GOAL KICKSTART

Focus on central bank meetings - from strong Tech earnings to higher rates

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Equities sold off sharply into Friday's close last week, led by a 4.8% decline in the Nasdaq after a stronger-than-expected US NFP print of +172k (vs. +85k cons). Strong labor market data has again driven concerns that resilient growth and inflationary pressures could drive a more hawkish Fed - our economists have pushed the final two rate cuts in their Fed forecast back to June and December of 2027, and while they still see rate hikes as unlikely, they view them as more likely than initially thought. Looking ahead, focus is shifting to the US CPI release on June 10 (GS: Core CPI +0.17% m/m vs. cons. +0.3%) and upcoming central bank meetings, starting with the ECB on June 11 and followed by the Fed/BoJ/BoE the week after. We expect a 25bp ECB rate hike in June, followed by another in September, driven by higher energy prices and stronger inflation expectations. Markets remain focused on the viability of the Middle East ceasefire, after a fresh escalation initially triggered a spike in crude prices.

Equity correlations to both bond yields and oil have moved further into negative territory (Exhibit 1). As we recently wrote, sharply higher yields due to rising inflation tend to weigh on equities. Equities have been able to digest higher rates so far due to micro tailwinds from AI capex and strong earnings. But with negative equity/bond correlations, further increases in yields become harder for equities to absorb once central banks have to prioritise fighting inflation. Markets are now caught between resilient earnings and strong labor market data as well as inflationary concerns heading into the next round of policy meetings and macro releases. Front-end pricing still points to impending central bank tightening across the G4 (Exhibit 2) - close to three ECB hikes across the remaining five meetings, around two BoE hikes and roughly one Fed. In the Euro Area, where inflation risks have picked up more clearly, option-implied distributions now assign roughly an 85% probability to further tightening (Exhibit 3). Rates tail risk has eased compared to the start of the Middle East war, but remains elevated - the swaption-implied probability of US 10y yields moving above 5% by year-end has fallen back to around 20% from the May 19 peak (Exhibit 4), well above levels from early 2026. Our rates strategists now expect US 10-year yields at 4.4% by year-end (up from 4.1%), supported by resilient nominal growth and inflationary pressures keeping the front-end pricing skewed toward further tightening. Rates volatility therefore remains in focus, and we run two option screens: (1) in a rates relief scenario (Exhibit 5), EM credit, USD IG/HY, receiver structures and duration calls look attractive, and (2) in a renewed rates shock (Exhibit 6) the distribution flips toward payers and bond puts, led by USD duration hedges, rates and EM credit downside.

We remain N equities tactically but modestly pro-risk for 12m (OW equities, N bonds/commodities/cash, UW credit). With the Risk Appetite Indicator around 2021 highs, we expect equity returns to moderate and correction risk to rise. However, with our macro baseline and continued good earnings growth, boosted by AI capex, we remain OW equities for 12m and would look to buy any dips in the coming months. We continue to prefer selective protective overlays such as equity put spread collars (US Real Estate, Communication Services, Utilities, Energy, HSCEI and HSTECH), alongside low-volatility overlays to manage increasingly narrow and fast re-risking windows.

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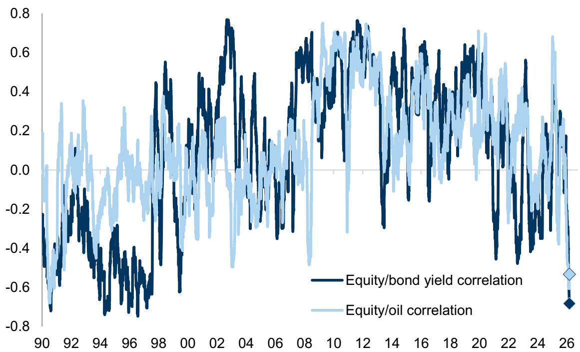
Exhibit 1: Equity correlation to yields and oil are at cycle lows

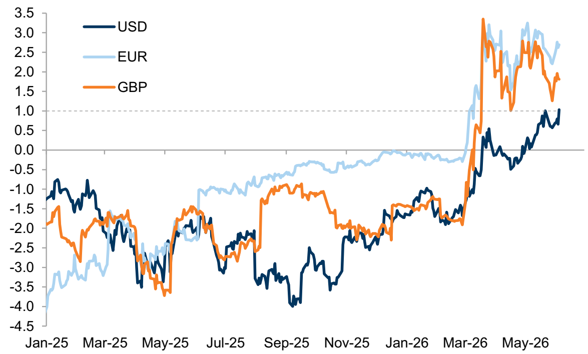
3-month correlation of daily return/changes. Bond yield: US 10y, oil = WTI.



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 2: European central banks are pricing more than two hikes this year

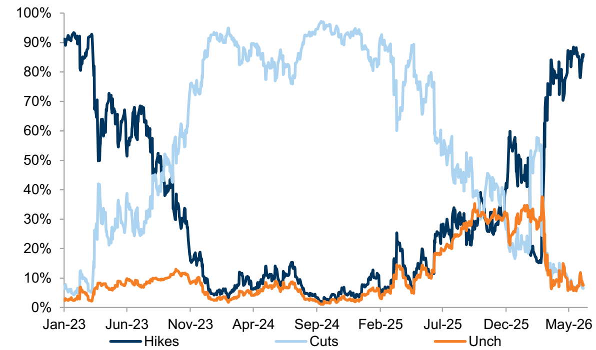
Number of 25 bps hikes/cuts priced over the following 5 meetings



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

Exhibit 3: Markets price a probability of hikes for the ECB of c.85%

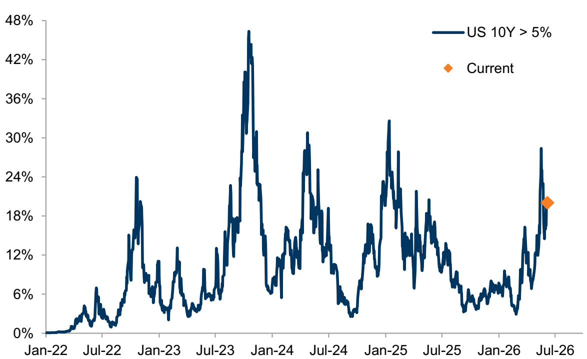
Option-implied probability of 12m ECB policy rate changes. 25bps cuts/hikes. Based on the price of 1Y1M swaptions vs. O/N rate.



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

Exhibit 4: The probability of the 10y being above 5% remains around 20%

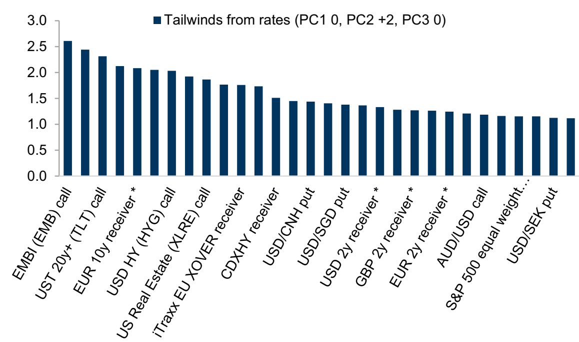
Probability of US 10y yield above 5% in six months, implied by 6m term 10y swaptions



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

Exhibit 5: Calls on EM credit and corporate bonds screen the most attractive in the event of a rates relief

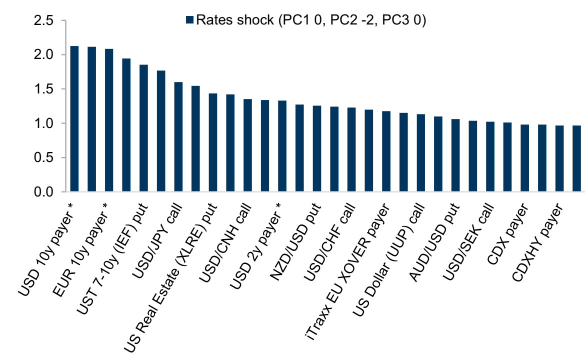
Assets with largest move implied by PCs/1m 25-delta implied volatility (inverted for puts). *=ATM vol.



Source: Datastream, Bloomberg, Goldman Sachs Global Investment Research

Exhibit 6: Payers and bond puts screen the most attractive in the case of a further rates shock

Assets with largest move implied by PCs/1m 25-delta implied volatility (inverted for puts).



Source: Datastream, Bloomberg, Goldman Sachs Global Investment Research

Cross-asset: Forecasts

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

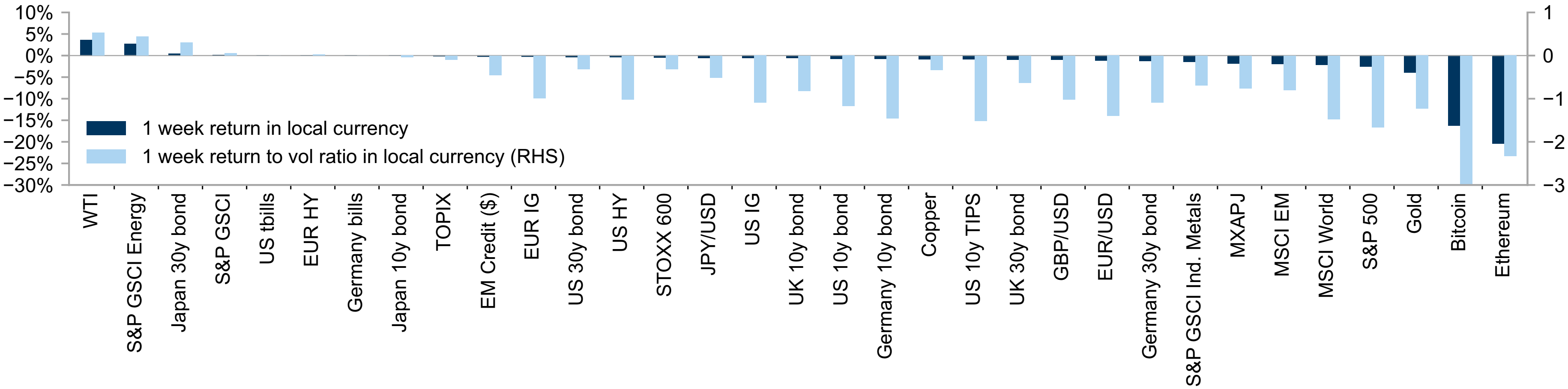
	Allocation Weighting		Current	Forecasts			Forecast Upside/Downside (%)		
	3m	12m	Level	3m	6m	12 m	3m	6m	12 m
Equities	**N**	**OW**			**Index level**			**Total Return**	
S&P 500 ($)	OW	OW	7384	7600	8000	8300	3.2	8.9	13.6
Stoxx Europe 600 (€)	UW	UW	623	640	645	660	3.6	5.2	9.3
MSCI Asia-Pacific ex. JP ($)	OW	OW	885	980	1030	1080	10.7	16.4	22.9
Topix (¥)	OW	OW	3949	4100	4200	4400	4.4	7.4	13.6
10 Year Government Bonds	**N**	**N**			**Yield (%)**			**Total Return**	
US	OW	OW	4.55	4.46	4.41	4.31	1.9	3.5	6.8
Germany	OW	N	3.04	2.94	2.99	3.00	1.8	2.2	3.9
Japan	UW	UW	2.65	2.50	2.50	2.41	2.3	3.3	6.0
UK	OW	OW	4.91	4.64	4.53	4.43	3.5	5.8	9.5
Corporate Bonds	**N**	**UW**			**Spread**			**Total Return**	
Bloomberg USD IG	OW	OW	73	93	91	90	0.6	2.4	6.0
Bloomberg USD HY	OW	OW	265	328	318	315	0.0	2.0	5.6
iBoxx EUR IG	UW	UW	88	118	115	114	0.1	0.9	2.9
ICE-BAML EUR HY	UW	UW	259	370	362	360	-2.2	-1.0	1.3
EM Hard Currency Sovereign	N	N	234			300	1.0	1.9	3.8
Commodities	**N**	**N**			**Spot price**			**Spot Return**	
WTI ($/bbl)	N	N	94	85	83	81	-9.9	-12.0	-14.1
Brent ($/bbl)	N	N	93	92	90	85	-1.3	-3.4	-8.8
Copper ($/mt)	N	N	13,490	13,620	13,735	13,800	1.0	1.8	2.3
Gold ($/troy oz)	N	OW	4,354	5,145	5,400	5,700	18.2	24.0	30.9
FX	-	-			**Spot rate**			**Spot Return**	
EUR/USD	-	-	1.16	1.14	1.18	1.20	-1.4	2.1	3.8
USD/JPY	-	-	160.3	160	158	155	-0.2	-1.4	-3.3
GBP/USD	-	-	1.34	1.33	1.34	1.33	-0.6	0.1	-0.6
AUD/USD	-	-	0.71	0.72	0.73	0.74	1.7	3.1	4.5
USD/BRL	-	-	5.12	4.90	5.00	5.00	-4.3	[illegible]	[illegible]
USD/INR	-	-	94.9	96.0	96.0	97.0	1.1	[illegible]	[illegible]
USD/CNY	-	-	6.77	6.80	6.70	6.50	0.4	[illegible]	[illegible]
Cash	**N**	**N**			**Spot rate**			**To**[illegible]	
US 3-month Tbill	-	-	-	-	-	-	0.93	[illegible]	[illegible]
Germany 3-month Bubills	-	-	-	-	-	-	0.53	[illegible]	[illegible]

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 returns and return to vol ratios

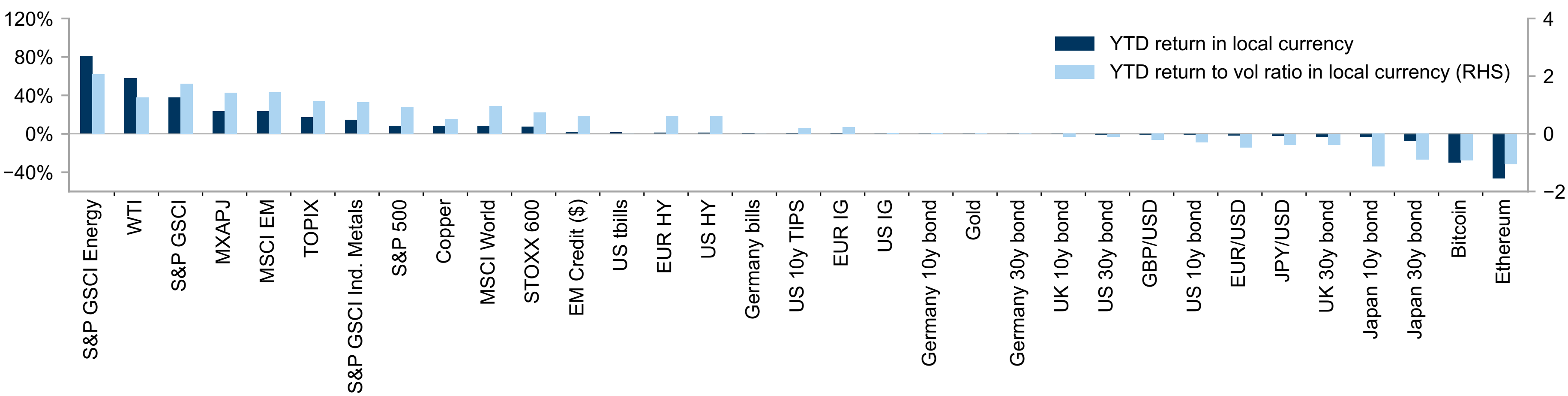
1 week returns. Volatility of weekly returns in the previous 12m



