01 October 2019

JPM FX - Derivatives Chartpack Notes

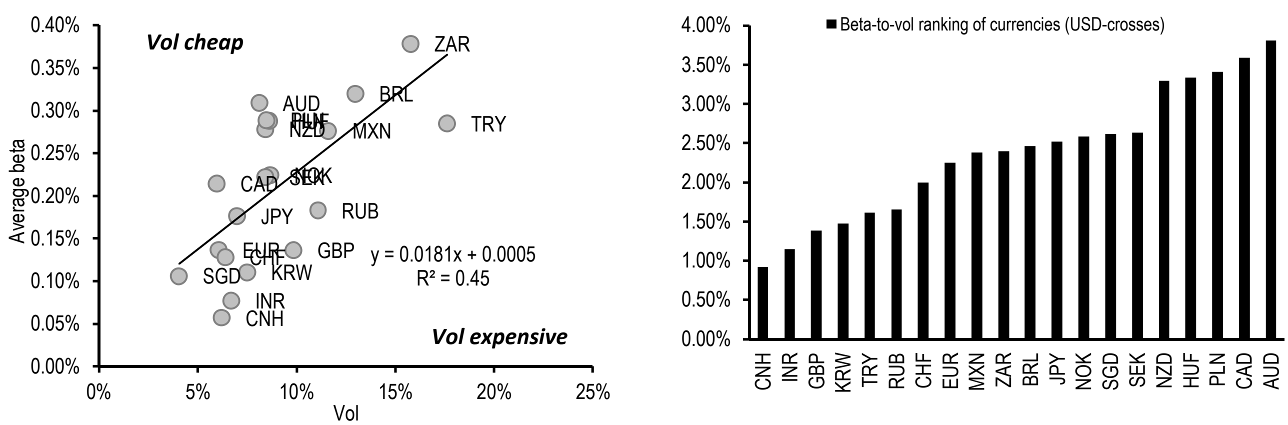
More on the interplay between FX betas to global risk factors and pricing parameters

- We extend an earlier framework for assessing the appeal of long/short vol trades based on the relative sensitivities to global market factors and apply similar RV screenings to implied carry and skew.
- The comparison of market betas and implied carry allows highlighting pairs where a positive carry is not offset by a large sensitivity to risk-off factors. A screening of risk-reversals vs sensitivity to global risk factors can allow isolating trade opportunities on dislocated skews.
- Long dated calls on INR still screen favourably based on mild time decay properties and modest sensitivity to risk. In the skew space, we like selling USD/RUB skews, either on a standalone basis or as delta-hedged 1*2 ratio call spread, or vs. a long USD/ZAR risk-reversal as a hedge.

In March we introduced a novel methodology for screening for long/short vol trades based on their sensitivity to a set of global risk-factors (*Beta-over-vol ratios - a bottom-up approach for spotting RV vol trades*, Ravagli, Jankovic, March 27). Somewhat arbitrarily we focus on four risk factors: S&P, JPM USD trade weighted Index, VIX and VXY-G7. The betas as shown in Exhibit 1 and weekly updated in FX options trading screeners (the latest given *here*) represent average of four risk factor betas which express the percentage move in the currency corresponding to the 1-sigma daily moves in the factors. By definition those betas are insensitive to direction, i.e. they are taken in absolute value – as vol is triggered by both up and down moves irrespectively.

Exhibit 1. A linear regression between vol levels (1y ATM) and average betas across a set of USD-pairs. AUD, CAD, PLN, HUF and NZD consistently screen as attractive long-vol opportunities based on the metric.

Average beta represent average of four risk factor betas (in absolute value). 20-year history used in calculating the betas. The risk factors: S&P, JPM USD trade weighted Index, VIX and VXY-G7.

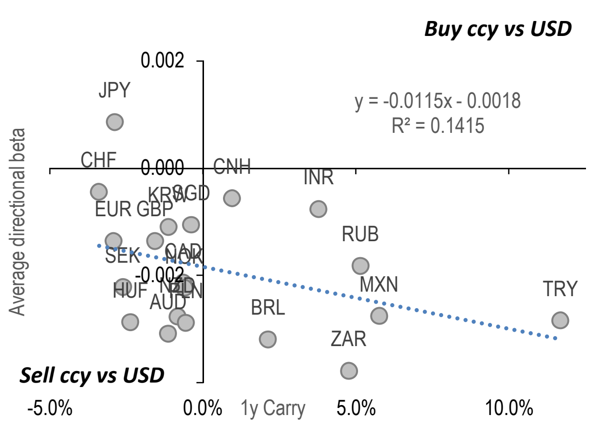


Source: J.P. Morgan

In the following, we expand on the earlier analysis by establishing further comparisons between market betas and pricing parameters like carry (i.e., rates differentials) and skews (i.e., market risk-reversals). One first difference compared to the earlier analysis is that, given the directional nature embedded in the market parameters above, we keep the signs of the regression betas, with positive betas expressing a positive exposure to risk-off factors such as vols and USD Index.

