

GOAL Kickstart

Tracking German reflation re-pricing

Last week, US February core CPI came in below expectations but Michigan inflation expectations increased further while UK January GDP growth surprised to the downside. In Germany, The CDU/CSU, SPD and Greens have agreed on a fiscal package that includes exemptions from debt limits for defense spending, a fund for infrastructure and climate investments, and raising federal state deficit limits. This package will be voted on this week (on March 18th and 21st) and our economists see only limited risks that the package is not passed.

Investors' expectations for fiscal spending in Germany have already boosted German and fiscal spending-exposed stocks since mid February (Exhibit 1). That said, some related trades such as German mid-caps (MDAX) have partially reverted over the past 2 weeks, while others like German domestics and European Fiscal infrastructure (GSSTFISC) stocks have continued to outperform. But while increased uncertainty has seemingly driven higher German mid-caps vol vs. the broad European markets, MDAX implied volatility has actually re-set vs. that of US equities (Exhibit 3).

Expectations of more fiscal spending also lifted German 10y rates to the top of their range since 2011, driven not only by higher real rates and breakeven inflation but also narrower

swap spreads (Exhibit 2). Our rates strategists believe that other catalysts are needed for Bund sell-off to continue, such as relaxation of trade policy uncertainty and improvement in economic sentiment. German Bunds materially underperformed against US treasuries, which also repriced US growth prospects. With the shift in growth asymmetry in Europe (with more growth upside risk) and the US (more downside risk), the beta of US 10y yields to global equities has turned sharply positive while that of German yields remained negative (Exhibit 4). We recently upgraded US bonds to OW (from N) and downgraded German bonds to N (from OW) as the first should offer a larger buffer for portfolios in case of growth shocks.

Tariffs continue to be a potential source of downside risk for both US and non-US risky assets - volatility markets are pricing large cross-asset moves around April 2nd, when reciprocal tariffs are expected - this is particularly the case for oil and EUR/USD (Exhibit 5). We still see value in safe havens such as CHF to improve balance in multi-asset portfolios in the event of negative growth shocks. CHF can help protect against a deterioration of the Europe growth optimism - the CHF has strengthened against the Dollar and significantly weakened against the EUR, which could

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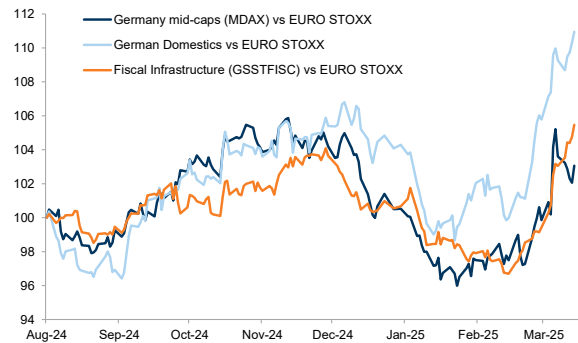
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revert with more tariff concern (Exhibit 3).

Tracking German reflation re-pricing

Exhibit 1: Equity repriced more supportive fiscal policy in Germany...

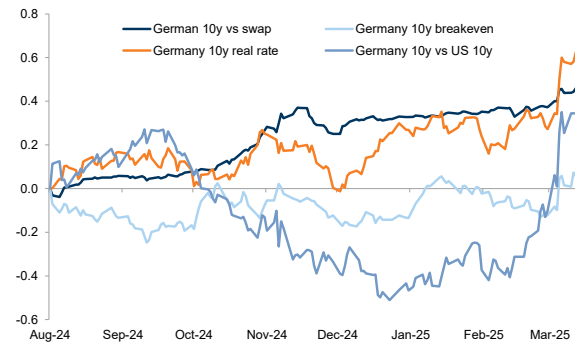
Relative performance indexed to 100



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 2: ...so did German 10y rates

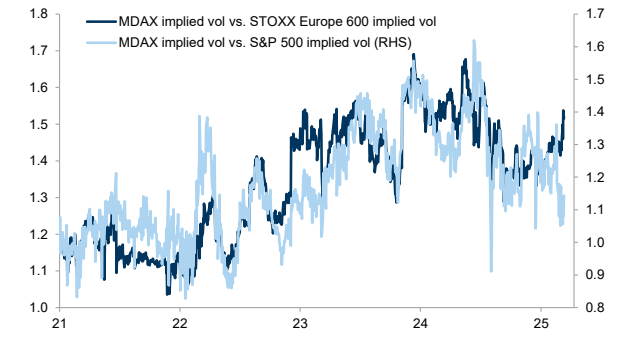
Cumulative change in pp



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 3: Markets pricing more uncertainty in MDAX vs. the European market, less vs. the US market

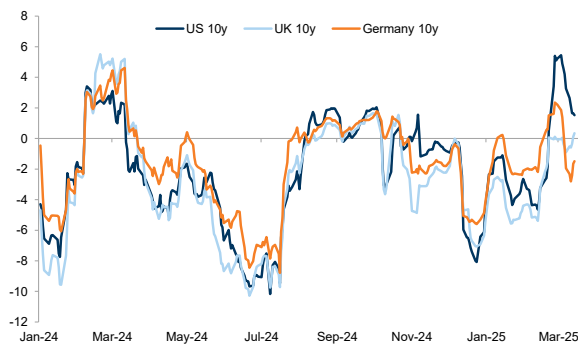
3m ATM implied vol



Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 4: US bonds have been a better buffer for equities recently

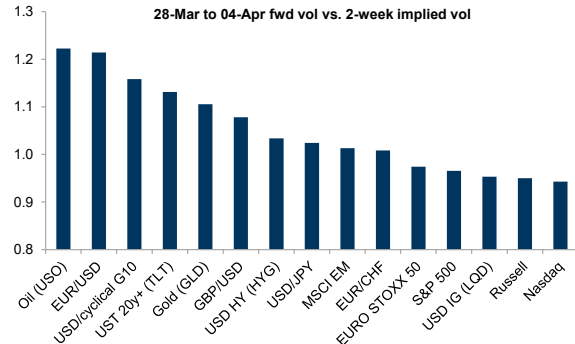
1-month beta of 10y rates to S&P 500



Source: Bloomberg, Goldman Sachs Global Investment Research

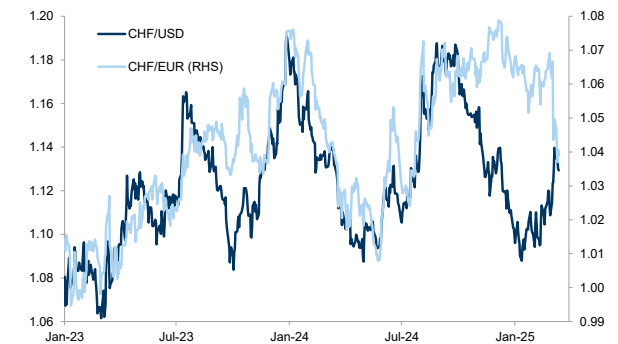
Exhibit 5: Markets are pricing a larger move on the first week of April vs. the next 2 weeks

ATM fwd implied volatility



Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 6: CHF weakened against the EUR, but strengthened against the USD



Source: Bloomberg, Goldman Sachs Global Investment Research

Cross-asset: Forecasts

Exhibit 7: GOAL asset allocation recommendations and GS cross-asset forecasts

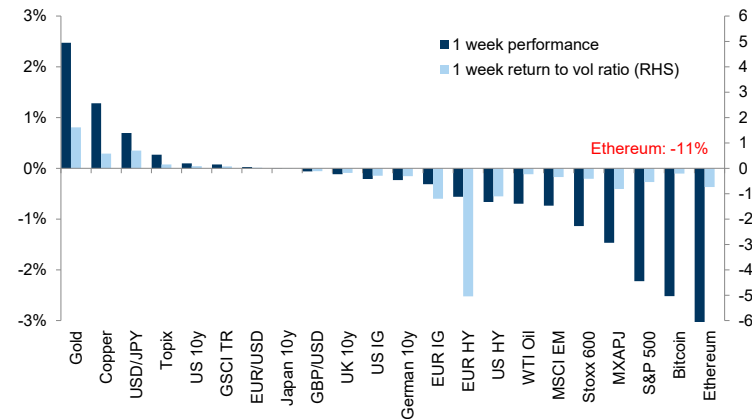
	Allocation Weighting		Current Level	Forecasts			Forecast Upside/Downside (%)		
	3m	12m		3m	6m	12 m	3m	6m	12 m
Equities	OW	OW			Index level			Total Return	
S&P 500 (\$)	N	N	5639	5600	5900	6500	-0.3	5.3	16.7
Stoxx Europe 600 (€)	N	N	547	560	570	580	3.3	6.0	9.5
MSCI Asia-Pacific Ex-Japan (\$)	N	N	582	600	610	640	4.4	7.1	14.0
Topix (¥)	N	N	2716	3000	3000	3100	10.6	10.8	14.8
10 Year Government Bonds	OW	OW			Yield (%)			Total Return	
US	OW	OW	4.32	4.41	4.36	4.39	0.6	2.1	4.0
Germany	N	N	2.87	2.94	2.99	3.08	1.1	1.3	2.0
Japan	UW	UW	1.51	1.38	1.48	1.68	2.5	2.0	0.9
UK	OW	OW	4.67	4.42	4.32	4.25	4.0	6.0	9.0
Corporate Bonds	UW	UW			Spread			Total Return	
Bloomberg Barclays US IG	OW	OW	93	105	122	115	0.1	0.6	3.5
Bloomberg Barclays US HY	UW	UW	321	362	429	400	0.2	0.1	4.2
iBoxx EUR IG	N	N	103	107	109	105	0.7	1.3	2.8
BAML EUR HY	N	N	314	343	373	355	0.3	0.4	3.2
EM Hard Currency Sovereign	N	N	331	336	341	350	0.9	2.5	5.1
Commodities	N	N			Spot price			Spot Return	
WTI (\$/bbl)	-	-	67	75	75	72	11.2	11.2	6.8
Brent (\$/bbl)	-	-	71	80	79	76	12.7	11.3	7.1
Copper (\$/mt)	-	-	9,732	9,600	10,000	10,700	-1.4	2.8	9.9
Gold (\$/troy oz)	-	-	2,988	2,930	3,000	3,160	-2.0	0.4	5.7
FX	-	-			Spot rate			Spot Return	
EUR/USD	-	-	1.09	1.07	1.05	1.02	-1.6	-3.4	-6.2
USD/JPY	-	-	148.5	150	151	152	1.0	1.7	2.3
GBP/USD	-	-	1.29	1.26	1.26	1.22	-2.4	-2.4	-5.5
AUD/USD	-	-	0.63	0.62	0.62	0.62	-1.9	-1.9	-1.9
USD/BRL	-	-	5.73	6.10	6.00	5.90	6.5	4.7	3.0
USD/INR	-	-	87.0	87.5	88.0	89.0	0.6	1.1	2.3
USD/CNY	-	-	7.23	7.30	7.35	7.35	1.0	1.7	1.7
Cash	N	N			Spot rate			Total Return	
US 3-month Tbill	-	-	-	-	-	-	1.08	2.13	4.09
Germany 3-month Bubills	-	-	-	-	-	-	0.54	1.09	2.09

Source: Bloomberg, Datastream, Bloomberg-Barclays, ICE-BAML, iBoxx, Goldman Sachs Global Investment Research

Cross-asset: Weekly and YTD performance, absolute and risk-adjusted

Exhibit 8: Local currency total returns and return to vol ratios over the past week

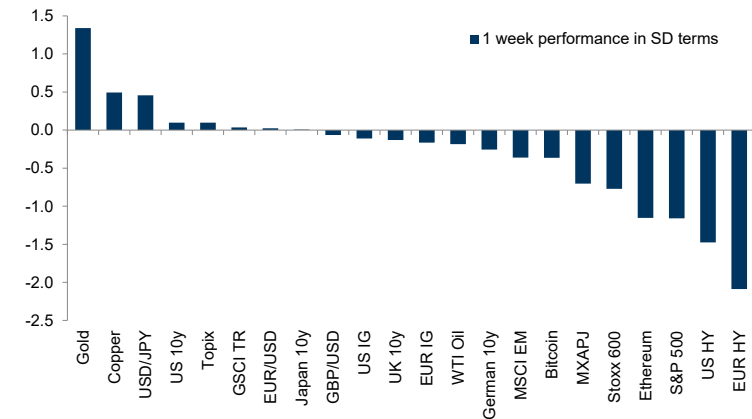
Weekly returns, return to vol ratios based on weekly volatility



Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Exhibit 9: Local currency total returns in standard deviation terms

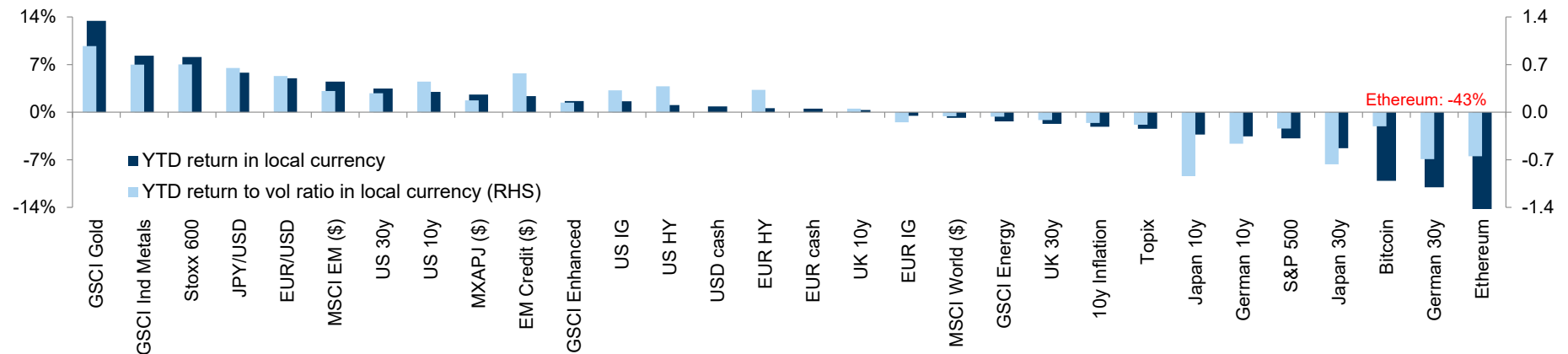
1-week performance in rolling 12m standard deviation terms



Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Exhibit 10: Local currency returns and return to vol ratios