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

Exhibit 9: Local currency returns and return to vol ratios

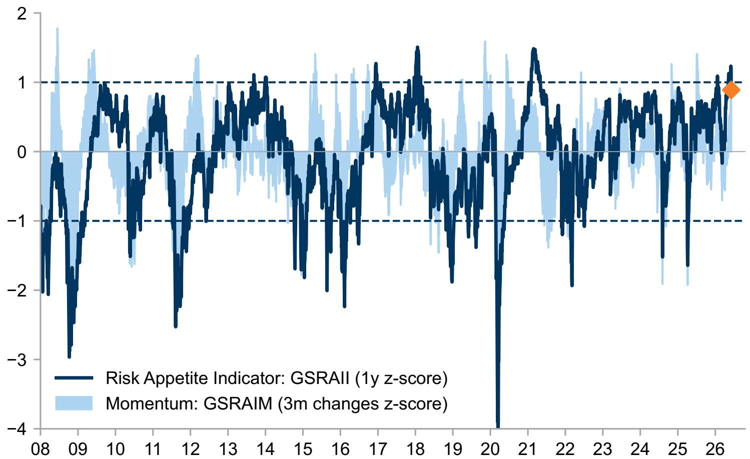
YTD returns



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

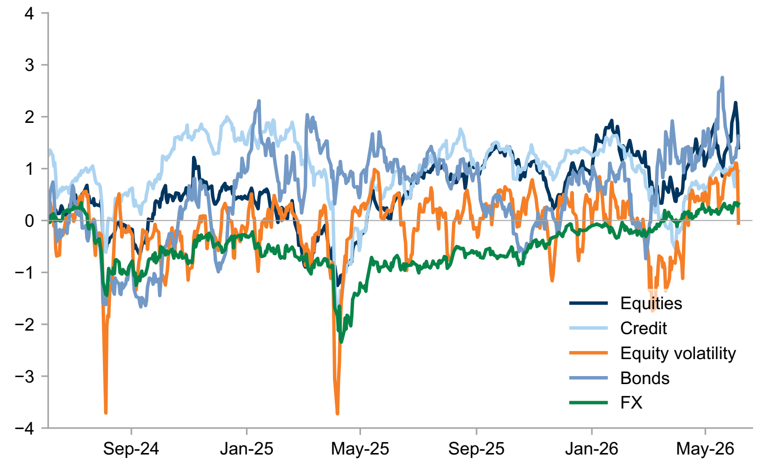
Cross-asset: Risk appetite indicator

Exhibit 10: Risk appetite indicator level and momentum factors
See July 2016 GOAL for construction details



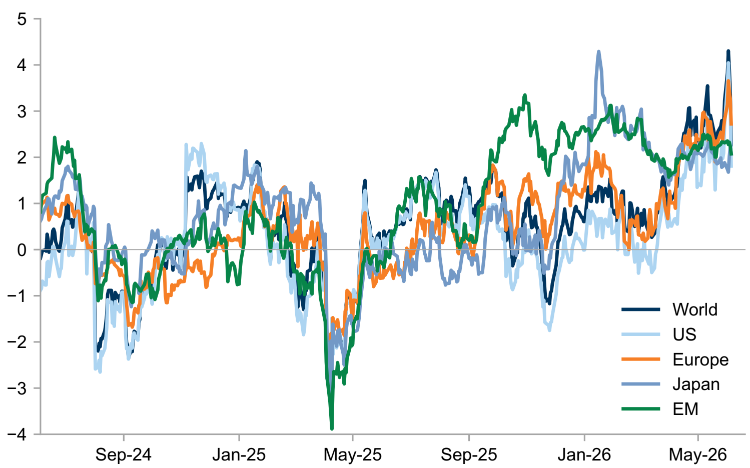
Source: Goldman Sachs Global Investment Research

Exhibit 11: Risk appetite indicators for different asset classes
See July 2016 GOAL for construction details



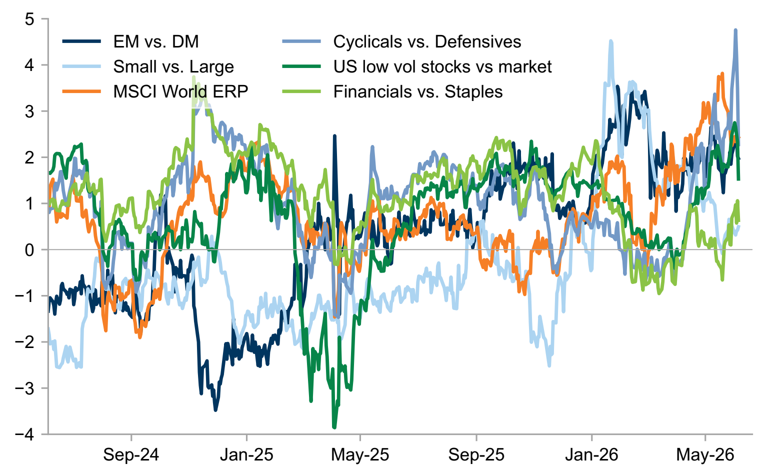
Source: Goldman Sachs Global Investment Research

Exhibit 12: Cyclicals vs. defensives 1-year rolling z-score across regions
See July 2016 GOAL for construction details



Source: Goldman Sachs Global Investment Research

Exhibit 13: Sub-components of equity risk appetite indicator
See July 2016 GOAL for construction details

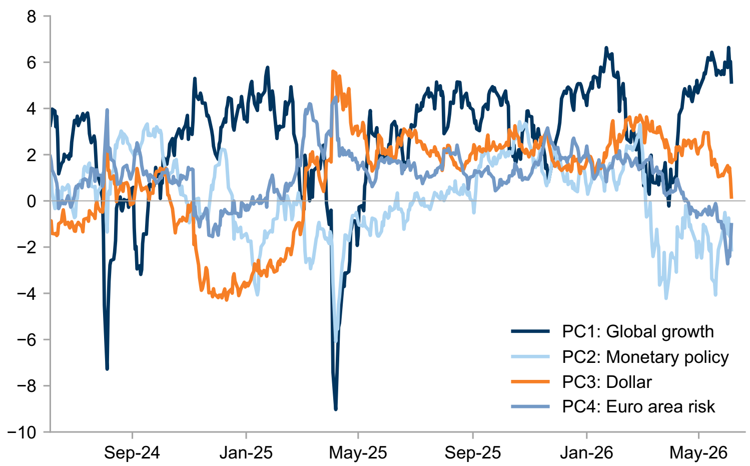


Source: Goldman Sachs Global Investment Research

Cross-asset: Risk Appetite principal component analysis

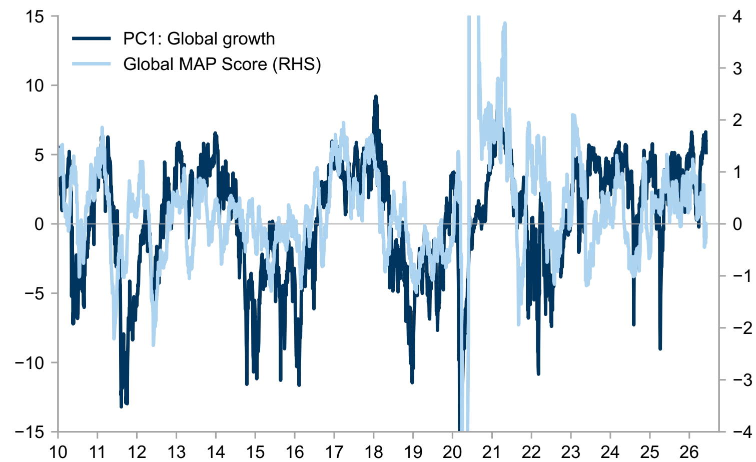
Exhibit 14: GS RAI principal component

See April 2019 GOAL for construction details



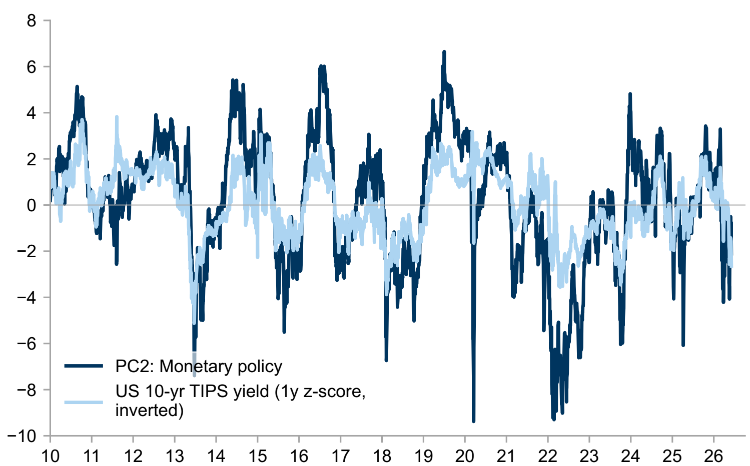
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 15: PC1: Global growth factor vs. Global MAP Score



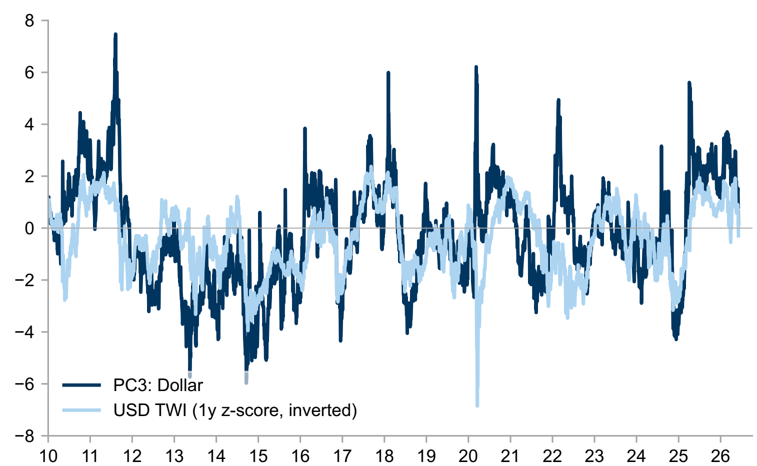
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 16: PC2: Monetary policy factor vs. US 10-year TIPS yield



Source: Datastream, Goldman Sachs Global Investment Research

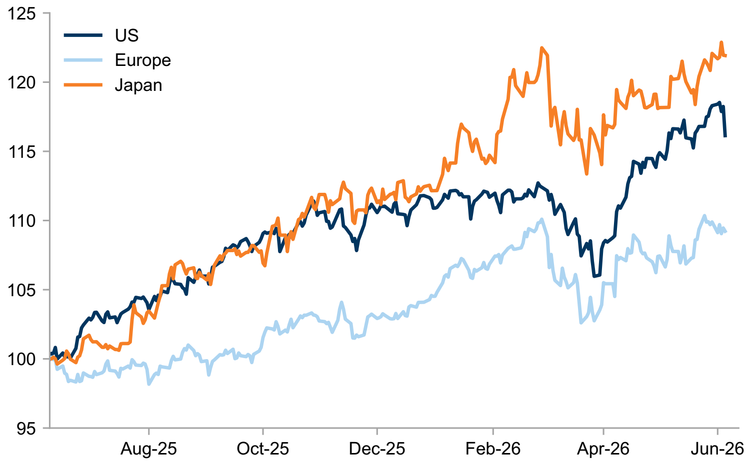
Exhibit 17: PC3: Dollar factor vs. USD TWI



Source: Datastream, Goldman Sachs Global Investment Research

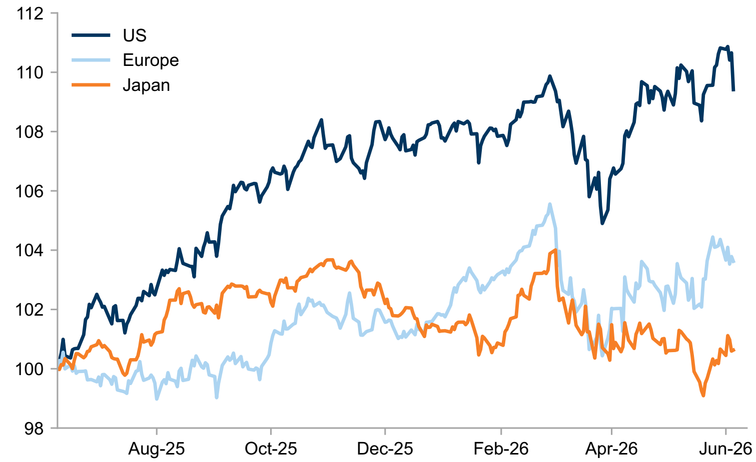
Cross-asset: Balanced portfolios and dynamic allocation strategies performance

Exhibit 18: 60/40 equity/bond portfolio performance across regions last 12m
Relative total return performance indexed to 100 12m ago



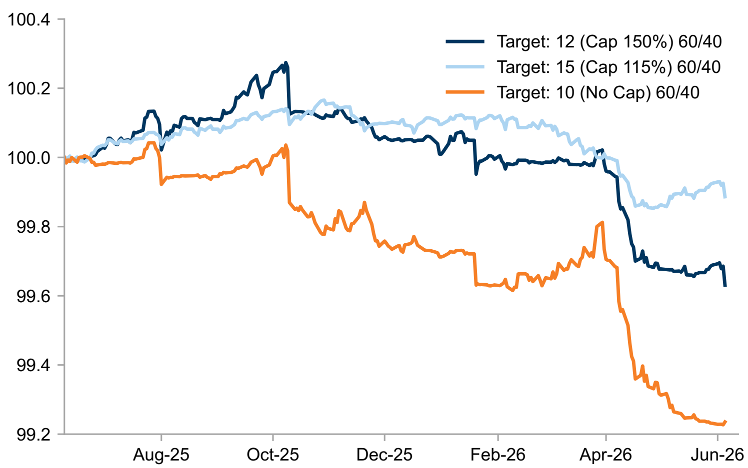
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 19: Risk parity portfolio performance across regions last 12m
Weighted inversely by 3m realised volatility of equity and 10y bonds



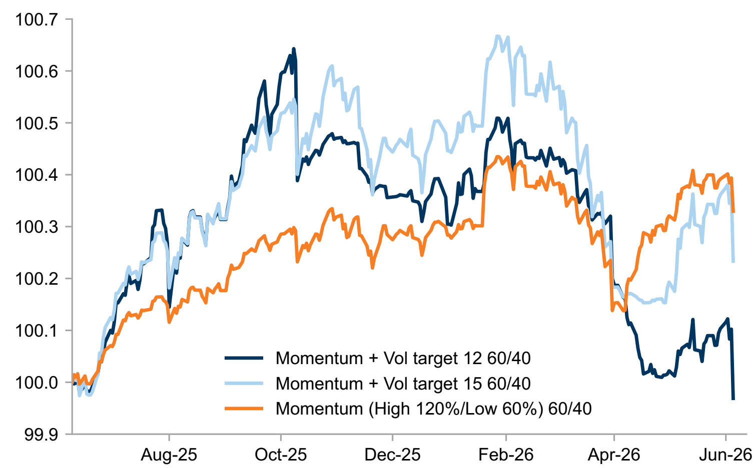
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 20: 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

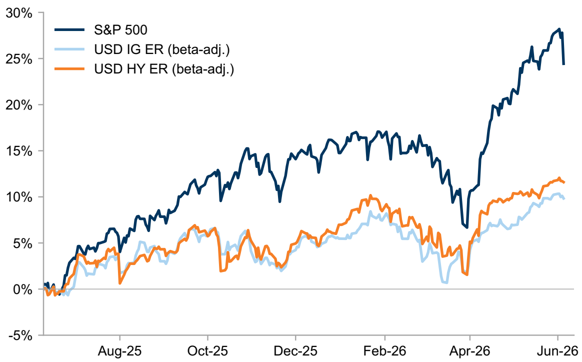
Exhibit 21: 60/40 portfolio with volatility target strategies and momentum overlay vs. US 60/40
60% S&P 500, 40% US 10y bond; Strategy methodology see: GOAL: The Balanced Bear - Part 2



