

FX Quant Insight

Extending the USD rally

Key takeaways

- Last week's USD rally occurred outside US trading hours; quant signals see more upside.
- Option flow and Technical Matrix are bullish USDZAR for this week.
- More caution on chasing USD higher vs G10 FX as DXY is now at trendline resistance.

FX Signal of the Week: Bullish USD/ZAR: 18.8917

Exhibit 1: Bullish USDZAR this week on supportive option flow and positioning signals

Top signals from quant models

Section	Insight	Rationale
Option Flow	Bullish USD	Option flow moved broadly for USD calls vs both G10 and EM last week.
Technical Matrix	Bullish USD	Bullish USD vs JPY and CHF in G10; bullish USD vs ZAR and Asia FX in EM.
CARS	Shock Regime	Model turns defensive on falling global yields led by GBP, CHF and CAD last week.
Time Zone	Asia hour USD demand	USD rally last week was led by Asia-based investors followed by Europe-based investors.

Source: BofA Global Research

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Catalysts outside of the US are driving the USD higher

The USD rallied aggressively last week; the +1% weekly gain was the fifth largest over the past year. Time zone analysis shows the strength was driven by demand for USD from European and Asia trading hours (Exhibit 8). European FX underperformed on dovish Bank of England and Swiss National Bank monetary policy meetings. Despite the Bank of Japan rate hike, Asia FX led by CNY also broadly weakened. Looking ahead, our signals continue to be bullish for the USD. Option flow shows investors are chasing the USD spot move with short-dated OTM USD calls. Positioning analysis sees USD uptrends continuing vs JPY and CHF in G10, and against ZAR and Asia FX in EM. Cross-asset signals also turned defensive on the back of falling global yields.

Bullish USD/ZAR signals for this week

We prefer to chase the USD higher against ZAR this week on the back of bullish option flow and positioning signals. Option flow showed +1.5 z-score move for USDZAR calls last week (Exhibit 2). Technical Matrix shows uptrend continuation signal for USDZAR (Exhibit 5). Our EM strategists are also bullish USDZAR on idiosyncratic local election drivers for ZAR ([Global Emerging Markets Weekly: 21 March 2024](#)). We are more cautious to chase USD higher against G10 FX for this week as the DXY index now sits around trendline resistance after last week's rally. Heading into April, seasonality would also start to work in favor of several non-USD G10 currencies such as GBP and CAD. The BBDXY Index, which includes EM FX weightings, is still around 0.6% below resistance. The risk to our bullish USD view would be weaker-than-expected PCE data this week.

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Refer to important disclosures on page 7 to 8.

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For more details on the construction of the quant signals, please refer to the [Global Rates and FX Primer: FX Quant Insight: decipher weekly FX signals 07 September 2022](#).

CARS (model): Cross-Asset Regime Switching

SDR: Swap Data Repository

MAA: Moving Average Aggregator

UD: Up/Down volatility

RS: Residual Skew

ADX: Average Directional Movement Index

DMI: Directional Movement Index

NFP: Non-farm payrolls

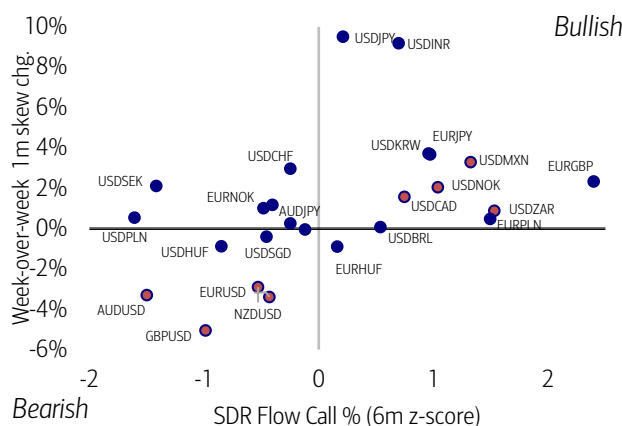
Option Flow Signals

Our options flow signals combine Event analysis framework ([FX Viewpoint: Vol-guided decisions 18 March 2021](#)) with SDR flows data ([FX Viewpoint: SDR: What do FX options flows tell us? 01 February 2021](#)) to gauge bullish and bearish sentiments.

To learn more about FX volatility and options please refer to our [FX Volatility Dashboard](#) as well as the FX Vol Dashboard Primer ([Global Rates and FX Primer: 09 March 2022](#)).

