Global FX Trader

Don't Stop Me Now

Our thoughts on USD, EM FX, EUR, JPY, GBP, ZAR & INR

- **USD: The dot blot test.** The contrast between the Fed and ECB in this forecasting round offers an important lesson for FX investors. The ECB revised its headline inflation forecasts *up* despite taking the growth forecasts *down*. Fed officials will likely do the opposite this week—revising inflation down despite much stronger growth. The key tactical question will be how durable FOMC officials think this trend can be. As the market reaction to the ECB demonstrated, FX markets focus primarily on the distribution of the forward policy profile. We think Fed officials will likely not be able to firmly close the door on further hikes or credibly open the possibility of imminent cuts just yet, which would probably lend further support to the recent Dollar trend. But, taking a step back, the pattern of these revisions represent opposing supply-side news, and that is what has underpinned the structural support for the Dollar. We have consistently argued that for the Dollar to decline it will require better capital return prospects abroad, and that does not appear imminent. Weaker growth and lingering inflation pressures are hardly an appealing investment environment. Looking forward, our baseline forecasts still embed an expectation that this picture will become more balanced, and we may be beginning to see some signs of that in the impulse from China. However, for now our views are still most consistent with a 'discerning Dollar' backdrop—room to run for the cyclical currencies, but the majors lagging behind.

- **EM FX: The return of COP's oil beta.** Oil prices have become an important differentiator of FX performance in recent weeks as they stand close to 30% higher since the end of June. We recently refreshed our estimates of EM FX betas to oil prices and have found that while FX oil betas had started to increase in 2021, this move stalled out for most of 2022 as the sharp rise in the Dollar was the dominant driver of FX markets. For this reason, the beta of relative value (RV) expressions remained higher through 2022. However, with the Dollar trading in a more range-bound fashion over the past year, oil betas have increased again for most of the oil exporter currencies (but they have decreased for others like MXN). The clearest trend in recent months has been the return of COP's oil beta: this beta was muted through 2022 due to increased domestic political risk premium but it has now risen close to historic highs over the past decade. And, in line with this, the Peso is trading near its strongest levels YTD.

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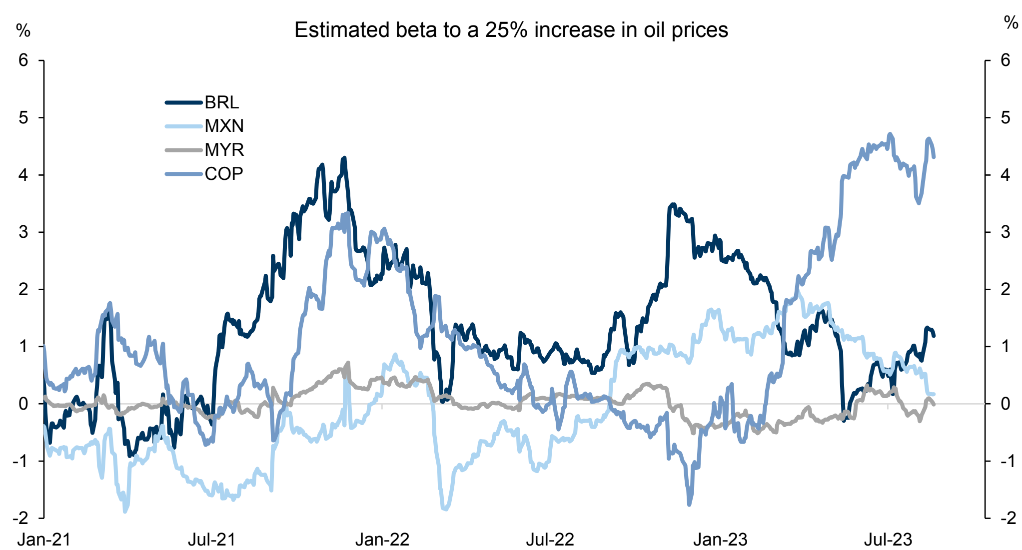
As a result, it is the highest oil beta in EM FX by a wide margin, followed by BRL (Exhibit 1). In Asia, the MYR is unlikely to benefit significantly from higher oil prices given its sensitivity to CNY and the USD liquidity hoarding by exporters. Within the oil importer currencies we find that a combination of FX policy and other commodities' moves are behind the recent changes in FX betas to oil price moves. For the INR, the typically negative relationship between FX performance and oil prices has been muted by the RBI's FX management. For CEE FX, the sharp and volatile rise in European natural gas prices last year meant that the relationship between CEE FX and oil prices was less strong than otherwise and, as a result, currently oil betas screen as slightly positive here. With more range-bound natural gas prices and European growth remaining subdued, we think the impact of oil on CEE FX should turn more negative again, as we have seen in the price action over the last couple of weeks. For the CLP, the oil beta is close to historic lows, which likely reflects the recent decoupling between oil and copper price developments. Overall, our current relative value trade recommendations within FX (long COP & BRL vs CNY and short EUR/CAD) are positively exposed to increasing oil prices and have traded resiliently through the recent bout of Dollar strength.

