policy Settings

G7 central banks, ex BoJ, have tightened financial conditions by raising rates since March 2022, but the tightening in financial conditions is less severe, given accommodative starting conditions. Currency moves reflect rate differentials with the yen and renminbi the weakest. The BoJ's balance sheet continues to grow, unlike other G7, although at a slower pace.

Japan's money supply growth y/y edged lower in August (Chart1), but the month-over-month change has improved (Chart 1). Money supply has helped loosen Japanese financial conditions, unlike other G7 countries, although y/y growth has slowed.

The US dollar rally continued in September, despite the Fed policy pause, as rate differentials improved against the renminbi, after the PBoC cut rates, and only the ECB raised rates in September. The yen rally on the flexing of yield curve control on July 28 proved short-lived, as the BoJ has retained short rates below zero. Expectations of further PBOC easing weigh on the renminbi.

After over 500bp of tightening, a policy pause from the Fed was no surprise in September, though the BoE surprised markets by pausing, particularly after more strong UK wage inflation data. The soft landing for the US and Canadian economies gives the Fed and BoC room to assess the impact of previous tightening moves. Meanwhile, the BoJ seems in no hurry to abandon zero rates, as it seeks sustained inflation above target, and the PBoC cut reserve requirement ratio (RRR) to provide liquidity support.

A 10-year yield cap raise, effective at end-July, has allowed the Bank of Japan to buy fewer Japanese Government Bonds (Chart 4). But rapidly increasing bond yields caused the central bank to resume additional JGBs purchases in early October, to signal its willingness to defend the 1% JGB 10 year yield cap. This move may exert more downward pressure on the yen.

Chart 1: Japan's M2 growth hit the lowest in 4 years, but relatively loose financial conditions remain, helped by the weak yen. Slower M2 growth raises doubts about the sustainability of 2%+ inflation.

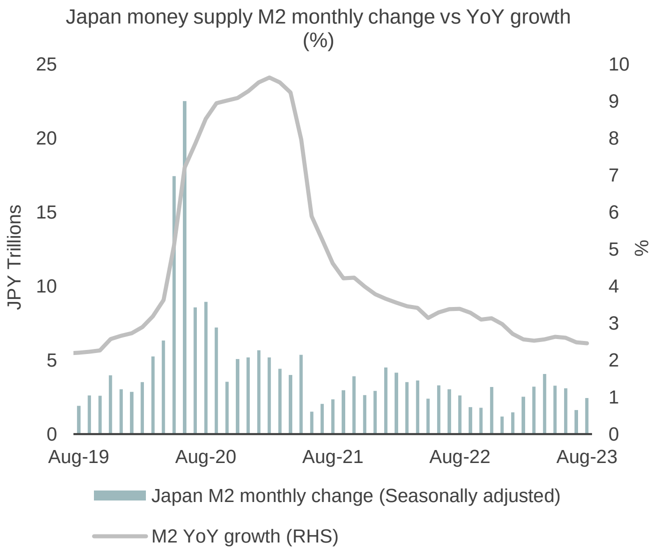


Chart 2: Currencies remain strongly correlated with interest rate differentials, as the yen and renminbi moved to new 2023 lows in Q3, and the dollar rallied. Sterling fell after the BoE policy pause.

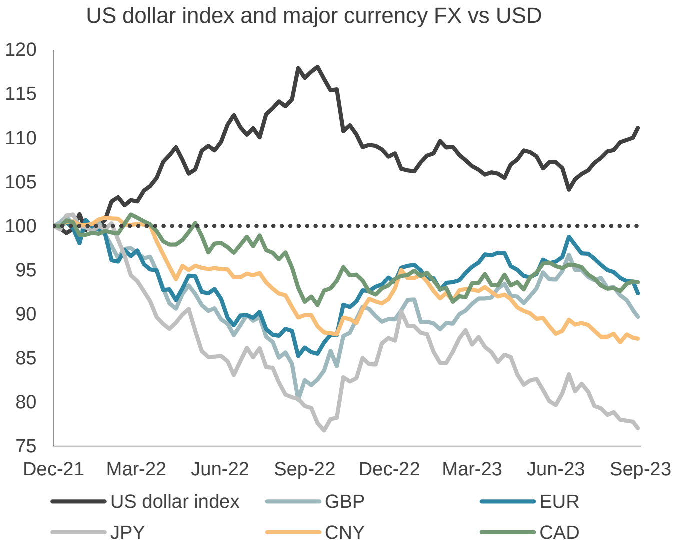


Chart 3: The Fed, BoC and BoE held policy rates unchanged, after 500-525bp of tightening in 2022-23, but did not rule out further moves .The PBoC provided longer-term liquidity by its RRR cut.

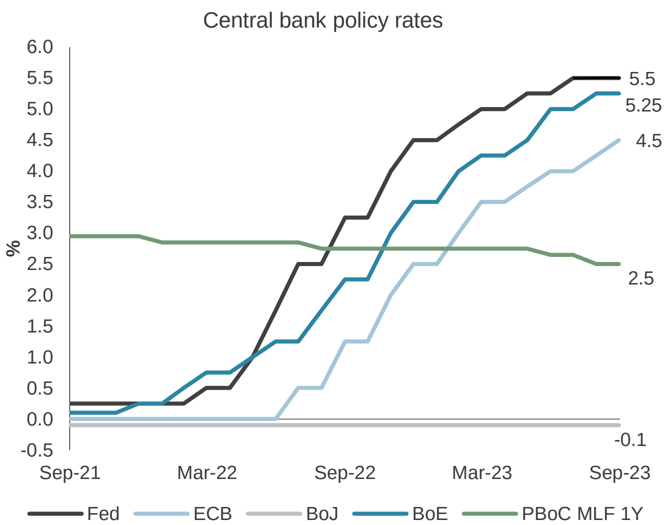
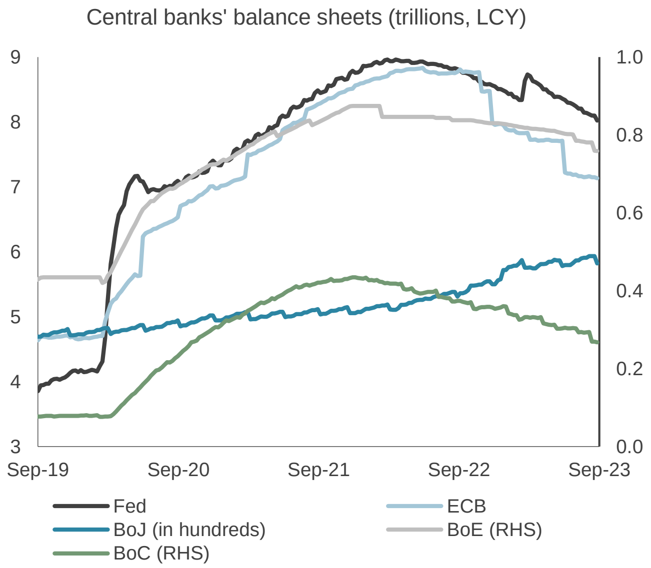


Chart 4: The BoJ holding of JGBs trended lower in September, reversing the rising course. But more bond buying is expected in October, as the central bank targets a slower rise in yields.



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Global Yields, Curves and Spread Analysis

Chart 1: September saw a further increase in G7 7-10 yr yields, led by the US and Canada, where yields hit new cycle highs. JGB yields edged higher, though the 1% 10-year yield ceiling is intact.

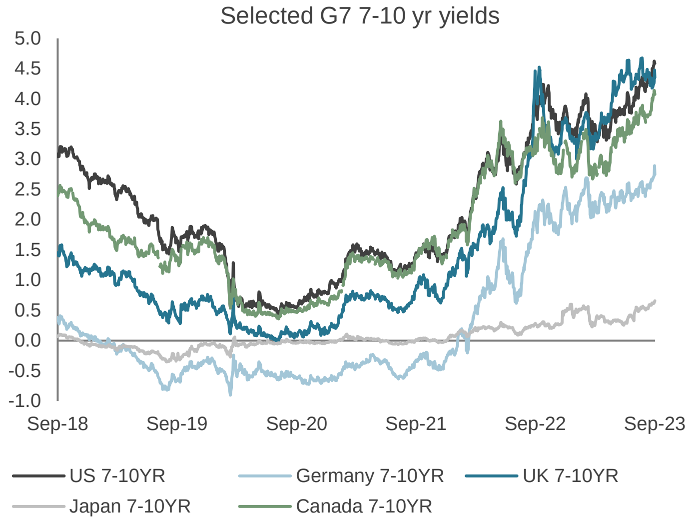


Chart 2: Real yields increased to new cycle highs in the US and Eurozone, but UK linkers moved a little less, helped by the BoE policy pause. JGB real yields edged higher with nominal yields.