In Exhibit 2 (LHS) we compare such obtained average betas to the level of yearly carry (as implied from the 3M forward). In the chart, for consistency, levels of carry and betas refer to the position long the ccy vs USD (i.e., we refer to the ccy/USD convention, regardless of the actual market convention for each pair). The first thing we notice is that level of carry and sign of market betas are negatively correlated, namely positive carry tends to be associated with a negative exposure to risk-off market factors. This result is consistent with an earlier note (*Investigating the interplay between forward points and FX skews*, Ravagli et al, 22 February) where implied skews were compared to rates differentials: here we look at market betas rather than skews, but the reasoning is very similar (i.e., high-carry currency are typically exposed to risk-off events). The chart can form the basis for a RV screening in the carry vs betas space: one would prefer to own positive carry currencies where the sensitivity to risk-off factors is either positive or at least less negative than on average. Conversely, one would like to sell currencies where carry is negative and market beta is either negative or below a certain average level (for the same level of carry). Two quadrants for buying/selling naturally emerge. Based on the screening, INR, TRY, and RUB are good candidates for long positions vs USD (better than ZAR and BRL for instance). The risk-off nature of the USD despite the higher level of rates than for other developed economies opens the way for several attractive long USD positions, especially against AUD, NZD, NOK, SEK, HUF, PLN. Short EUR/USD and GBP/USD trades are also nicely associated with positive Carry and positive exposure to risk-off factors.

Exhibit 2. RV opportunities in the beta to carry space. Analysis of time decay for long-dated USD crosses favours buying USD/INR and USD/TRY puts and USD/JPY calls.



Pair	Type	3m	6m	1y	2y	3y	5y	1y-5y % diff
USD-INR	Put	0.3	0.4	0.5	0.5	0.5	0.5	-2%
USD-TRY	Put	0.3	0.7	1.2	1.4	1.6	1.8	53%
USD-MXN	Put	0.1	0.4	0.8	1.3	1.5	1.8	115%
USD-ZAR	Put	0.2	0.5	1.1	1.9	2.3	2.5	127%
USD-JPY	Call	0.1	0.2	0.5	0.9	1.1	1.1	142%
USD-BRL	Put	0.1	0.4	0.9	1.6	1.8	2.3	160%
USD-RUB	Put	0.1	0.4	0.7	1.2	1.6	2.2	201%
USD-CHF	Call	0.1	0.2	0.5	0.8	1.2	1.6	219%
EUR-USD	Put	0.1	0.3	0.6	1.0	1.4	2.1	275%
GBP-USD	Put	0.3	0.5	1.0	1.9	2.7	4.1	298%
USD-CNH	Put	0.1	0.2	0.5	0.9	1.3	1.9	327%

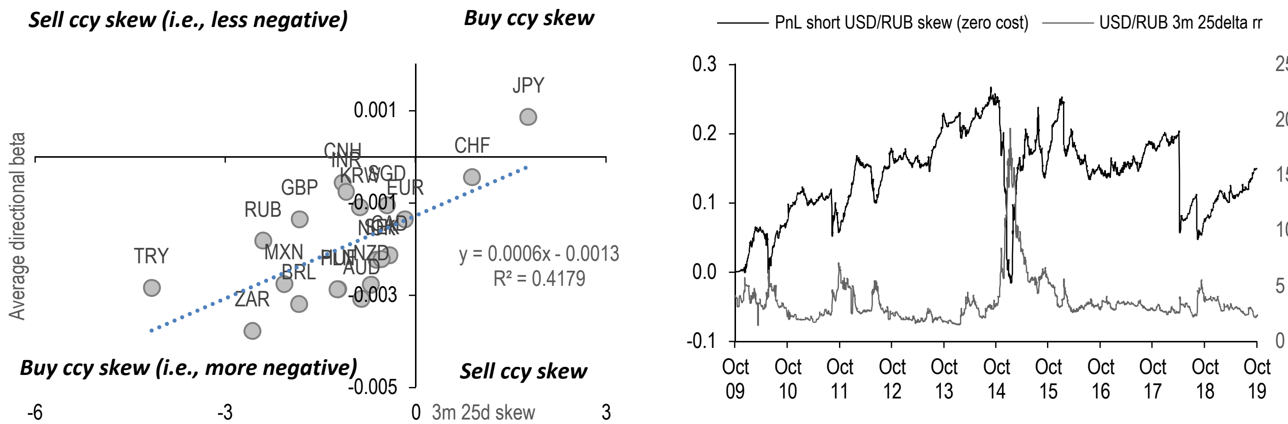
Source: J.P. Morgan

In an earlier piece we discussed how positive carry can be an offsetting factor massively reducing the time decay suffered by long volatility positions (*Practical recipes for reducing options time decay*, Ravagli, Jankovic et al, 5 September). In the second chart above, we analyze the scaling properties of fixed strike option premia across different maturities (options correspond to 1y 15% delta calls and puts). From the chart, it is confirmed how USD/INR and USD/TRY puts and USD/JPY calls (especially in the 3y-5y segment) premia suffer a very contained time decay thanks to the positive carry associated with the pairs. Based on the earlier analysis, the modest sensitivity to risk factors of USD/INR should make such long-dated puts attractive: we are keeping a short EUR/INR long-dated put in our model portfolio. While we have focused just on USD-crosses in the charts above, we stress that extending the RV analysis to non-USD crosses would pose no theoretical challenges. Given that supportive carry is a crucial factor for reducing time decay, in this context we would favor holding the positions above without carrying delta-hedging.