Source: Datastream, Goldman Sachs Global Investment Research

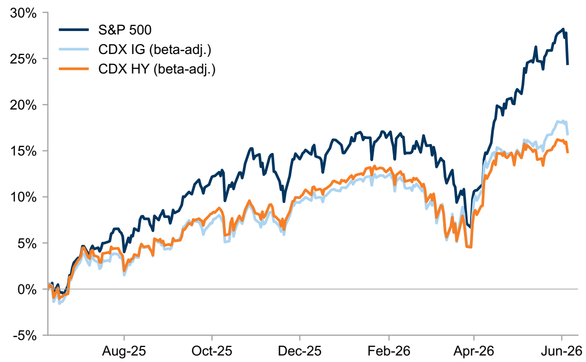
Cross-asset: Equity vs. credit monitor

Exhibit 22: USD cash credit vs. US equity
Cash credit excess returns (beta-adjusted) vs. S&P 500 total returns



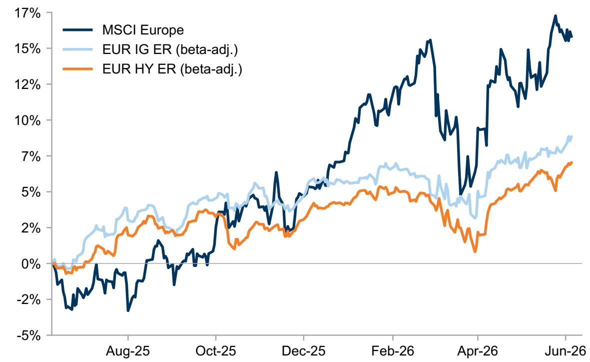
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 23: USD synthetic credit vs. US equity
Synthetic credit excess returns (beta-adjusted) vs. S&P 500 total returns



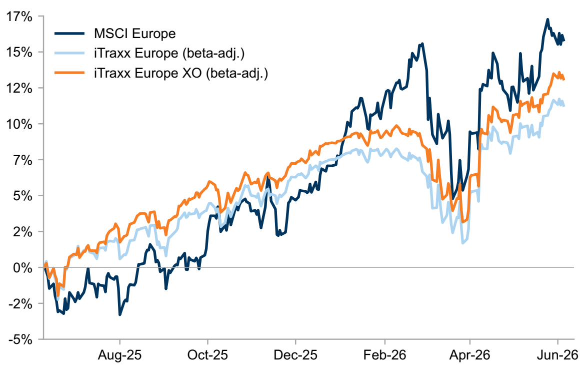
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 24: EUR cash credit vs. European equity
Cash credit excess returns (beta-adjusted) vs. MSCI Europe total returns



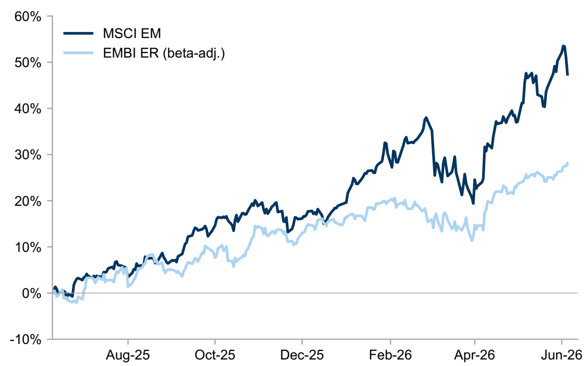
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 25: EUR synthetic credit vs. European equity
Synthetic credit excess returns (beta-adjusted) vs. MSCI Europe total returns



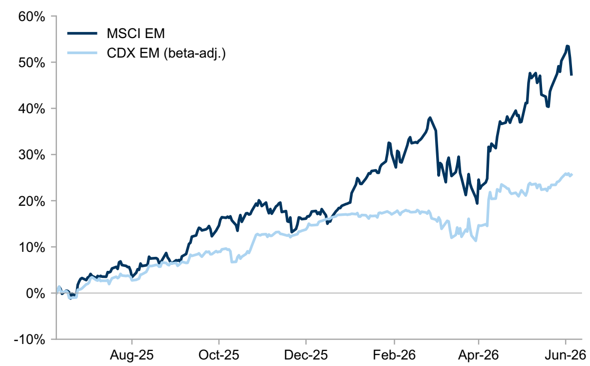
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 26: 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 27: 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 28: Cross-asset valuation table

A higher percentile means more expensive relative to 10y history

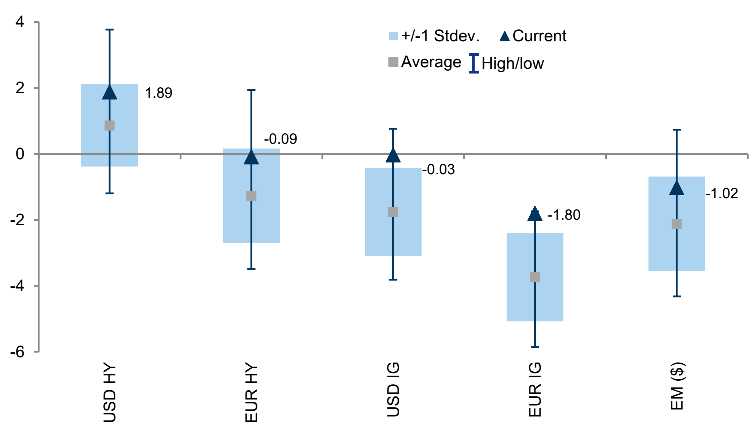
	Equity					Government bonds				Credit					FX (vs. USD)	
	S&P 500	Stoxx 600	MXAPJ	Topix	MSCI EM	US 10y	German 10y	Japan 10y	UK 10y	US IG	US HY	EUR IG	EUR HY	EM ($)	EUR	JPY
Valuation metric	12m forward P/E ratio					Yield				Spread					Actual - GS fair value	
Current:	20.7x	14.5x	13.0x	16.8x	11.9x	4.5%	3.0%	2.6%	4.9%	73bp	276bp	86bp	259bp	234bp	-3.9%	-41.7%
Expensiveness (last 10y percentile):	*66%*	*58%*	*29%*	*92%*	*35%*	*4%*	*1%*	*1%*	*1%*	*99%*	*96%*	*98%*	*98%*	*100%*	*75%*	*1%*
3M change:	1.2x	0.1x	0.3x	1.0x	0.3x	0.2%	0.1%	0.3%	0.1%	-9bp	-37bp	-16bp	-67bp	-46bp	-0.1%	-0.2%
Average:	19.1x	14.3x	13.6x	14.1x	12.3x	2.8%	1.0%	0.4%	2.2%	112bp	393bp	130bp	378bp	94bp	-7.3%	-20.7%
95th:	22.4x	17.4x	16.2x	17.3x	14.8x	4.5%	2.8%	1.9%	4.7%	152bp	563bp	202bp	550bp	510bp	-1.2%	-7.1%
5th:	16.0x	11.9x	11.9x	12.0x	10.8x	0.7%	-0.5%	-0.1%	0.3%	77bp	281bp	89bp	266bp	266bp	-13.6%	-40.4%

Note: GSDEER is our fair value macro model for exchange rates.

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

Exhibit 29: Credit spread minus equity risk premium estimates across markets

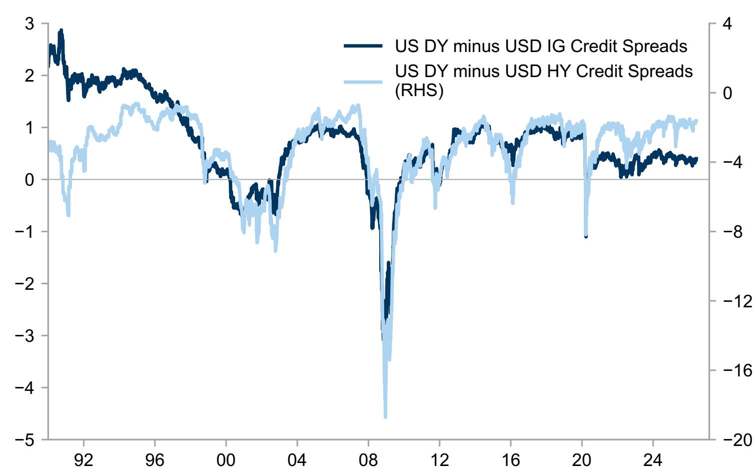
Equity risk premia based on 1-stage DDM using local 10-year yields and LT GDP consensus estimates. Using past 10 years of data.



Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Exhibit 30: Equity vs. credit relative valuation

US Dividend Yield minus Credit spreads



Source: Datastream, Goldman Sachs Global Investment Research

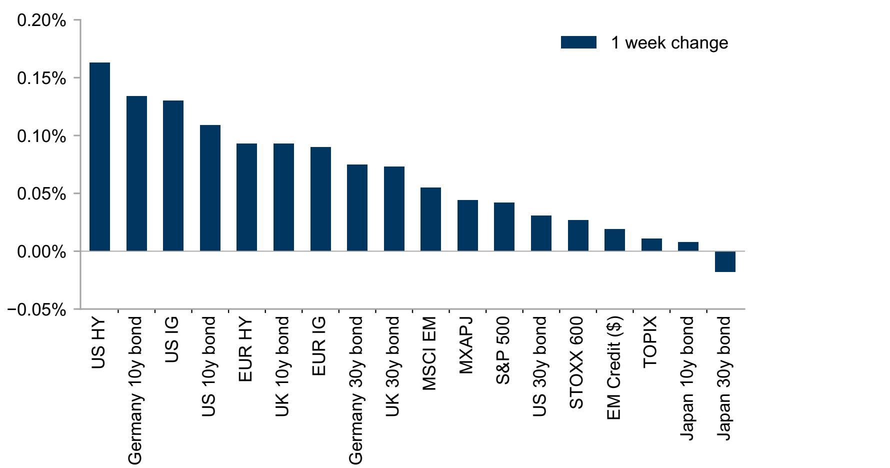
Cross-asset: Yields

Exhibit 31: 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:	1.2%	3.3%	2.1%	2.2%	2.3%	4.5%	3.0%	2.6%	4.9%	5.3%	3.8%	7.5%	5.8%	6.5%
Percentile (-10y):	***1%***	***20%***	***1%***	***22%***	***2%***	***96%***	***99%***	***100%***	***99%***	***83%***	***84%***	***68%***	***68%***	***59%***
Average:	1.7%	3.5%	2.9%	2.4%	2.9%	2.8%	1.0%	0.4%	2.2%	3.9%	2.1%	6.9%	4.9%	6.3%
95th:	2.2%	4.0%	3.4%	2.7%	3.4%	4.5%	2.8%	1.9%	4.7%	5.6%	4.3%	8.8%	7.5%	8.1%
5th:	1.2%	3.0%	2.3%	2.1%	2.4%	0.7%	-0.5%	-0.1%	0.3%	2.0%	0.5%	4.7%	3.0%	4.8%
3m real. ret. vol:	15.0%	16.6%	27.2%	23.6%	26.6%	5.8%	6.3%	4.7%	8.9%	5.1%	4.1%	3.8%	3.8%	5.6%
Percentile (-10y):	***60%***	***64%***	***89%***	***87%***	***86%***	***32%***	***79%***	***76%***	***80%***	***56%***	***90%***	***67%***	***58%***	***74%***
Yield/vol ratio	0.08	0.20	0.08	0.09	0.09	0.78	0.48	0.56	0.55	1.02	0.91	1.98	1.56	1.17

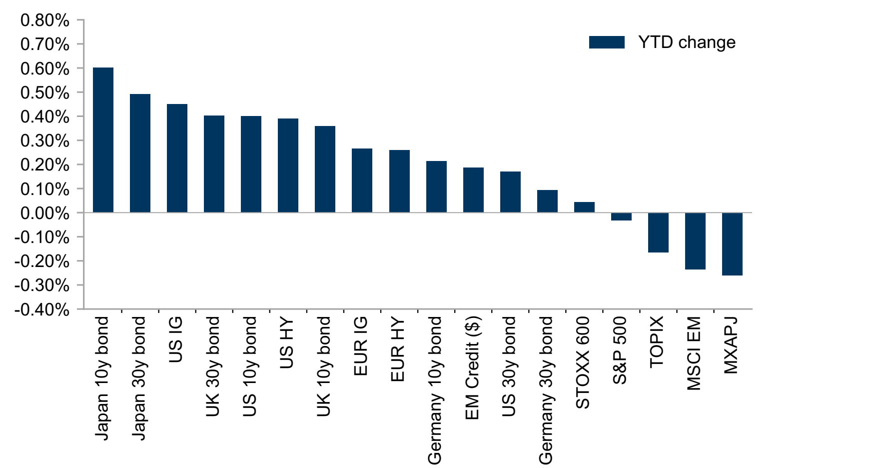
Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

Exhibit 32: Past week change in yields across assets



Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

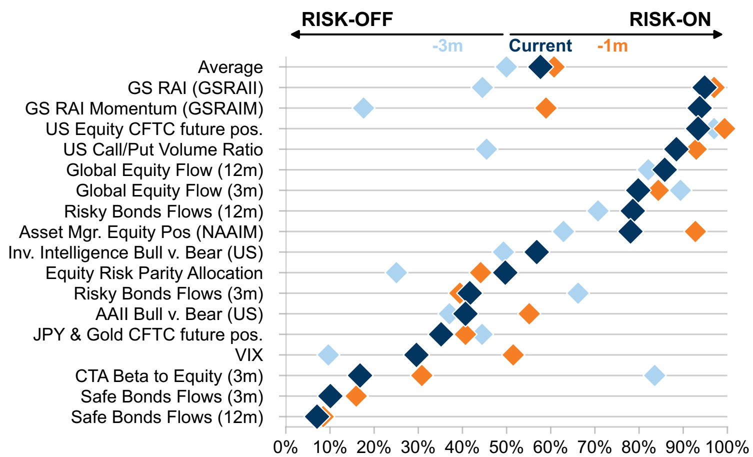
Exhibit 33: YTD change in yields across assets



Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

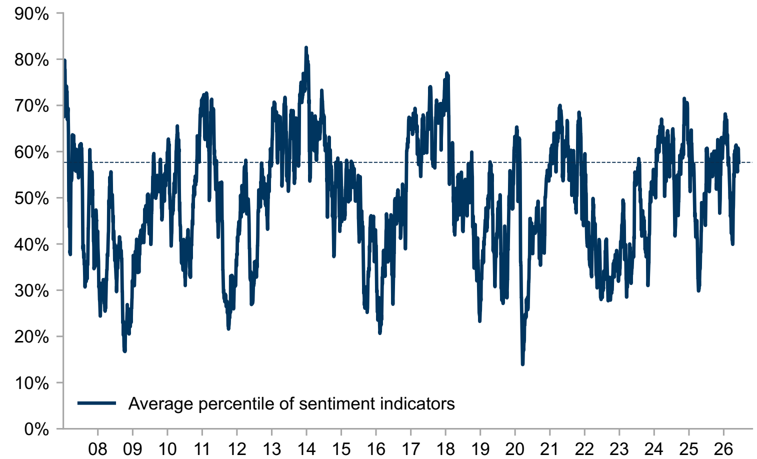
Cross-asset: Sentiment and Positioning

Exhibit 34: Percentile of sentiment indicators
Data since 2007



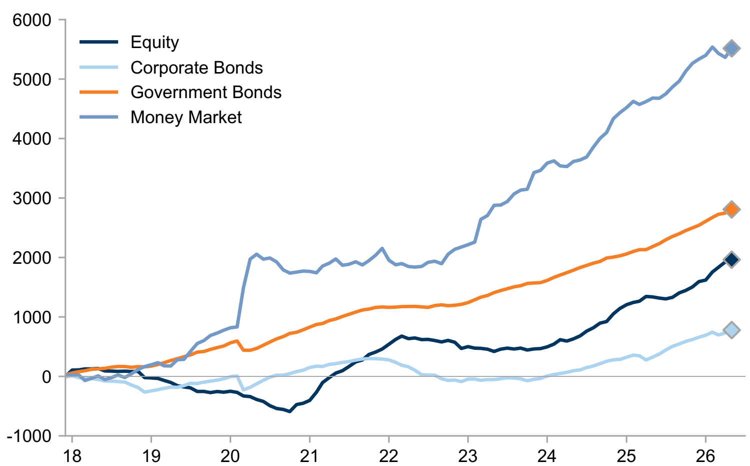
Source: Datastream, Haver Analytics, EPFR, Goldman Sachs Global Investment Research