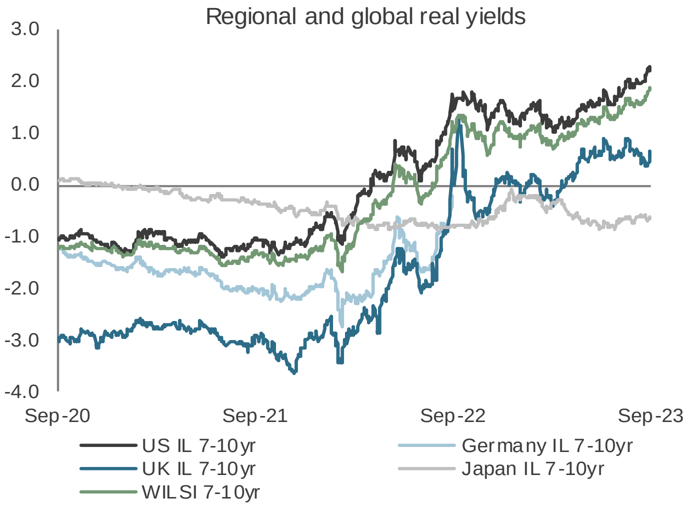


Chart 3: Yield curves dis-inverted further in September, with the front end helped by policy pauses, aside from the ECB. The JGB curve have steepened since the 10-yr yield cap increase (July 28).

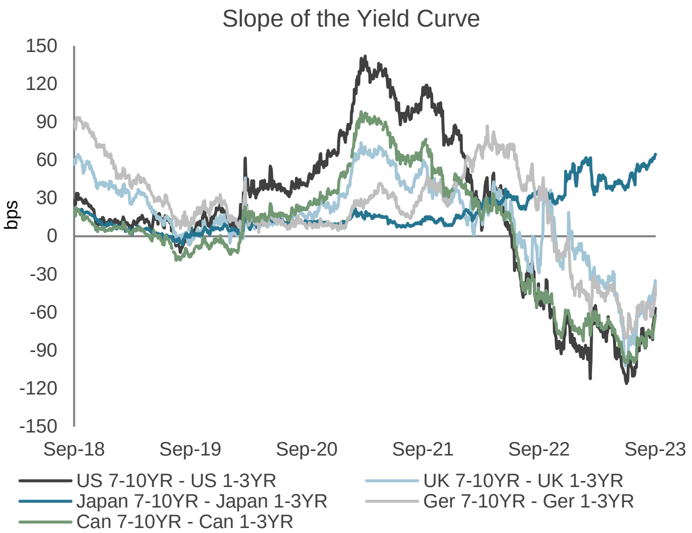


Chart 4: There were bigger dis-inversion moves in longer maturities versus shorts, led by the UK, after the surprise BoE policy pause caused short yields to ease. Long JGB yields also increased.

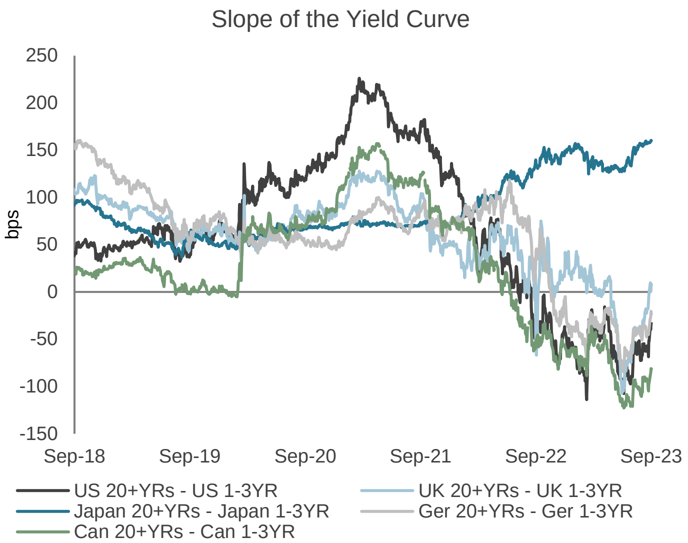


Chart 5: Breakevens increased in the UK, on the BoE policy pause, but moved little overall in September, including WGBI breakevens. JGB breakevens edged higher, as the BoJ retained zero rates.

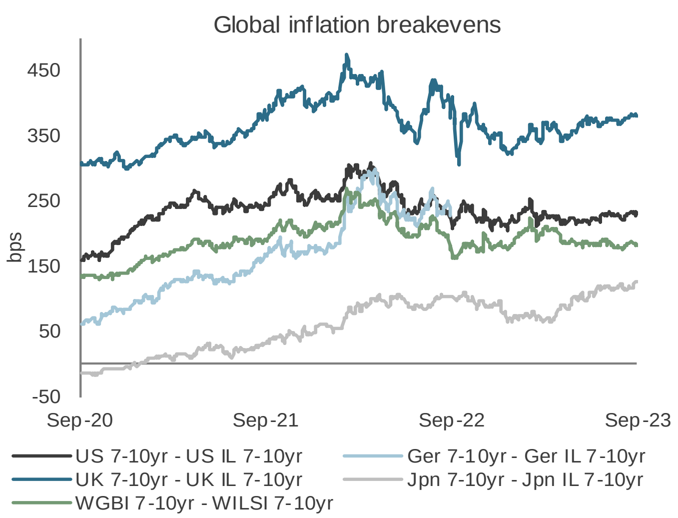
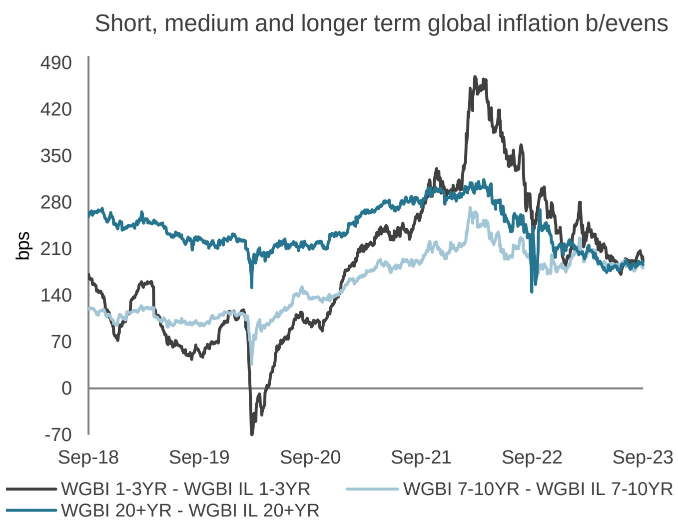


Chart 6: Global inflation breakevens of all tenors remain stable around 2%. Despite the oil price rebound in September, there is little evidence of inflation expectations de-stabilising.



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Yield Spread and Credit Spread Analysis

Chart 1: UK gilt yields traded through Treasuries again in September, reversing the pattern of recent months. US spreads generally increased in September, including spreads vs Japan.

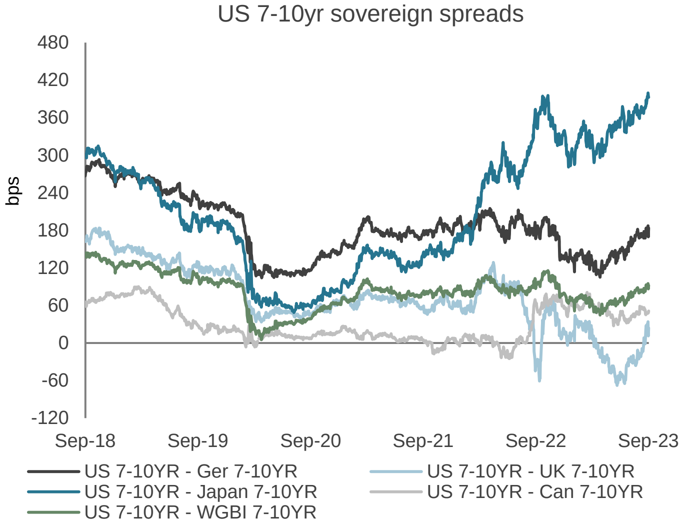

Chart 2: 7-10 yr Italian spreads spiked in September, partly on failure to agree new EU fiscal rules but also after further ECB policy tightening. Italian spreads have trended pro-cyclically since Covid.

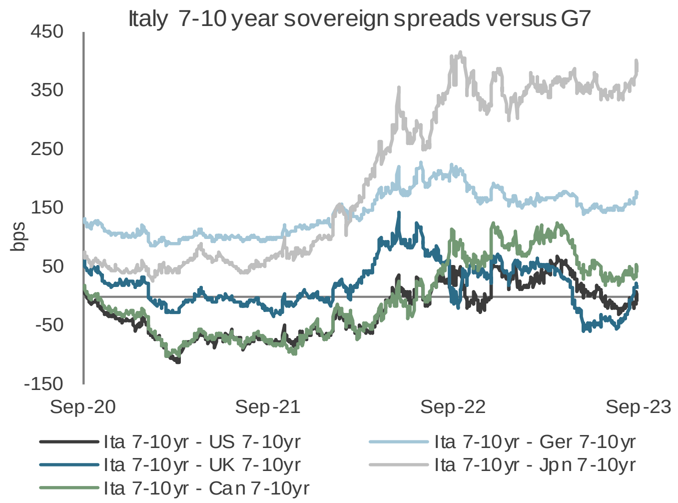

Chart 3: EM sovereign spreads remain near post-Covid lows, due to early counter-inflation policy, in advance of DM. EM spillover effects from G7 tightening have been far less than previous cycles.