Exhibit 1: COP's beta to oil prices has risen sharply this year and is the highest in EM FX by a wide margin



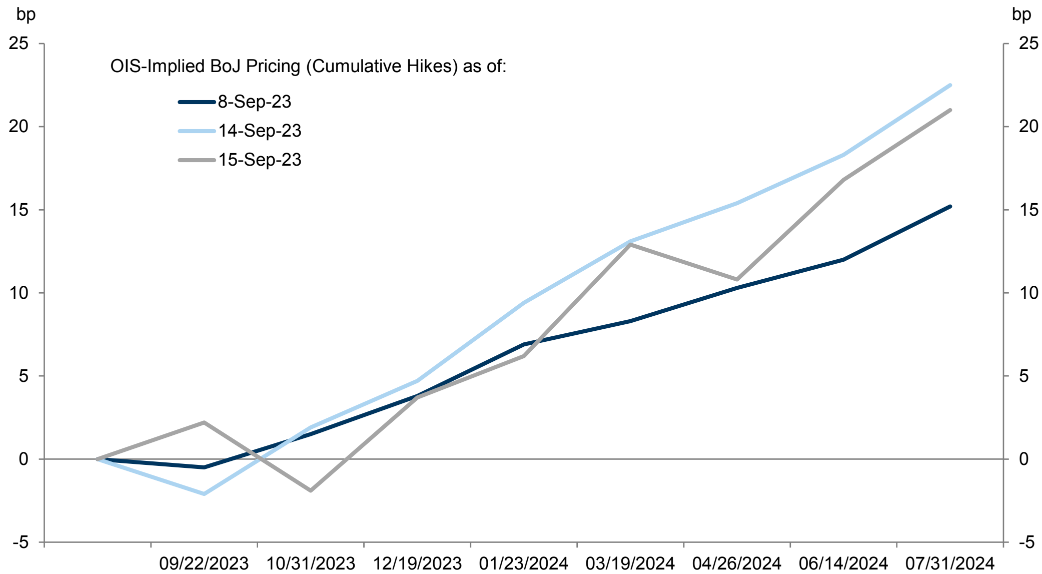
Estimated betas to a 25% increase in the price of oil, using a 6-month rolling sample window, and controlling for shifts in other key global market variables.

Source: Bloomberg, Goldman Sachs Global Investment Research

- **EUR: The last hike is the weakest.** The ECB manufactured another rate hike, but you would hardly know it from the market reaction. We think the market's response is sensible, and downside EUR momentum can continue in the near term. Central banks tend to focus on the action (in this case, a hike to "reinforce progress towards [the inflation] target"), but we have demonstrated that markets respond more to the direction of travel. Slowing down is easing. Signaling a pause—or in this case, showing more sensitivity to slowing growth data—also tends to be treated as an easing step. Markets are forward looking, and policy biases "tilt the tables" of the market response to future data. In this case, the ECB's new guidance presents a high bar to additional hikes in the near term. Importantly, the ECB has also opened the left tail of the distribution. With the length of the pause now tied to the activity outlook, further disappointments would naturally lead the market to explore the possibility of earlier rate cuts. Our economists expect growth to stabilize around here before strengthening next year, which underpins their call for a long pause. But the fact that cuts are now on the table will change market behavior and that is important for the Euro outlook. We maintain our recommendation to go short EUR/CAD, with a target of 1.42. We think that cross should capture the theme of US outperformance, a more balanced Fed decision, and a relatively benign risk environment. It also offers a reliable hedge against one of the key risks to growth sentiment—higher oil prices. A firm inflation print in Canada next week, as we expect, would also support the trade. We are tightening the stop on our trade recommendation to 1.46 to lock in potential returns following a series of positive catalysts.