Exhibit 2: Option flow broadly moved for USD calls as USD spot rallied

1m skew change vs call percentage z-score

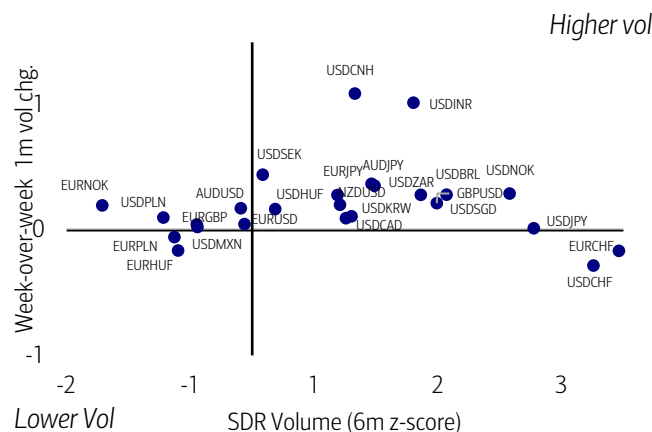


Source: BofA Global Research, DTCC. Note: CNH flows are proxied by "CNY" flows in SDR.

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Exhibit 3: Implied vols broadly rose last week

1m implied vol change vs volume z-score



Source: BofA Global Research, DTCC. Note: CNH flows are proxied by "CNY" flows in SDR.

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Exhibit 4: Short-dated skew broadly moved for USD calls despite only moderate change to levels of implied vols

Event analysis signals after last week's spot and vol moves

Pair	Old spot	New spot	1m vol	1m vol chg	1y vol	1y vol chg	1y - 1m chg	Currency	Return vs USD	1m skew % chg vs		Signals
										USD	USD	
EURUSD	1.0872	1.0832	5.24	0.05	6.19	0.07	0.02	EUR	-0.37%	-3.36		EUR No Signal
USDJPY	149.15	151.24	7.57	0.02	8.79	0.40	0.38	JPY	-1.39%	-9.54		JPY No Signal
GBPUSD	1.2729	1.2638	6.00	0.22	7.29	0.22	0.00	GBP	-0.72%	-4.95		GBP No Signal
USDCHF	0.8878	0.8975	5.90	-0.28	6.80	0.12	0.40	CHF	-1.09%	-2.92		CHF No Signal
AUDUSD	0.6560	0.6533	7.89	0.18	9.14	0.30	0.12	AUD	-0.41%	-3.21		AUD No Signal
USDCAD	1.3534	1.3586	4.77	0.11	5.58	0.07	-0.04	CAD	-0.38%	-1.49		CAD No Signal
USDSEK	10.4339	10.5798	9.00	0.44	9.85	0.25	-0.19	SEK	-1.39%	-1.90		SEK No Signal
USDNOK	10.6560	10.7175	9.52	0.29	10.91	0.24	-0.06	NOK	-0.58%	-1.93		NOK No Signal
NZDUSD	0.6085	0.6006	8.18	0.20	9.23	0.29	0.09	NZD	-1.31%	-2.83		NZD No Signal
USDSGD	1.3392	1.3451	3.73	0.28	4.32	0.07	-0.22	SGD	-0.44%	0.65		SGD No Signal
USDKRW	1333.7	1342.3	7.08	0.09	8.02	0.04	-0.05	KRW	-0.64%	-3.70		KRW No Signal
USDMXN	16.8305	16.7390	8.11	0.02	10.48	0.00	-0.02	MXN	0.55%	-3.24		MXN No Signal
USDTRY	32.3103	32.1462	11.58	3.09	20.56	0.86	-2.23	TRY	0.51%	7.97		TRY No Signal
USDZAR	18.9460	18.9296	12.19	0.37	14.89	0.10	-0.27	ZAR	0.09%	-0.57		ZAR No Signal
USDHUF	363.2	365.5	9.72	0.17	10.80	0.10	-0.06	HUF	-0.63%	1.13		HUF No Signal
USDPLN	3.9750	3.9770	7.81	0.10	9.39	0.01	-0.09	PLN	-0.05%	-0.36		PLN No Signal

Source: BofA Global Research, Bloomberg.

The table shows the 1-year percentile and 1-week change in 1m and 1y implied vol, the 1y-1m spread, and the 1m 25 delta risk reversal as a percentage of the ATM. For a currency with a put skew, the rules for generating the signal column are the following:

[1] Bearish Continuation: Spot change < -1%, 1m vol change > 0.5%, 1y vol change > 0%, 1m skew chg. < -2; [2] Bearish Contrarian: Spot change > 1%, 1m skew change < -2;

[3] Bullish Continuation: Spot change > 2%, 1y-1m change < -0.1%, 1m skew change > 2; [4] Bullish Contrarian Spot change < -1%, 1m vol change < -0.2%, 1m skew chg. > 1.