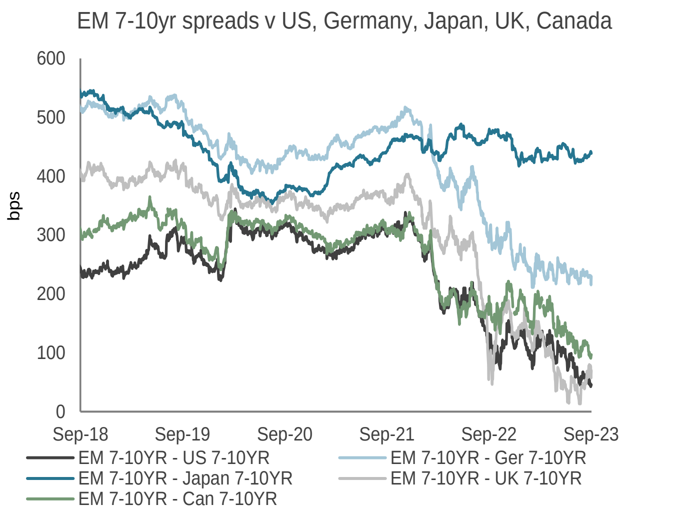

Chart 4: Chinese sovereign spreads fell to cyclical lows, despite higher Chinese yields. The correlation of Chinese yields to the G7 remains very low, and de-globalisation may reduce this further.

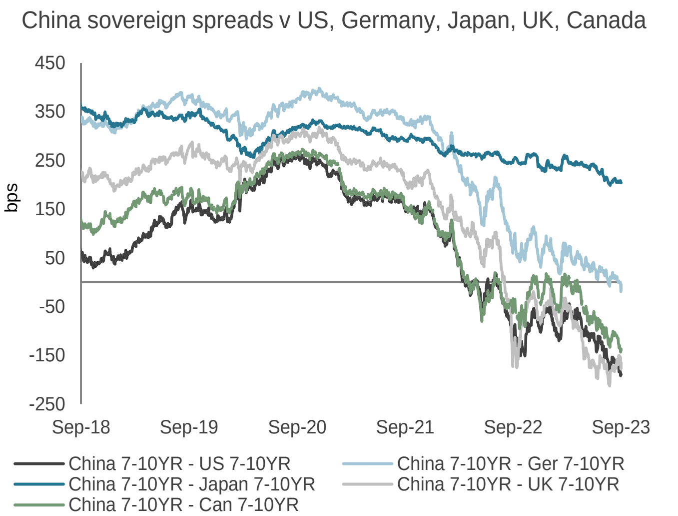

Chart 5: High yield credit spreads continue to grind lower, helped by risk appetite, and low default rates. IG spreads are now relatively more attractive, having fallen far less since the 2022 spike.

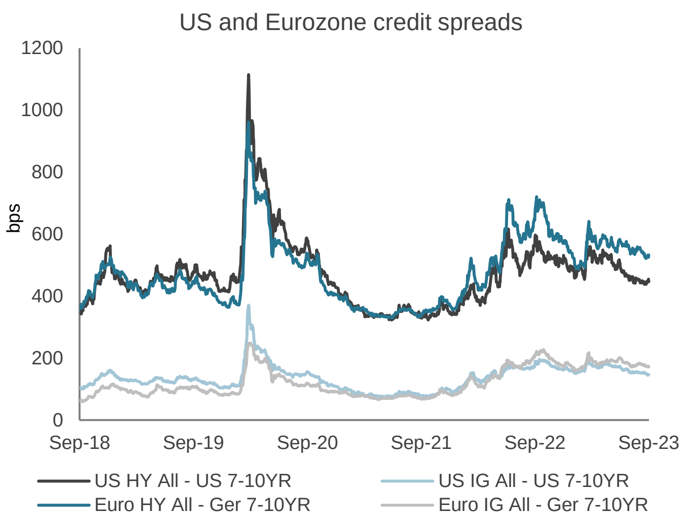

Chart 6: Chinese $ HY spreads eased in September from record highs, but rose back to near 8000bps in the month. Easier mortgage policies may have helped spreads to narrow.

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Sovereign and Climate Bonds Analysis

Chart 1: Climate WGBI outperformed WGBI during the years of very low yields, helped by extra duration, but this reversed in the sell-off

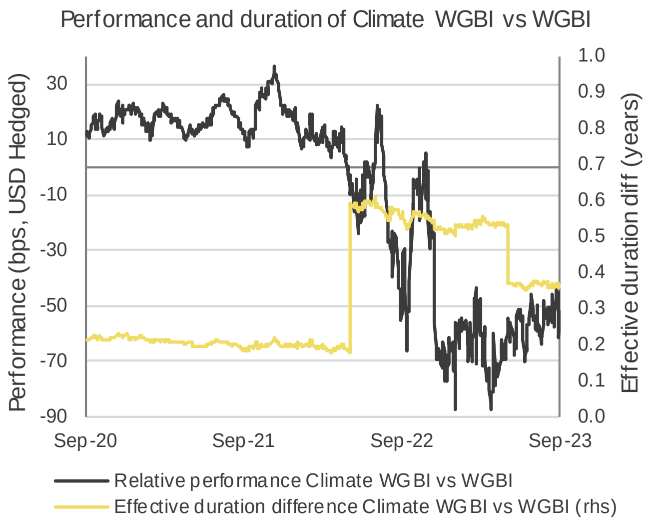


Chart 2: US underweight in the Climate WGBI fell in July's re-weighting, reducing the duration difference vs WGBI. China's 15%

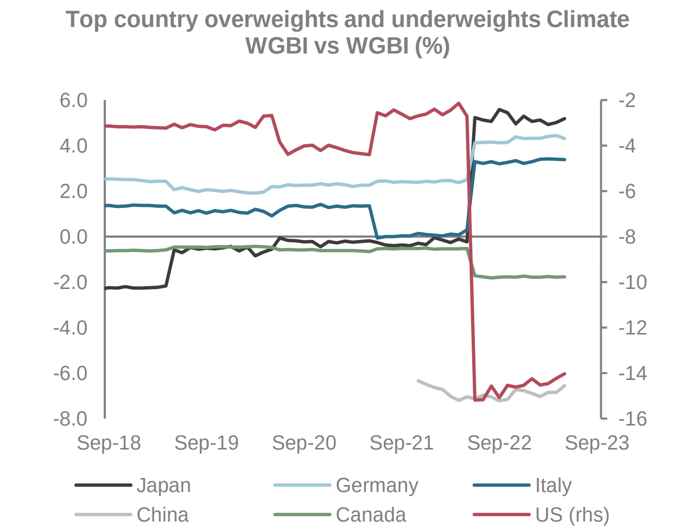


Chart 3: The increase in JGB yields in 2023 and high Japan country weight drove climate-WGBI yields higher, versus WGBI, though climate-WGBI yields remain lower, even if the 'greenium' is modest.

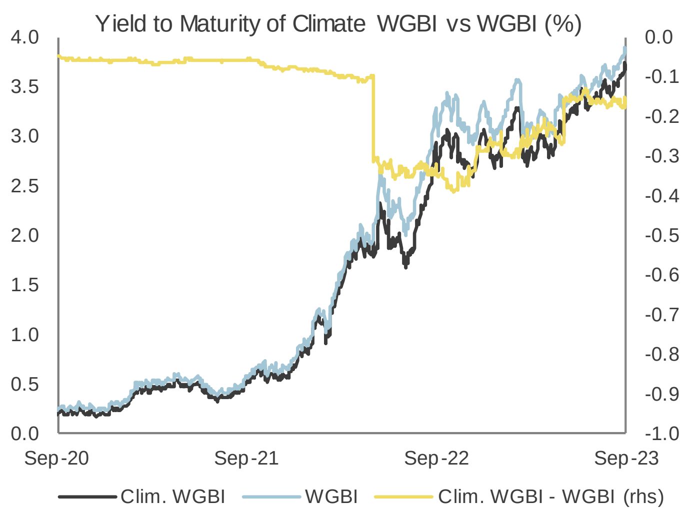


Chart 4: Climate WGBI's higher weighting in the Eurozone gives the index higher AAA weight, with Bunds rated AAA, but the lower US weighting in climate WGBI means the AA weight is notably lower.