Exhibit 35: Average percentile of sentiment indicators
Data since 2007



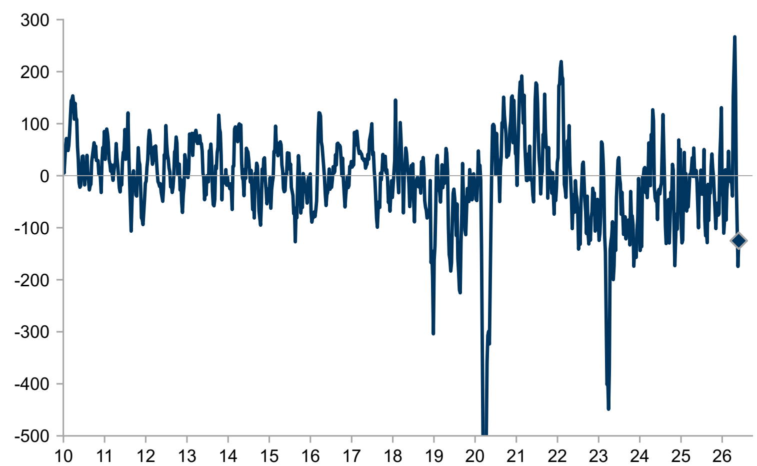
Source: Datastream, Haver Analytics, EPFR, Goldman Sachs Global Investment Research

Exhibit 36: 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

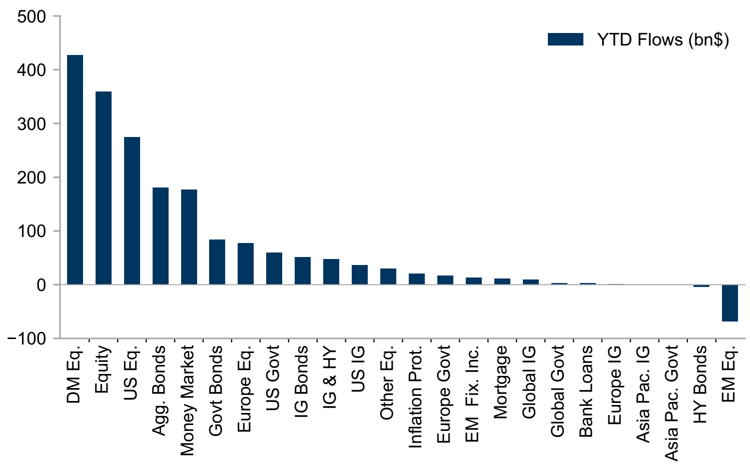
Exhibit 37: Risky vs. safe assets fund flows
4 weeks rolling flows, USD bn



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

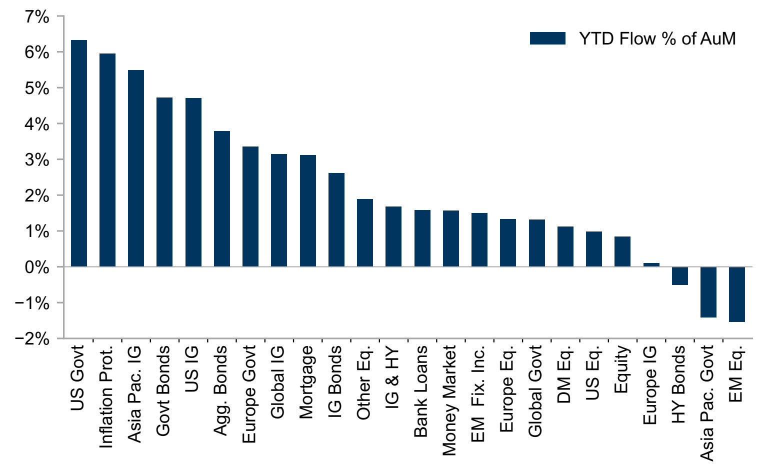
Cross-asset: Global Funds Flows

Exhibit 38: YTD cross-asset global fund flows
All funds reporting monthly. MTD sum of weekly flows when monthly not yet available ($bn)



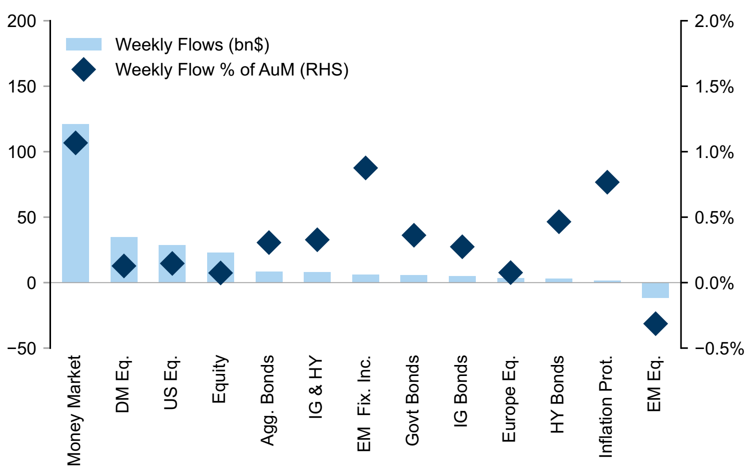
Source: EPFR, Goldman Sachs Global Investment Research

Exhibit 39: YTD cross-asset global fund flows
All funds reporting monthly. MTD sum of weekly flows when monthly not yet available (% of AUM)



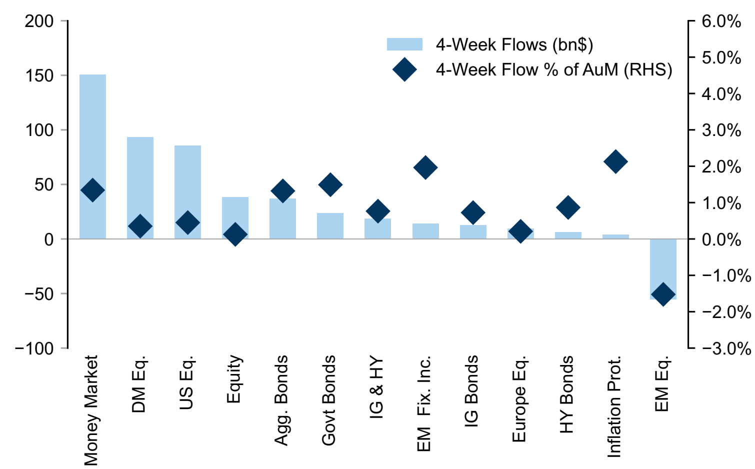
Source: EPFR, Goldman Sachs Global Investment Research

Exhibit 40: 1-week cross-asset global fund flows
All funds reporting weekly



Source: EPFR, Goldman Sachs Global Investment Research

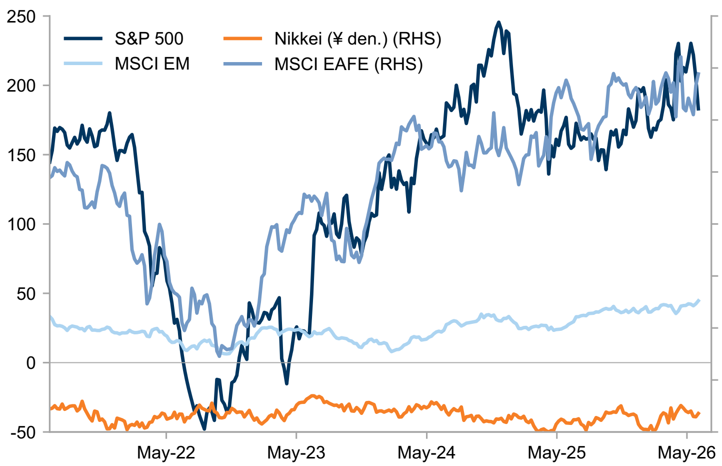
Exhibit 41: 4-week cross-asset global fund flows
All funds reporting weekly



Source: EPFR, Goldman Sachs Global Investment Research

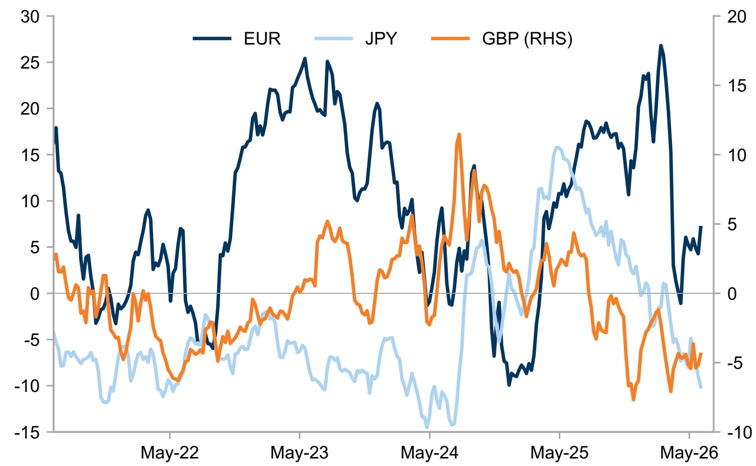
Cross-asset: CFTC positioning

Exhibit 42: Equity net long positioning
Leveraged funds and asset managers net future positions ($ bn)



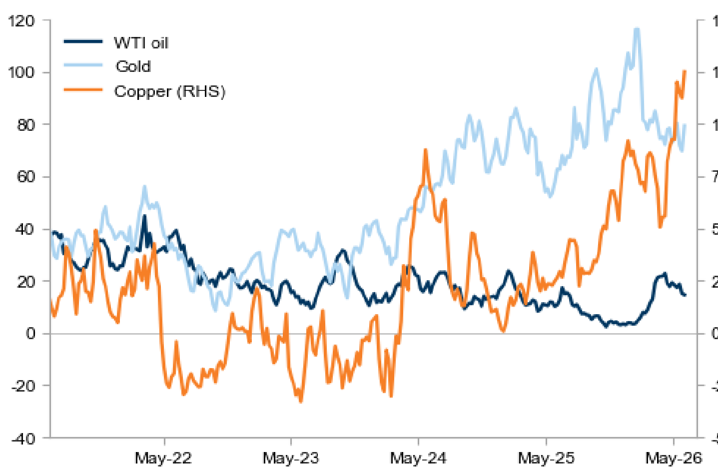
Source: Bloomberg, CFTC, Goldman Sachs Global Investment Research

Exhibit 43: Currency net long positioning
Net non-commercial positions ($ bn)



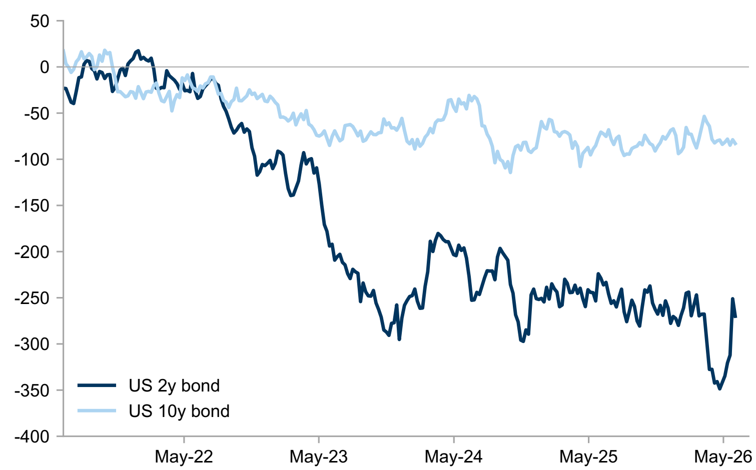
Source: Bloomberg, CFTC, Goldman Sachs Global Investment Research

Exhibit 44: Commodity net long positioning
Net non-commercial positions ($ bn)



Source: Bloomberg, CFTC, Goldman Sachs Global Investment Research

Exhibit 45: US Treasury net long positioning
Net non-commercial positions ($ bn)

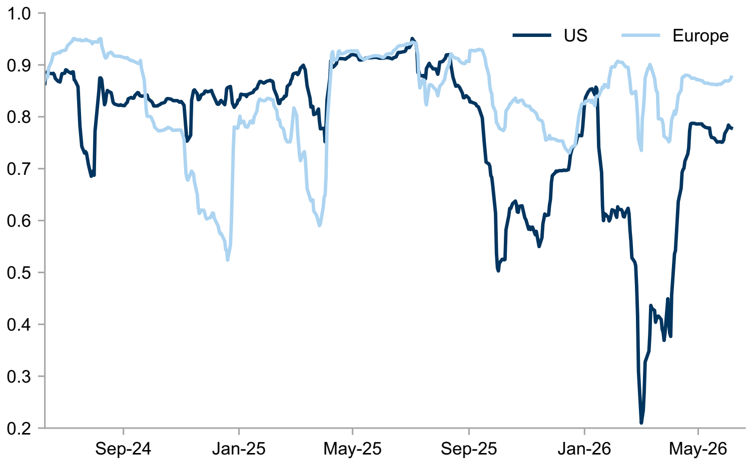


Source: Bloomberg, CFTC, Goldman Sachs Global Investment Research

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

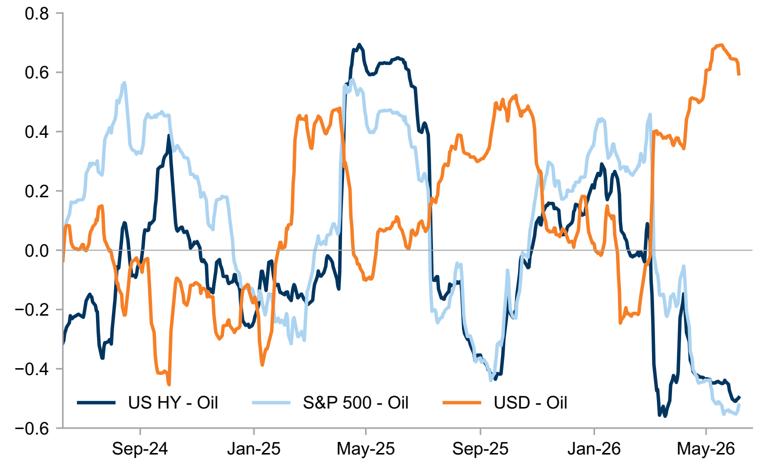
Exhibit 46: 3m rolling equity vol/CDS correlation of weekly level changes

CDX HY for the US, iTraxx Xover for Europe; ATM implied vol for S&P 500 and Euro Stoxx 50