YTD returns

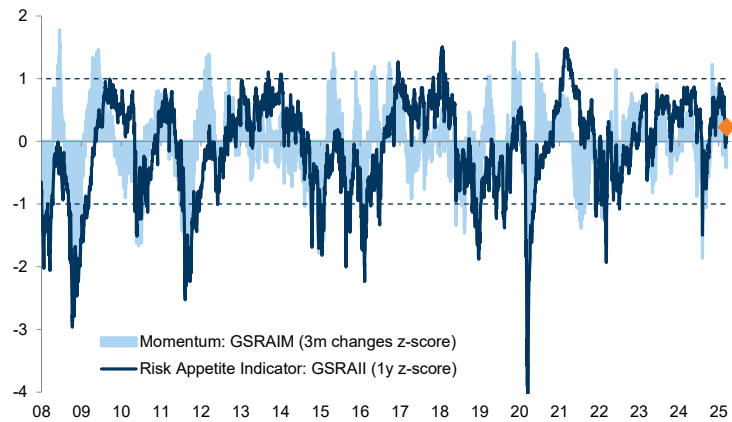


Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Cross-asset: Risk appetite indicator

Exhibit 11: Risk appetite indicator level and momentum factors

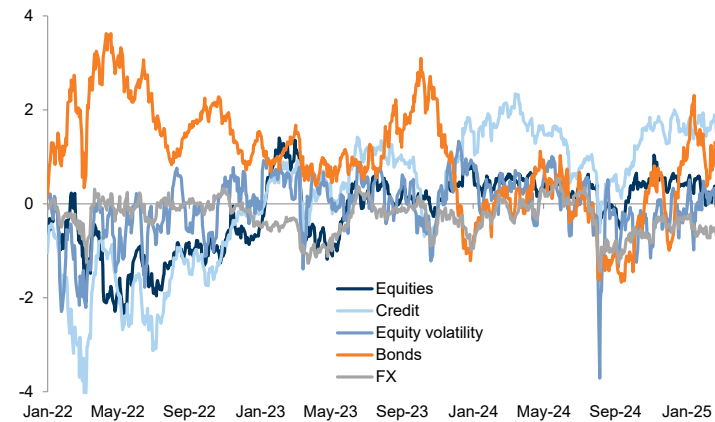
See July 2016 GOAL for construction details



Source: Goldman Sachs Global Investment Research

Exhibit 12: Risk appetite indicators for different asset classes

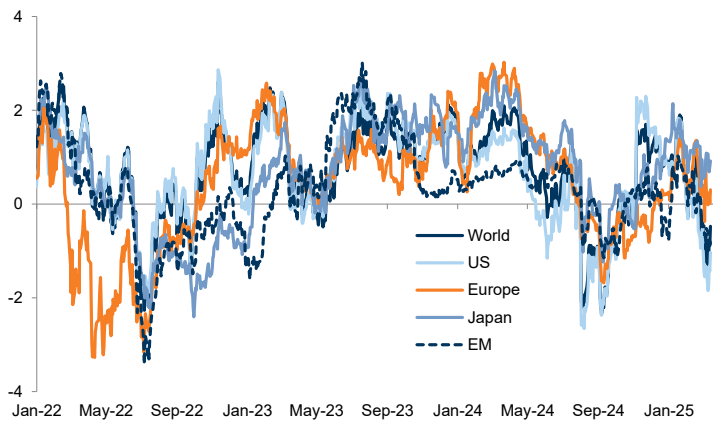
See July 2016 GOAL for construction details



Source: Goldman Sachs Global Investment Research

Exhibit 13: Cyclical vs. defensives 1-year rolling z-score across regions

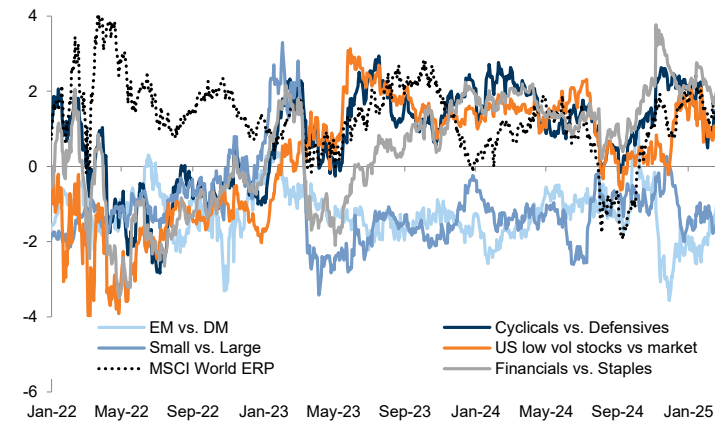
See July 2016 GOAL for construction details



Source: Goldman Sachs Global Investment Research

Exhibit 14: Sub-components of equity risk appetite indicator

See July 2016 GOAL for construction details

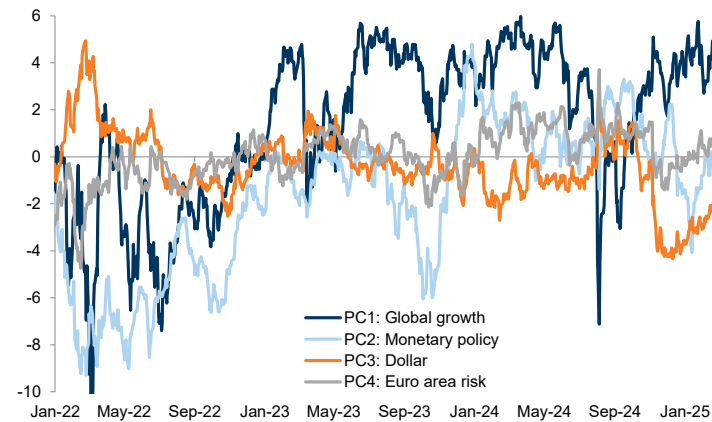


Source: Goldman Sachs Global Investment Research

Cross-asset: Risk Appetite principal component analysis

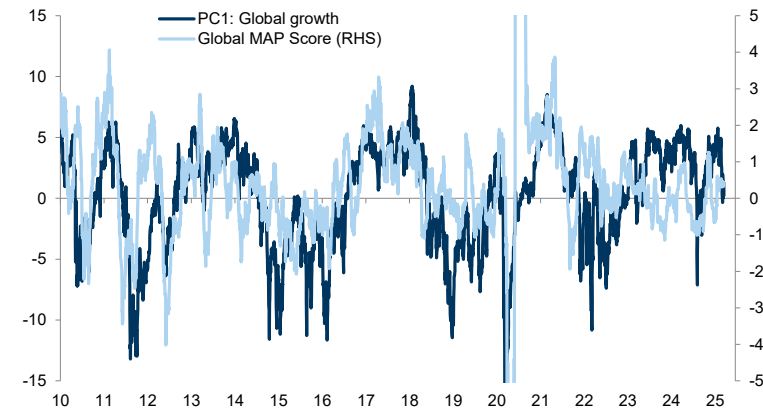
Exhibit 15: GS RAI principal component

See April 2019 GOAL for construction details



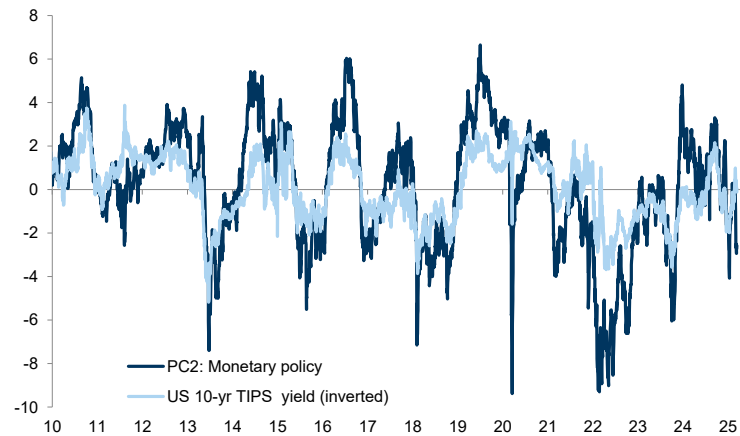
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 16: PC1: Global growth factor vs. Global MAP Score



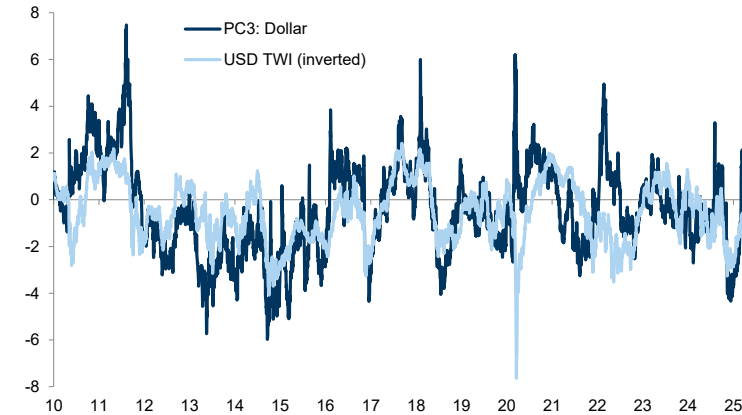
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 17: PC2: Monetary policy factor vs. US 10-year TIPS yield



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 18: PC3: Dollar factor vs. USD TWI

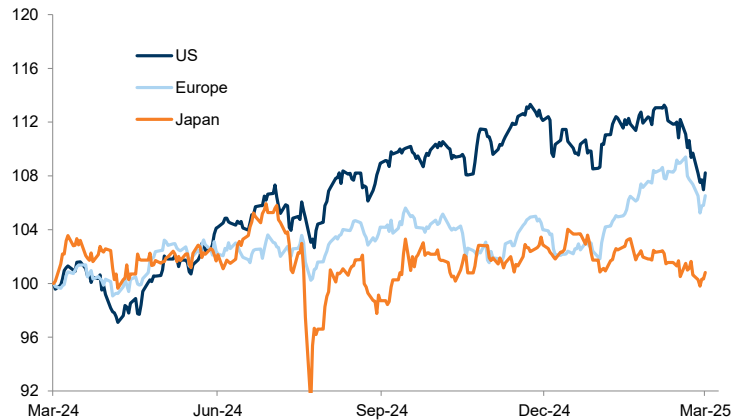


Source: Datastream, Goldman Sachs Global Investment Research

Cross-asset: Balanced portfolios and dynamic allocation strategies performance

Exhibit 19: 60/40 equity/bond portfolio performance across regions last 12m

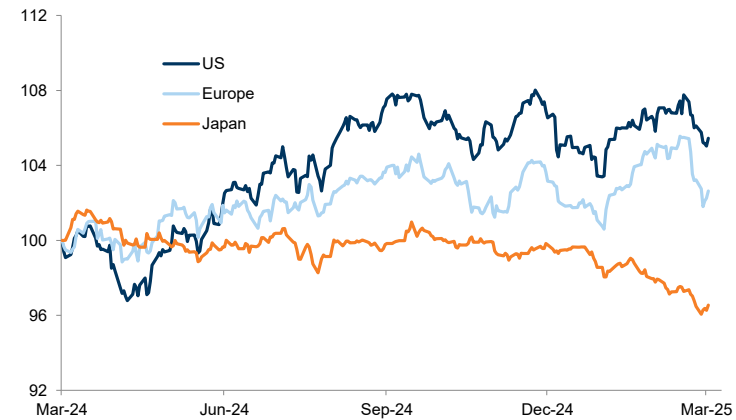
Relative total return performance indexed to 100 12m ago



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 20: Risk parity portfolio performance across regions last 12m

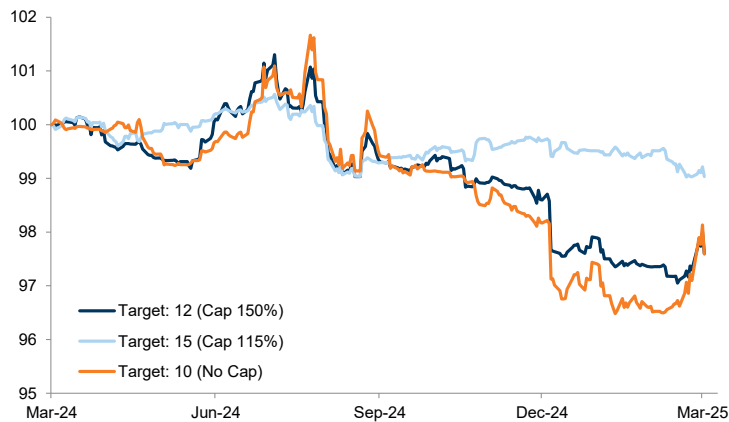
Weighted inversely by 3m realised volatility of equity and 10y bonds



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 21: 60/40 portfolio with volatility target strategies overlay vs. US 60/40 portfolio

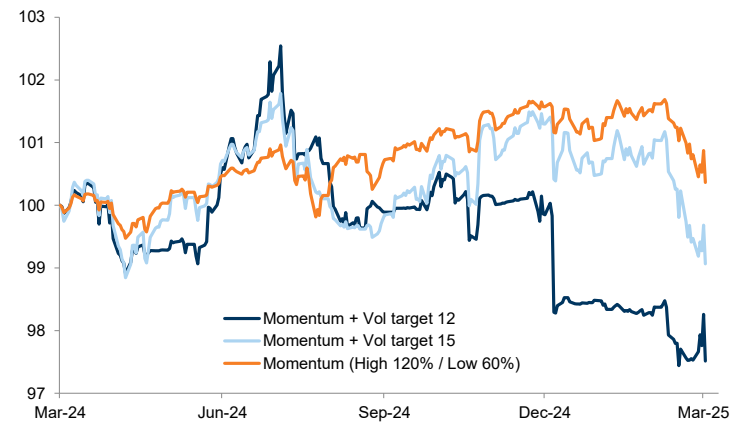
60% S&P 500, 40% US 10y bond; based on 1m realised S&P 500 volatility



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 22: 60/40 portfolio with volatility target strategies and momentum overlay vs. US 60/40

60% S&P 500, 40% US 10y bond; Strategy methodology see: GOAL: The Balanced Bear - Part 2