Parameters that triggered a bearish condition are colored in red; parameters that triggered a bullish condition are colored in green.

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Technical Matrix

The Technical Matrix is a table of technical indicators ([Get to know even more technical strategy, 24 January 2022](#)) and BoFA positioning analysis ([Global Rates and FX Primer: 01 October 2018](#)) that look at trend following and reversal signals. To learn more about a variety of technical strategies, please see [Technicals Explained primer](#), as well as our Quantifying Technicals publications for [the ADX](#) and [Bollinger indicators](#).

Exhibit 5: Trend-followers should continue to chase USD higher vs CHF, JPY, ZAR, and EM Asia FX

Technical matrix with positioning analysis and key levels to watch

		Spot	Positioning Trend	Bullish / Bearish	ADX Trend	Bollinger Bands	Next Support	Next Resistance
USD	EURUSD	1.0832	↔	No Signal	Transition	None	1.0764	1.0839
	USDJPY	151.17	↑	Bullish	Transition	None	149.13	151.91
	GBPUSD	1.2641	↑	No Signal	Range	None	1.2592	1.2642
	AUDUSD	0.6535	↓	No Signal	Range	None	0.6511	0.6552
	USDCHE	0.8973	↑	Bullish	Transition	None	0.8896	0.9244
	USDCAD	1.3589	↑	Slightly Bearish	Range	None	1.3503	1.3591
	NZDUSD	0.6005	↓	No Signal	Range	None	0.5774	0.6018
	USDSEK	10.5776	↔	No Signal	Range	Upper	10.4268	10.5875
	USDNOK	10.7141	↑	No Signal	Range	None	10.6142	10.7738
EUR	EURGBP	0.8569	↔	No Signal	Range	None	0.8549	0.8600
	EURJPY	163.74	↑	Bullish	Transition	None	161.67	164.30
	EURAUD	1.6576	↑	Bullish	Range	None	1.6547	1.6600
	EURCHF	0.97197	↑	No Signal	Uptrend	None	0.9709	0.9990
	EURCAD	1.4720	↑	No Signal	Uptrend	None	1.4680	1.4748
	EURNZD	1.8037	↑	Bullish	Uptrend	None	1.7968	1.8462
	EURSEK	11.4575	↔	No Signal	Transition	Upper	11.3821	11.4992
	EURNOK	11.6053	↑	No Signal	Range	None	11.6015	11.7206
G10 Cross	AUDJPY	98.785	↑	Bullish	Range	None	98.62	100.17
	AUDNZD	1.0882	↑	No Signal	Uptrend	None	1.0867	1.1056
	AUDCAD	0.888	↑	No Signal	Range	None	0.8851	0.8902
	NOKSEK	0.9873	↓	Bearish	Transition	Upper	0.9826	0.9874
	CADJPY	111.241	↑	Bullish	Transition	None	111.17	112.29
	GBPJPY	191.08	↑	No Signal	Transition	None	189.10	193.54
	NZDJPY	90.78	↑	No Signal	Transition	None	90.49	91.17
	GBPCHF	1.1343	↑	Slightly Bearish	Uptrend	None	1.1174	1.1506
EM	USDMXN	16.745	↓	No Signal	Transition	None	16.6262	17.0172
	USDBRL	4.9922	↑	No Signal	Range	None	4.9584	5.0187
	USDZAR	18.9161	↑	Bullish	Range	None	18.7685	18.9308
	EURPLN	4.3068	↓	No Signal	Range	None	4.2935	4.3298
	EURHUF	395.9	↑	No Signal	Uptrend	None	389.63	399.75
	USDKRW	1342.25	↑	Bullish	Range	None	1330.58	1363.55
	USDINR	83.425	↑	Bullish	Uptrend	Upper	83.13	83.50
	USDCNH	7.2483	↑	Bullish	Range	None	7.2298	7.3682

Data as of 03/25/24. Source: BoFA Global Research, Bloomberg.

Positioning uptrend has MAA > 60, downtrend MAA < 40. Positioning uptrend reversal likely if MAA/UD/RS > 80, continuation likely if UD, RS < 50. Positioning downtrend reversal likely if MAA/UD/RS < 20, and continuation likely if UD, RS > 50. UD and RS are 1y percentile and MAA is in %.

Positioning is bullish (green) if matrix shows downtrend reversal or uptrend continuation; Positioning is bearish (red) if matrix shows uptrend reversal or downtrend continuation.