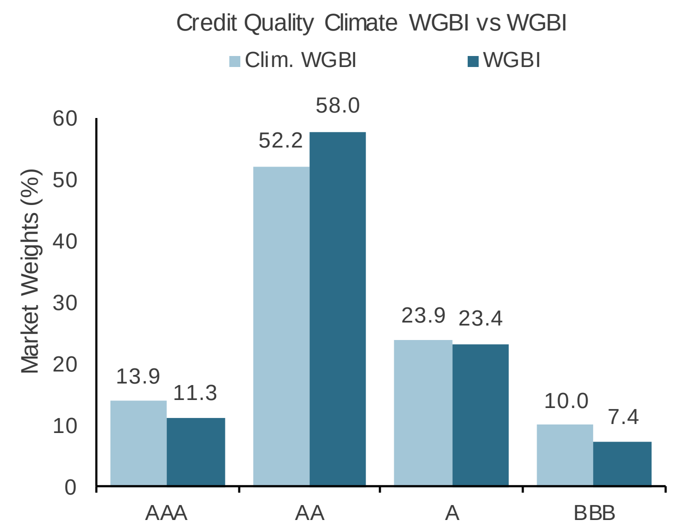


Chart 5: Although curves dis-inverted further in September, as long yields rose, yields converged on 4% in both WGBI and climate WGBI in 2023, eliminating most of the 'greenium' in climate WGBI.

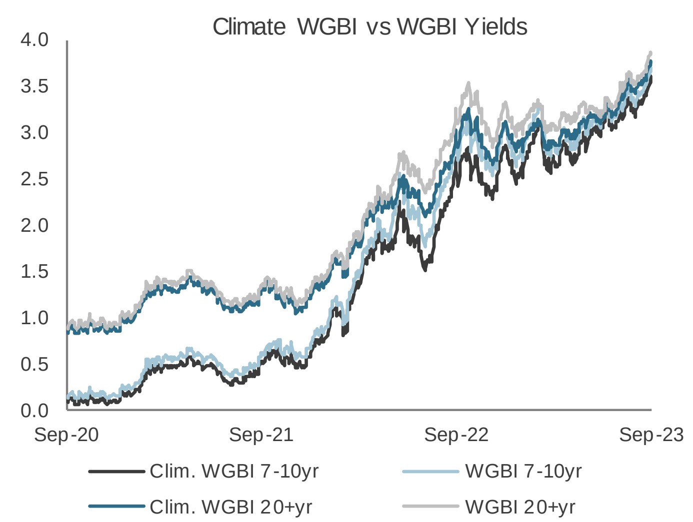
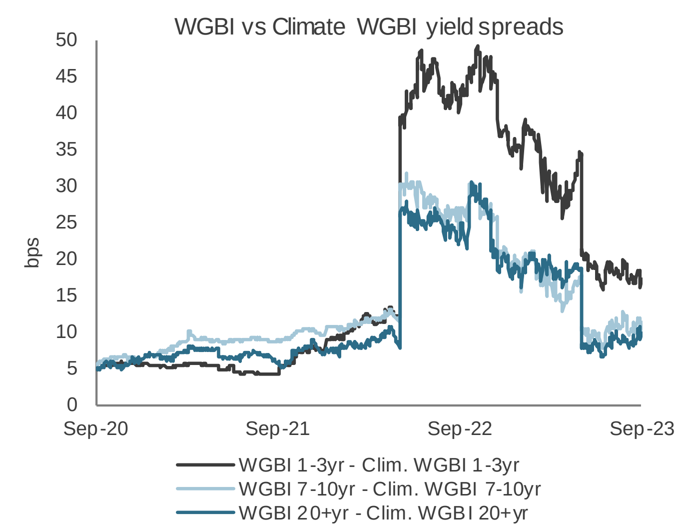


Chart 6: The 'greenium' rose sharply in 2022, when Japan's country weight was increased, and the US fell, reflecting Fed tightening, and BoJ curve control, but much of this has unwound in 2023.



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Credit sector and MBS analysis

Chart 1: US credit spreads show signs of a recovery in commercial real estate, since the Q1 banking crisis, and Tech outperformance on AI. Industrials benefited from the growth pick-up.

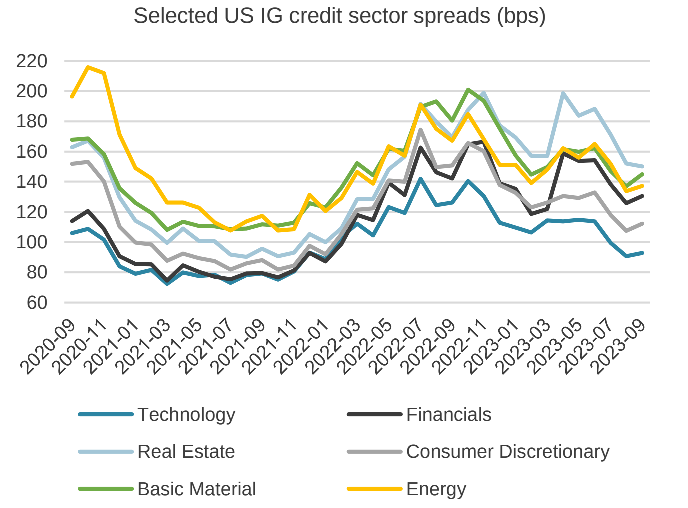


Chart 2: Euro credit sector spreads show the impact of the Ukraine war on the insurance sector. Consumer credits have outperformed, and bank spreads have narrowed on higher rates.

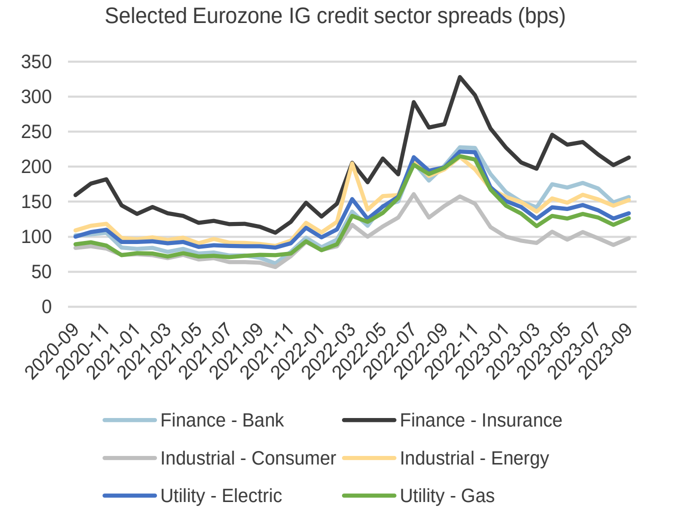


Chart 3: UK spreads show the spike in insurance sector spreads on the Ukraine war, and resilience of consumer credits. Energy spreads show high volatility but trended lower in 2023.

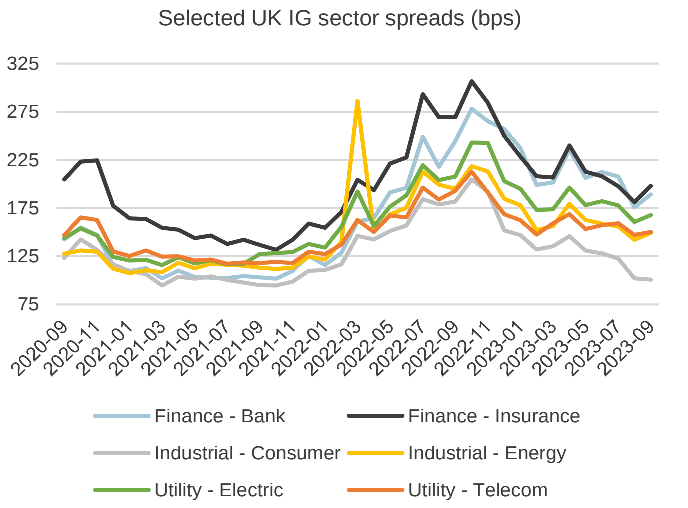


Chart 4: US agency-MBS traded through 7-10-year Treasuries in the early Covid period, driven by aggressive Fed QE. Negative convexity in MBS and higher Fed rates have boosted MBS spreads.

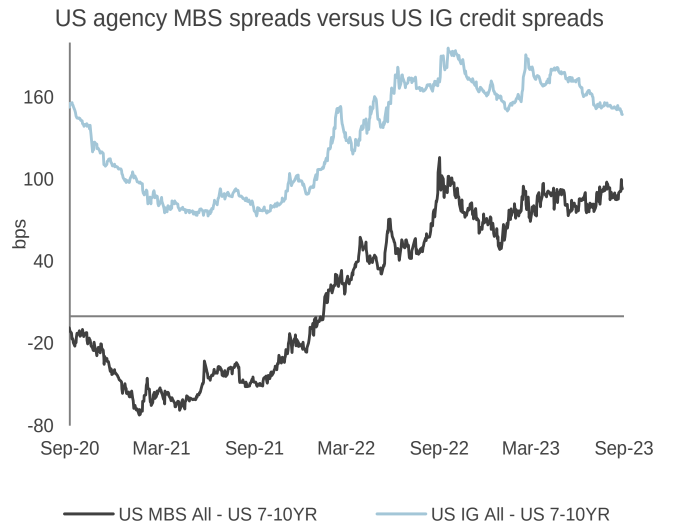


Chart 5: MBS prepayments and mortgage refinancings have collapsed since the Fed tightening began, due to the increase in US Treasury yields and mortgage coupons in 2022-23.