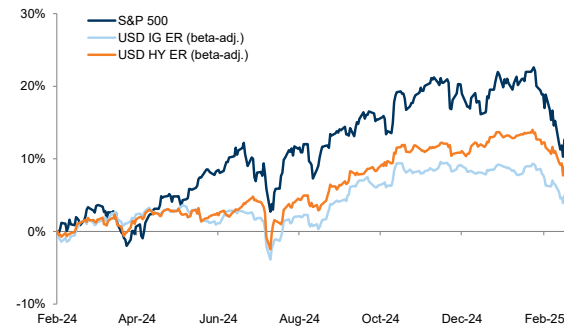


Source: Datastream, Goldman Sachs Global Investment Research

Cross-asset: Equity vs. credit monitor

Exhibit 23: USD cash credit vs. US equity

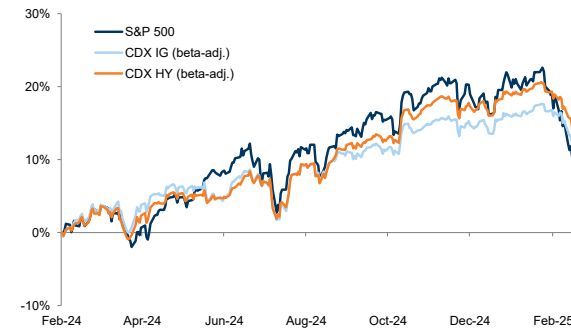
Cash credit excess returns (beta-adjusted) vs. S&P 500 total returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 24: USD synthetic credit vs. US equity

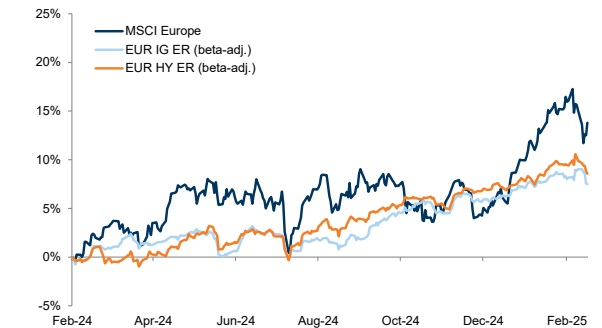
Synthetic credit excess returns (beta-adjusted) vs. S&P 500 total returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 25: EUR cash credit vs. European equity

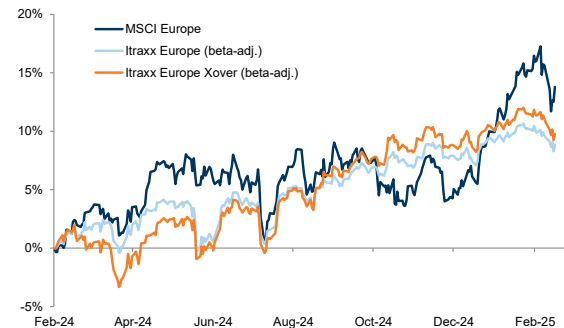
Cash credit excess returns (beta-adjusted) vs. MSCI Europe total returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 26: EUR synthetic credit vs. European equity

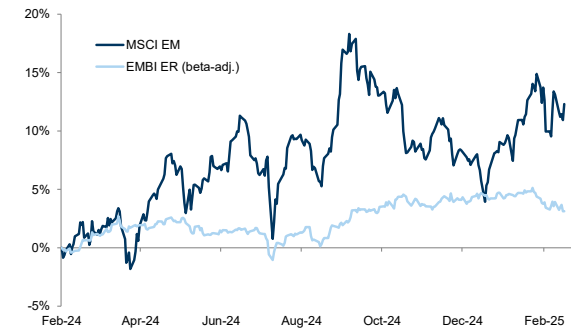
Synthetic credit excess returns (beta-adjusted) vs. MSCI Europe total returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 27: EM cash credit vs. EM equity

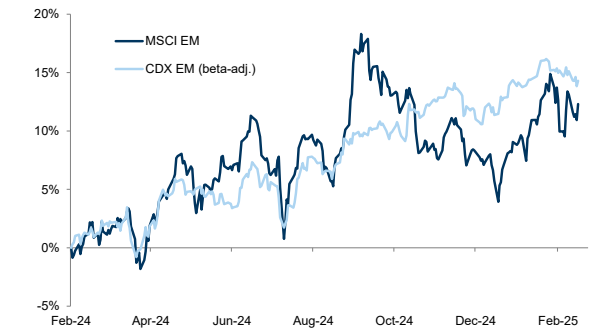
Cash credit excess returns (beta-adjusted) vs. MSCI EM total returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 28: EM synthetic credit vs. EM equity

Synthetic credit excess returns (beta-adjusted) vs. MSCI EM total returns



Source: Datastream, Goldman Sachs Global Investment Research

Cross-asset: Valuation and risk premia

Exhibit 29: Cross-asset valuation table

A higher percentile means more expensive relative to 10y history

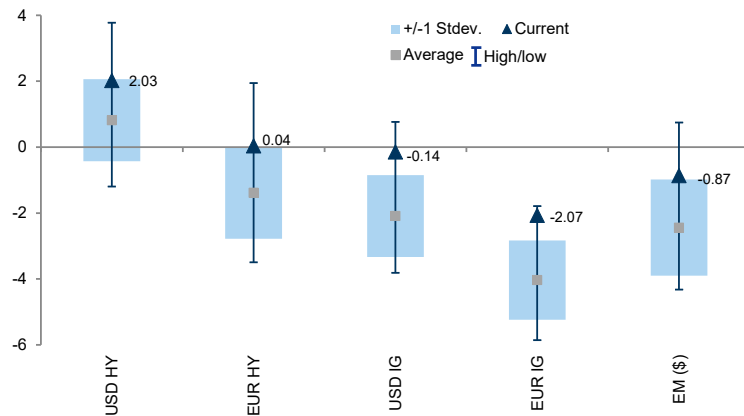
	Equity					Government bonds				Credit					FX	
	S&P 500	Stoxx 600	MXAPJ	Topix	MSCI EM	US 10y	German 10y	Japan 10y	UK 10y	US IG	US HY	EUR IG	EUR HY	EM (\$)	EUR/USD	USD/JPY
Valuation metric	12m forward P/E ratio					Yield				Spread					Actual - GS fair value	
Current:	20.3x	13.9x	13.5x	13.4x	12.2x	4.3%	2.8%	1.5%	4.7%	108bp	325bp	103bp	314bp	331bp	-0.12 €//\$	55.2 \$/¥
Expensiveness (last 10y percentile):	73%	42%	67%	38%	65%	7%	1%	0%	1%	82%	86%	84%	81%	79%	29%	9%
3M change:	-1.9x	0.6x	-0.1x	-0.5x	0.1x	-0.1%	0.6%	0.5%	0.3%	19bp	57bp	-6bp	16bp	10bp	0.03 €//\$	-4.3 \$/¥
Average:	18.4x	14.3x	13.4x	13.9x	12.2x	2.5%	0.7%	0.2%	1.9%	140bp	430bp	137bp	400bp	-2bp	-0.09 €//\$	23.1 \$/¥
95th:	22.2x	17.4x	16.2x	17.3x	14.8x	4.4%	2.5%	1.0%	4.4%	192bp	693bp	203bp	583bp	509bp	-0.01 €//\$	59.1 \$/¥
5th:	15.6x	11.9x	11.6x	12.0x	10.6x	0.7%	-0.5%	-0.1%	0.3%	98bp	305bp	96bp	277bp	293bp	-0.16 €//\$	7.2 \$/¥

Note: GSDEER is our fair value macro model for exchange rates. US IG spread is from iBoxx.

Source: Datastream, I/B/E/S, iBoxx, Goldman Sachs Global Investment Research

Exhibit 30: Credit spread minus equity risk premium estimates across markets

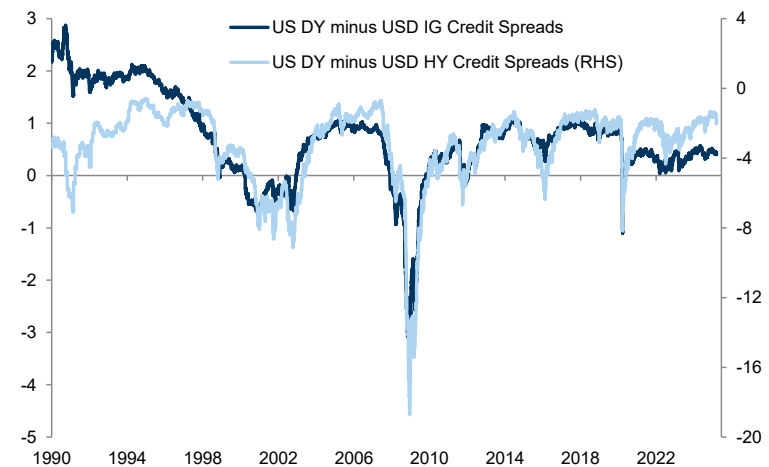
Equity risk premia based on 1-stage DDM using local 10-year yields and LT GDP consensus estimates. Using past 10 years of data.



Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Exhibit 31: Equity vs. credit relative valuation

US Dividend Yield minus Credit spreads



Source: Datastream, Goldman Sachs Global Investment Research

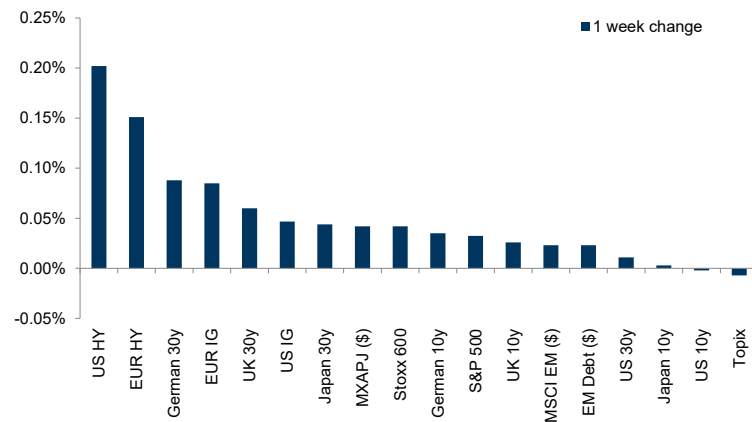
Cross-asset: Yields

Exhibit 32: Current yields across assets and their percentile to the past 10 years

	Equity					Government bonds				Credit				
	S&P 500	Stoxx 600	MXAPJ (\$)	Topix	MSCI EM (\$)	US 10y	German 10y	Japan 10y	UK 10y	US IG	EUR IG	US HY	EUR HY	EM Debt (\$)
Valuation metric	Dividend Yield (NTM)					Yield				Yield				
Current:	1.4%	3.4%	2.8%	2.6%	2.9%	4.3%	2.8%	1.5%	4.7%	5.1%	3.5%	7.7%	6.1%	7.6%
Percentile (-10y):	11%	23%	20%	87%	39%	93%	100%	100%	99%	83%	79%	69%	76%	75%
Average:	1.9%	3.6%	3.0%	2.4%	3.0%	2.5%	0.7%	0.2%	1.9%	3.3%	1.6%	7.0%	4.8%	6.3%
95th:	2.3%	4.1%	3.5%	2.7%	3.4%	4.4%	2.5%	1.0%	4.4%	5.4%	4.3%	8.8%	7.4%	8.4%
5th:	1.4%	3.0%	2.4%	2.0%	2.5%	0.8%	-0.5%	-0.1%	0.3%	1.3%	0.2%	4.8%	3.0%	4.7%
3m real. ret. vol:	16.8%	11.5%	13.5%	14.3%	13.7%	6.7%	7.1%	3.3%	5.9%	5.3%	3.3%	2.9%	1.6%	4.4%
Percentile (-10y):	69%	40%	26%	53%	44%	55%	74%	75%	44%	63%	75%	40%	23%	39%
Yield/vol ratio	0.08	0.30	0.21	0.19	0.21	0.65	0.40	0.46	0.80	0.96	1.05	2.66	3.69	1.74

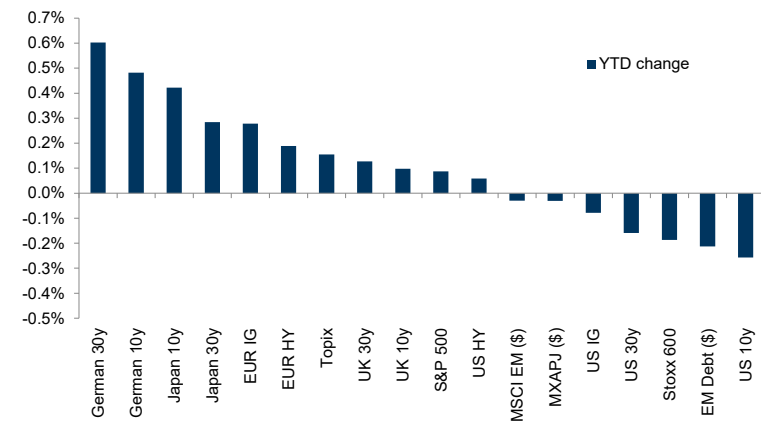
Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Exhibit 33: Past week change in yields across assets



Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Exhibit 34: YTD change in yields across assets

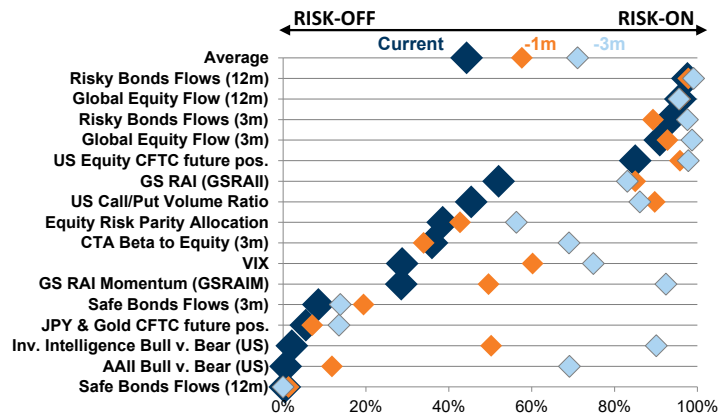


Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Cross-asset: Sentiment and Positioning

Exhibit 35: Percentile of sentiment indicators

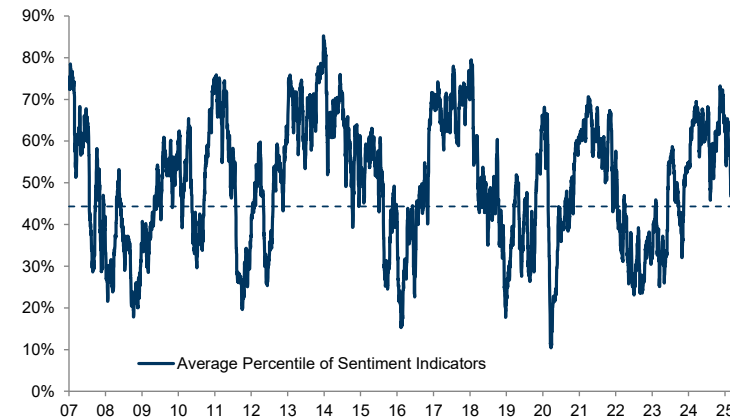
Data since 2007



Source: Datastream, Haver Analytics, EPFR, Goldman Sachs Global Investment Research

