JPM FX - Derivatives Chartpack Notes

Rates vol sensitivity + mean-reversion RV: buy 1y NZD vol vs sell NOK vol

- We run a sensitivity analysis of FX vols on US long-end rates vol. We find that there is a good relationship between changes in long-end US rates vol (1Yx30Y Swaptions) and those of 1y FX vols.
- As US long-end-end rates vol has moved lower over the past 6-8 months, some FX vols have overshoot the move (HUF and CLP), while others have undershoot the move (NOK and ILS).
- We combine these findings together with our mean-reversion model in order to propose buying NZD vol vs NOK vol in the 1y ATM space. Both volatilities have a similar sensitivity to US rates vol, while the spread is very dislocated from historical values, the vol carry is its favor, and it is a very mean-reverting spread.

Global Quantitative and Derivatives Strategy

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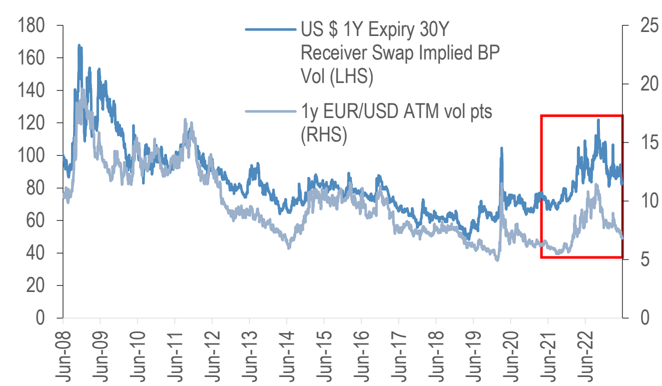
Rates vol sensitivity + mean-reversion RV

The JPM 1Y VXY Global index peaked at 12.5 vol pts in late October 2022. Since then, we have seen this index drop by around 4 vol pts. to around 8.5 vol pts. This has been mainly driven by a moderation in inflation in the world's major economies. As it can be observed in Figure 1, the volatility in the long-end of the US rates curve (US $ 1Y Expiry 30Y Receiver Swap Implied BP Vol) has also come down significantly, also driven by this moderation in inflation .

However, the drop in implied volatility across the currencies that we monitor has not been completely even. Indeed some currencies have overshoot this drop in overall volatility levels, while others have undershot this move. In order to assess possible discrepancies , we linearly regress the changes in 1y ATM FX vols on the changes on the US $ 1Y Expiry 30Y Receiver Swap's Implied Vol (BPs). We choose this underlying US rate because the long-end of the US rates curve is driven more by long-term inflation expectations than the front end of the curve. Thus it can be taken as a proxy of the inflation risk. The choice of the expiry of the swaption was chosen to match that of the FX volatility (i.e. 1Y), so that the gamma profile of both is comparable. For this exercise we take 15 years of data and we use 6m changes to normalize.

Figure 1: EUR 1y vol has moved in line with back-end (30Y) US rates vol over the last 6 months

15 year time-series of EUR/USD 1y vol and that of the US $ 1y Expiry 30Y Receiver Swap Implied BP Vol



Source: J.P. Morgan.

Figure 2: There is a good relationship between changes in back-end (30Y) US rates vol and those of 1y FX vols

Statistics obtained when linearly regressing different currencies 1y ATM vols on US $ 1Y Expiry 30Y Receiver Swap Implied BP Vol (6m changes in both cases, 15yr of data)