- **JPY: Searching for hawks.** Since Governor Ueda's interview that was published last weekend, there has been increased interest in short cross-JPY positions, leaning into the ideas that JPY weakness has gone too far for domestic policymakers and the end to negative rates could come sooner than expected. While the new mentions of a possible decision on exiting NIRP by "year-end" and the potential for it to happen before the end of YCC in particular got markets excited, it has become clearer that the comments were not meant to pull forward market pricing as much as they did (Exhibit 2). In fact, our economists still believe the most likely path for policy will be an exit from YCC in April 2024 and an end to negative rates only in spring 2025—well past current market expectations. For that reason, and more importantly due to our baseline of lower rate vol and supportive risk sentiment over the next 6 months, we expect to see the Yen gradually weaken without a more substantial policy shift from the BoJ. Next week's meeting could drive some further excitement in JPY longs if the statement adds a reference to recent currency weakness (rather than just exchange rate vol), and especially if the guidance is changed to put rate hikes more deliberately on the table. But our baseline remains that markets will continue to be disappointed by the slow pace of normalization. More generally, we expect to see some back-and-forth on the path to our 3m forecast of 150, with more verbal pushback and signals of an earlier policy shift if the market moves towards and through those levels quickly, though the impact will likely be limited and short-lived without an actual shift.

Exhibit 2: Markets initially got excited about a more hawkish BoJ, though nearer-term expectations have tempered once again