Exhibit 36: Average percentile of sentiment indicators

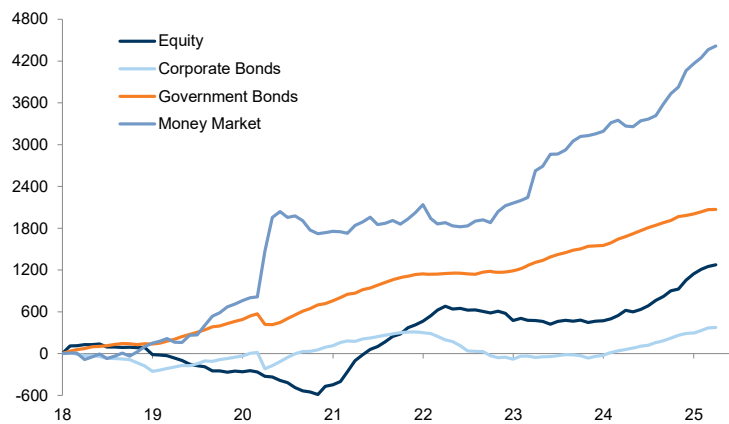
Data since 2007



Source: Datastream, Haver Analytics, EPFR, Goldman Sachs Global Investment Research

Exhibit 37: Cumulative fund flows across assets

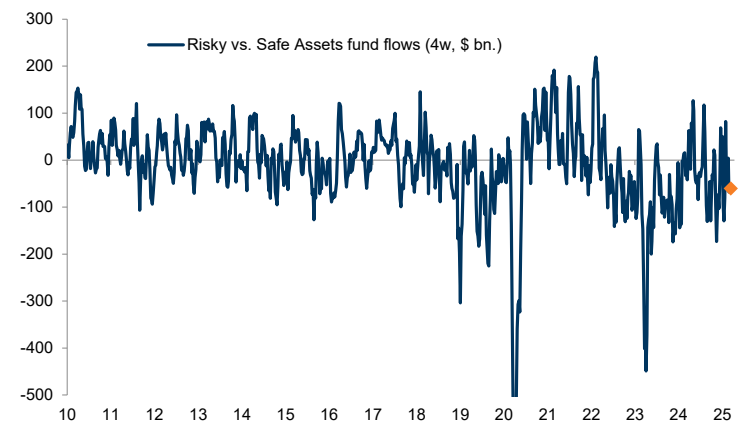
Monthly flows (\$bn). MTD sum of weekly flows when monthly not yet available



Source: Datastream, Haver Analytics, EPFR, Goldman Sachs Global Investment Research

Exhibit 38: Risky vs. safe assets fund flows

4 weeks rolling flows, USD bn

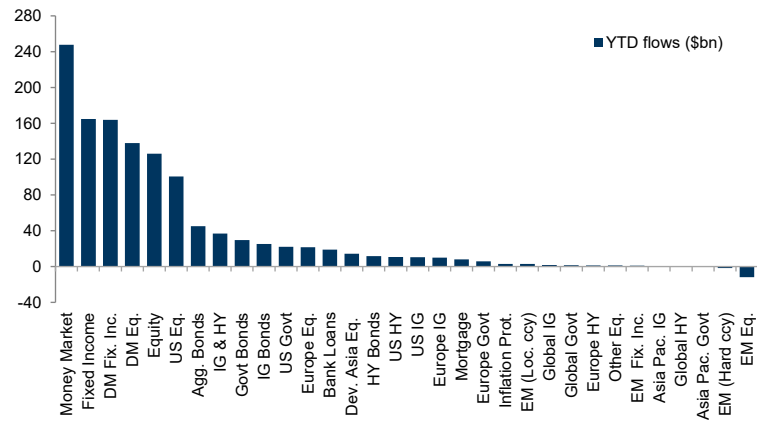


Source: Datastream, Haver Analytics, EPFR, Goldman Sachs Global Investment Research

Cross-asset: Global Funds Flows

Exhibit 39: YTD cross-asset global fund flows

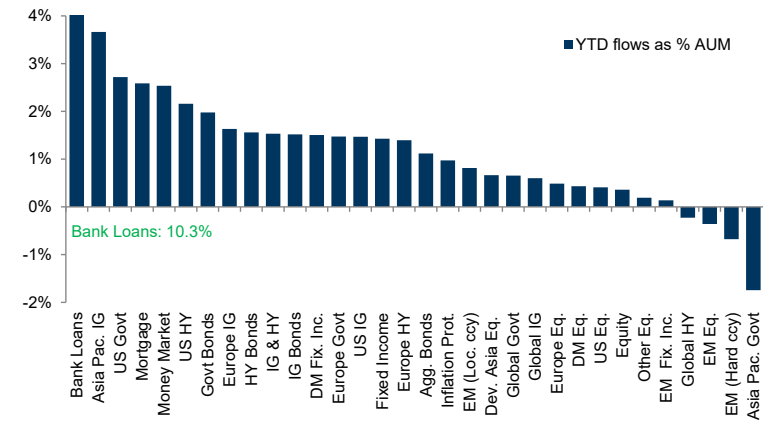
All funds reporting monthly. MTD sum of weekly flows when monthly not yet available (\$Bn)



Source: EPFR, Goldman Sachs Global Investment Research

Exhibit 40: YTD cross-asset global fund flows

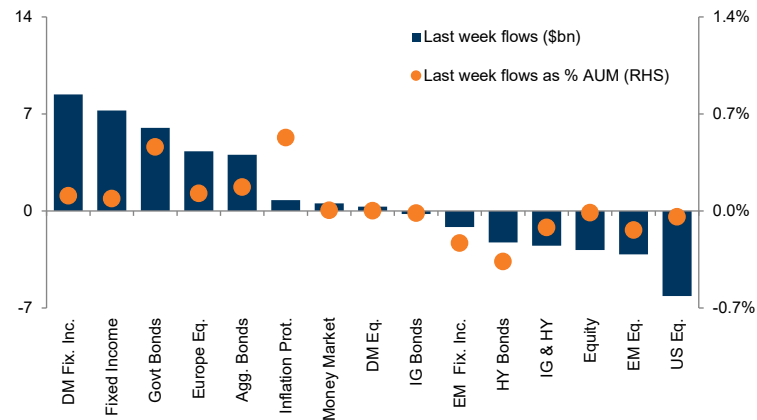
All funds reporting monthly. MTD sum of weekly flows when monthly not yet available (% of AUM)



Source: EPFR, Goldman Sachs Global Investment Research

Exhibit 41: 1-week cross-asset global fund flows

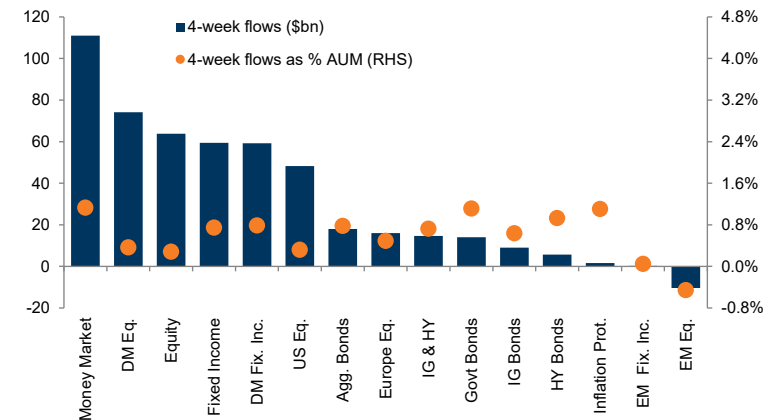
All funds reporting weekly



Source: EPFR, Goldman Sachs Global Investment Research

Exhibit 42: 4-week cross-asset global fund flows

All funds reporting weekly

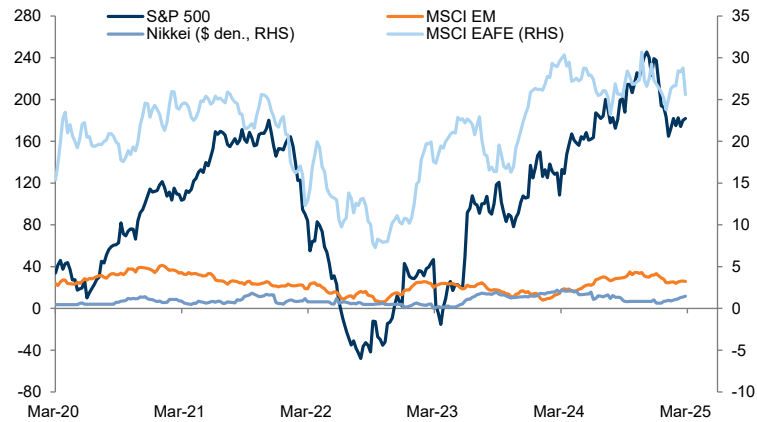


Source: EPFR, Goldman Sachs Global Investment Research

Cross-asset: CFTC positioning

Exhibit 43: Equity net long positioning

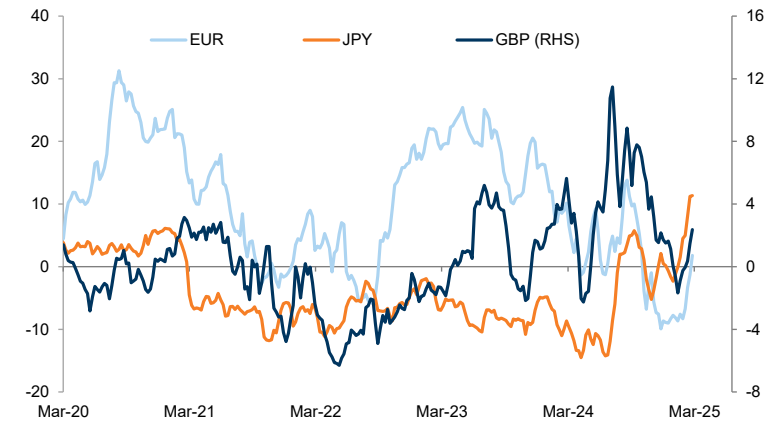
Leveraged funds and asset managers net future positions (\$ bn)



Source: Bloomberg, CFTC, Goldman Sachs Global Investment Research

Exhibit 44: Currency net long positioning

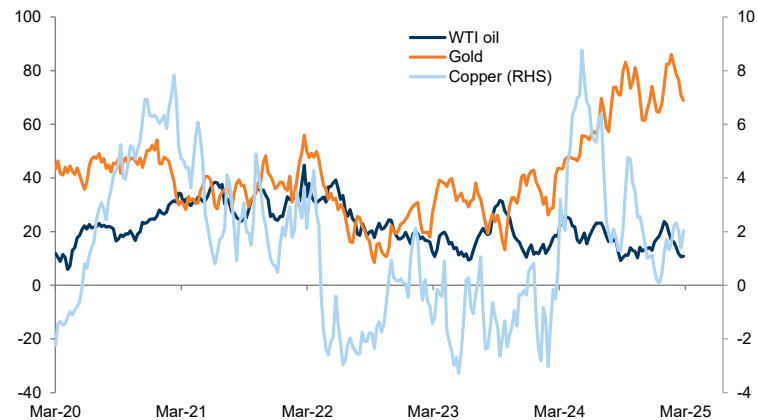
Net non-commercial positions (\$ bn)



Source: Bloomberg, CFTC, Goldman Sachs Global Investment Research

Exhibit 45: Commodity net long positioning

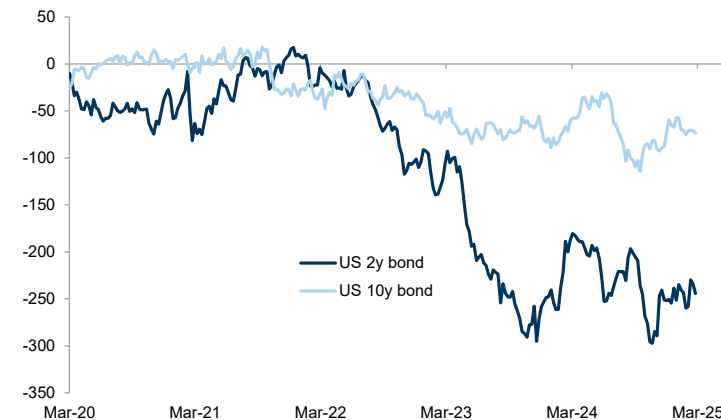
Net non-commercial positions (\$ bn)



Source: Bloomberg, CFTC, Goldman Sachs Global Investment Research

Exhibit 46: US Treasury net long positioning

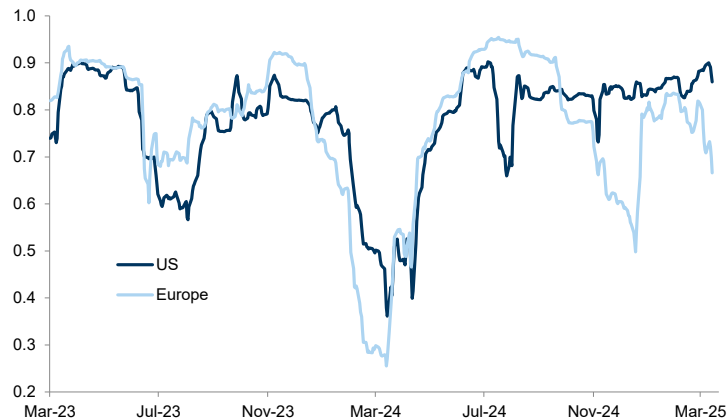
Net non-commercial positions (\$ bn)



Source: Bloomberg, CFTC, Goldman Sachs Global Investment Research

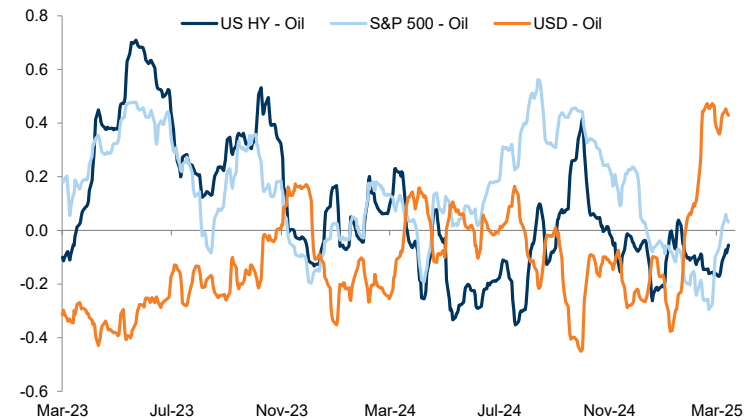
Cross-asset: Correlations: Equity vol/CDS, commodity prices/credit & FX, equity/bond, equity/FX