ccy	R-squared (%)	Std. Residual	Absolute Residual (vol pts)	Beta
SEK	56	0.5	0.8	0.13
NZD	54	0.3	0.5	0.13
AUD	54	0.4	0.8	0.15
CAD	51	0.6	0.8	0.11
NOK	49	1.1	1.8	0.12
HUF	47	-0.8	-2.2	0.20
SGD	46	0.7	0.9	0.08
PLN	46	0.5	1.7	0.21
EUR	45	0.5	0.8	0.10
CHF	44	0.7	1.0	0.09
MXN	43	1.0	3.7	0.23
COP	43	-0.4	-0.8	0.14
BRL	43	-0.5	-1.4	0.19
KRW	39	0.9	3.1	0.20
ILS	39	1.7	1.7	0.06
JPY	38	0.3	0.4	0.08
CZK	38	0.3	0.7	0.13
IDR	37	0.9	4.0	0.26
GBP	37	0.1	0.2	0.11
XAU	36	0.5	1.7	0.20
CLP	33	-1.0	-2.9	0.14
ZAR	33	0.7	1.8	0.13
XAG	32	0.3	1.3	0.26
INR	29	0.4	1.1	0.12
MYR	25	0.9	1.6	0.07
PHP	23	1.0	1.7	0.06
CNY	18	0.3	0.6	0.06
TRY	12	3.1	13.9	0.12
THB	8	-0.2	-0.2	0.03
TWD	5	-0.1	-0.1	0.02

Source: J.P. Morgan.

Ravagli and Jankovic (see here) introduced a framework in 2019 that links FX vol to rates differential volatility, the model is tracked on a regular basis here. The difference between the two frameworks is that the one introduced in this note looks at the US rates vol sensitivity exclusively rather than that to the rates differential volatility, it also concentrates on the volatility of the long-end of the US rate curve rather than shorter tenors, and it tracks the changes in volatility versus the changes in US rates vol rather

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than the outright value.

In Figure 2 we can see that , over the past 15 years there has been a reasonable beta and R-squared between US 30Y rates volatility changes and those of 1Y ATM FX vols. In particular the R-squared is highest in G10 high-beta currencies as well as in EM high yielders. In terms of beta the highest values go to EM high-beta currencies as well as precious metals.

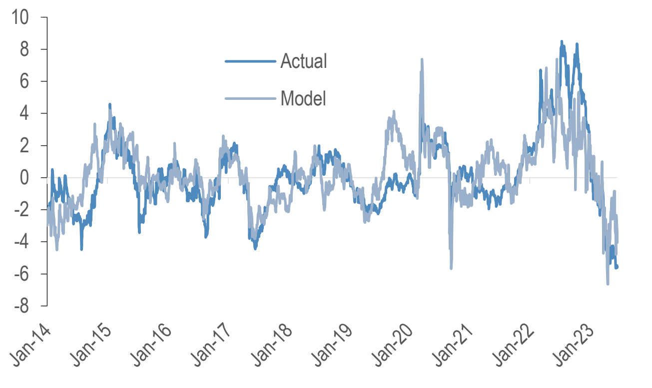
In the last 6-months we have seen a 18 bps vol drop in the US rates swaptions implied vol (from a level of 100 bps vol to 82 bps). ILS and NOK are the ones that have undershoot the move the most, their standard residual are at +1.7 and +1.1 respectively, meaning that they are +1.7 and +1.8 vols above where they should be given the move in the swaptions. Both volatilities have a reasonable R-squared (39% and 49% respectively) to US swaptions. The beta however is 0.12 for NOK while that of ILS is just 0.06.

Looking at the other side of the spectrum, CLP and HUF vols are overshooting the move. Their standard residuals are at -1.0 and -0.8 respectively, meaning that they are 2.9 and 2.2 vols below where they should be given the move in the swaptions. Both volatilities have a reasonable r-squared (33% and 47% respectively) to US swaptions. The beta is 0.14 for CLP while that of HUF is 0.2.

Although ILS has the largest dislocation in terms of standardized residual, this is due to a recent political idiosyncratic story in the country, which means that the risk premium is unlikely to fade in the short term. HUF and CLP, the other dislocated candidates are overshooting the drop in vols because they also overshoot on the way up, when US rates vol increased dramatically last fall (see Figure 3, for reference HUF). Thus showing some negative auto-correlation in the residual of the model for these two currencies.