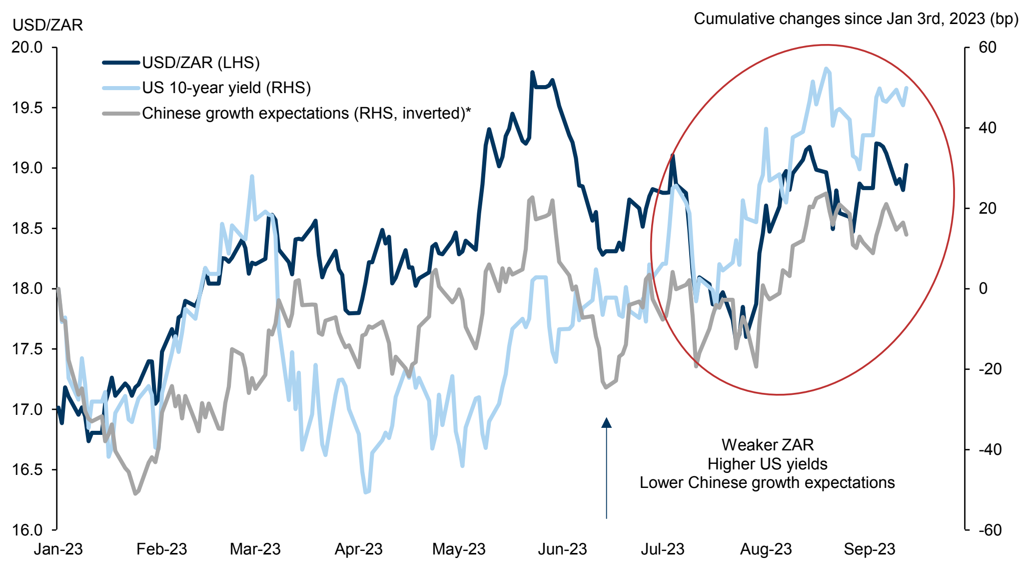


Source: Bloomberg, Goldman Sachs Global Investment Research

- **GBP: Tears for the Kingdom.** This week's dovish guidance from the ECB saw GBP weaken against the Dollar and flat against Euro, as markets read through to the upcoming BoE meeting. Our economists expect the BoE to hike by 25bps next week. On balance, we think elevated inflation and high wage growth should pull the BoE into a hike—unless August CPI surprises materially to the downside—though labor market activity has cooled notably since the last meeting. Policymakers have voiced dovish views on the path of policy ahead as well, emphasizing a preference to hold rates higher for longer rather than additional hikes. While a stronger currency would ultimately support the BoE's goal to get inflation to target, the latest communication and policy has had the opposite effect. In order to see greater Sterling strength, we think that the cyclical picture in Europe needs to improve, and the Bank of England needs to pursue a more hawkish policy path. Unfortunately, neither of those seem likely to shift in the near-term, meaning that a flattish EUR/GBP could persist for longer.
- **ZAR: At the centre of the divergence.** With its high beta to Chinese growth expectations, the broad Dollar and US yields, the Rand has been among the currencies most impacted by the divergence between the US and the Chinese growth outlooks that has been driving FX markets. This has meant that USD/ZAR is now back trading close to year-to-date highs and the path there has been quite volatile (Exhibit 3). While earlier this year 'local' factors were dominating the Rand narrative, we think the 'global' factors (in particular, whether the US-China growth outlook becomes less divergent) will remain in the driver's seat for the Rand going forward. For this reason, barring a significant surprise, we do not expect next week's SARB meeting to have a large FX impact. With the disinflation process well underway, the SARB's trade-off has become less severe and the probability of a negative feedback loop between rates, growth and the FX has decreased

significantly. And, in relative terms, the difference in FX carry between ZAR and its high-carry EM peers is now less negative than earlier this year. While high-frequency data for Q3 has pointed to some sequential weakening, Q2 GDP was stronger than expected, with our economists revising their 2023 growth forecast to 0.9% (from 0.4% previously). Turning back to the global backdrop, with USD/ZAR trading around 19, we think a significant amount of negativity is already in the price and pressures on the Rand should ease as the Chinese data starts showing signs of stabilisation. Plus, the automatic stabiliser role of domestic investors has previously kicked in at similar spot levels and could trigger a sharp reversal. However, given the resilience of the cyclical picture in the US, we expect US yields to remain well-supported, which would limit the room for Rand appreciation. In sum, if we start getting more signs of a stabilisation in the China growth outlook, we would expect the Rand (together with KRW) to recoup some of the recent losses.

Exhibit 3: The combination of downgrades to Chinese growth expectations, rising US yields and a stronger Dollar have pushed USD/ZAR close to YTD highs



*Series represents cumulative changes to our market-based proxy of Chinese growth expectations. This is the first principal component (PC1) of A- and H-shares, Copper, AUD

Source: Bloomberg, Goldman Sachs Global Investment Research

- **INR: Waiting on a weighty decision.** High-yielding Asian currencies (such as INR, PHP and IDR) underperformed NJA FX over the past week reflecting a muted drag from oil prices (see oil bullet above). Even though August inflation declined sharply below consensus expectations to 6.8% yoy (versus 7.4% y/y in July) driven by a sharp sequential contraction in vegetable prices, and RBI core inflation also continued to edge lower to 4.8% from 4.9% in July, INR OIS rates and USD/INR crept higher as oil prices moved above USD 90/bbl. Given that India is one of the largest net oil importers in the region, and thus higher energy prices adversely affect inflation and the current account deficit, pressure on the INR may persist in an environment of a firm USD and increasing oil prices. But the sensitivity is likely to be moderated since we expect the RBI to lean against currency volatility. One important offset to these pressures could be an index inclusion announcement. September is the index review season for the GBI-EM Global Diversified index and India will again be considered for eligibility. We think that India's inclusion would be welcomed by many end-investors and the index provider as it would potentially be adding a high-yield, relatively deep and liquid market to the index. However, the reason why it was not included in previous years was due to accessibility / operational issues. In our assessment there has been no significant progress on these issues, so India should remain on the watch list. The tax rate for non-residents is higher from a year ago as the authorities removed tax concessions thereby aligning capital gains tax with resident Indians. Although the removal of taxes is not pre-requisite for eligibility, it may be perceived as further adding to the accessibility issues. In the event that India is included, we think there should be significant lead time between announcement and actual inclusion. Given its size, we think its weight will ultimately go to 10% (over the phase-in period, which is 1% per month over 10-months). This should prompt around USD 30bn of passive inflows as a one-off stock adjustment. But the wait for that is likely to go on.

