

## FX Quant Insight

## Pre-Jackson Hole trend-following

## Key takeaways

- Bullish USD quant signals remain intact ahead of Jackson Hole.
- But we caution chasing USD higher as hawkish Powell is priced-in; USD could consolidate before US Labor Day.
- We are bearish AUD/NOK this week on diverging rates factors and central bank sentiment indicators.

## FX Trade of the week: Sell AUD/NOK: 6.8094

## Exhibit 1: Bullish USD signals remain intact ahead of Jackson Hole

Top signals from quant models

Section	Insight	Rationale
Option Flow	Bullish USD	Investors continued to buy USD calls vs EUR and AUD last week.
Technical Matrix	Bullish USD	Bullish signals for broad USD uptrends remain intact.
CARS	Rates regime	Bullish GBP and NOK vs AUD on rates divergence.
Time Zone	US hour USD demand	Demand for USD continued in US and European hours.

Source: BofA Global Research

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## Quant signals are still bullish USD into Jackson Hole

The bullish USD FX quant signals from last week ([FX Quant Insight: 14 August 2023](#)) remain largely in place. Option flow continued to move for USD calls vs EUR and AUD. The broad USD uptrends was supported by demand from US and European trading hours. With both the DXY and BBDXY indices breaking above the 200d SMA, Technical Matrix also remains bullish USD, in particular vs JPY, AUD, NZD, and NOK. However, it should be noted that US yield and USD moves over the past week would suggest investors are already positioned for more hawkishness from Fed Chairman Powell at the Jackson Hole Symposium. Despite the myriad of bullish USD quant signals, price actions could consolidate ahead of a heavy data week (US GDP, PCE, and NFP in the week of Aug 28 to Sep 1) before US Labor Day.

## Bearish AUD/NOK on rates factor signals

Rather than chasing the USD uptrend for another week, we prefer to follow the AUD/NOK downtrend for this week on the back of signals from rates factor. 2y rates saw diverging moves for NOK and AUD over the past week (Exhibit 7). BofA Norges Bank mood indicator remains on hawkish ground and we expect two more rate hikes after last week's 25 bp rate increase ([European Watch: 17 August 2023](#)). To the contrary, our RBA sentiment indicator shows the incoming RBA Governor Bullock would likely be more dovish and keep RBA on extended rate pause ([Liquid Insight: 15 August 2023](#)). AUD/NOK downtrend is also no longer stretched after recent pullback. The risk to the short-term bearish AUD/NOK view would be announcement of major fiscal stimulus measures from China supporting AUD in the coming week.

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Refer to important disclosures on page 6 to 7.

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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

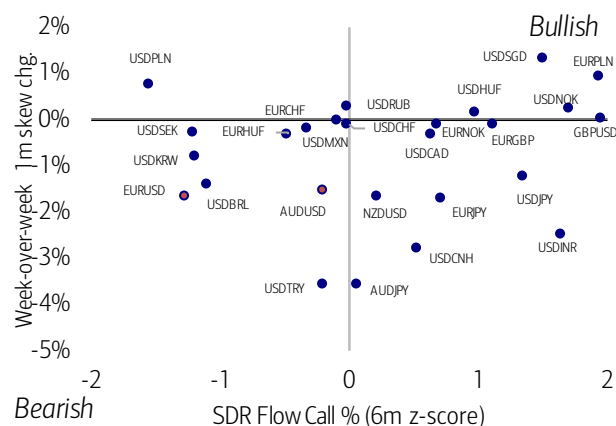
# Option Flow Signals

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: Investors bought USD calls vs EUR and AUD last week

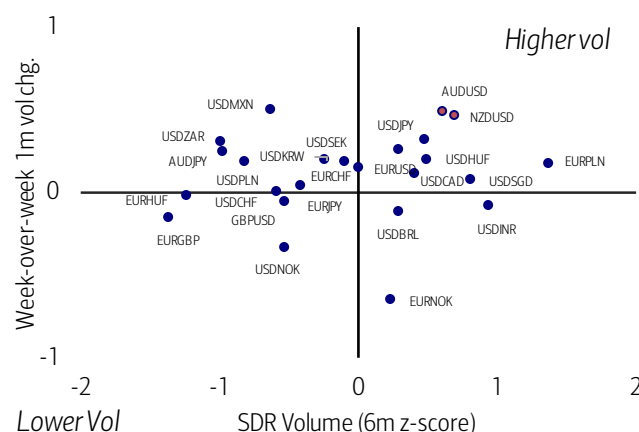
1m skew change vs call percentage z-score