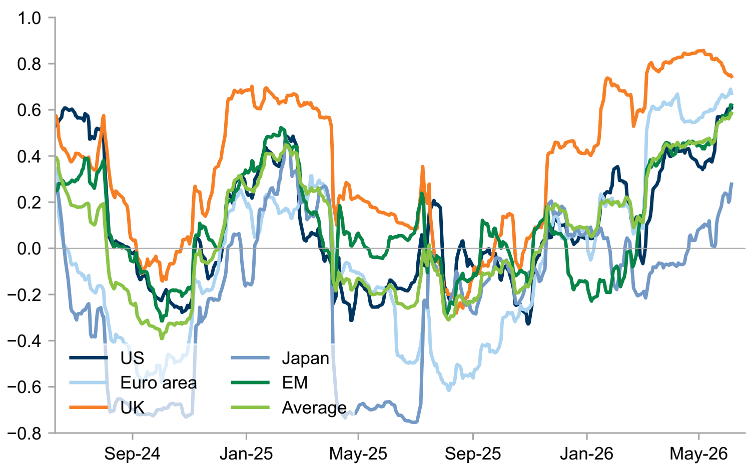
Source: Datastream, Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 47: 3m rolling commodity price correlations of weekly % changes with different assets



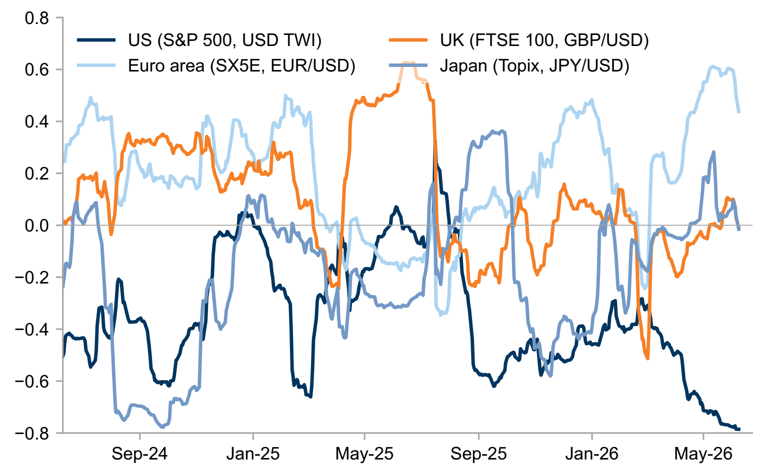
Source: Datastream, Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 48: 3m rolling equity/bond correlation of weekly returns



Source: Datastream, Goldman Sachs Global Investment Research

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



Source: Datastream, Goldman Sachs Global Investment Research

Cross-asset: Correlation matrix

Exhibit 50: 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.

Current 1y correlation of weekly returns (upper half); Current correlation's percentile since 2001 (lower half)

	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 ($)	WTI Crude Oil	Copper	Gold	VIX
S&P 500		0.66	0.62	0.36	0.64	0.19	0.25	0.17	0.37	0.51	-0.29	0.63	0.42	0.57	0.82	0.75	0.62	-0.36	0.58	0.29	-0.77
STOXX 600	0.11		0.54	0.50	0.57	0.25	0.37	0.03	0.54	0.34	-0.17	0.41	0.36	0.57	0.58	0.59	0.54	-0.49	0.65	0.33	-0.68
MXAPJ	0.51	0.18		0.55	0.99	0.28	0.33	0.26	0.39	0.57	-0.40	0.62	0.40	0.56	0.49	0.63	0.61	-0.57	0.54	0.26	-0.49
TOPIX	0.04	0.15	0.34		0.58	0.29	0.29	0.02	0.41	0.33	-0.06	0.28	0.32	0.39	0.28	0.48	0.52	-0.53	0.28	0.14	-0.39
MSCI EM	0.45	0.18	0.95	0.43		0.31	0.36	0.26	0.42	0.60	-0.40	0.62	0.43	0.60	0.53	0.67	0.65	-0.61	0.57	0.30	-0.52
US 10 yr	0.90	0.96	0.92	0.98	0.95		0.75	0.48	0.77	0.26	-0.26	0.13	0.89	0.68	0.45	0.30	0.66	-0.43	0.26	0.43	-0.11
Germany 10 yr	0.93	0.98	0.98	0.99	0.98	0.31		0.52	0.81	0.16	-0.20	0.11	0.68	0.85	0.36	0.32	0.51	-0.41	0.25	0.45	-0.18
Japan 10 yr	0.95	0.88	0.98	0.84	0.98	0.39	0.56		0.41	0.14	-0.10	0.15	0.44	0.43	0.26	0.23	0.43	-0.16	0.01	0.29	-0.01
UK 10 yr	0.95	1.00	0.98	0.99	0.99	0.47	0.29	0.28		0.21	-0.20	0.15	0.73	0.79	0.51	0.49	0.64	-0.46	0.45	0.42	-0.29
EUR/USD	0.92	0.80	0.93	0.85	0.95	0.70	0.80	0.73	0.78		-0.64	0.74	0.41	0.35	0.53	0.42	0.50	-0.46	0.28	0.33	-0.54
USD/JPY	0.06	0.05	0.15	0.11	0.13	0.81	0.77	0.75	0.82	0.07		-0.55	-0.35	-0.29	-0.38	-0.24	-0.39	0.20	-0.16	-0.24	0.19
AUD/USD	0.75	0.57	0.47	0.43	0.54	0.72	0.79	0.84	0.80	0.90	0.09		0.25	0.37	0.56	0.50	0.52	-0.30	0.37	0.42	-0.61
iBoxx US IG	0.87	0.87	0.86	0.93	0.89	0.55	0.54	0.62	0.69	0.83	0.62	0.69		0.75	0.68	0.50	0.74	-0.41	0.34	0.43	-0.26
iBoxx EUR IG	0.94	0.98	0.95	0.98	0.96	0.70	0.63	0.74	0.81	0.88	0.37	0.85	0.66		0.65	0.68	0.77	-0.55	0.47	0.52	-0.35
BAML US HY	0.94	0.45	0.19	0.20	0.30	0.87	0.84	0.84	0.96	0.92	0.09	0.74	0.85	0.87		0.72	0.74	-0.36	0.50	0.34	-0.64
BAML EUR HY	0.94	0.39	0.69	0.41	0.77	0.89	0.90	0.92	0.96	0.90	0.20	0.73	0.81	0.85	0.23		0.71	-0.47	0.53	0.34	-0.50
EM Credit ($)	0.83	0.69	0.67	0.89	0.66	0.85	0.87	0.88	0.90	0.84	0.20	0.72	0.74	0.89	0.79	0.81		-0.57	0.49	0.46	-0.42
WTI Crude Oil	0.01	0.00	0.00	0.01	0.00	0.11	0.14	0.30	0.02	0.00	0.75	0.00	0.02	0.00	0.00	0.00	0.00		-0.36	-0.18	0.41
Copper	0.82	0.98	0.72	0.50	0.74	1.00	0.99	0.80	1.00	0.36	0.25	0.22	0.95	0.96	0.86	0.92	0.88	0.00		0.44	-0.43
Gold	0.86	0.91	0.47	0.82	0.54	0.82	0.90	0.80	0.90	0.28	0.69	0.49	0.81	0.98	0.86	0.94	0.85	0.01	0.80		-0.13
VIX	0.72	0.66	0.58	0.87	0.61	0.06	0.02	0.14	0.02	0.00	0.96	0.09	0.15	0.02	0.19	0.27	0.33	0.99	0.20	0.26	

Source: Datastream, iBoxx, Goldman Sachs Global Investment Research

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

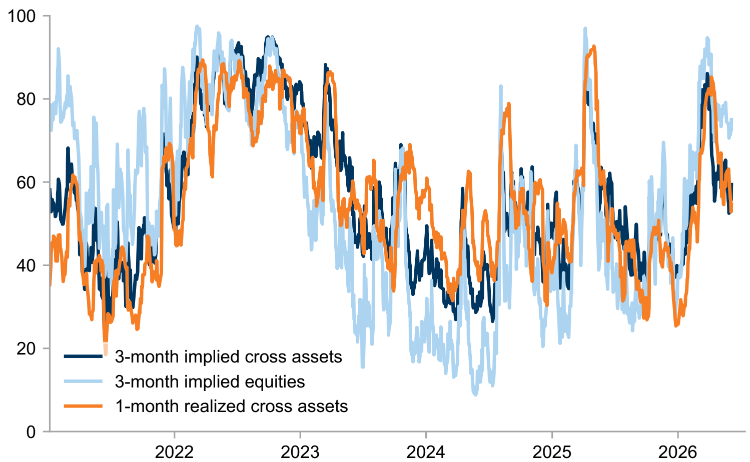
Exhibit 51: Cross-asset volatility, current and historical percentiles, implied 3m and realised 1m

	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:	16.0	16.8	28.9	12.8	32.0	18.2	6.2	4.7	4.9	3.9	43.5	38.1	43.2	52.8	21.4	25.4	5.5	7.7	6.5
Percentile:	*64%*	*61%*	*98%*	*49%*	*99%*	*80%*	*67%*	*47%*	*72%*	*63%*	*38%*	*44%*	*29%*	*93%*	*94%*	*73%*	*14%*	*36%*	*8%*
1M change:	0.7	-0.8	2.6	-1.0	7.7	1.5	0.5	0.2	-1.0	0.0	4.7	3.3	-3.7	-9.5	-1.1	1.5	-0.3	-0.3	-0.4
Average:	16.0	17.1	19.1	14.1	19.2	15.3	4.9	5.2	3.2	4.0	48.5	42.9	50.8	36.2	14.7	22.0	7.1	8.9	8.7
95th:	25.5	25.5	26.8	22.3	26.6	22.8	9.7	7.9	8.5	7.7	69.8	65.9	69.9	56.4	22.3	29.9	10.2	12.7	12.4
5th:	10.0	12.2	13.7	10.0	14.5	10.4	1.3	3.5	0.9	2.2	37.8	30.5	38.6	23.8	9.7	16.0	5.1	5.6	6.3
Realised (%)																			
1-month:	13.5	17.4	25.3	11.6	22.1	11.7	5.4	4.6	5.1	4.9	21.7	21.0	28.7	56.0	24.0	25.4	4.2	2.3	5.9
Percentile:	*55%*	*71%*	*85%*	*56%*	*90%*	*54%*	*67%*	*52%*	*83%*	*77%*	*8%*	*21%*	*31%*	*90%*	*93%*	*85%*	*7%*	*0%*	*13%*
Average:	15.2	16.3	19.2	13.3	15.0	13.2	4.6	5.0	2.5	3.6	39.4	33.2	39.8	39.1	14.5	20.1	7.2	8.7	8.7

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

Exhibit 52: 10y percentile for cross-asset average volatility

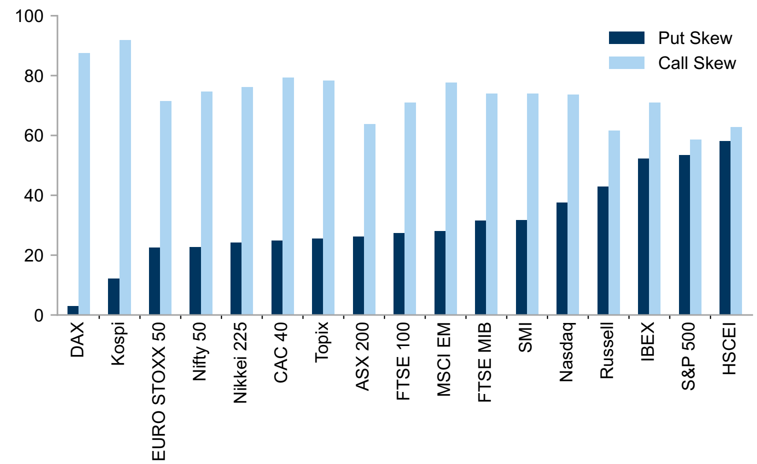
Using 16 assets across equity, government bonds, credit, commodities and FX



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

Exhibit 53: Putwing and Callwing normalised skew 5y percentile

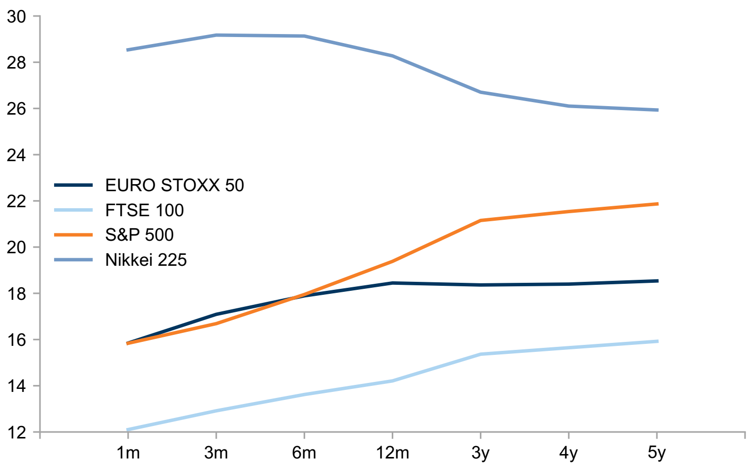
Normalised skew = (impl. vol 25 delta put/call minus implied vol 50 delta call)/50 delta call



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

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

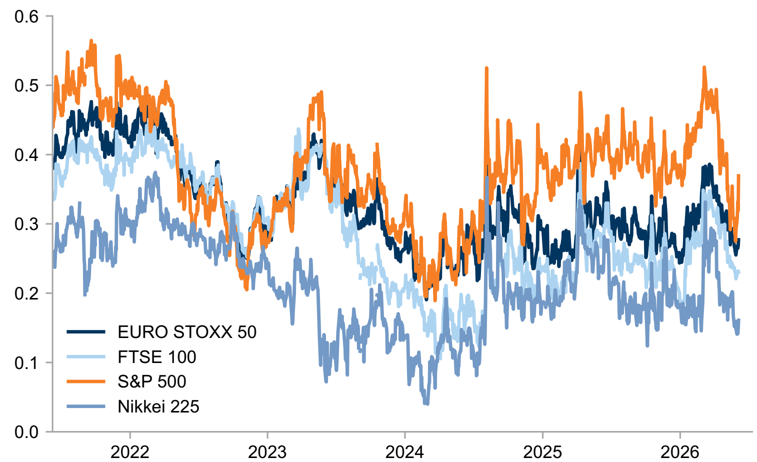
Exhibit 54: ATM implied volatility term structure for equity indices



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

Exhibit 55: Normalised implied volatility skew across regions

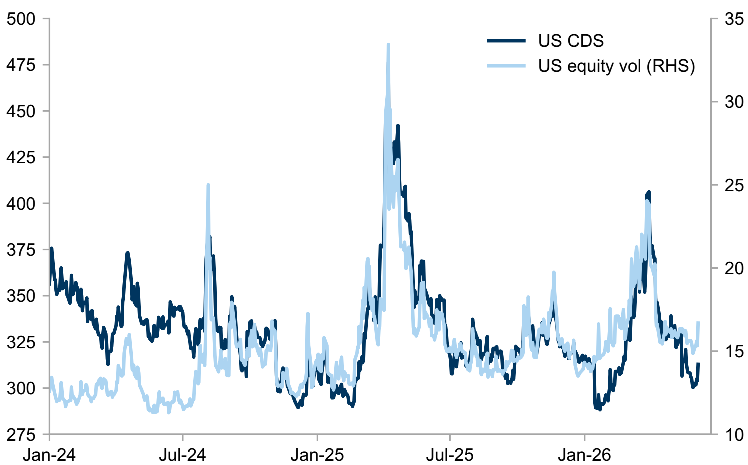
3m 25 delta put vol minus 25 delta call vol scaled by ATM implied vol