Global FX Forecasts

	Current Spot	3-Month Horizon		6-Month Horizon		12-Month Horizon		Longer-term Forecasts (eop)		
		Forward	Forecast	Forward	Forecast	Forward	Forecast	2024	2025	2026
G10										
EUR/$	1.06	1.07	1.07	1.07	1.10	1.08	1.12	1.15	1.15	1.15
£/$	1.24	1.24	1.24	1.24	1.29	1.24	1.33	1.31	1.35	1.34
AUD/$	0.64	0.65	0.65	0.65	0.68	0.65	0.71	0.73	0.75	0.80
NZD/$	0.59	0.59	0.61	0.59	0.62	0.59	0.64	0.65	0.67	0.70
$/CAD	1.35	1.35	1.34	1.35	1.30	1.34	1.28	1.28	1.23	1.20
$/CHF	0.90	0.89	0.89	0.88	0.85	0.86	0.83	0.81	0.81	0.81
$/NOK	10.73	10.71	11.03	10.68	10.36	10.64	9.91	9.39	8.87	8.35
$/SEK	11.19	11.14	11.12	11.09	10.55	11.02	10.09	9.57	9.04	8.70
$/JPY	147	145	150	143	155	139	150	135	125	115
EMEA										
$/CZK	23.1	23.1	22.7	23.1	22.3	23.1	22.1	21.7	22.6	23.5
$/HUF	361	367	346	370	332	374	326	317	313	313
$/PLN	4.35	4.37	4.35	4.38	4.18	4.38	4.06	3.96	3.91	3.91
$/RON	4.67	4.68	4.63	4.69	4.50	4.70	4.46	4.39	4.43	4.48
$/RUB	99.84	99.84	91.00	104.19	94.00	111.92	98.00	92.00	92.00	92.00
$/UAH	36.9	39.8	36.6	43.2	42.0	49.4	50.0	52.5	55.0	57.5
$/TRY	26.95	29.22	28.00	31.75	29.00	37.48	30.00	30.00	31.00	31.00
$/ILS	3.82	3.81	3.70	3.79	3.60	3.75	3.60	3.50	3.45	3.40
$/ZAR	19.02	19.17	17.50	19.31	17.00	19.59	16.75	16.00	15.00	14.00
$/NGN	770	805	750	845	750	913	750	750	750	750
Americas										
$/ARS	350	555	700	815	900	1023	1100	1100	1100	1100
$/BRL	4.87	4.93	4.60	4.97	4.40	5.06	4.40	4.50	4.50	4.50
$/MXN	17.11	17.38	17.00	17.66	17.25	18.21	17.25	18.00	18.50	18.50
$/CLP	889	897	775	901	775	904	770	800	775	750
$/PEN	3.71	3.73	3.90	3.75	3.90	3.76	3.80	3.75	3.65	3.55
$/COP	3921	4011	3800	4091	3700	4237	3700	3800	3800	3700
Asia										
$/CNY	7.28	7.23	7.30	7.20	7.20	7.12	7.00	6.70	6.50	6.40
$/HKD	7.83	7.81	7.80	7.80	7.80	7.78	7.80	7.80	7.80	7.80
$/INR	83.04	83.46	83.00	83.76	82.00	84.62	82.00	80.00	79.00	78.00
$/KRW	1326	1319	1250	1311	1230	1297	1220	1200	1180	1150
$/MYR	4.68	4.65	4.75	4.62	4.70	4.58	4.60	4.40	4.30	4.20
$/SGD	1.36	1.36	1.34	1.35	1.33	1.34	1.30	1.29	1.27	1.25
$/TWD	31.9	31.7	30.5	31.4	30.0	30.8	30.0	31.0	30.0	29.0
$/THB	35.79	35.55	33.50	35.25	32.50	34.71	32.00	34.00	34.00	34.00
$/IDR	15355	15414	15500	15439	15300	15494	15000	14500	14400	14200
$/PHP	56.76	56.80	56.00	56.89	55.50	57.05	55.00	55.00	58.00	58.00
Euro Crosses										
EUR/GBP	0.86	0.86	0.86	0.86	0.85	0.87	0.84	0.88	0.85	0.86
EUR/CHF	0.95	0.95	0.95	0.94	0.94	0.93	0.93	0.93	0.93	0.93
EUR/NOK	11.43	11.44	11.80	11.47	11.40	11.52	11.10	10.80	10.20	9.60
EUR/SEK	11.91	11.91	11.90	11.91	11.60	11.93	11.30	11.00	10.40	10.00
EUR/CZK	24.54	24.72	24.25	24.83	24.50	24.97	24.75	25.00	26.00	27.00
EUR/HUF	384	392	370	397	365	405	365	365	360	360
EUR/PLN	4.63	4.67	4.65	4.70	4.60	4.75	4.55	4.55	4.50	4.50
EUR/RON	4.97	5.00	4.95	5.03	4.95	5.09	5.00	5.05	5.10	5.15
EUR/RUB	106.3	106.7	97.4	111.8	103.4	121.2	109.8	109.8	105.8	105.8

Note: Spot values are as of Thursday's close.