Positioning is slightly bullish or slightly bearish (yellow) if only one of UD or RS supports the signal.

ADX downtrend if ADX > 25 and DMI+ is below DMI-. ADX uptrend if ADX > 25 and DMI+ is above DMI-. ADX shows Transition if ADX is between 20 and 25, and Range if ADX < 20. Cells in the ADX Trend column are colored with more intensity if the ADX trend signal matches the positioning signal. 14-day lookahead is used for the ADX indicators.

The Bollinger Bands column shows 'Upper' if spot is above the +2 std bollinger band, and 'Lower' if spot is below the -2 std band. 20-day SMA is used for Bollinger indicators.

Cells in Next Support and Next Resistance columns are colored if spot is within 0.5% of the support or resistance level.

CARS Signals

CARS ("cross-asset regime-switching") is a systematic model that makes weekly buy/sell decisions for G10 currencies based on cross-asset factors (equity, rates, and commodities). FX's relationship with other asset classes is not constant over time, and investors could flock to own haven currencies during shock periods. The CARS model chooses the most performing factor for the appropriate macro regime of the week ([FX Viewpoint: CARS model: weekly FX cross-asset drivers 22 June 2022](#)).

Exhibit 6: Model turns defensive on falling global yields last week

CARS signals for a macro-shock week

Currency	Bullish/Bearish	Equity Shock	Rates Shock	Global regime	z-score
EUR	Bearish	0.9	-0.8	Commodity Shock	-0.2
JPY	Bullish	1.3	2.2	S&P 500	0.6
GBP	Bearish	0.5	-1.0	US Treasury	-0.8
AUD	Bearish	0.4	-0.7		
CAD	Bearish	0.4	-1.4		
CHF	Bullish	0.2	-1.8		
NZD	Bearish	0.1	-0.9		
SEK	Bearish	0.7	-0.9		
NOK	Bearish	0.5	-0.8		

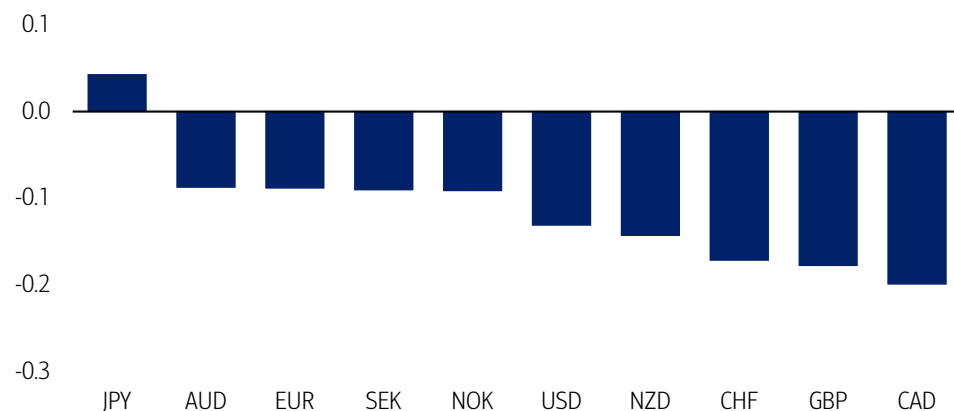
The chart shows bull/bear signals for G10 FX versus the USD based on cross-asset shocks. Factor cells are colored in red if equity/rates z-scores are below -1 and commodity z-score is below -2.

Source: BofA Global Research,

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Exhibit 7: Global yields broadly declined except for JPY last week