Source: BofA Global Research, DTCC. Note: CNH flows are proxied by "CNY" flows in SDR.  
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## Exhibit 3: Short-dated implied vols increased the most for AUDUSD and NZDUSD 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: Long-dated implied vols broadly increased last week

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	1.0906	1.0909	7.11	0.25	7.03	0.15	-0.10	EUR	0.03%	-1.50		EUR No Signal
USDJPY	145.56	145.87	9.55	0.31	9.48	0.08	-0.23	JPY	-0.21%	1.04		JPY No Signal
GBPUSD	1.2683	1.2758	7.75	-0.07	8.30	-0.09	-0.02	GBP	0.59%	-0.02		GBP No Signal
USDCHF	0.8784	0.8793	7.56	-0.02	7.61	-0.04	-0.02	CHF	-0.10%	0.11		CHF No Signal
AUDUSD	0.6487	0.6412	11.23	0.48	10.79	0.30	-0.18	AUD	-1.16%	-1.23		AUD No Signal
USDCAD	1.3461	1.3516	6.27	0.10	6.40	0.09	0.00	CAD	-0.41%	0.41		CAD No Signal
USDSEK	10.7771	10.9171	12.35	0.17	11.33	0.07	-0.10	SEK	-1.29%	0.42		SEK No Signal
USDNOK	10.4790	10.5721	13.93	-0.35	13.05	0.04	0.39	NOK	-0.88%	-0.37		NOK No Signal
NZDUSD	0.5976	0.5922	11.19	0.46	10.88	0.31	-0.15	NZD	-0.91%	-1.40		NZD No Signal
USDSGD	1.3557	1.3566	4.95	0.07	4.88	-0.07	-0.13	SGD	-0.07%	-1.22		SGD No Signal
USDKRW	1330.6	1342.8	9.93	0.19	9.88	-0.01	-0.21	KRW	-0.91%	0.94		KRW No Signal
USDMXN	17.0555	17.0398	12.41	0.49	12.38	0.12	-0.37	MXN	0.09%	1.05		MXN No Signal
USDTRY	27.0443	27.1652	17.19	-0.60	28.62	-0.57	0.03	TRY	-0.45%	2.07		TRY No Signal
USDZAR	19.0829	18.9986	16.08	0.29	15.98	0.27	-0.03	ZAR	0.44%	0.15		ZAR No Signal
USDHUF	352.3	350.0	14.48	0.18	14.12	0.05	-0.13	HUF	0.64%	0.12		HUF No Signal
USDPLN	4.0794	4.1059	10.81	0.17	11.04	-0.03	-0.20	PLN	-0.65%	-0.47		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: USD uptrends remain intact vs JPY, AUD, NZD, and NOK