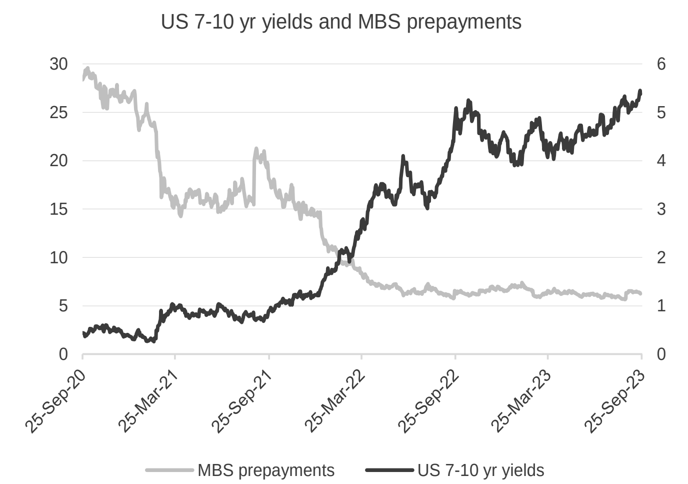
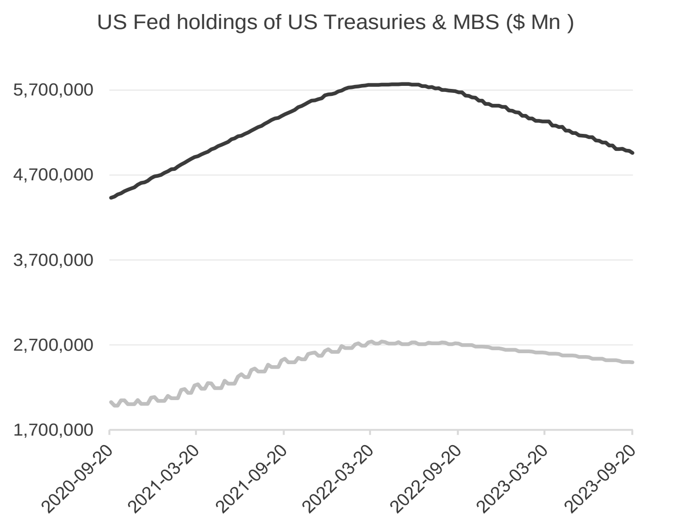


Chart 6: Fed holdings of MBS have been reduced at a slower pace than US Treasuries, since QT began in 2022. This reflects slow MBS prepayments for low coupons, and the Fed's coupon stack.



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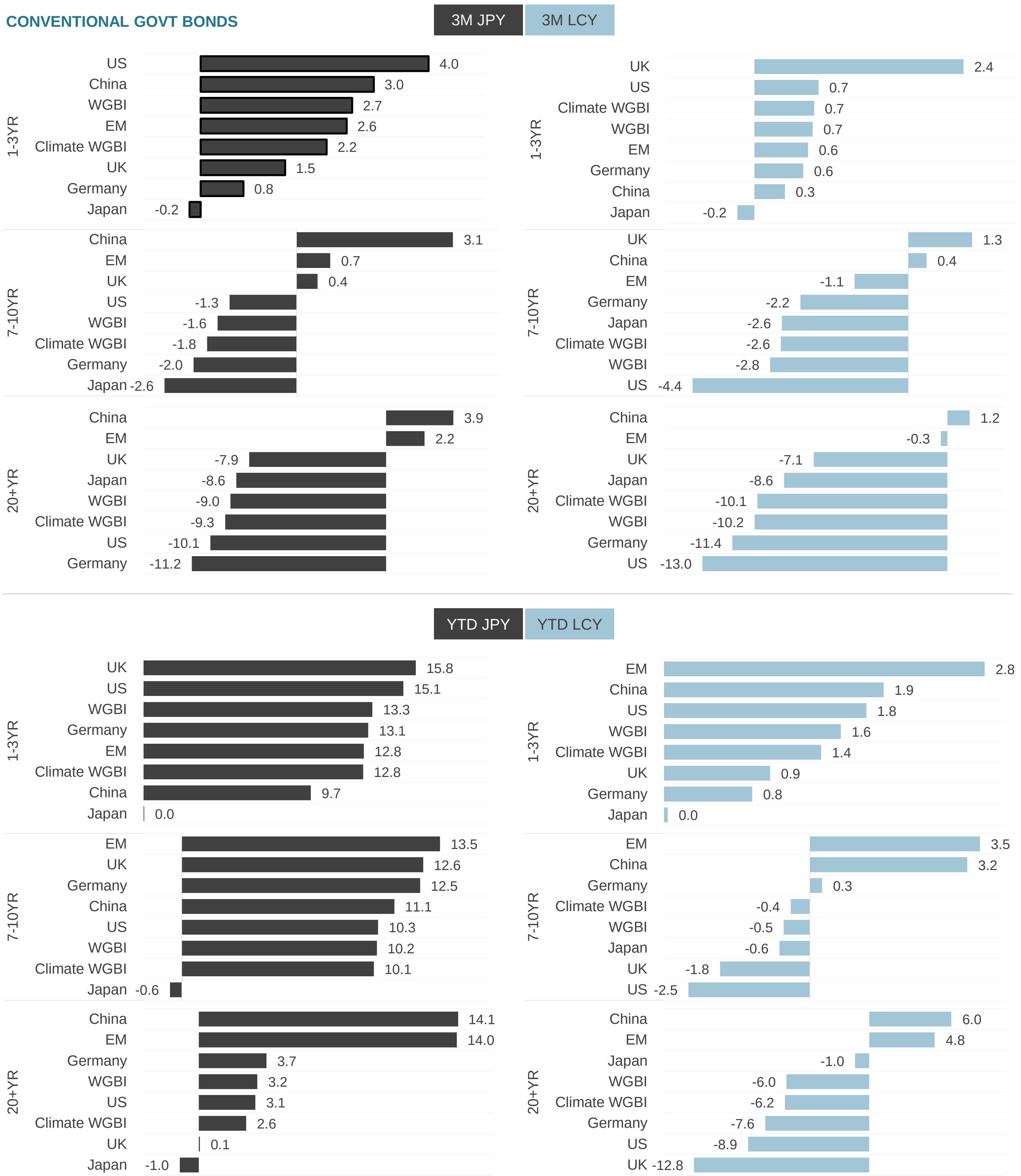
Global Sovereign Bond Returns – 3M and YTD % (JPY & LC, TR) as of September 30, 2023

Longer conventionals fell in Q3, led by Treasuries and Bunds, as “higher for longer” proved a dominant narrative, after strong central bank signalling. Gilts underperformed YTD, losing 2-9% in longs. YTD, long bonds were also weakest, but currency effects boosted returns in yen terms, despite sharp losses in local currency terms (except in China and EM).

3M returns reflect diverging performance government bonds across the curve, i.e. gains in short-dated but losses in longer-dated bonds. The yen generally lost ground, apart from strengthening marginally against sterling (after the BoE left rates unchanged). Looser curve control by the BoJ, effective end-July, has failed to drive a sustained yen rally, despite a brief uptick at end-July.

Year-to-date local currency returns for longer-dated were dragged down by Q3 losses, leaving positive returns only in China and EM. Shorter-dated gilts and US Treasuries outperformed in yen terms, with sterling and dollar strength YTD.



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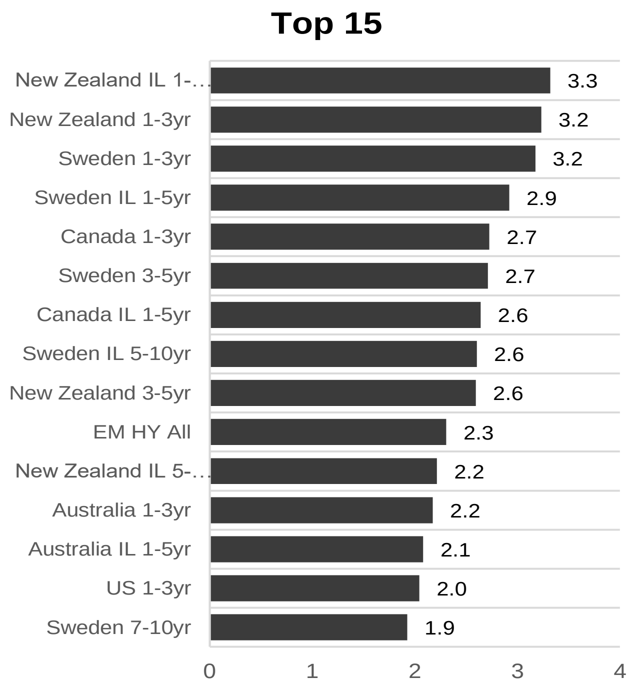
Top and Bottom Bond Returns – 1M & 12M (JPY, TR) as of September 30, 2023