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

Exhibit 56: CDS and equity vol levels in the US

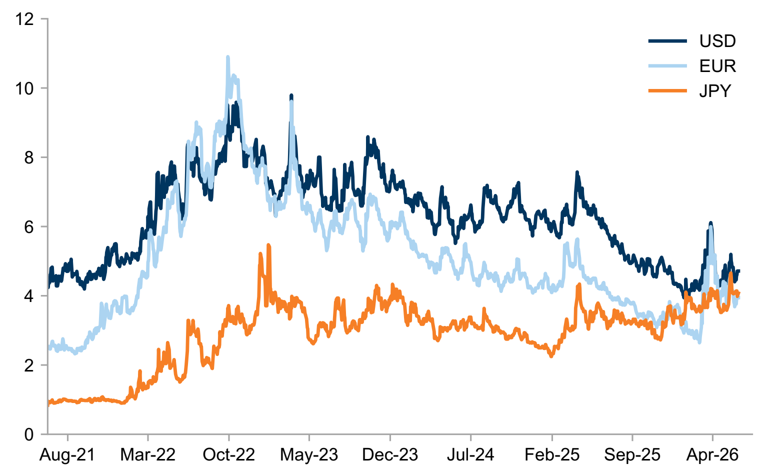
CDX HY, 3m ATM S&P 500 implied vol



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

Exhibit 57: 3m ATM implied rate volatility across regions

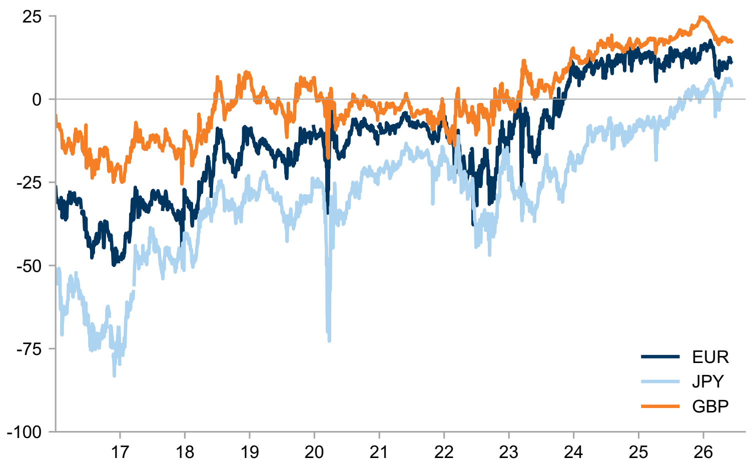
3-month implied volatility of 10-year rates (bp/day)



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

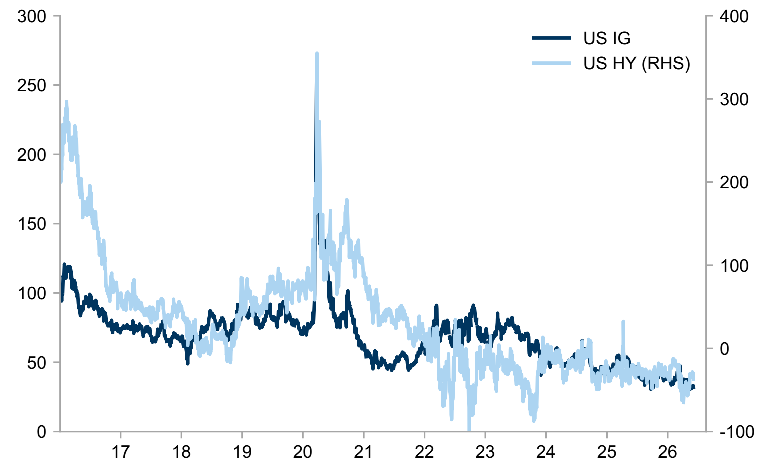
Cross-asset: Liquidity indicators

Exhibit 58: 1-year cross-currency basis
Basis points



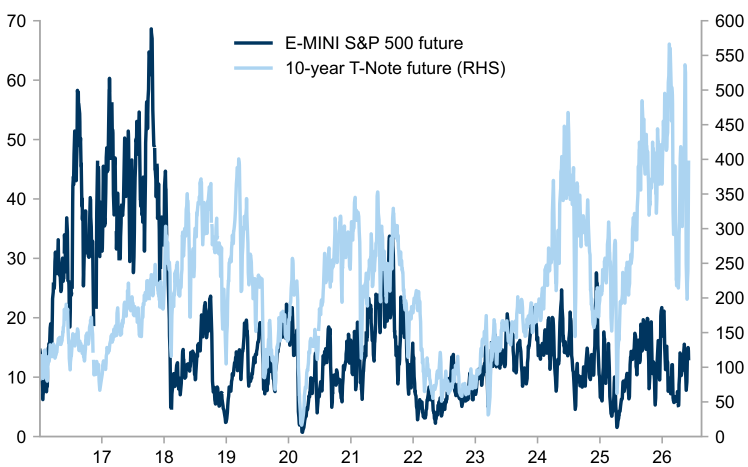
Source: Goldman Sachs FICC and Equities, Goldman Sachs Global Investment Research

Exhibit 59: Cash credit versus CDS spread
Basis points



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

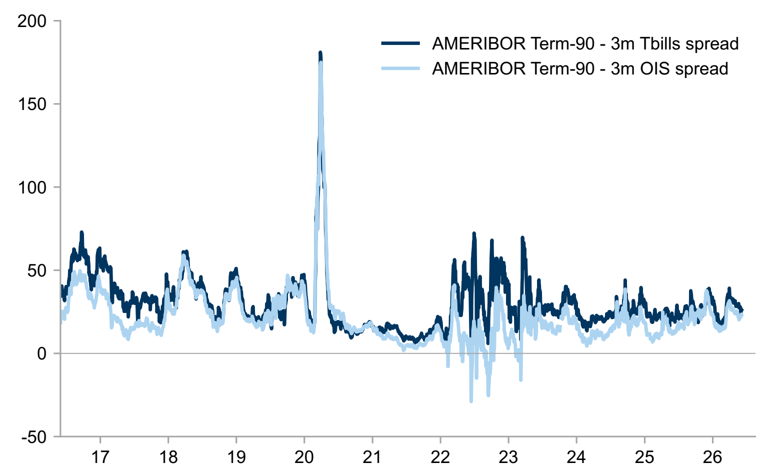
Exhibit 60: Top-of-book depth
5-day average, $ mln



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

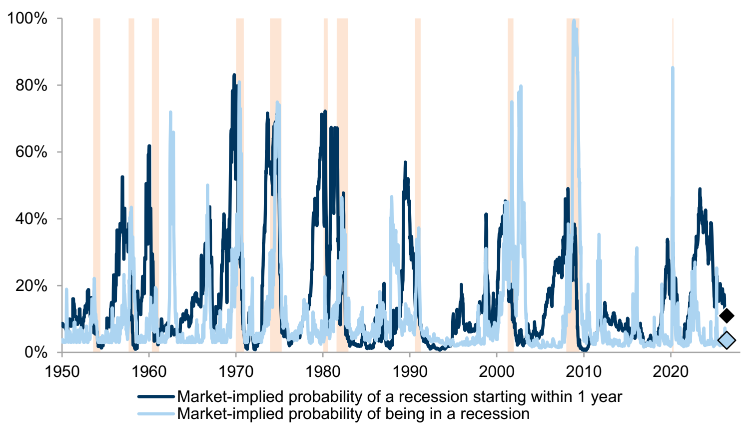
Exhibit 61: US financial institutions wholesale funding cost
Basis points



Source: Bloomberg, Goldman Sachs Global Investment Research

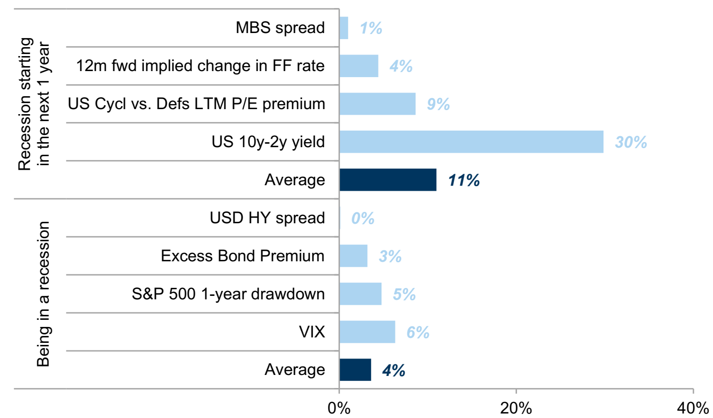
Cross-asset: Market pricing of US recession risk

Exhibit 62: Market-implied US recession probability
Average of univariate logit models on the right. Orange shade: NBER recession



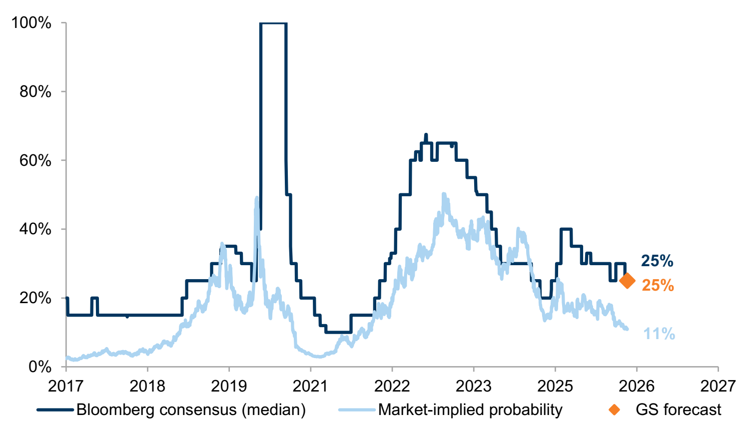
Source: Haver Analytics, Datastream, Worldscope, Goldman Sachs Global Investment Research

Exhibit 63: Market-implied US recession probability by indicator
Univariate logit models. Maximum history since 1950



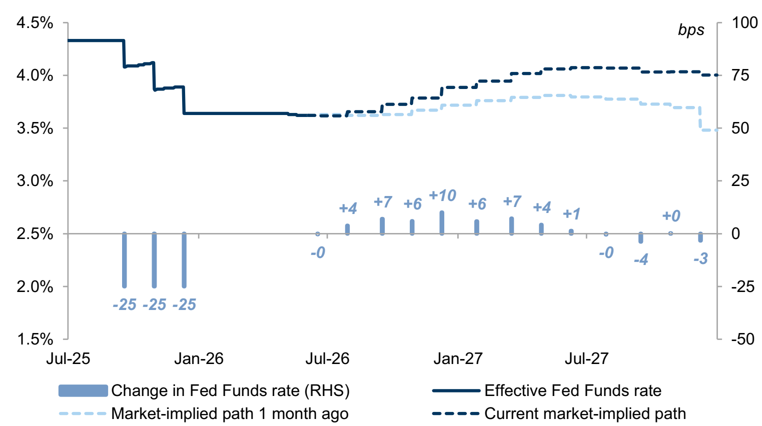
Source: Haver Analytics, Datastream, Worldscope, Goldman Sachs Global Investment Research

Exhibit 64: Probability of a US recession in the next 1 year



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

Exhibit 65: Market-implied path of the Fed Funds rate
Based on 30-day Fed Funds futures

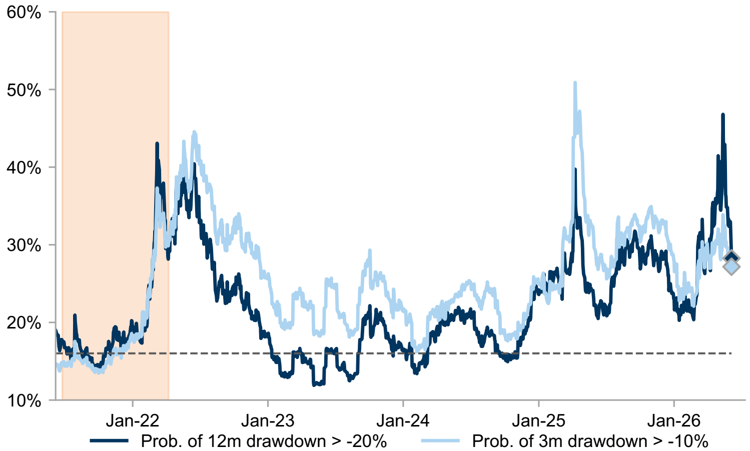


Source: Haver Analytics, Goldman Sachs Global Investment Research

Equity: Drawdown probability

Exhibit 66: Implied probability of S&P 500 drawdown based on multi-variate logit model

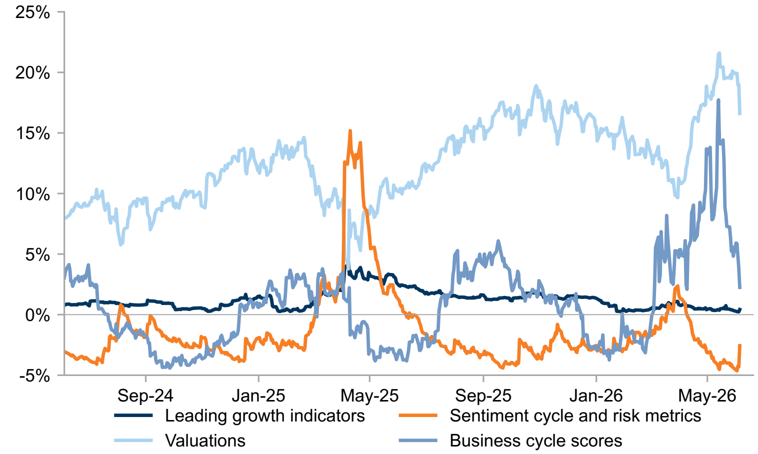
Orange shading = S&P 500 subsequent drawdown >20%. Dashed line = unconditional probability



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

Exhibit 67: Contribution to the probability of a drawdown >20% in 12m

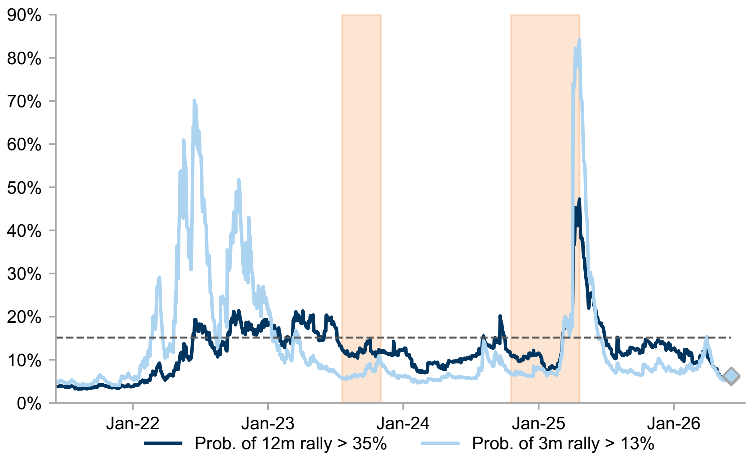
Based on Shapley values. Inputs aggregated by type



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

Exhibit 68: Implied probability of S&P 500 rally based on multi-variate logit model