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	1.0891	↔	No Signal	Range	None	1.0794	1.0931
	USDJPY	146.13	↑	Bullish	Transition	None	142.51	151.95
	GBPUSD	1.2746	↑	No Signal	Transition	None	1.2632	1.2793
	AUDUSD	0.6413	↓	Bearish	Transition	None	0.6170	0.6547
	USDCHE	0.8802	↓	No Signal	Range	None	0.8758	0.8810
	USDCAD	1.3515	↑	No Signal	Uptrend	None	1.3454	1.3564
	NZDUSD	0.5917	↓	Bearish	Downtrend	None	0.5904	0.6025
	USDSEK	10.9331	↑	No Signal	Transition	None	10.8149	10.9758
	USDNOK	10.5989	↑	Bullish	Transition	None	10.5702	10.6391
EUR	EURGBP	0.8545	↓	Bearish	Range	None	0.8408	0.8584
	EURJPY	159.14	↑	Bullish	Range	None	156.41	159.36
	EURAUD	1.6981	↑	Bullish	Uptrend	None	1.6470	1.7065
	EURCHF	0.9586	↓	No Signal	Transition	None	0.9410	0.9673
	EURCAD	1.4719	↑	Slightly Bearish	Range	None	1.4631	1.5113
	EURNZD	1.8406	↑	Slightly Bearish	Uptrend	None	1.7865	1.8440
	EURSEK	11.9071	↑	No Signal	Uptrend	None	11.6942	11.9633
	EURNOK	11.5431	↑	Bullish	Uptrend	None	11.4370	11.5525
G10 Cross	AUDJPY	93.714	↔	No Signal	Range	None	92.85	93.81
	AUDNZD	1.0839	↑	No Signal	Range	None	1.0808	1.0848
	AUDCAD	0.8668	↓	No Signal	Range	None	0.8599	0.8858
	NOKSEK	1.0315	↑	No Signal	Transition	None	1.0262	1.0442
	CADJPY	108.116	↑	Bullish	Range	None	107.23	110.64
	GBPJPY	186.24	↑	No Signal	Range	None	182.20	186.47
	NZDJPY	86.46	↔	No Signal	Transition	None	86.16	87.55
	GBPCHF	1.1219	↓	No Signal	Downtrend	None	1.1046	1.1240
EM	USDMXN	17.0344	↓	No Signal	Uptrend	None	17.0237	17.4203
	USDBRL	4.9888	↑	No Signal	Uptrend	None	4.9145	5.0147
	USDZAR	18.9759	↑	No Signal	Uptrend	None	18.6883	19.3508
	EURPLN	4.478	↔	No Signal	Range	None	4.4484	4.5059
	EURHUF	383.13	↑	No Signal	Uptrend	None	379.29	385.22
	USDKRW	1342.75	↑	Bullish	Uptrend	None	1330.45	1357.37
	USDINR	83.11	↑	No Signal	Uptrend	None	82.32	83.29
	USDCNH	7.282	↑	Bullish	Transition	None	7.2119	7.3749

Data as of 08/21/23. **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.

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# 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 is bullish GBP and NOK vs AUD on rates divergence

CARS signals for a trending week (no macro shock)

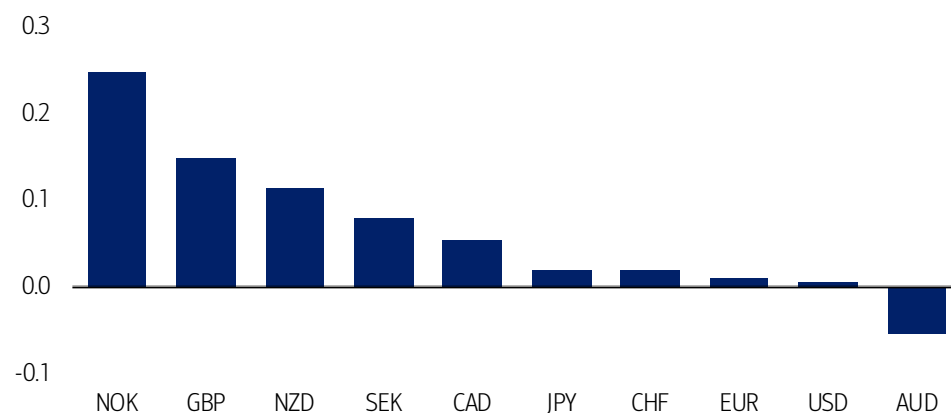
Currency	Bullish/Bearish	Equity	Rates	Commodity	Global regime	Values
EUR		3	7	4	Commodity z-score	0.1
JPY		2	5	9	Performing factor	Rates
GBP	Bullish	9	2	6		
AUD	Bearish	4	10	3		
CAD		6	6	2	USD Equity	8
CHF		5	8	8	USD Rates	9
NZD		10	4	7		
SEK		7	3	5		
NOK	Bullish	1	1	1		

The Equity ranking is ordered by 5y z-score of 1-week equity return. The Rates ranking is ordered by 5y z-score of 1-week rate change and level of 2y swap rate. The Commodity ranking is ordered by 52-week FX correlation with BCOM. The Commodity z-score is the 1y z-score of 1-week BCOM Index return.