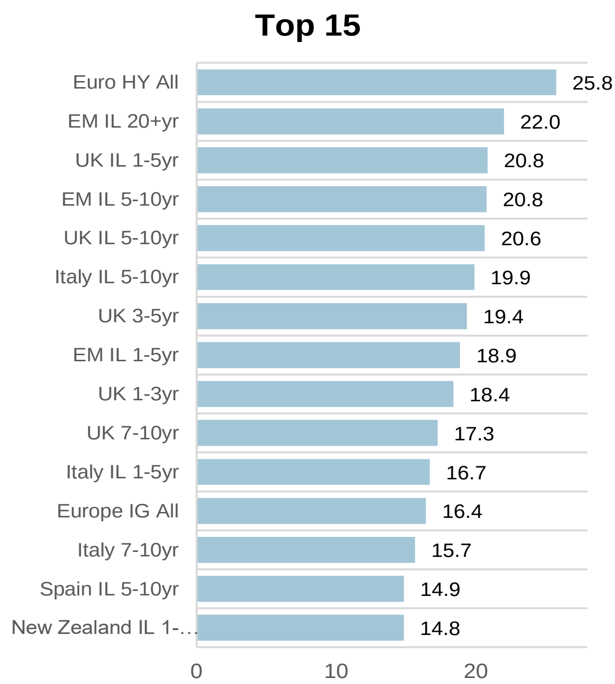
Long conventional and inflation linked bonds fell sharply in September, as yields spiked, led by Eurozone longs, with losses of 5-14% in yen terms, though losses in overseas markets, were reduced by yen weakness (apart from the UK). Euro HY credit and shorter UK gilts recovered strongly y/y from the deep September 2022 sell-offs, with 21-26% returns on 12M. EM inflation linked remain strong performers.

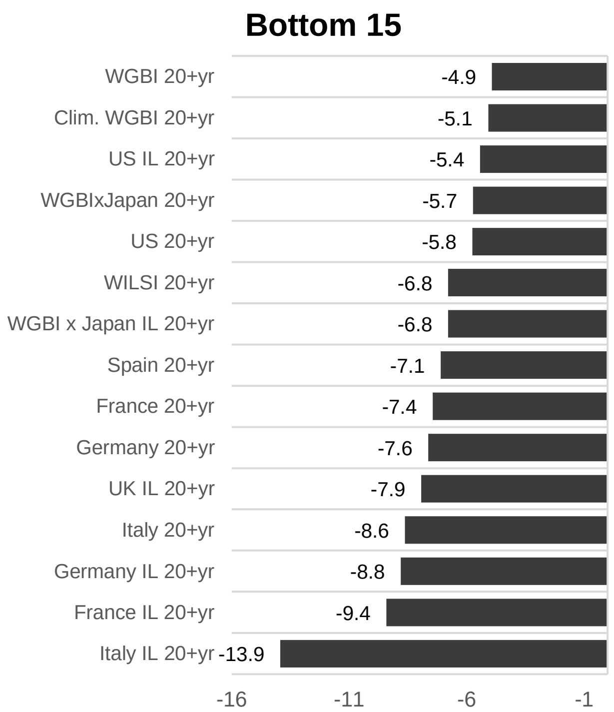
Real yields rose abruptly in long dated govt bonds in September, as yield curves dis-inverted further, in signs of capitulation by bond bulls, and despite policy pauses, apart from the ECB.

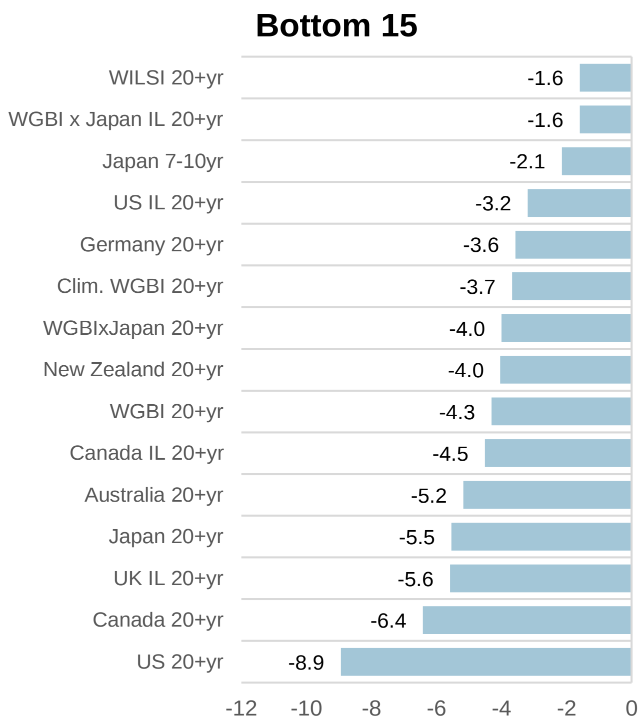
Australasian bonds stabilised in September, helped by modest currency recoveries, with 3% gains in NZ short bonds. Virtually all bonds with positive returns on the month were short-dated, including EM high yield credits, as duration took its toll on longs, in bearish curve steepenings.

1M JPY | 12M JPY









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Appendix − Global Bond Market Returns % (JPY & LC, TR) – September 30, 2023

Government Bond Returns

Top 15% | Bottom 15%

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

		3M		6M		YTD		12M	
		Local	JPY	Local	JPY	Local	JPY	Local	JPY
WGBI	1-3YR	0.67	2.66	0.32	10.40	1.56	13.31	1.89	6.99
	7-10YR	-2.83	-1.55	-3.71	5.02	-0.54	10.21	-1.20	5.15
	20+YR	-10.21	-8.99	-11.34	-3.96	-6.04	3.19	-9.13	-4.52
WGBI x Japan	1-3YR	-0.19	1.78	-1.10	9.47	0.88	13.50	1.23	7.31
	7-10YR	-2.85	-1.43	-3.88	5.99	-0.43	11.79	-0.93	6.09
	20+YR	-10.61	-9.08	-12.22	-2.85	-7.36	4.38	-10.14	-4.26
US	1-3YR	0.73	4.00	0.17	12.31	1.78	15.11	2.49	5.66
	7-10YR	-4.42	-1.31	-6.17	5.20	-2.50	10.27	-1.90	1.14
	20+YR	-12.97	-10.15	-15.01	-4.71	-8.86	3.08	-10.69	-7.93
	IG All	-2.84	0.32	-3.10	8.65	0.37	13.51	3.75	6.97
	HY All	0.66	3.92	2.48	14.90	6.20	20.10	10.47	13.89
UK	1-3YR	2.38	1.48	0.43	11.15	0.94	15.83	3.60	16.78
	7-10YR	1.30	0.41	-4.68	5.51	-1.85	12.64	2.67	15.74
	20+YR	-7.08	-7.90	-15.26	-6.20	-12.81	0.06	-15.63	-4.90
EUR	IG All	0.31	0.50	0.76	10.09	2.63	15.14	3.71	15.55
	HY All	2.03	2.11	3.74	13.51	6.91	20.24	12.13	25.09
Japan	1-3YR	-0.19	-0.19	-0.18	-0.18	0.03	0.03	-0.13	-0.13
	7-10YR	-2.59	-2.59	-2.34	-2.34	-0.62	-0.62	-2.20	-2.20
	20+YR	-8.65	-8.65	-7.96	-7.96	-1.03	-1.03	-5.59	-5.59
China	1-3YR	0.35	3.04	1.41	6.97	1.94	9.73	2.24	2.34
	7-10YR	0.37	3.06	2.42	8.04	3.24	11.13	3.60	3.70
	20+YR	1.18	3.89	5.05	10.81	6.01	14.11	5.84	5.93
EM	1-3YR	0.61	2.56	1.96	9.01	2.83	12.81	3.83	6.89
	7-10YR	-1.10	0.66	1.17	8.53	3.50	13.52	5.60	8.27
	20+YR	-0.35	2.22	2.93	9.81	4.80	14.04	6.66	8.61
	IG All	-1.56	1.63	-0.65	11.39	1.54	14.84	5.02	8.27
	HY All	0.01	3.26	0.60	12.79	1.51	14.80	10.13	13.53
Germany	1-3YR	0.56	0.75	0.27	9.56	0.78	13.07	-0.31	11.07
	7-10YR	-2.21	-2.02	-2.58	6.45	0.25	12.48	-3.09	7.97
	20+YR	-11.39	-11.22	-11.53	-3.33	-7.59	3.68	-14.42	-4.65
Italy	1-3YR	0.61	0.80	0.53	9.84	1.59	13.98	1.63	13.23
	7-10YR	-3.45	-3.26	-2.18	6.88	2.89	15.44	2.45	14.15
	20+YR	-10.49	-10.31	-8.15	0.36	-1.07	10.99	-5.60	5.18
France	1-3YR	0.58	0.78	0.26	9.55	1.09	13.42	-0.16	11.24
	7-10YR	-2.36	-2.17	-2.63	6.39	0.19	12.41	-2.86	8.23
	20+YR	-10.63	-10.46	-10.33	-2.03	-7.21	4.11	-12.25	-2.23
Australia	1-3YR	1.06	1.17	-0.47	7.54	1.16	8.89	2.02	5.58
	7-10YR	-2.04	-1.94	-6.65	0.87	-0.14	7.49	-0.37	3.10
	20+YR	-7.33	-7.24	-14.95	-8.11	-5.17	2.07	-8.74	-5.56
NZ	1-3YR	0.13	1.39	-0.01	7.67	1.57	9.13	1.28	10.91
	7-10YR	-4.11	-2.90	-5.78	1.46	-3.04	4.18	-3.27	5.93