Exhibit 47: 3m rolling equity vol/CDS correlation of weekly level changes
CDX HY for the US, iTraxx Xover for Europe; ATM implied vol for S&P 500 and Euro Stoxx 50



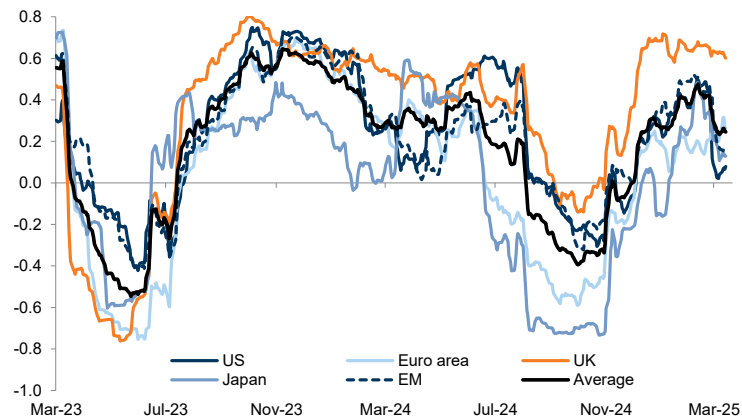
Source: Datastream, Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 48: 3m rolling commodity price correlations of weekly % changes with different assets



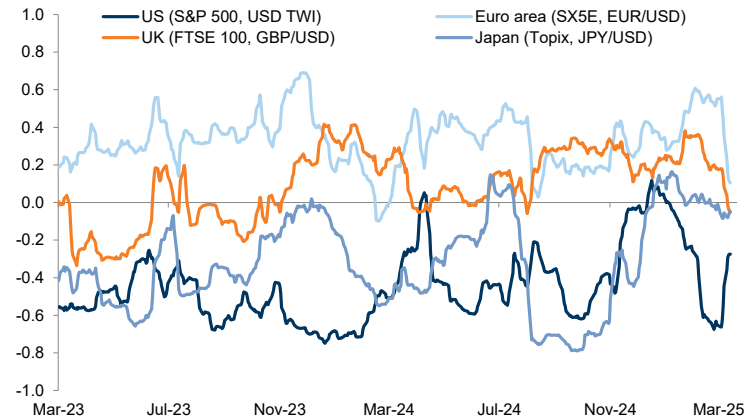
Source: Datastream, Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 49: 3m rolling equity/bond correlation of weekly returns



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 50: 3m rolling equity/FX correlation of weekly returns



Source: Datastream, Goldman Sachs Global Investment Research

Cross-asset: Correlation matrix

Exhibit 51: Cross-asset correlation matrix

Upper half of matrix: current 1-year correlation (black shading = more/less than 0.50/-0.50); lower half of matrix: percentile since 2001 (dark grey shading indicates above 75th percentile, orange shading indicates below 25th percentile); correlations are calculated on weekly, local currency returns.

	S&P 500	STOXX 600	MXAPJ	TOPIX	MSCI EM	US 10 yr	Germany 10 yr	Japan 10 yr	UK 10 yr	EUR/USD	USD/JPY	AUD/USD	iBoxx US IG	iBoxx EUR IG	BAML US HY	BAML EUR HY	EM Credit (\$)	WTI Crude Oil	Copper	Gold	VIX
	Current 1y correlation of weekly returns																				
S&P 500		0.62	0.60	0.55	0.55	0.21	0.24	0.03	0.30	0.02	0.11	0.43	0.44	0.32	0.66	0.46	0.56	0.29	0.17	0.07	-0.58
STOXX 600	0.04		0.56	0.45	0.55	0.06	0.00	-0.10	0.10	0.13	0.00	0.36	0.19	0.10	0.43	0.48	0.36	0.08	0.31	0.16	-0.45
MXAPJ	0.46	0.26		0.58	0.99	0.14	0.00	-0.04	0.08	0.37	-0.14	0.70	0.32	0.13	0.51	0.42	0.46	0.12	0.46	0.31	-0.35
TOPIX	0.49	0.09	0.40		0.56	-0.07	-0.10	-0.23	-0.07	0.14	0.25	0.40	0.13	0.03	0.36	0.21	0.23	0.04	0.11	0.06	-0.41
MSCI EM	0.25	0.16	0.89	0.41		0.10	-0.04	-0.05	0.06	0.36	-0.13	0.68	0.27	0.10	0.45	0.38	0.42	0.13	0.49	0.34	-0.32
US 10 yr	0.90	0.91	0.84	0.89	0.82		0.74	0.46	0.86	0.20	-0.67	0.14	0.95	0.69	0.55	0.17	0.82	-0.38	-0.09	-0.04	-0.09
Germany 10 yr	0.93	0.83	0.75	0.81	0.72	0.25		0.54	0.79	-0.34	-0.39	-0.08	0.67	0.92	0.40	0.25	0.58	-0.26	-0.27	-0.02	-0.20
Japan 10 yr	0.79	0.62	0.57	0.60	0.53	0.41	0.67		0.46	-0.10	-0.23	-0.08	0.38	0.43	0.26	0.15	0.39	-0.11	-0.18	-0.03	0.03
UK 10 yr	0.93	0.90	0.86	0.82	0.85	0.87	0.15	0.45		0.02	-0.52	0.08	0.81	0.75	0.49	0.18	0.75	-0.33	-0.14	0.09	-0.18
EUR/USD	0.28	0.57	0.47	0.65	0.43	0.57	0.12	0.19	0.45		-0.43	0.61	0.28	-0.27	0.20	-0.05	0.28	-0.29	0.36	0.15	0.08
USD/JPY	0.41	0.18	0.34	0.43	0.33	0.13	0.53	0.56	0.27	0.46		-0.26	-0.62	-0.36	-0.30	-0.06	-0.49	0.52	-0.05	-0.07	-0.15
AUD/USD	0.55	0.50	0.62	0.66	0.66	0.70	0.49	0.33	0.67	0.54	0.54		0.29	-0.04	0.41	0.14	0.38	0.05	0.46	0.35	-0.23
iBoxx US IG	0.87	0.82	0.81	0.77	0.75	0.82	0.44	0.41	0.91	0.59	0.06	0.69		0.67	0.69	0.28	0.90	-0.31	0.00	-0.03	-0.21
iBoxx EUR IG	0.86	0.44	0.39	0.41	0.38	0.70	0.82	0.74	0.68	0.09	0.31	0.15	0.38		0.50	0.46	0.63	-0.26	-0.25	-0.03	-0.28
BAML US HY	0.69	0.26	0.29	0.36	0.15	0.94	0.88	0.87	0.94	0.43	0.20	0.41	0.86	0.71		0.50	0.82	-0.05	-0.09	-0.10	-0.41
BAML EUR HY	0.41	0.26	0.13	0.11	0.09	0.78	0.85	0.82	0.82	0.16	0.33	0.10	0.55	0.47	0.03		0.36	-0.06	0.04	-0.02	-0.43
EM Credit (\$)	0.72	0.32	0.32	0.38	0.14	0.95	0.90	0.84	0.96	0.35	0.09	0.28	0.96	0.76	0.89	0.16		-0.13	0.08	0.11	-0.30
WTI Crude Oil	0.63	0.30	0.21	0.19	0.18	0.16	0.31	0.42	0.18	0.00	0.99	0.14	0.09	0.06	0.15	0.18	0.09		0.20	0.28	-0.18
Copper	0.20	0.40	0.49	0.12	0.52	0.64	0.26	0.30	0.52	0.65	0.38	0.52	0.55	0.02	0.00	0.08	0.20	0.32		0.48	-0.03
Gold	0.51	0.72	0.58	0.68	0.62	0.13	0.21	0.16	0.32	0.05	0.88	0.36	0.14	0.25	0.11	0.32	0.22	0.63	0.82		0.10
VIX	0.02	0.24	0.37	0.37	0.48	0.11	0.00	0.24	0.02	0.89	0.46	0.35	0.13	0.13	0.26	0.26	0.25	0.40	0.87	0.73	
	Current correlation's percentile since 2001																				

Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Cross-asset: Implied and realised vol, call and put skew

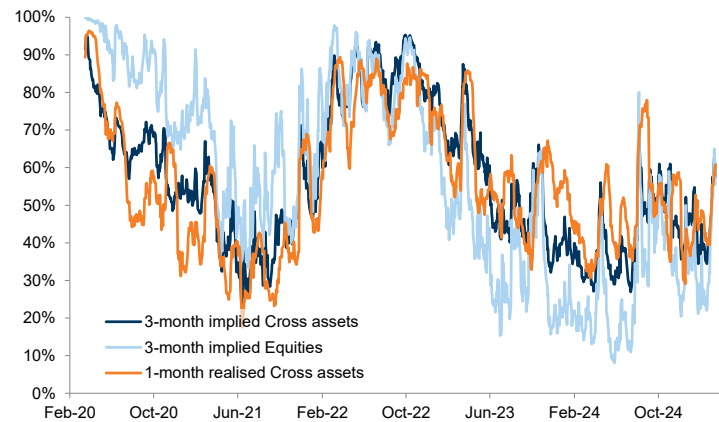
Exhibit 52: Cross-asset volatility, current and historical percentiles, implied 3m and realised 1m

	Equities						Rates				Credit			Commodities			Currencies		
	S&P 500	EURO STOXX 50	Nikkei 225	FTSE 100	MSCI EM	MSCI EAFE	USD 2-year	USD 10-year	EUR 2-year	EUR 10-year	CDX IG	CDX HY	iTraxx Europe	WTI	Gold	Copper	EUR/USD	JPY/USD	GBP/USD
Implied (3-month ATM, %)																			
Current:	17.3	16.4	20.6	11.6	18.0	15.7	6.5	6.4	4.7	5.4	52.5	48.4	47.9	28.5	15.3	19.4	7.5	10.0	7.2
Percentile:	71%	50%	76%	29%	43%	64%	72%	75%	72%	81%	72%	72%	45%	24%	68%	34%	58%	68%	18%
1M change:	4.5	2.6	2.6	1.4	2.9	2.3	1.0	0.5	0.4	1.1	16.1	16.5	8.9	1.0	0.6	1.2	-0.1	0.1	-0.8
Average:	15.9	17.7	18.9	14.6	19.5	15.4	4.7	5.2	2.9	4.0	49.1	43.7	52.3	36.3	14.2	22.1	7.6	8.9	9.0
95th:	25.2	26.1	25.7	22.6	26.7	22.6	9.7	7.9	8.5	7.7	69.7	65.7	70.3	54.2	19.4	29.7	11.1	12.7	13.0
5th:	10.0	12.2	13.8	10.1	14.7	10.4	1.3	3.5	0.9	2.2	37.8	30.4	38.6	23.7	9.7	16.0	5.1	5.6	6.4
Realised (%)																			
1-month:	20.3	18.9	17.8	10.5	17.9	14.6	5.4	5.9	5.2	6.7	38.3	33.4	30.1	25.3	12.9	18.6	10.5	8.4	7.3
Percentile:	80%	72%	56%	36%	78%	71%	71%	73%	86%	91%	58%	63%	30%	25%	50%	43%	86%	55%	32%
Average:	15.2	17.1	19.1	14.0	14.8	13.3	4.4	5.1	2.3	3.7	39.5	33.2	41.5	39.5	13.6	20.2	7.7	8.7	9.0

Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 53: 10y percentile for cross-asset average volatility

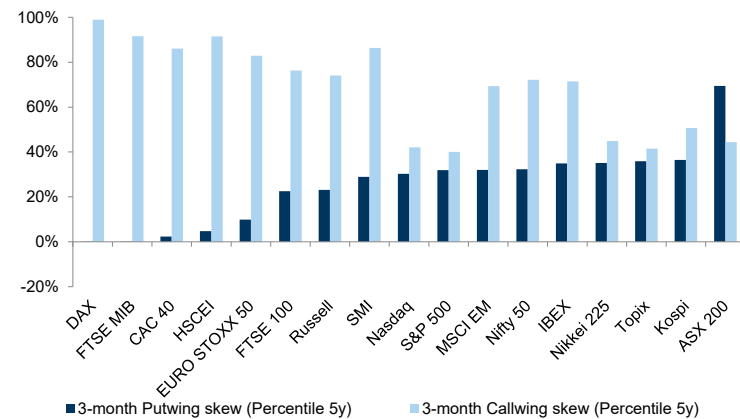
Using 16 assets across equity, government bonds, credit, commodities and FX



Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 54: Putwing and Callwing normalised skew 5y percentile

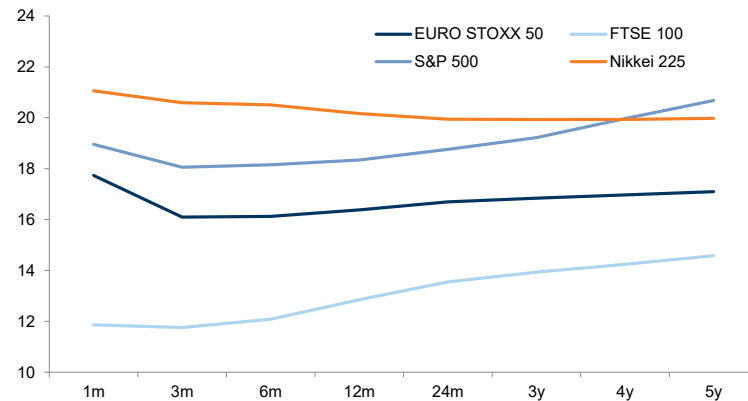
Normalised skew = (impl. vol 25 delta put/call minus implied vol 50 delta call)/50 delta call



Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Cross-asset: Volatility, skew, CDS with equity vol, rate vol

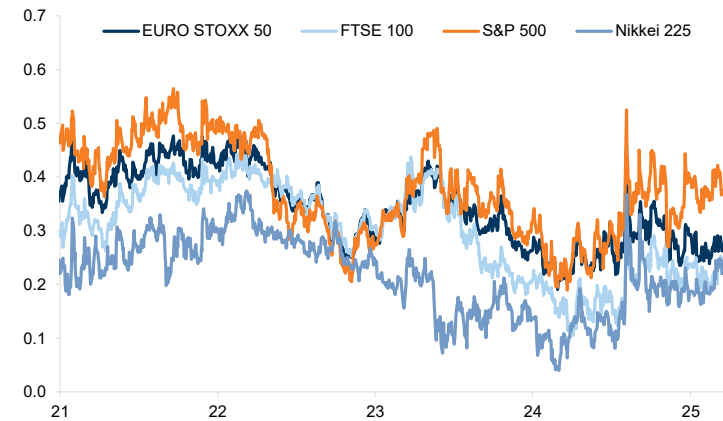
Exhibit 55: ATM implied volatility term structure for equity indices



Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 56: Normalised implied volatility skew across regions

3m 25 delta put vol minus 25 delta call vol scaled by ATM implied vol



Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 57: CDS and equity vol levels in the US

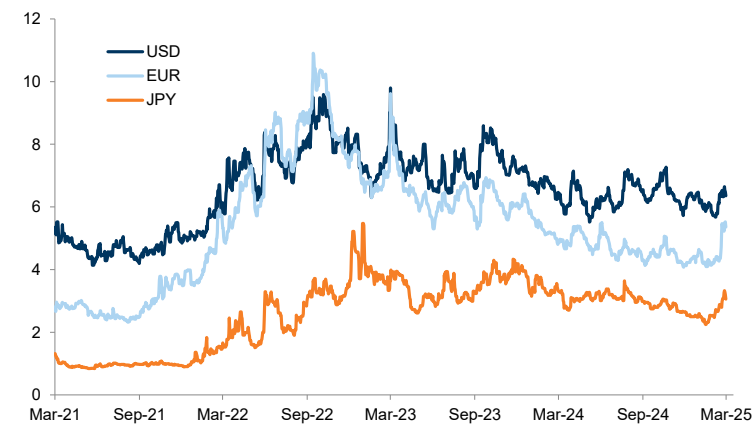
CDX HY, 3m ATM S&P 500 implied vol



Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 58: 3m ATM implied rate volatility across regions

3-month implied volatility of 10-year rates (bp/day)

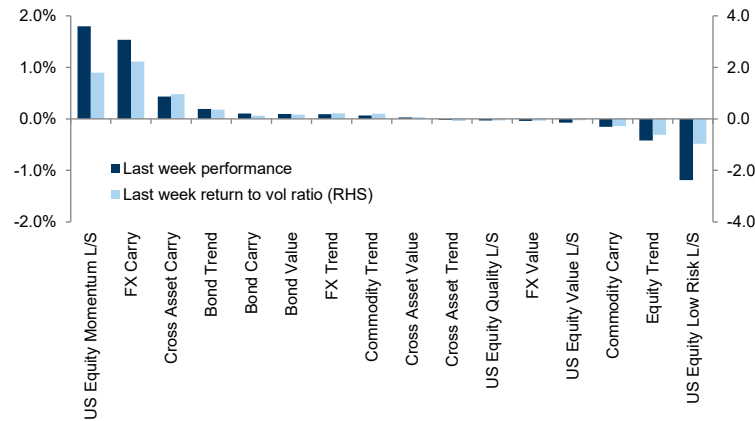


Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Cross-asset: Alternatives and liquid risk premia

Exhibit 59: Last week performance of liquid risk premia

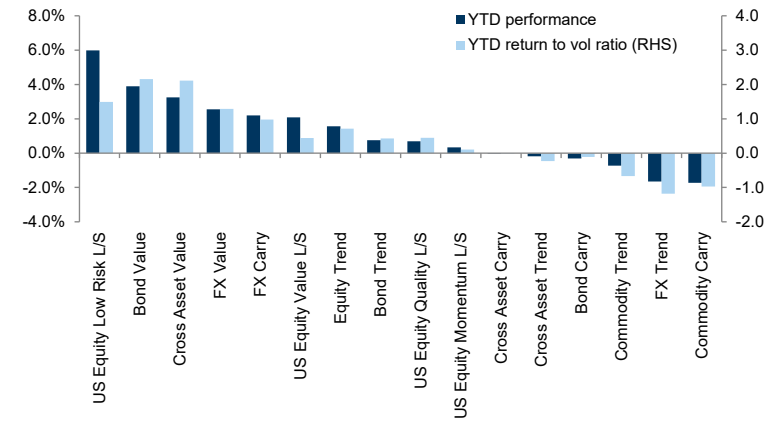
Bloomberg GSAM indices. 12M volatility



Source: Bloomberg, Goldman Sachs Global Investment Research

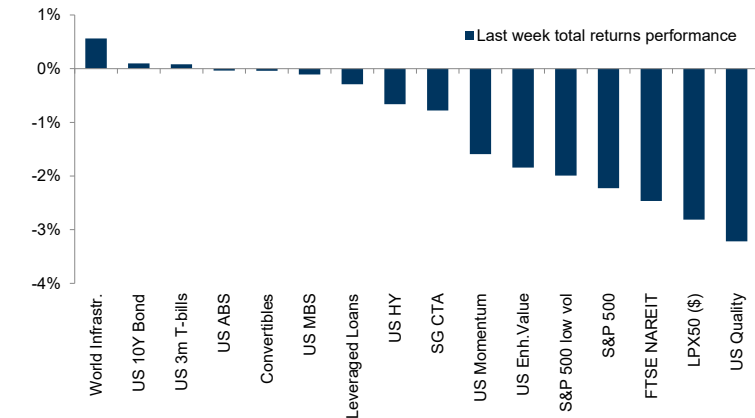
Exhibit 60: YTD performance of liquid risk premia

Bloomberg GSAM indices. 12M volatility



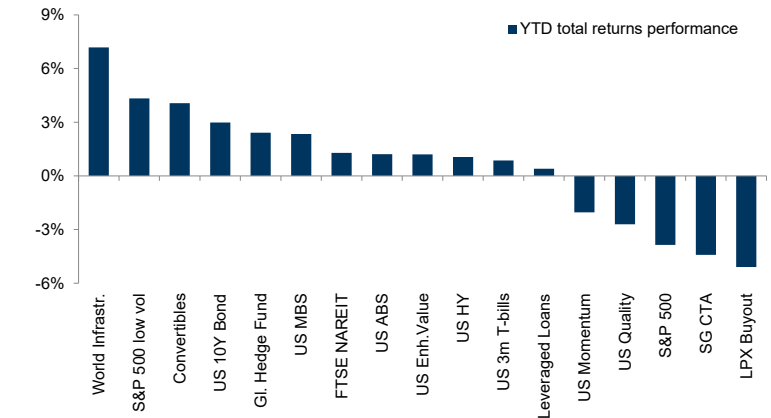
Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 61: Last week performance of alternative assets or strategies



Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

Exhibit 62: YTD performance of alternative assets or strategies

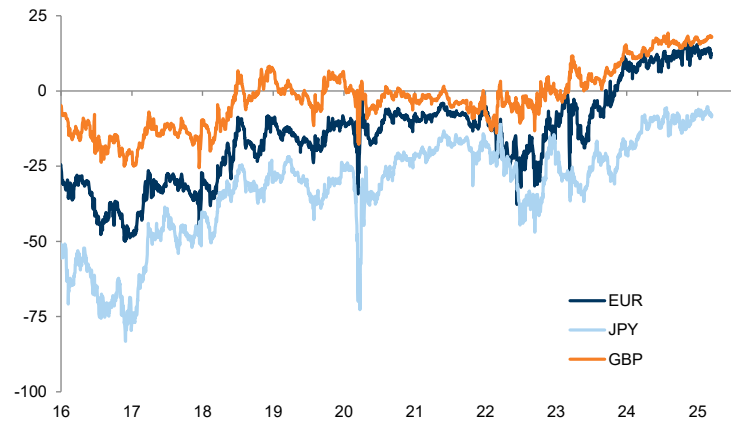


Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

Cross-asset: Liquidity indicators

Exhibit 63: 1-year cross-currency basis

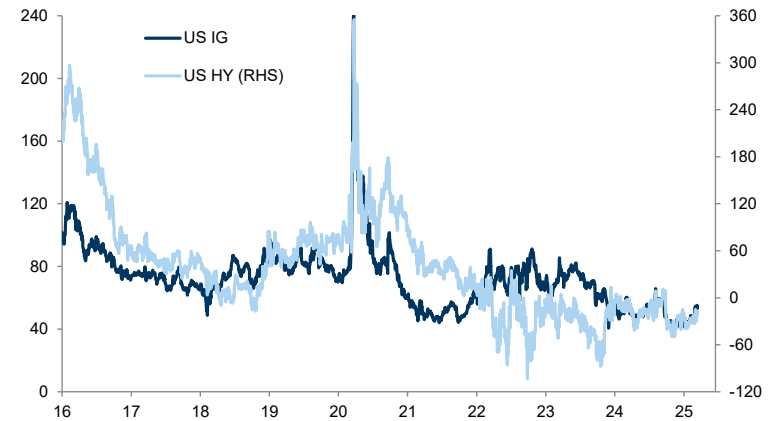
Basis points



Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 64: Cash credit versus CDS spread

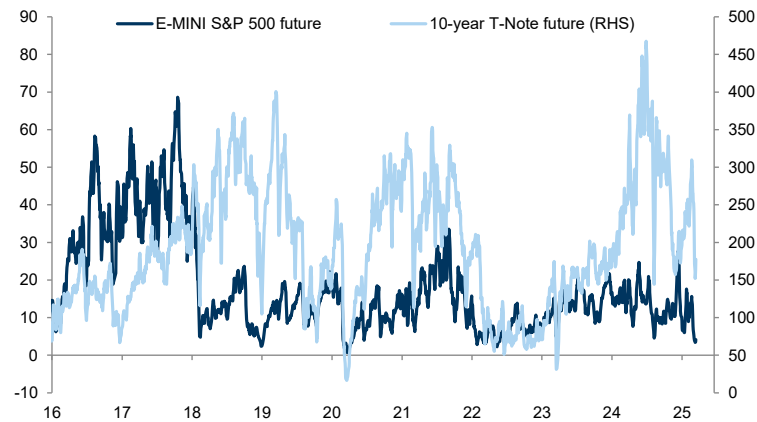
Basis points



Source: Goldman Sachs FICC and Equities, Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 65: Top-of-book depth

5-day average, \$ mln

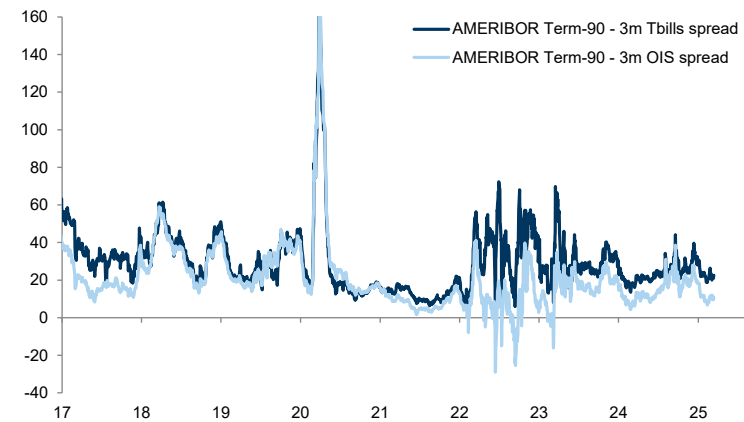


E-MINI S&P 500 = 5d avg. # of contracts * S&P 500 price * \$50. 10-year T-note = 5d avg. # of contracts * \$100,000

Source: Bloomberg, Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 66: US financial institutions wholesale funding cost

Basis points

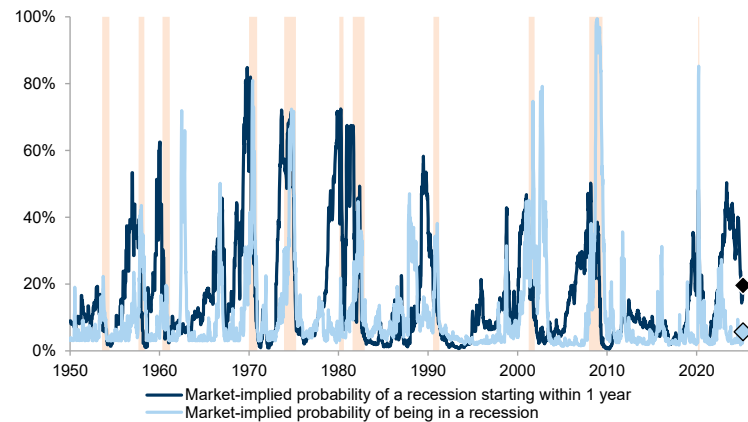


Source: Bloomberg, Goldman Sachs Global Investment Research

Cross-asset: Market pricing of US recession risk

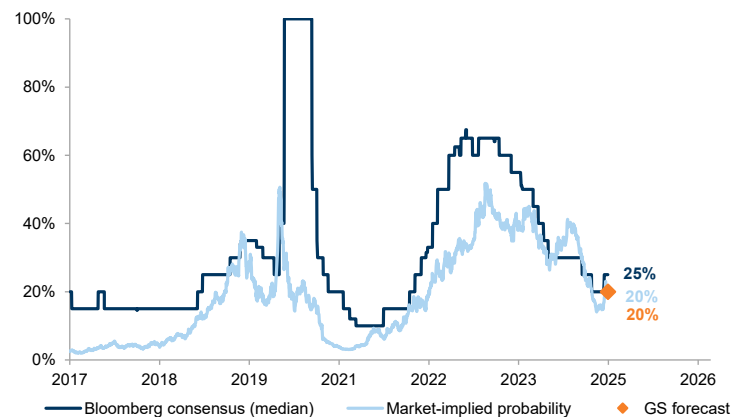
Exhibit 67: Market-implied US recession probability

Average of univariate logit models on the right. Orange shade: NBER recession



Source: Haver Analytics, Datastream, Worldscope, Goldman Sachs Global Investment Research

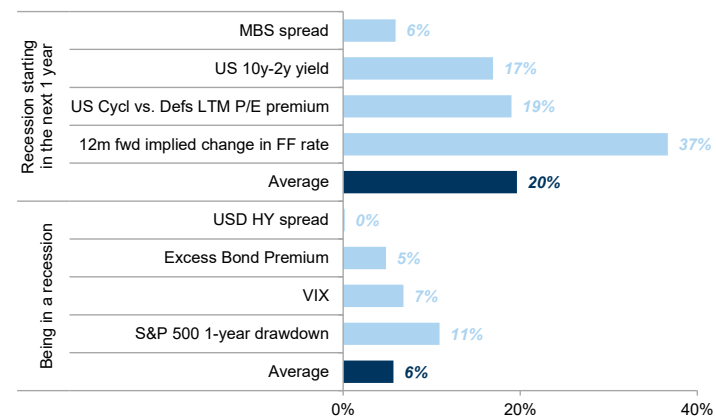
Exhibit 69: Probability of a US recession in the next 1 year



Source: Haver Analytics, Datastream, Worldscope, Bloomberg, Goldman Sachs Global Investment Research