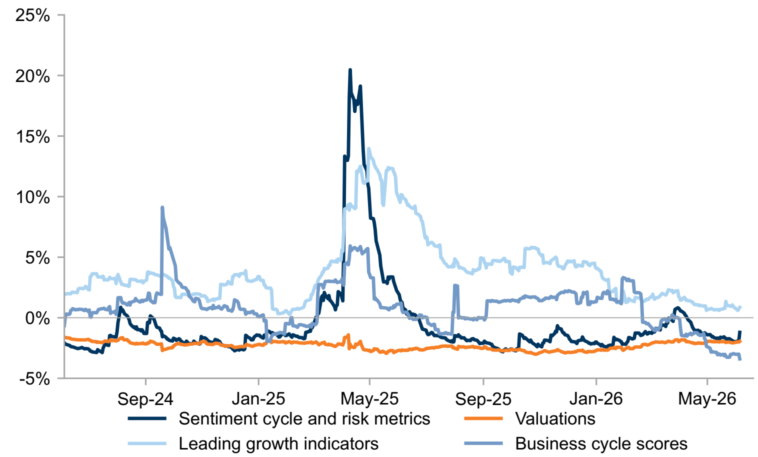
Orange shading = S&P 500 subsequent rally >35%. Dashed line = unconditional probability



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

Exhibit 69: Contribution to the probability of a rally >35% in 12m

Based on Shapley values. Inputs aggregated by type

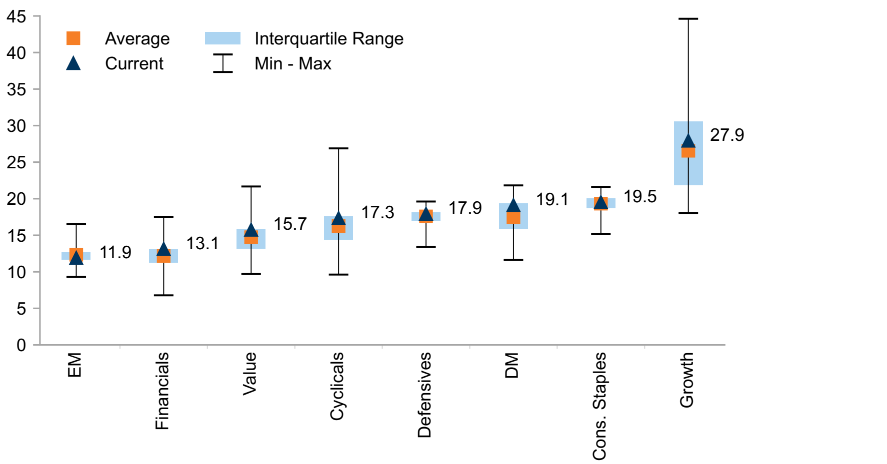


Source: Haver Analytics, Datastream, Goldman Sachs Global Investment Research

Equity: Valuation and styles

Exhibit 70: Valuation ranges of MSCI World styles indices

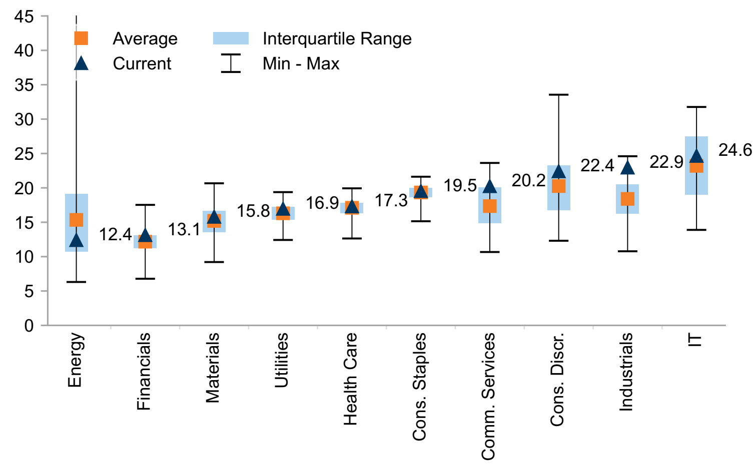
12-month forward P/Es relative to the last 10 years



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

Exhibit 71: MSCI World sector valuations

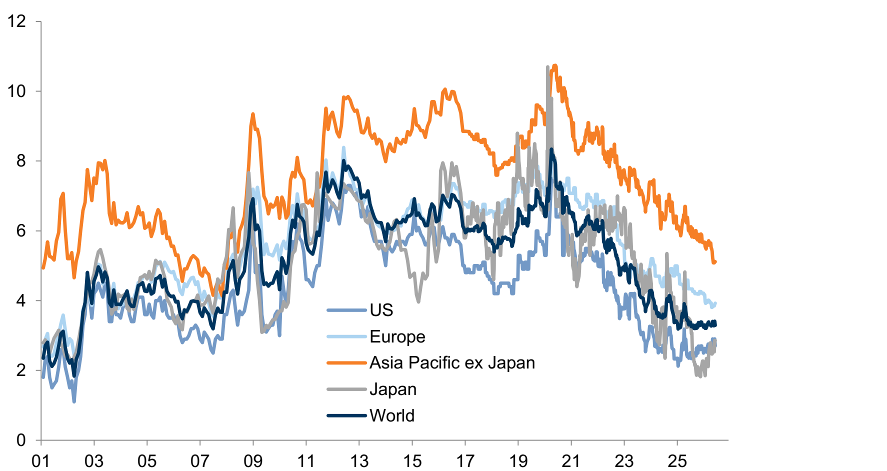
12-month forward P/Es relative to the last 10 years



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

Exhibit 72: Global market implied ERPs (%)

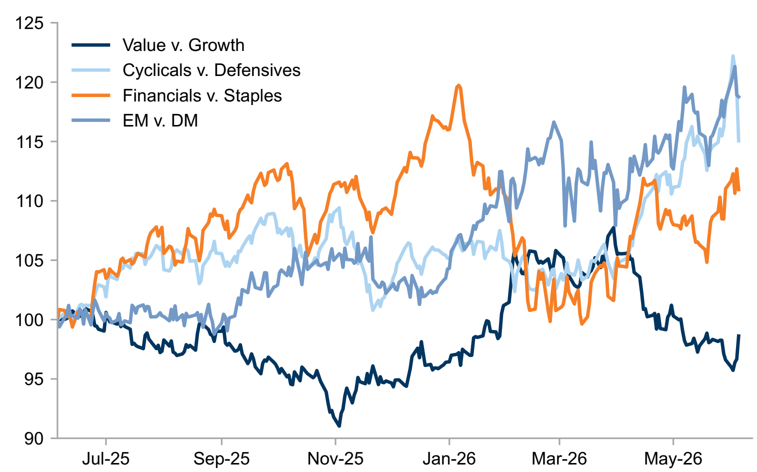
Implied ERPs are calculated by each regional strategy team. While specific assumptions differ between regions, all are calculated using similar frameworks



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 73: MSCI World style index performance

Performance indexed to 100 12m ago

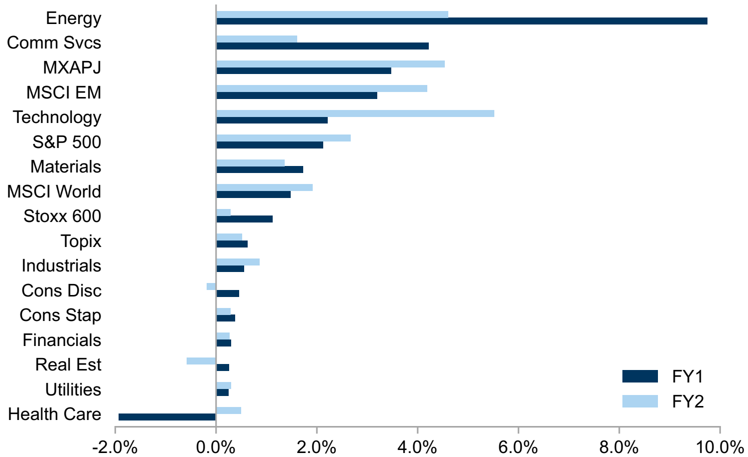


Source: Datastream, Goldman Sachs Global Investment Research

Equity: Earnings

Exhibit 74: 1-month revision to I/B/E/S consensus earnings

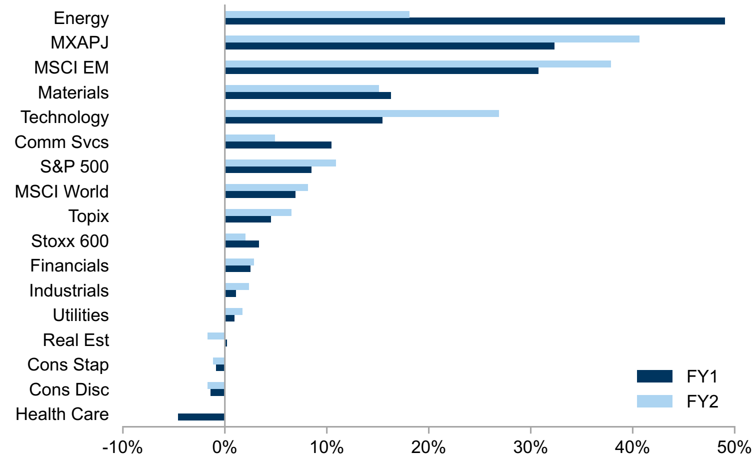
MSCI World sectors, other global equity index aggregates



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

Exhibit 75: 6-month revision to I/B/E/S consensus earnings

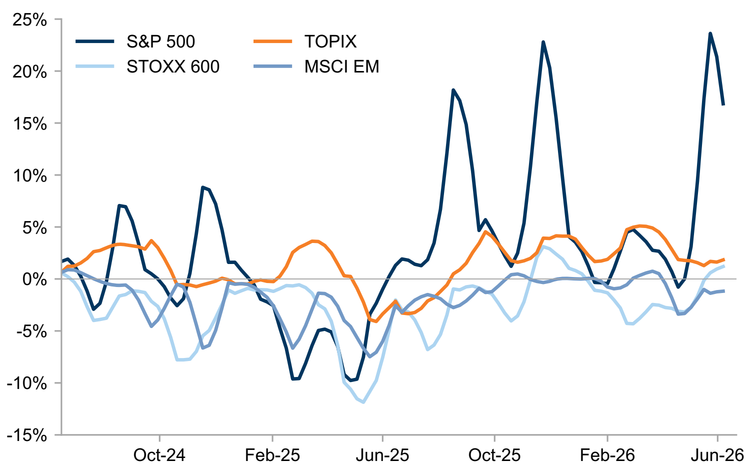
MSCI World sectors, other global equity index aggregates



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

Exhibit 76: Earnings sentiment: Analyst upgrades minus downgrades (scaled by total analysts) across markets

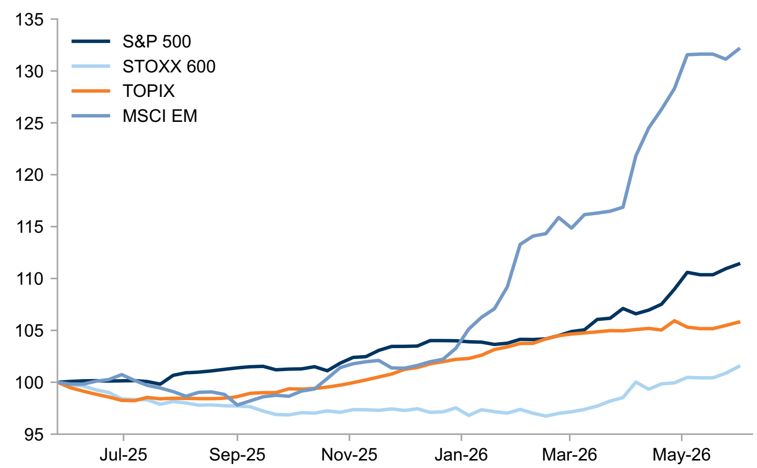
1-month moving average of net monthly upgrades



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

Exhibit 77: FY1 consensus earnings expectations over the past 12 months

Earnings indexed to 100 12 months ago

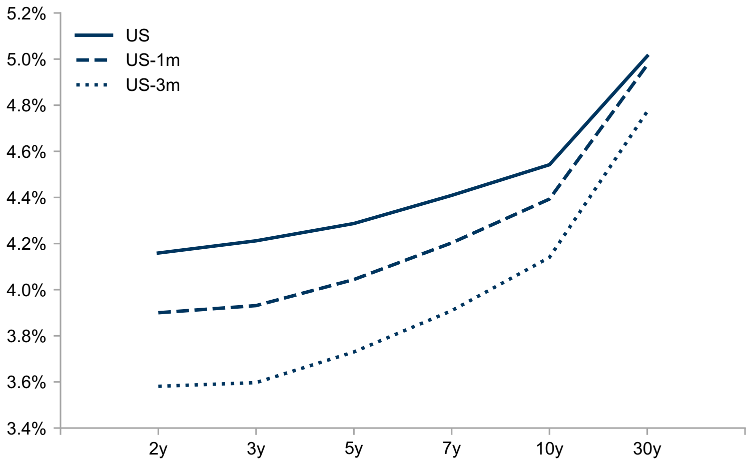


Source: Datastream, I/B/E/S, Goldman Sachs Global Investment Research

Government bonds: Yield curves

Exhibit 78: US yield curve dynamics

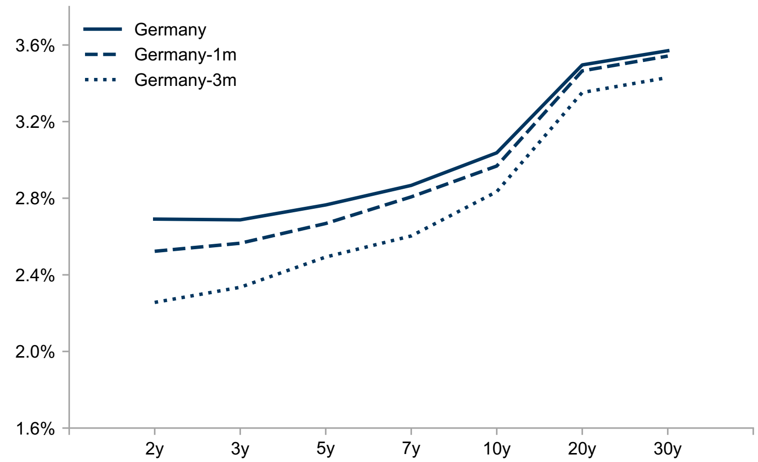
Current relative to 1 month and 3 months ago



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 79: German yield curve dynamics

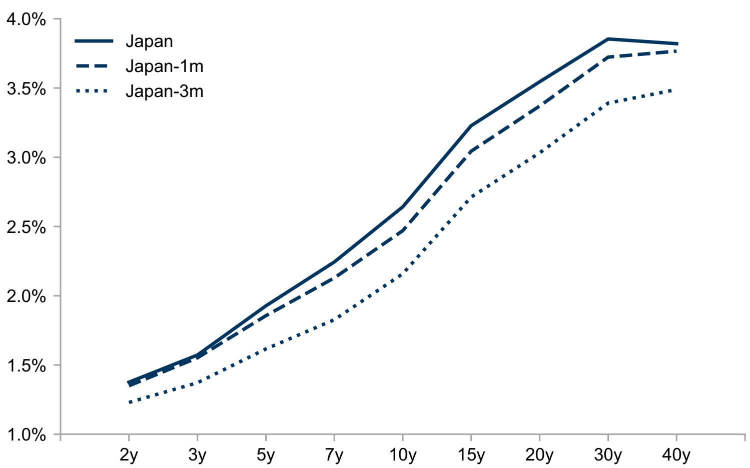
Current relative to 1 month and 3 months ago