2y global yield change



Source: BofA Global Research, Bloomberg

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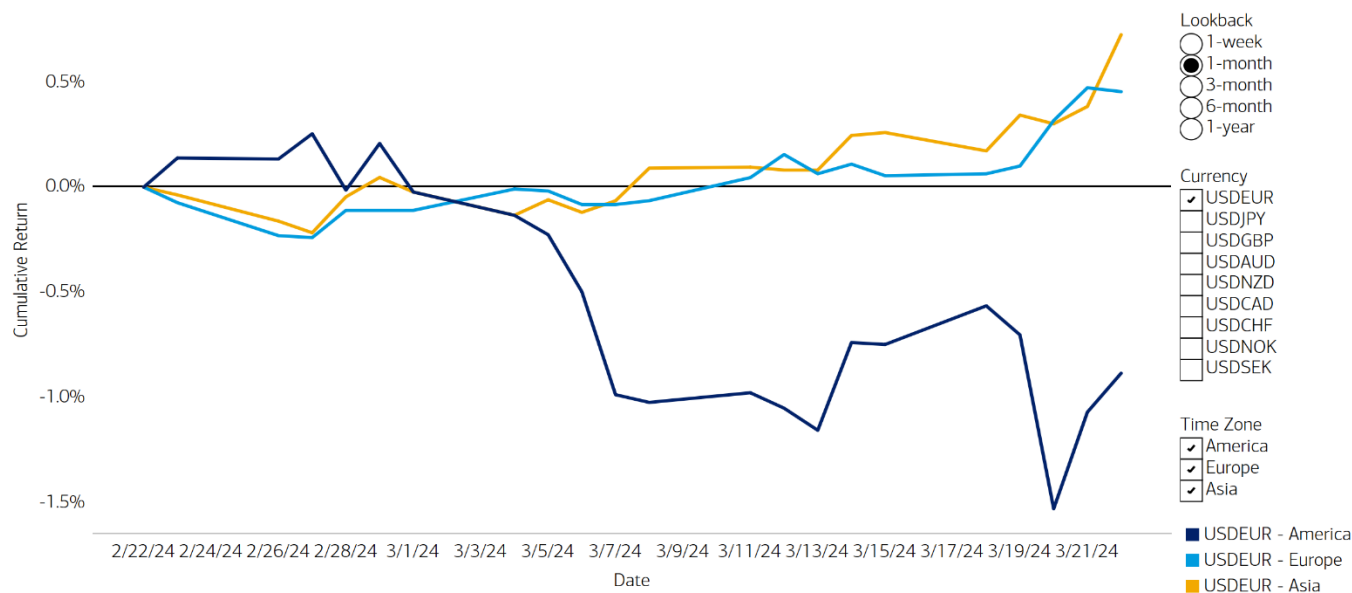


Interactive Time Zone

Expanding exhibits in the HTML view shows cumulative FX returns at different lookback periods, currency groupings, and time zones ([FX Watch: Interacting with time zones 06 July 2022](#)). Hours are shown in Coordinated Universal Time (UTC). We define America time zone as 1pm-12am UTC (8am-7pm EST), Europe time zone as between 8am-1pm UTC (3am-8am EST), and Asia time zone as between 12am to 8am UTC (7pm-3am EST).

Exhibit 8: USD gained the most in Asia trading hours last week

Interactive time zone plot. For readers of the web-formatted version of this report, access interactive features of the visualization by clicking on the image. Use Google Chrome or Microsoft Edge browsers for the best experience



We denote America time zone as between 1pm to 12am UTC, Europe time zone as between 8am to 1pm UTC, and Asia time zone as between 12am to 8am UTC.

Source: BofA Global Research, Bloomberg

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Exhibit 9: USD gained the least in US trading hours last week

Interactive time zone plot. For readers of the web-formatted version of this report, access interactive features of the visualization by clicking on the image. Use Google Chrome or Microsoft Edge browsers for the best experience

	8am-11am	11am-2pm	2pm-5pm	5pm-8pm	8pm-11pm	11pm-2am	2am-5am	5am-8am	Lookback
USDEUR	0.4%	0.2%	0.4%	-0.5%	-0.2%	0.3%	0.1%	0.2%	1-week
USDJPY	0.4%	0.1%	0.4%	-0.3%	-0.4%	1.7%	0.6%	0.4%	1-month
USDGBP	0.6%	0.0%	0.3%	-0.4%	-0.2%	0.7%	0.1%	0.4%	3-month
USDAUD	0.5%	0.1%	0.1%	-0.7%	-0.2%	0.1%	0.7%	0.2%	6-month
USDNZD	0.7%	0.3%	0.5%	-0.7%	-0.2%	0.8%	0.4%	0.1%	1-year
USDCAD	0.6%	0.3%	-0.2%	-0.4%	-0.1%	0.0%	0.1%	0.1%	
USDCHF	1.0%	0.3%	0.4%	-0.4%	-0.3%	1.7%	0.1%	0.3%	
USDNOK	0.6%	0.3%	0.5%	-0.8%	-0.1%	0.7%	0.3%	0.3%	
USDSEK	1.6%	-0.3%	0.8%	-0.6%	-0.3%	1.3%	0.3%	0.2%	

Hours are as of UTC. Currency pairs with greater loss over the lookback period are colored in darker red. Currency pairs with greater gain over the lookback period are colored in darker green. We denote America time zone as between 1pm to 12am UTC, Europe time zone as between 8am to 1pm UTC, and Asia time zone as between 12am to 8am UTC.

Source: BofA Global Research, Bloomberg

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