Exhibit 68: Market-implied US recession probability by indicator

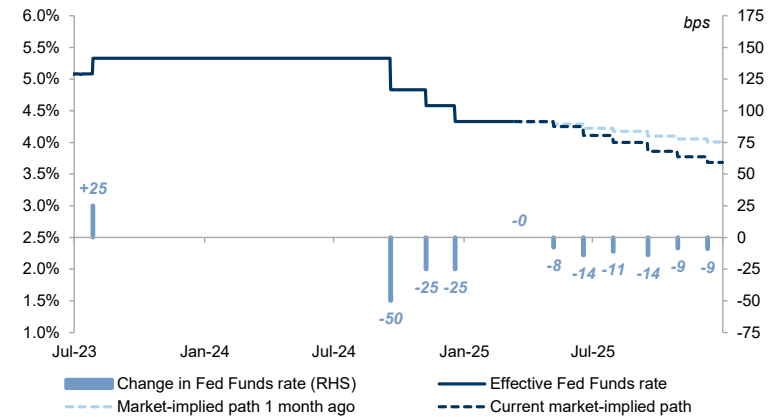
Univariate logit models. Maximum history since 1950



Source: Haver Analytics, Datastream, Worldscope, Goldman Sachs Global Investment Research

Exhibit 70: Market-implied path of the Fed Funds rate

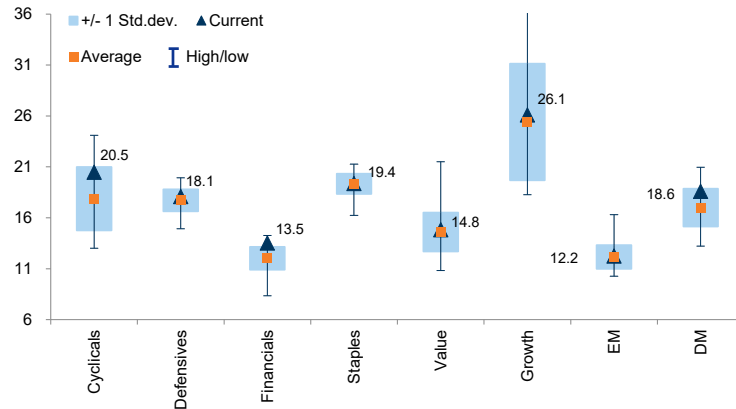
Based on 30-day Fed Funds futures



Source: Haver Analytics, Goldman Sachs Global Investment Research

Equity: Valuation and styles

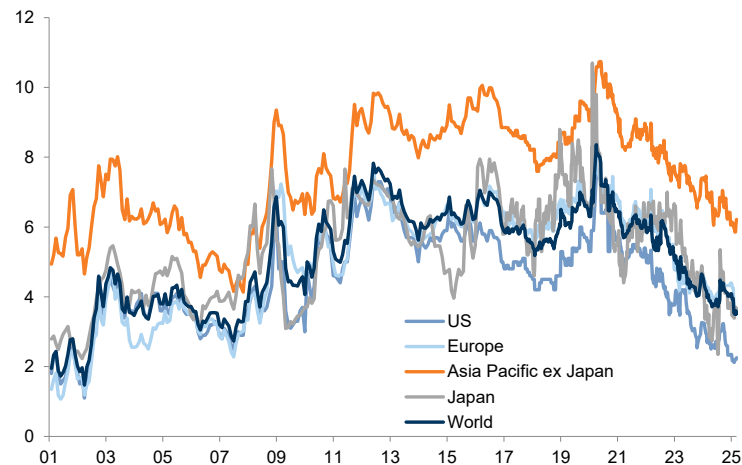
Exhibit 71: Valuation ranges of MSCI World styles indices
12-month forward P/E's relative to the last 10 years



Source: Datastream, I/B/E/S, Goldman Sachs Global Investment Research

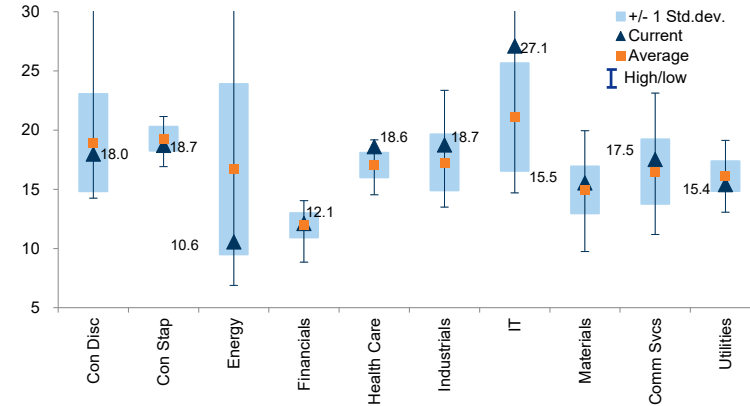
Exhibit 73: Global market implied ERPs (%)

Implied ERPs are calculated by each regional strategy team. While specific assumptions differ between regions, all are calculated using similar frameworks



Source: Datastream, Goldman Sachs Global Investment Research

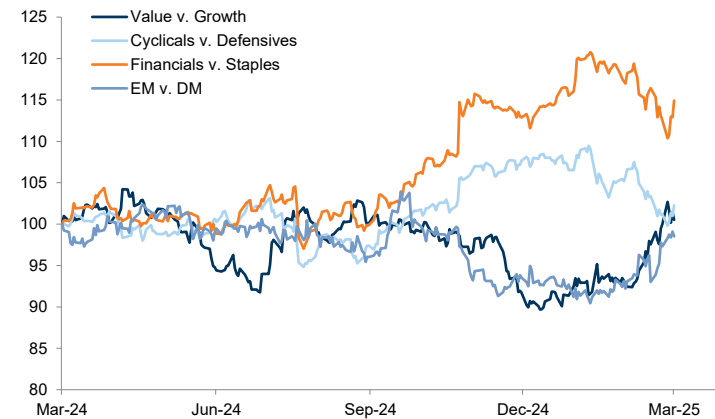
Exhibit 72: MSCI World sector valuations
12-month forward P/E's relative to the last 10 years



Source: Datastream, I/B/E/S, Goldman Sachs Global Investment Research

Exhibit 74: MSCI World style index performance

Performance indexed to 100 12m ago

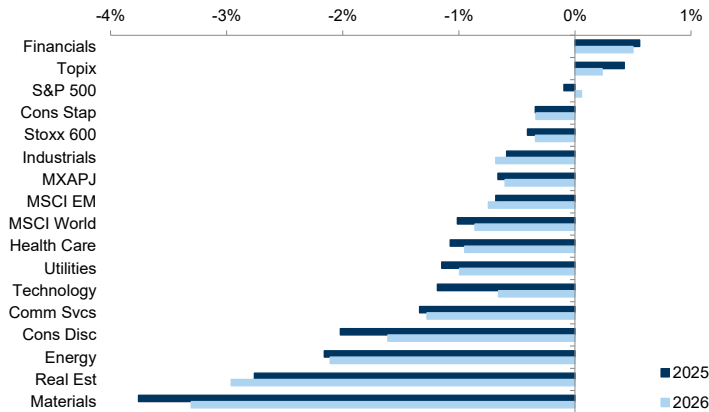


Source: Datastream, Goldman Sachs Global Investment Research

Equity: Earnings

Exhibit 75: 1-month revision to I/B/E/S consensus earnings

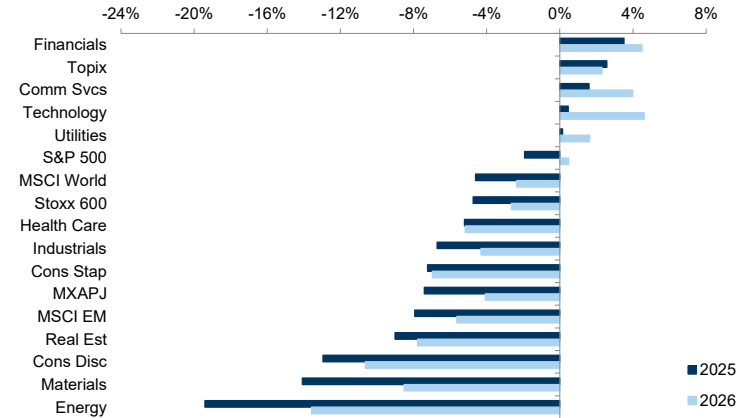
MSCI World sectors, other global equity index aggregates. TOPIX: FY 2025/2026



Source: Datastream, I/B/E/S, Goldman Sachs Global Investment Research

Exhibit 76: 12-month revision to I/B/E/S consensus earnings

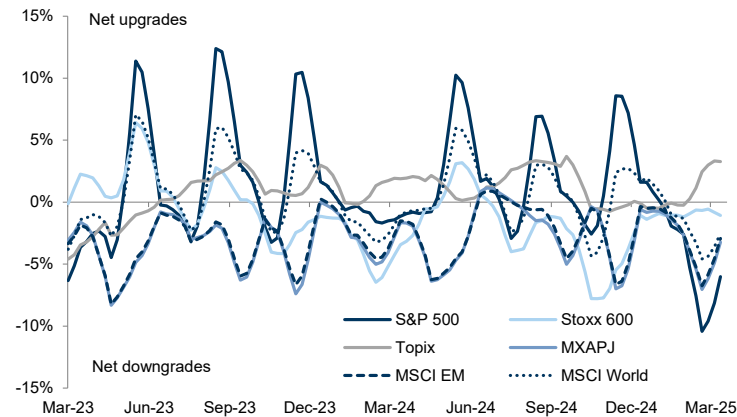
MSCI World sectors, other global equity index aggregates. TOPIX: FY 2025/2026



Source: Datastream, I/B/E/S, Goldman Sachs Global Investment Research

Exhibit 77: Earnings sentiment: Analyst upgrades minus downgrades (scaled by total analysts) across markets

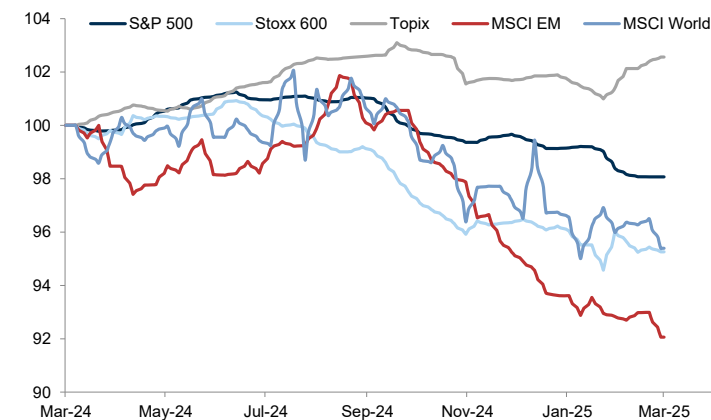
1-month moving average of net monthly upgrades



Source: Datastream, I/B/E/S, Goldman Sachs Global Investment Research

Exhibit 78: 2025 consensus earnings expectations over the past 12 months

Earnings indexed to 100 12 months ago. TOPIX: FY 2025

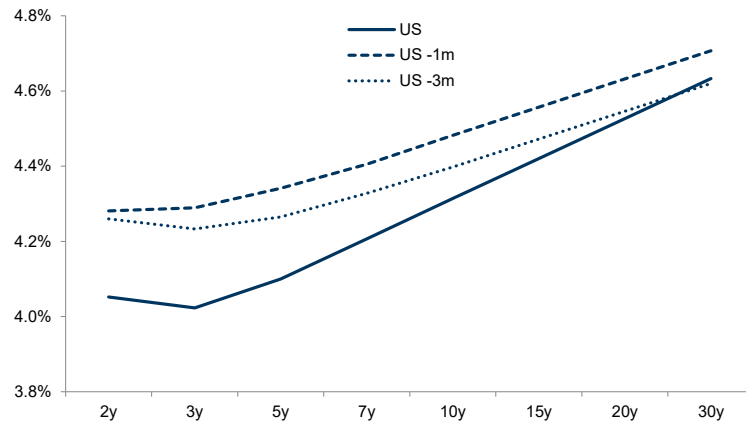


Source: Datastream, I/B/E/S, Goldman Sachs Global Investment Research

Government bonds: Yield curves

Exhibit 79: US yield curve dynamics

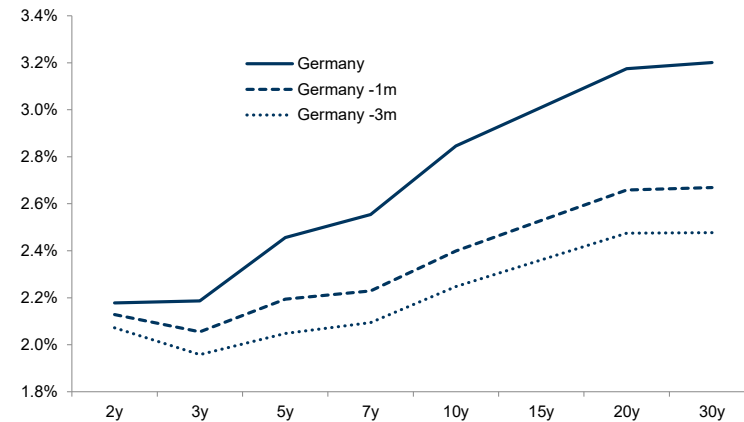
Current relative to 1 month and 3 months ago



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 80: German yield curve dynamics

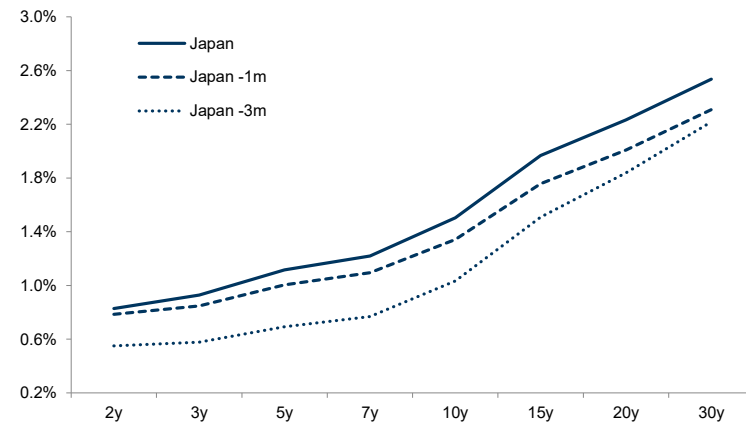
Current relative to 1 month and 3 months ago