Source: Datastream, Goldman Sachs Global Investment Research

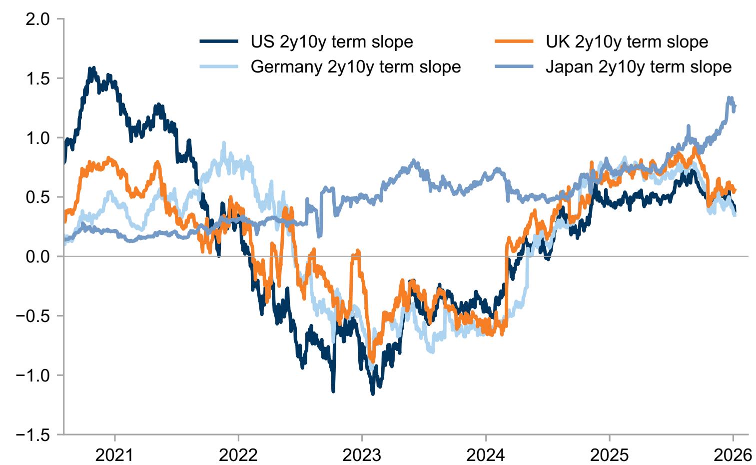
Exhibit 80: Japan yield curve dynamics

Current relative to 1 month and 3 months ago



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 81: Yield curve term slope across regions

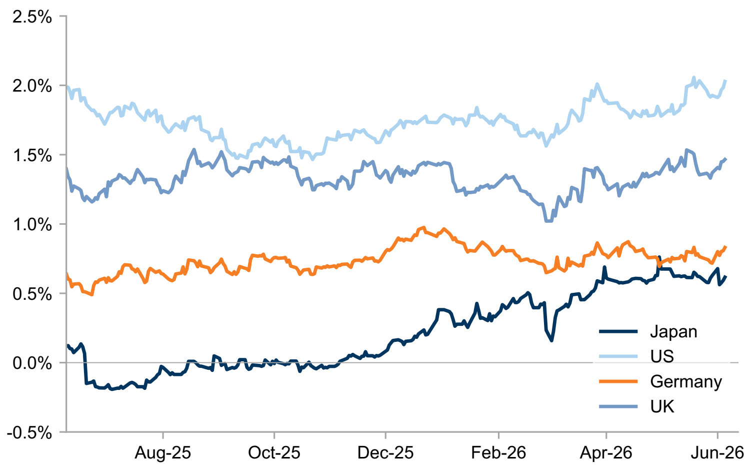


Source: Datastream, Goldman Sachs Global Investment Research

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

Exhibit 82: 10y real yields across regions

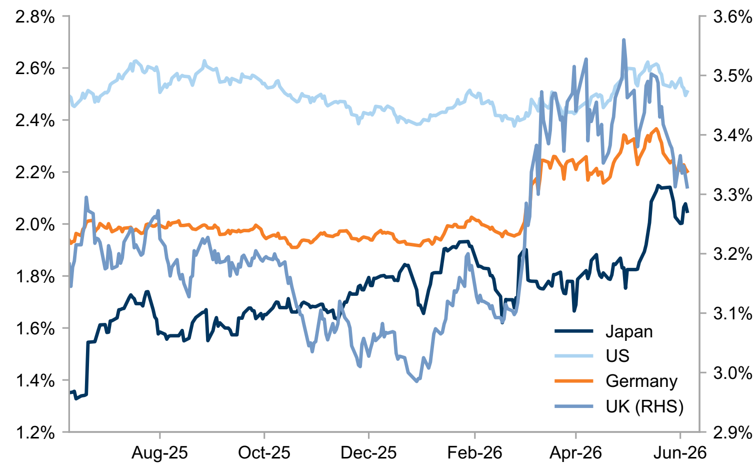
Nominal bond yield minus CPI inflation swap (RPI for the UK)



Source: Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 83: 10y inflation swaps across regions

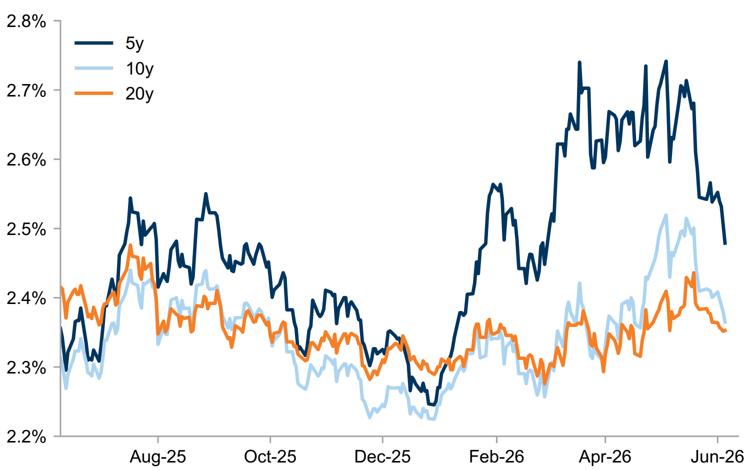
CPI inflation swap (RPI for the UK)



Source: Goldman Sachs, Goldman Sachs Global Investment Research

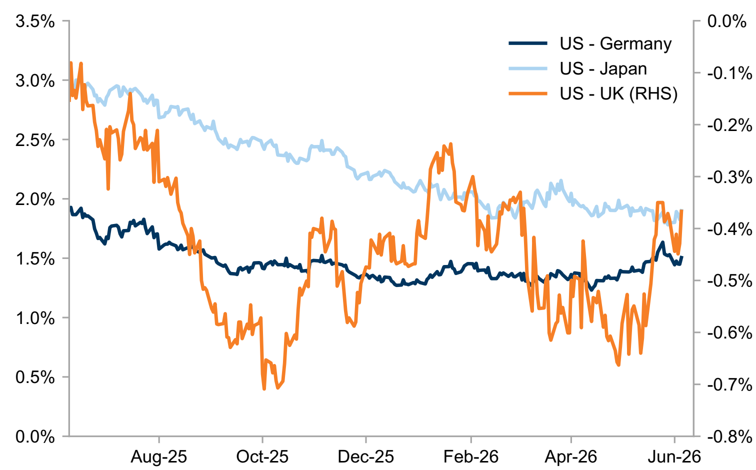
Exhibit 84: US breakeven inflation

Nominal yield minus TIPS yield



Source: Bloomberg, Goldman Sachs Global Investment Research

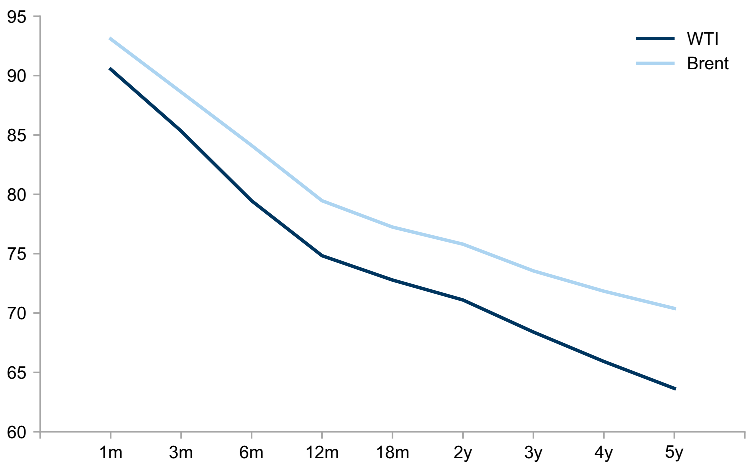
Exhibit 85: 10y nominal bond yield differentials



Source: Datastream, Goldman Sachs Global Investment Research

Commodities: Curve shapes and roll yields

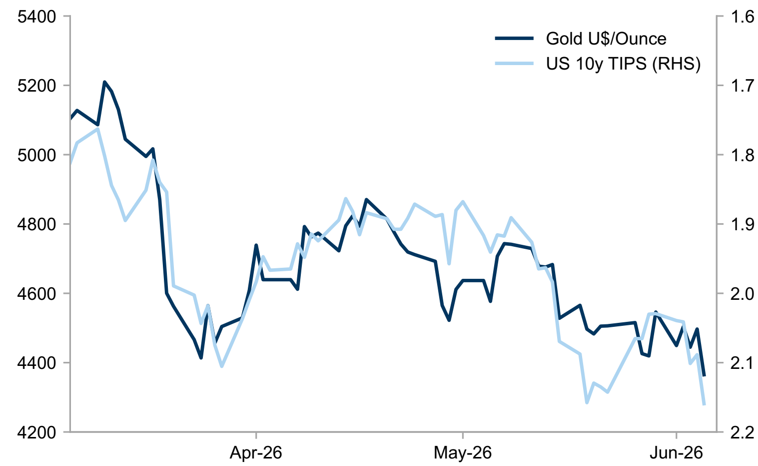
Exhibit 86: WTI and Brent oil forward curves



Source: Goldman Sachs, Goldman Sachs Global Investment Research

Exhibit 87: Gold price and US real yields

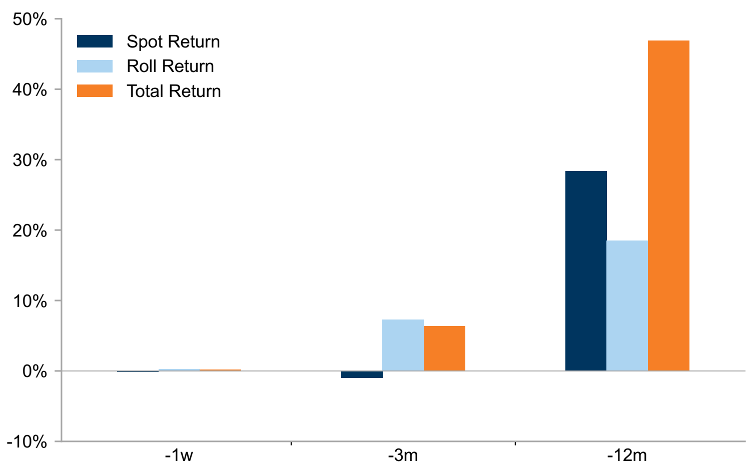
US 10-year TIPs yield, Gold U$/ounce



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 88: S&P GSCI spot, roll and total returns

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



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 89: Recent performance of S&P GSCI sectors

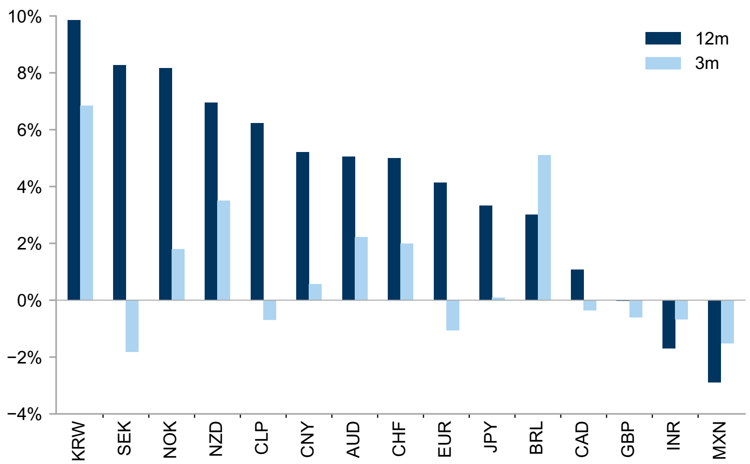
Weight signifies contribution to the S&P GSCI index

	Current Weight (%)	Returns (%) -1w	-1m	-1y
S&P GSCI	**100**	**0.2**	**-3.3**	**46.9**
Energy	55.0	2.7	-2.4	82.1
Industrial Metals	13.1	-1.4	1.6	41.4
Precious Metals	9.2	-5.4	-7.8	33.2
Agriculture	12.5	-5.1	-8.5	-9.1
Livestock	10.2	0.8	-3.6	13.4

Source: Goldman Sachs, Goldman Sachs Global Investment Research

FX: Forecasts and forwards, recent performance and positioning

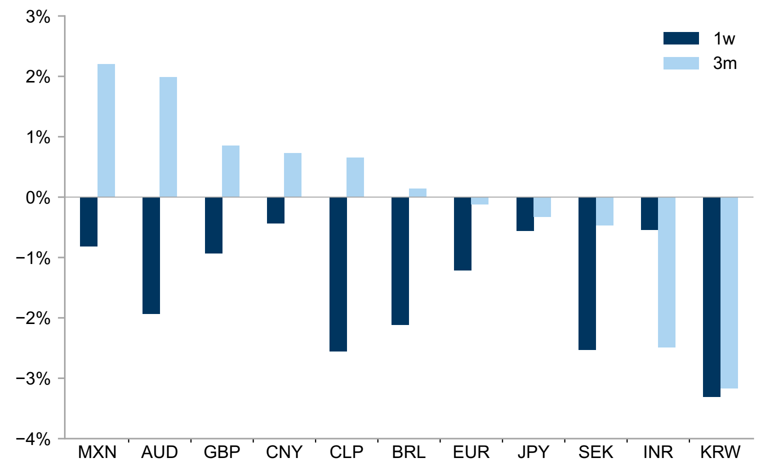
Exhibit 90: Our 3- and 12-month forecasts for dollar crosses



Source: Datastream, Goldman Sachs Global Investment Research

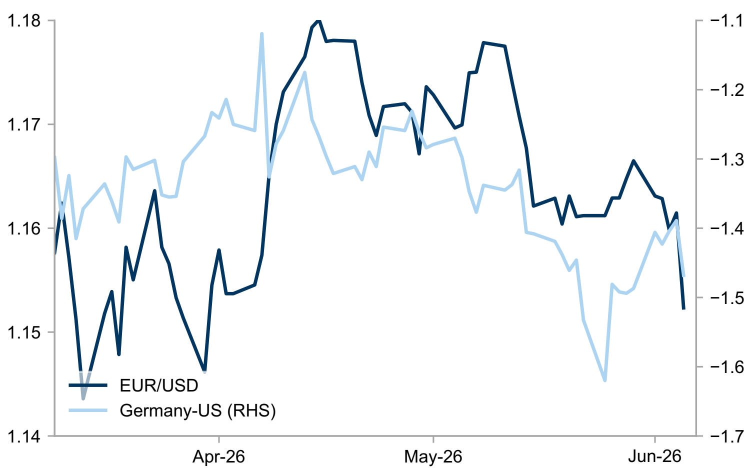
Exhibit 91: Recent performance of dollar crosses

Percentage change over past 1 week, 3 months



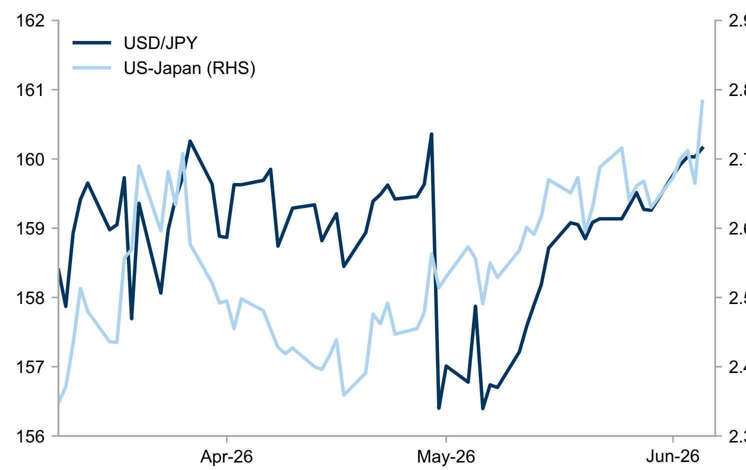
Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 92: EUR/USD against German - US 2y interest rate differentials past 3m



Source: Datastream, Goldman Sachs Global Investment Research

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



Source: Datastream, Goldman Sachs Global Investment Research