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## Exhibit 7: NOK and GBP yields increased and AUD yields decreased last week

1-week global rate change



Source: BofA Global Research, Bloomberg

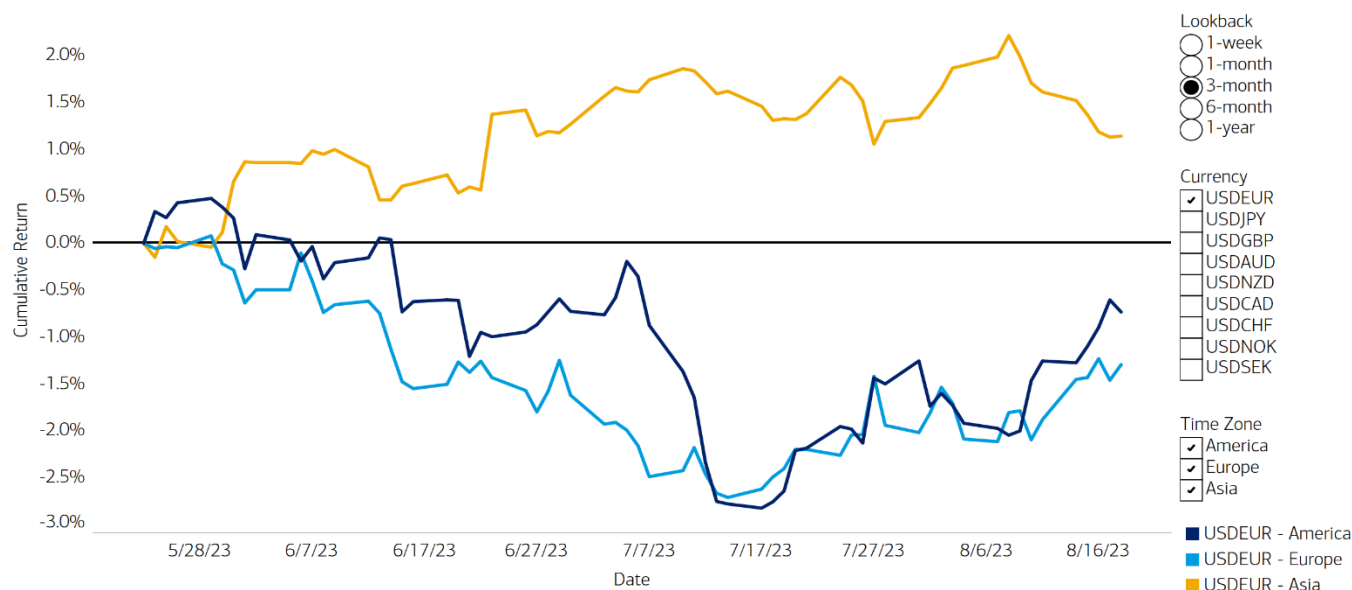
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# Interactive Time Zone

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 (9am-8pm EDT), Europe time zone as between 8am-1pm UTC (4am-9am EDT), and Asia time zone as between 12am to 8am UTC (8pm-4am EDT).

## Exhibit 8: Last week's USD rally was driven by US and Europe-based investors paring back short USD positions

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 rallied in both European and 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	0.1%	0.4%	0.2%	0.5%	-0.1%	0.4%	0.0%	-0.4%	1-week
USDJPY	0.1%	0.2%	0.0%	0.3%	0.0%	0.4%	0.0%	-0.2%	1-month
USDGBP	-0.4%	0.1%	-0.4%	0.6%	-0.1%	-0.5%	0.1%	-0.3%	3-month
USDAUD	-0.3%	0.4%	-0.1%	0.9%	0.0%	1.0%	-0.2%	-0.3%	6-month
USDNZD	-0.1%	0.7%	-0.2%	0.9%	0.1%	0.7%	-0.2%	-0.7%	1-year
USDCAD	-0.1%	0.2%	0.1%	0.4%	0.0%	0.7%	0.1%	0.1%	
USDCHE	0.0%	0.5%	-0.1%	0.3%	-0.1%	0.1%	-0.1%	-0.1%	
USDNOK	-0.3%	1.1%	0.3%	1.1%	0.0%	1.3%	-0.1%	-0.2%	
USDSEK	-0.1%	0.3%	0.0%	0.9%	0.0%	0.7%	0.0%	0.1%	

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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