Source: FTSE Russell. All data as of September 30, 2023. 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 September 30, 2023

Global Bond Yields

Top 15% Bottom 15%

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

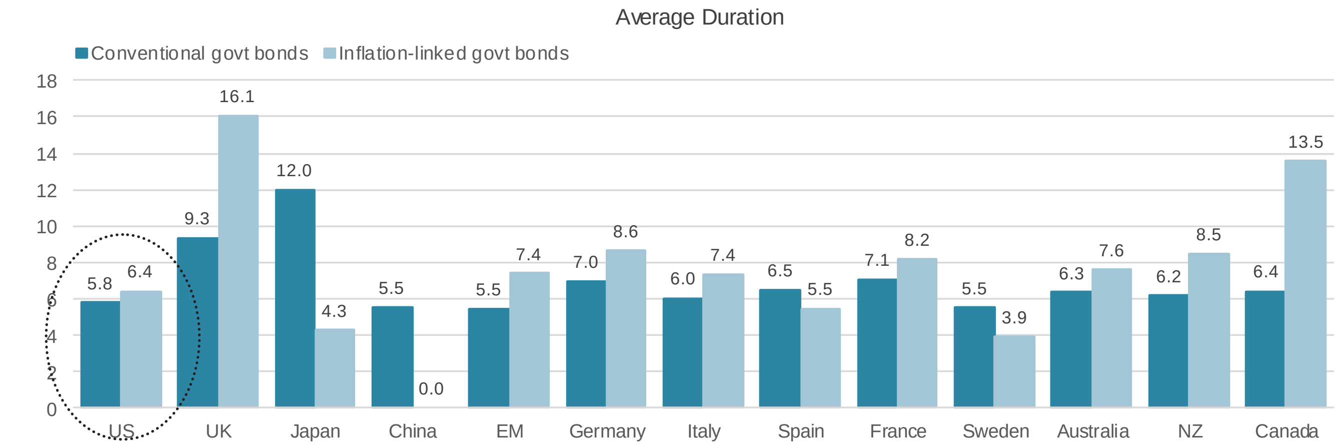
		Conventional government bonds				Inflation-linked bonds			Inv Grade	High Yld
		1-3YR	3-5YR	7-10YR	20+YR	1-5YR	5-10YR	20+YR	All Mat	All Mat
US	Current	5.16	4.71	4.59	4.82	2.72	2.29	2.37	6.06	9.05
	3M Ago	5.01	4.31	3.85	3.95	2.45	1.72	1.68	5.53	8.75
	6M Ago	4.20	3.72	3.49	3.76	1.44	1.17	1.53	5.25	8.58
	12M Ago	4.31	4.18	3.83	3.95	2.11	1.82	1.95	5.72	9.73
UK	Current	4.73	4.46	4.35	4.81	0.55	0.53	1.39		
	3M Ago	5.36	5.04	4.38	4.35	1.78	0.72	0.90		
	6M Ago	3.79	3.55	3.43	3.80	0.00	-0.27	0.35		
	12M Ago	4.39	4.36	4.22	4.29	-0.37	0.48	0.54		
Japan	Current	0.01	0.21	0.66	1.61	-1.75	-0.70			
	3M Ago	-0.10	-0.01	0.29	1.21	-1.64	-0.87			
	6M Ago	-0.09	0.02	0.30	1.22	-1.30	-0.51			
	12M Ago	-0.07	0.02	0.26	1.34	-1.35	-0.77			
China	Current	2.24	2.42	2.70	3.06					
	3M Ago	2.09	2.33	2.66	3.08					
	6M Ago	2.31	2.56	2.84	3.25					
	12M Ago	2.06	2.35	2.73	3.17					
EM	Current	3.58	4.52	5.05	4.51	3.27	4.48	5.32	6.43	
	3M Ago	3.67	4.04	4.79	4.42	4.15	4.07	4.86	5.95	
	6M Ago	3.62	4.37	4.69	4.52	2.59	3.67	5.15	5.77	
	12M Ago	3.70	4.42	5.07	4.79	1.96	3.35	5.28	6.09	
Germany	Current	3.21	2.78	2.75	2.97	0.87	0.44	0.52		
	3M Ago	3.17	2.66	2.37	2.36	0.96	0.19	-0.06		
	6M Ago	2.69	2.36	2.24	2.33	-0.02	-0.12	-0.15		
	12M Ago	1.66	1.90	2.00	2.12	-0.78	-0.43	-0.29		
Italy	Current	3.94	4.03	4.50	5.02	1.68	2.31	2.43		
	3M Ago	3.79	3.71	3.87	4.25	1.74	1.78	1.70		
	6M Ago	3.27	3.43	3.88	4.34	0.45	1.50	1.74		
	12M Ago	2.87	3.41	4.05	4.43	0.23	1.71	1.89		
France	Current	3.33	3.14	3.26	3.79	0.82	0.75	1.12		
	3M Ago	3.21	2.94	2.85	3.19	0.88	0.47	0.55		
	6M Ago	2.83	2.66	2.70	3.17	-0.29	0.05	0.53		
	12M Ago	1.91	2.32	2.50	2.95	-0.97	-0.20	0.38		
Sweden	Current	3.50	3.18	2.98		1.42	1.28			
	3M Ago	3.43	2.94	2.61		1.18	0.91			
	6M Ago	2.85	2.56	2.25		0.09	0.32			
	12M Ago	2.31	2.28	2.08		-0.48	-0.23			
Australia	Current	4.14	4.10	4.43	4.86	1.30	1.78	2.24		
	3M Ago	4.17	3.99	4.02	4.36	1.04	1.47	1.85		
	6M Ago	3.03	3.00	3.27	3.82	0.01	0.82	1.43		
	12M Ago	3.44	3.27	3.54	4.01	-0.12	1.06	1.71		
NZ	Current	5.63	5.35	5.32	5.54	2.50	2.89			
	3M Ago	5.08	4.67	4.61	4.77	1.53	2.15			
	6M Ago	4.78	4.37	4.23	4.37	1.04	1.72			
	12M Ago	4.20	4.46	4.16	4.34	1.56	2.05			
Canada	Current	4.70		4.07	3.88			2.22	5.90	
	3M Ago	4.34		3.34	3.13			1.54	5.36	
	6M Ago	3.58		2.87	3.03			1.28	5.00	
	12M Ago	3.65		3.19	3.13			1.43	5.20	

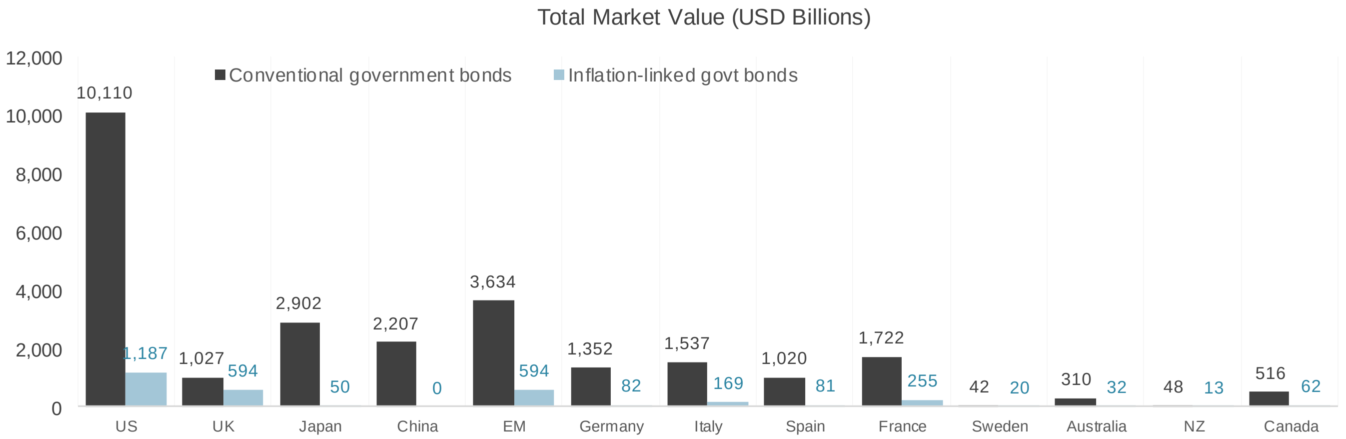
Source: FTSE Russell. All data as of September 30, 2023. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