Source: Datastream, Goldman Sachs Global Investment Research

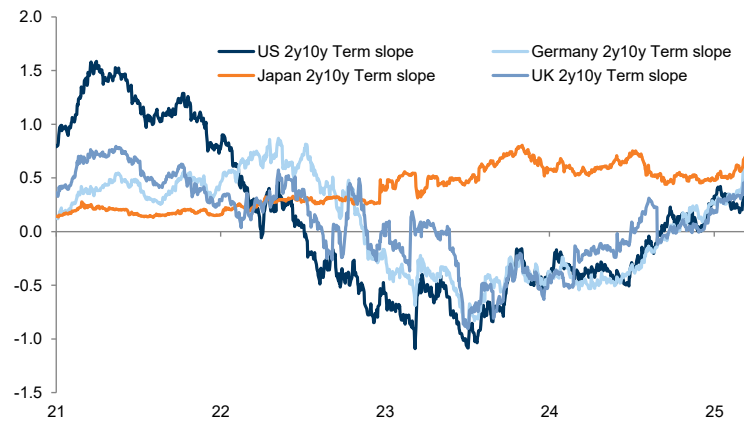
Exhibit 81: Japan yield curve dynamics

Current relative to 1 month and 3 months ago



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 82: Yield curve term slope across regions

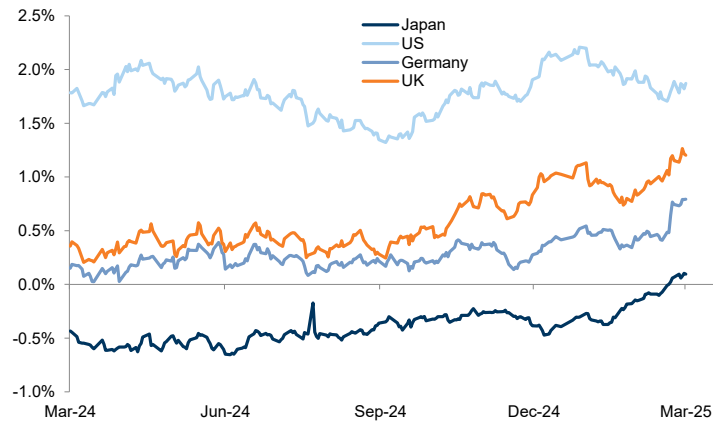


Source: Datastream, Goldman Sachs Global Investment Research

Government bonds: Real yields, inflation, breakevens, 10y IR differentials

Exhibit 83: 10y real yields across regions

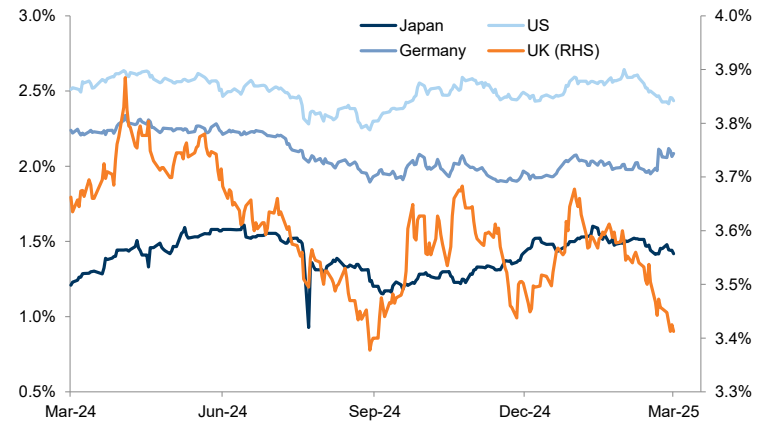
Nominal bond yield minus CPI inflation swap (RPI for the UK)



Source: Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 84: 10y inflation swaps across regions

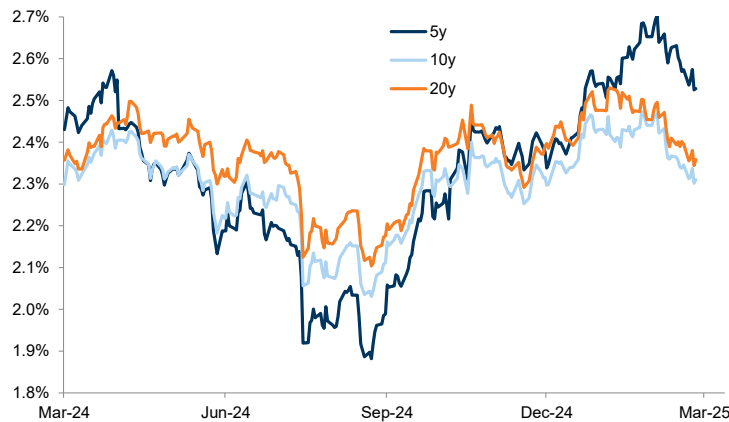
CPI inflation swap (RPI for the UK)



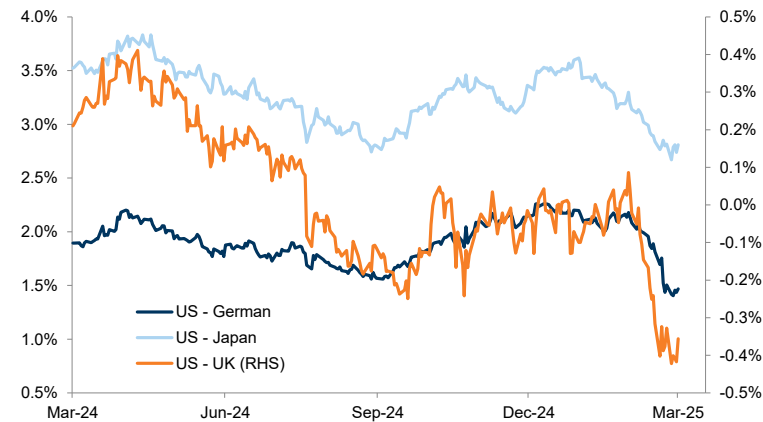
Source: Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 85: US breakeven inflation

Nominal yield minus TIPS yield



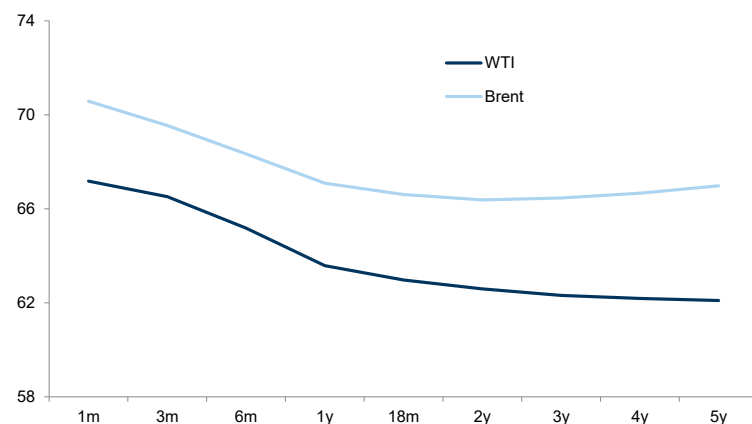
Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 86: 10y nominal bond yield differentials


Source: Datastream, Goldman Sachs Global Investment Research

Commodities: Curve shapes and roll yields

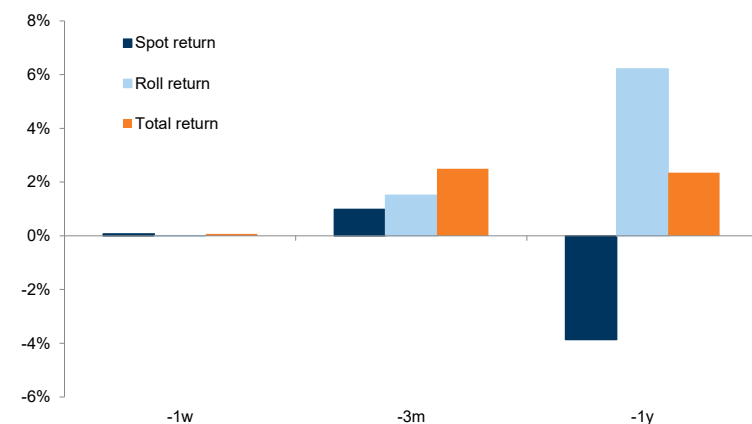
Exhibit 87: WTI and Brent oil forward curves



Source: Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 89: GSCI® Enhanced spot, roll and total returns

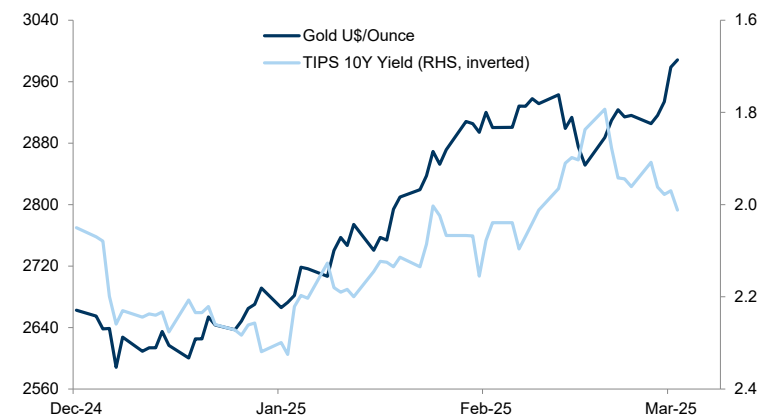
Returns over the past 1 week, 3 months and 1 year



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 88: Gold price and US real yields

US 10-year TIPS yield, Gold US/ounce



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 90: Recent performance of GSCI® Enhanced sectors

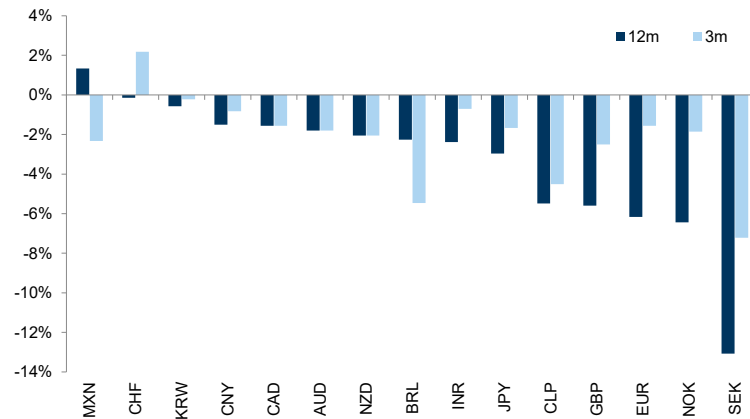
Weight signifies contribution to the GSCI® Enhanced index

	Current Weight (%)	Returns (%)		
		-1w	-1m	-1y
S&P GSCI	100.0	0.1	-2.9	2.1
Energy	51.8	-0.5	-4.4	-4.6
Industrial Metals	12.3	0.7	3.4	9.7
Precious Metals	7.9	3.2	3.8	37.2
Agriculture	17.3	-0.3	-7.6	2.1
Livestock	10.8	0.4	1.7	11.7

Source: Goldman Sachs, Goldman Sachs Global Investment Research

FX: Forecasts and forwards, recent performance and positioning

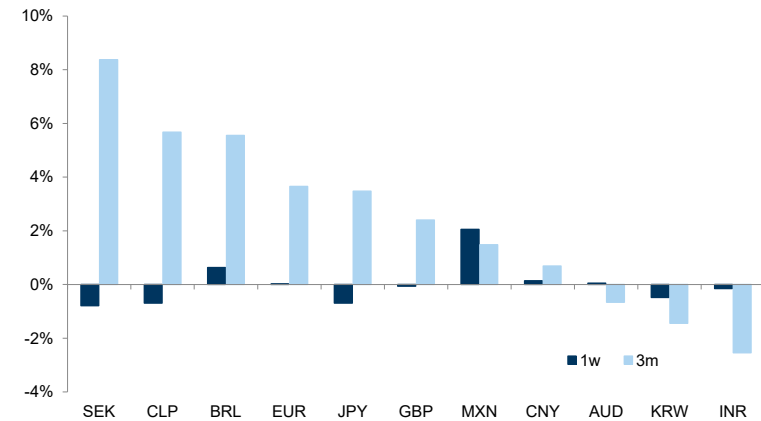
Exhibit 91: Our 3- and 12-month forecasts for dollar crosses



Source: Datastream, Goldman Sachs Global Investment Research

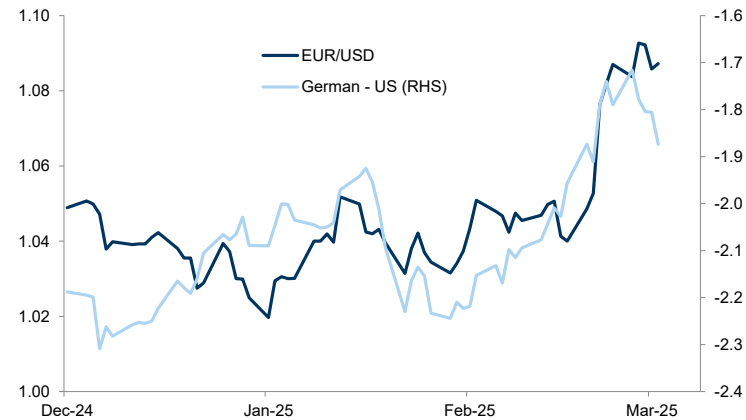
Exhibit 92: Recent performance of dollar crosses

Percentage change over past 1 week, 3 months



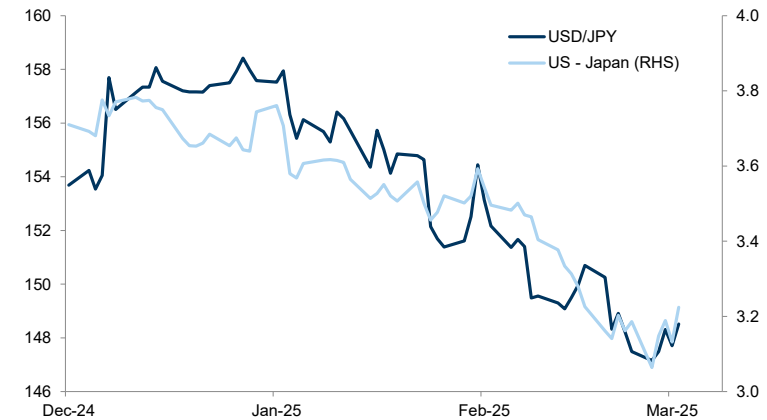
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 93: EUR/USD against German - US 2y interest rate differentials past 3m



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 94: USD/JPY against US - Japan 2y interest rate differentials past 3m



Source: Datastream, Goldman Sachs Global Investment Research

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Reg AC

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