See dynamic table here (or click image above):

Source: Goldman Sachs Global Investment Research

Return Forecasts & Valuations

		Forecast: 12-Month Return (%)				GSDEER			GSFEER				
							Misalignment			Misalignment			
	Current Spot	Spot	Carry	Total	NEER	Estimate	Bilateral	Trade-Weighted	Estimate	Bilateral	Trade-Weighted	Average Estimate	PPP*
G10													
EUR/$	1.06	5.2	-1.7	3.4	-0.4	1.23	-14%	6%	1.21	-12%	5%	1.23	1.45
GBP/$	1.24	7.4	0.0	7.5	2.3	1.28	-3%	17%	1.32	-6%	11%	1.29	1.48
AUD/$	0.64	10.2	-1.1	9.0	6.6	0.92	-30%	-12%	0.85	-24%	-10%	0.89	0.70
NZD/$	0.59	8.3	0.0	8.3	4.3	0.68	-14%	7%	0.75	-22%	-5%	0.71	0.68
$/CAD	1.37	5.5	-0.5	5.1	5.6	1.22	-11%	-4%	1.28	-7%	-1%	1.24	1.19
$/CHF	0.89	7.9	-3.7	3.8	4.5	0.91	2%	18%	0.81	-9%	4%	0.87	1.03
$/NOK	10.71	8.3	-0.9	7.4	3.4	5.98	-44%	-32%	6.68	-38%	-33%	6.26	12.44
$/SEK	11.15	10.9	-1.5	9.2	6.2	6.89	-38%	-25%	8.74	-22%	-5%	7.63	8.88
$/JPY	147	-1.7	-5.6	-7.2	-5.9	92	-38%	-26%	112	-24%	-11%	100	91
EMEA													
$/CZK	22.8	3.1	0.2	3.2	-1.0	24.8	9%	29%	21.7	-5%	10%	23.5	17.3
$/HUF	362	11.0	4.0	15.5	7.0	305	-16%	1%	343	-5%	11%	320	217
$/PLN	4.33	6.5	0.8	7.3	2.5	3.59	-17%	-1%	3.8	-13%	5%	3.66	2.71
$/RON	4.64	4.0	0.6	4.6	--	--	--	--	--	--	--	--	--
$/RUB	102.17	4.3	12.3	17.1	0.9	65.01	-36%	-17%	75.11	-26%	-8%	69.05	47.57
$/UAH	36.9	-26.2	33.7	7.6	--	--	--	--	--	--	--	--	--
$/TRY	26.84	-10.5	35.0	20.7	-13.9	10.86	-60%	-53%	18.11	-33%	-22%	13.76	8.71
$/ILS	3.85	7.0	-1.9	5.0	4.2	3.45	-10%	6%	3.13	-19%	-6%	3.32	4.32
$/ZAR	19.18	14.5	3.1	18.0	10.5	10.59	-45%	-36%	14.8	-23%	-5%	12.27	16.24
$/NGN	777	3.6	14.9	18.5	--	--	--	--	--	--	--	--	--
Americas													
$/ARS	350.0	-68.2	187.7	119.5	-69.9	--	--	--	--	--	--	--	--