Appendix – Duration and Market Value (USD, Bn) as of September 30, 2023

	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
US	3.7	7.4	16.6	**5.8**	2,336.3	1,016.5	1,147.5	**10,110.2**	7.0	21.2	**6.4**	374.4	114.8	**1186.8**
UK	3.4	7.5	17.9	**9.3**	129.3	178.5	272.7	**1,026.8**	6.9	27.2	**16.1**	97.3	220.6	**593.8**
Japan	3.9	8.0	23.7	**12.0**	347.2	333.9	626.2	**2,901.5**	7.3		**4.3**	19.1		**50.1**
China	3.7	7.5	17.6	**5.5**	450.8	347.6	252.7	**2,207.1**						
EM	3.6	6.9	15.8	**5.5**	738.74	655.47	345.32	**3,633.5**	5.8	13.4	**7.4**	105.8	159.9	**594.1**
Germany	3.8	7.6	20.3	**7.0**	295.95	204.19	142.89	**1,351.8**	7.1	21.6	**8.6**	41.2	16.6	**82.5**
Italy	3.7	7.2	15.7	**6.0**	269.05	227.15	134.11	**1,537.0**	7.8	26.1	**7.4**	54.7	4.6	**168.6**
Spain	3.8	7.5	16.8	**6.5**	196.31	175.14	88.72	**1,020.2**	6.6		**5.5**	21.5		**80.6**
France	3.6	7.5	19.4	**7.1**	312.44	302.33	190.11	**1,721.8**	6.6	24.2	**8.2**	98.6	18.6	**254.5**
Sweden	3.6	7.5		**5.5**	13.22	8.45		**41.8**	5.7		**3.9**	9.4		**20.3**
Australia	3.4	7.6	17.1	**6.3**	49.79	83.62	13.55	**310.3**	7.1	22.1	**7.6**	9.4	2.4	**31.9**
NZ	3.7	7.5	16.1	**6.2**	9.69	13.14	2.20	**48.0**	6.2		**8.5**	3.0		**12.9**
Canada		7.1	16.9	**6.4**		168.40	89.00	**515.8**		13.5	**13.5**		61.7	**61.7**

	Investment grade bonds										High Yield	
	Duration					Market Value					Duration	MktVal
	AAA	AA	A	BBB	Overall	AAA	AA	A	BBB	Overall		
US	10.2	8.1	6.9	6.4	**6.8**	68.6	431.6	2,513.0	3,216.0	**6,229.3**	3.9	1,151.5
Euro	5.7	4.7	4.5	4.2	**4.4**	11.0	177.5	1,147.5	1,381.6	**2,717.6**	3.0	405.7
EM		5.5	4.6	4.9	**4.9**		45.19	216.36	311.9	**573.4**	3.3	183.7

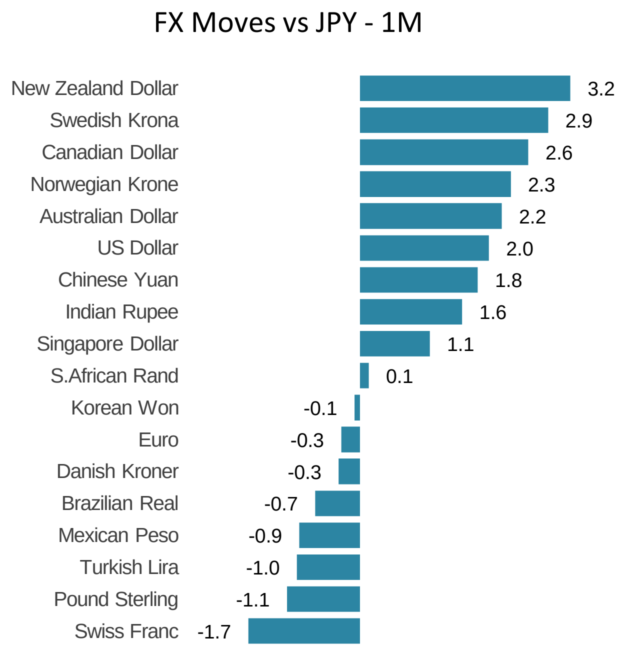


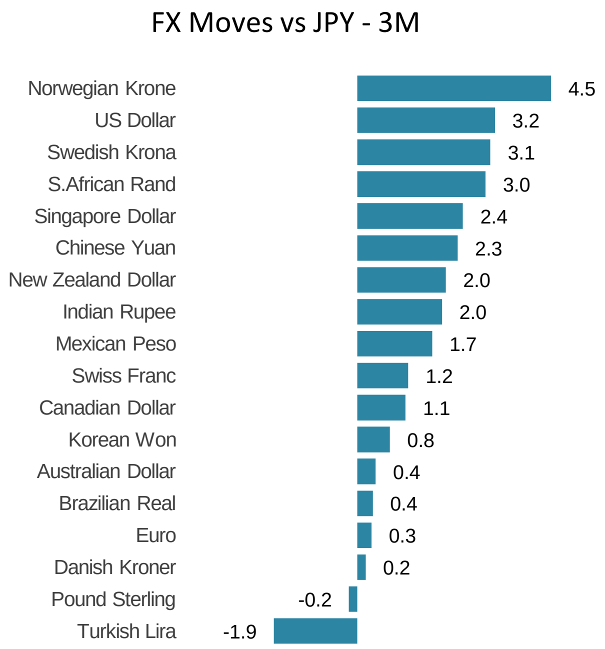


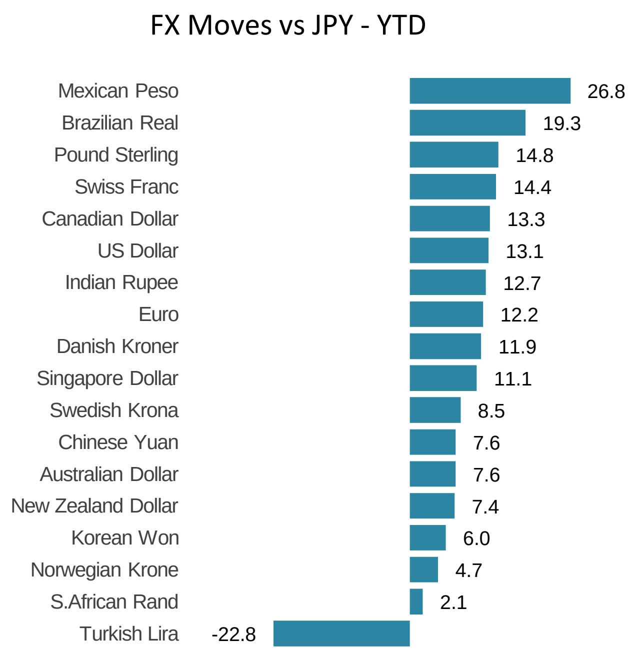
Data as of 2023-09-29

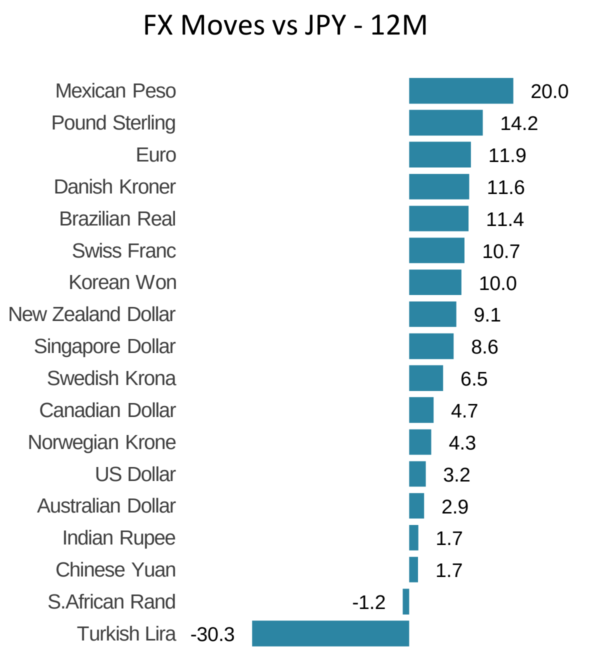
Source: FTSE Russell. All data as of September 30, 2023. Past performance is no guarantee of future results. Please see the end for important legal disclosures. Bond market data is derived from FTSE Fixed Income Indices. See Appendix Glossary for list of indices used for each market. For professional investors only.

Appendix − Foreign Exchange Returns % as of September 30, 2023









Source: FTSE Russell and Refinitiv. All data as of September 30, 2023. 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 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 Government Bond Index (EMGBI) for the emerging markets government bond market. Please note that over 50% of this index is invested in China

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

FTSE ESG World Government Bond Index for the global government bond markets with an ESG tilt

FTSE Climate Risk-Adjusted World Government Bond Index (Climate WGBI) and FTSE Advanced Climate Risk-Adjusted World Government Bond Index (Advanced Climate WGBI) for each country's relative exposure to climate risk, with respect to resilience and preparedness to the risks of climate change

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

Source: FTSE Russell. All data as of September 30, 2023. Past performance is no guarantee of future results. Please see the end for important legal disclosures. For professional investors only.