Figure 3: HUF vol overshoot the US rates vol moves both on the way up and down in 2022 and 2023

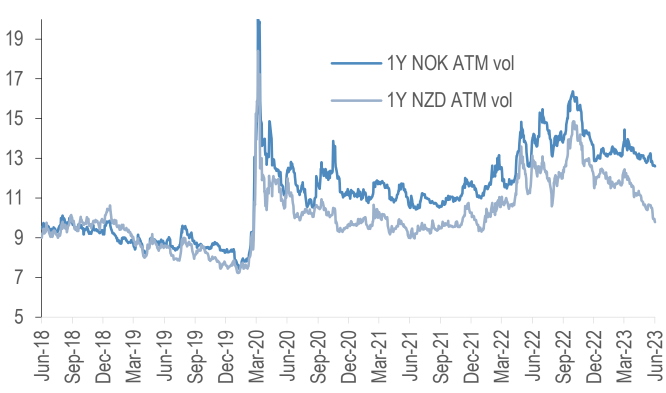
Model obtained from the regression of 6m changes of HUF 1Y ATM vol on 6m changes of US $ 1Y Expiry 30Y Receiver Swap Implied BP Vol vs the actual HUF 1Y ATM vol (Vol pts)



Source: J.P. Morgan.

Figure 4: NOK-NZD 1y ATM vol spread has dislocated significantly in the last few months

1y NZD and NOK ATM vol (Vol pts)

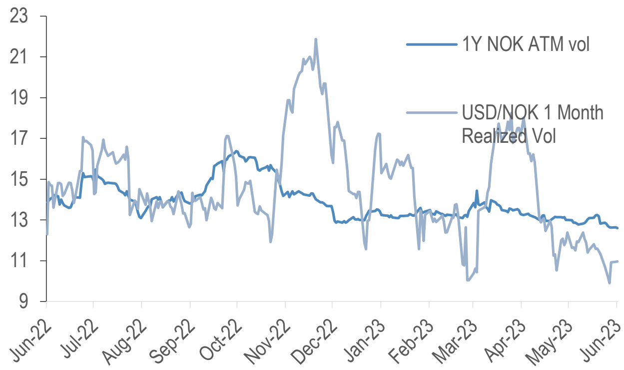


Source: J.P. Morgan.

However, 1y NOK vol does seem a good candidate to sell, given that it did not overshoot US rates vol on the way up in the fall of 2022, nor is the volatility in the currency driven by purely idiosyncratic factors. One option is to pair it with some other high-beta G10 currency that shares a similar sensitivity to US rates vol, and if possible a currency that has moved in line with rates vol on the recent leg lower. We find the perfect candidate in NZD. Not only that but we also find that the mean-reversion model (see here), is also in favor of playing an RV in the NZD-NOK vol spread. This is so because the spread is almost at a historical high (except a brief period in 2020), and the the vol carry is rather in favor of going long NZD vol vs NOK vol (See Figure 5-6). Further, this is one of the most mean reverting spreads, with a half life of only 46 trading days, out of the pairs that we monitor (see here).

Figure 5: NOK vol carry is +1.7 vol pts

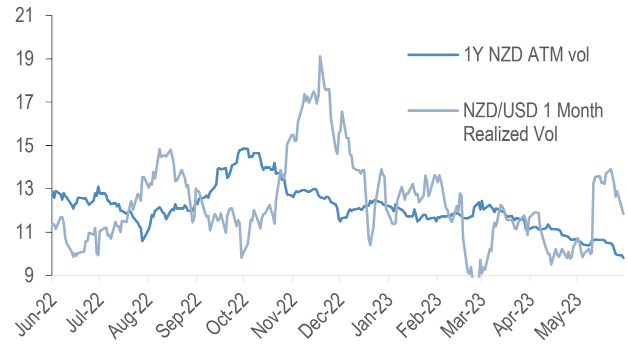
1y NOK ATM vol and 1m NOK realized vol (vol pts)



Source: J.P. Morgan.

Figure 6: NZD vol carry is -2 vol pts

1y NZD ATM vol and 1m NZD realized vol (vol pts)



Source: J.P. Morgan.

- *Buy a 1y ATM vol swap in NZD/USD, sell in USD/NOK for 2.2 vol pts (received), mid at 2.6 vol pts.*
- *Buy a 1y ATM straddle in NZD/USD, sell in USD/NOK for 2.25 vol pts (received), keep delta-hedged, mid at 2.6 vol pts.*

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