$/BRL	4.98	13.2	4.0	17.7	16.3	3.79	-24%	-7%	4.60	-8%	9%	4.11	5.66
$/MXN	17.60	2.0	6.5	8.7	0.5	18.67	6%	17%	17.66	0%	11%	18.26	18.66
$/CLP	885	14.9	1.8	17.0	15.8	616	-30%	-17%	855	-3%	14%	712	819
$/PEN	3.71	-2.4	1.2	-1.2	-2.1	3.14	-15%	-1%	3.40	-8%	4%	3.24	4.26
$/COP	4039	9.2	7.6	17.5	8.2	3019	-25%	-11%	4103	2%	12%	3453	3279
Asia													
$/CNY	7.33	4.7	-2.4	2.2	0.5	5.06	-31%	-17%	5.85	-20%	-6%	5.38	7.44
$/HKD	7.84	0.5	-0.7	-0.2	-3.6	7.16	-9%	17%	7.10	-9%	8%	7.14	5.69
$/INR	83.21	1.5	1.7	3.2	-1.8	76.64	-8%	8%	73.19	-12%	6%	75.26	72.61
$/KRW	1335	9.5	-2.2	7.1	6.0	1252	-6%	18%	1129	-15%	2%	1203	917
$/MYR	4.68	1.7	-2.2	-0.6	-2.5	3.24	-31%	-16%	4.03	-14%	2%	3.55	2.34
$/SGD	1.37	5.1	-1.8	3.2	1.4	1.38	1%	22%	1.26	-8%	10%	1.33	0.69
$/TWD	32.0	6.7	-3.0	3.5	3.3	26.5	-17%	5%	25.9	-19%	-5%	26.3	14.5
$/THB	35.61	11.3	-2.9	8.0	8.0	32.41	-9%	12%	31.60	-11%	7%	32.09	21.70
$/IDR	15325	2.2	0.9	3.0	-1.5	13939	-9%	11%	12560	-18%	-3%	13388	11322
$/PHP	56.80	3.3	0.6	3.9	-0.2	55.27	-3%	19%	55.32	-3%	13%	55.29	52.43
Euro Crosses													
EUR/GBP	0.86	2.1	1.9	4.0	2.3	0.96	12%	17%	0.92	8%	11%	0.95	0.98
EUR/CHF	0.95	2.7	-2.0	0.7	4.5	1.12	17%	18%	0.99	3%	4%	1.07	1.50
EUR/NOK	11.46	3.2	1.1	4.3	3.4	7.37	-36%	-32%	8.11	-29%	-33%	7.67	18.09
EUR/SEK	11.92	5.5	0.3	5.8	6.2	8.50	-29%	-25%	10.61	-11%	-5%	9.34	12.90
EUR/CZK	24.36	-1.6	5.9	4.3	-1.0	30.57	25%	29%	26.32	8%	10%	28.87	25.20
EUR/HUF	387	6.0	5.9	11.9	7.0	375	-3%	1%	416	8%	11%	392	316
EUR/PLN	4.63	1.7	2.6	4.3	2.5	4.43	-4%	-1%	4.6	-1%	5%	4.49	3.94
EUR/RON	4.96	-0.7	2.4	1.7	--	--	--	--	--	--	--	--	--
EUR/RUB	109.3	-0.4	14.1	13.7	0.9	80.2	-27%	-17%	91.2	-17%	-8%	84.6	--
Addendum													
USD	--	-5.8	-1.5	-7.2	-4.4	--	--	19%	--	--	12%	--	--

Note: USD returns average of all other currencies (except ARS, NGN and UAH) with opposite sign; *EM estimates adjusted for per capita income. Spot values as of Thursday.

See dynamic table here (or click image above):

Source: Goldman Sachs Global Investment Research

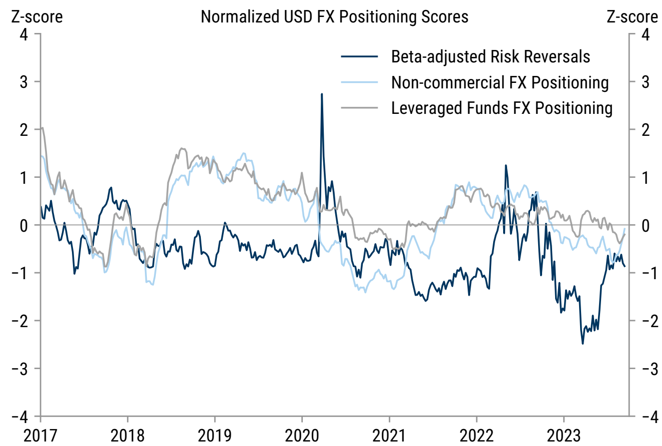
FX Positioning

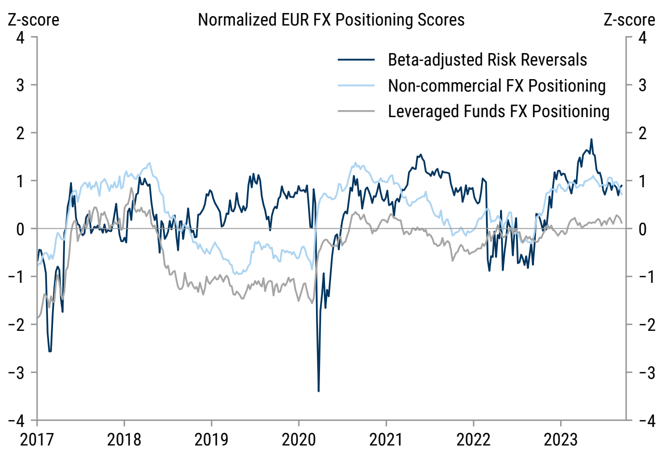
Weekly IMM Futures Positioning

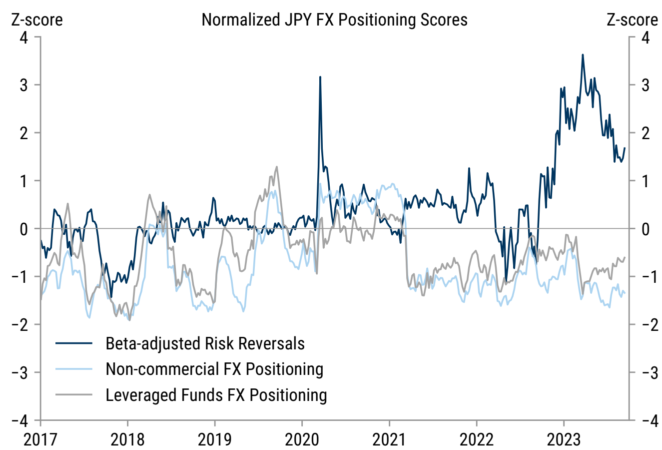
Currency	Spot Rate	Net Futures Length									Sentiment Index* (SI)	Last Week
		Non-Commercial			Asset Managers			Leveraged Funds				
		$bn	% of OI	Chg. ($bn)	$bn	% of OI	Chg. ($bn)	$bn	% of OI	Chg. ($bn)		
EUR	1.08	15.2	15.7	-3.1	46.1	47.7	-1.3	1.8	1.9	-1.4	67.4	77.1
GBP	1.25	3.6	22.0	-0.0	0.6	3.6	-0.4	3.2	19.5	-0.2	87.8	88.0
AUD	0.64	-5.1	-33.9	0.2	-6.3	-41.6	-0.1	0.2	1.4	0.1	11.1	7.4
NZD	0.59	-0.9	-24.1	-0.0	-1.7	-47.6	-0.1	0.2	6.2	-0.0	14.0	15.6
CAD	1.36	-3.1	-20.5	-1.3	-5.5	-36.5	-1.4	0.3	1.9	-0.5	15.5	31.3
CHF	0.89	-1.3	-19.1	-0.6	-2.2	-31.6	-0.4	0.5	8.0	0.0	30.9	41.9
JPY	147.08	-8.4	-38.3	-0.2	-3.9	-17.8	-0.3	-3.0	-13.7	0.5	11.4	12.3
MXN	17.22	1.9	29.9	0.0	3.6	54.7	-0.3	1.1	17.0	0.1	80.0	80.3
BRL	4.95	0.3	38.1	-0.0	0.2	25.1	-0.0	0.1	15.2	-0.0	52.6	53.5
RUB	96.0											
USD		-2.3	-1.2	4.9	-30.9	-16.9	4.4	-4.5	-2.4	1.3		
	Implied EUR Crosses											
EUR/GBP	0.86	11.6		-3.0	45.5		-0.9	-1.4		-1.3		
EUR/CHF	0.96	16.5		-2.5	48.2		-0.9	1.3		-1.4		
EUR/JPY	158.18	23.6		-2.9	50.0		-1.0	4.8		-1.9		

Normalized G10 FX Positioning Scores

Currency	Futures	Risk Reversals**	Average
USD	-0.25	-0.8	-0.53
EUR	0.82	0.85	0.83
GBP	0.96	0.83	0.89
AUD	-1.17	0.97	-0.1
NZD	-0.75	0.93	0.09
CAD	-0.55	0.4	-0.07
CHF	-0.45	1.43	0.49
NOK		0.79	0.79
SEK		0.54	0.54
JPY	-1.38	1.47	0.04







*Our Sentiment Index scales non-commercial net speculative positioning relative to the rolling three-year minimum and maximum of net positioning. ** Beta-adjusted risk reversals.

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

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