As market risk-reversals naturally embody an implied spot/volatility correlation for a given pair, establishing a cross-sectional comparison to risk-off factors can allow highlighting dislocation opportunities suitable for trading. We also stress that for risk-reversals another natural comparison regards the mismatch between implied vs. realized spot/vol correlation, especially as far as the Vanna axis of risk is concerned (*FX options trading screeners*, Ravagli, 18 September). In Exhibit 3, we plot average risk-factor betas (y-axis) vs. level of implied skew (3m, 25delta, x-axis), by adopting the same conventions as in Exhibit 2: a positive sign for the skew indicates a higher premium for calls over puts for that currency vs. USD. The two quantities are positively correlated on a cross-sectional basis, with a reasonable R2 of around 42%.

How can one interpret RV opportunities in this 2-d space? For a given positive level of market risk-reversal, opportunities are found for buying skew on the currencies where average risk-off betas are positive (or above regression values). For the negative skew case, one looks to position for more negative riskies in the case where the average beta is in deep negative territory or below the regression line. We will adhere to market conventions in the chart by referring to the case where one wants to position for a more negative skew (in case where the latter is negative) as “buying the skew”: as we acknowledge an element of possible confusion here, we will try to eliminate any ambiguity in the following when referring to actual candidate trades. Based on the chart, we see opportunities in buying the skew on JPY (better than CHF), ZAR, BRL, PLN, AUD, NZD. Skew appears overvalued on TRY, RUB, GBP (on the latter case a very well identified skew premium can be attributed to Brexit risk). Such dislocation-based trades would naturally be implemented via delta-hedged risk-reversals.

Exhibit 3. RV opportunities in the betas vs implied skews space. Performance of short USD/RUB skew has been attractive since April 2018 (limit of zero trading costs).



Source: J.P. Morgan

Our EM strategy keeps a constructive view on RUB and especially so against ZAR (see for instance *Emerging Markets Outlook and Strategy*, Oganes, Goulden, 12 September). The idiosyncratic nature of RUB, other than via the skew premium highlighted above, is also reflected by the low beta to vol ratios of Exhibit 1, which essentially stresses how RUB vol pricing is mostly driven by local than exogenous factors (we recall that Oil is not included amongst the global factors we monitor). These results are broadly consistent with an analysis of EM macro vulnerabilities, which finds Russia near the bottom of the countries examined. With fundamentals (most notably, a currency which remains undervalued) still supportive, and diminished downside risk to lower oil prices, there is potential in fading the rich skew premium highlighted above. RHS above shows how the performance of short skew on USD/RUB (trading daily 3m 25delta riskies, delta hedged with smile-adjusted forwards) has been attractive since Spring 2018, at least by neglecting the impact of trading costs.

We consider:

- *Sell delta-hedged 3m 25delta-hedged risk-reversal on USD/RUB at 2.1/2.6 vols indic.*

Exhibit 4 shows a long term back test of systematically running 1*N ratio call spreads (vega notionals) in USD/RUB. The1*2 ratio call spread structures are efficient in capturing skew underperformance during risk supportive times but are exposed to blowups (left tail risk). The LHS chart of Exhibit 4 shows systematically strong performance outside of the devaluation and sanctions left tail episodes. N=2. i.e. 1*2 vega notionals structure is a sweet spot in maximizing the long term Sharpe while keeping net short vol in check. With the supportive macro for RUB and an attractive vol-beta-skew setup at the moment we see RUB as an attractive pocket where one can pick up theta income. Consider:

- *3M delta-hedged USD/RUB 1*2 ratio call spread (ATM/25D) in vega notionals @9.8ch against @11.2/11.6 indic.*

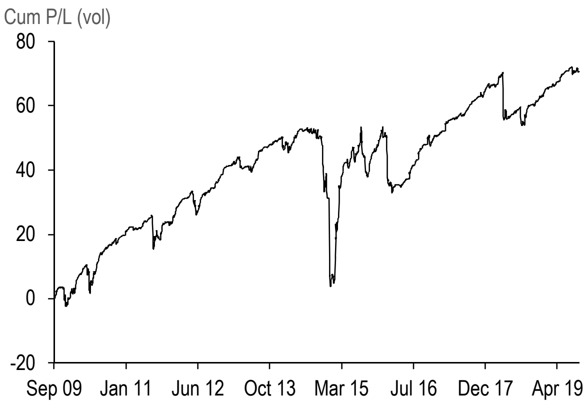
Alternatively consider a RUB – ZAR RV trade, supported by the earlier screener on skews:

- *Sell 3M delta-hedged USD/RUB 25D call @11.1/11.7 and hedge it with 3M delta-hedged USD/ZAR 25D call @16.85/17.45, equal vega*

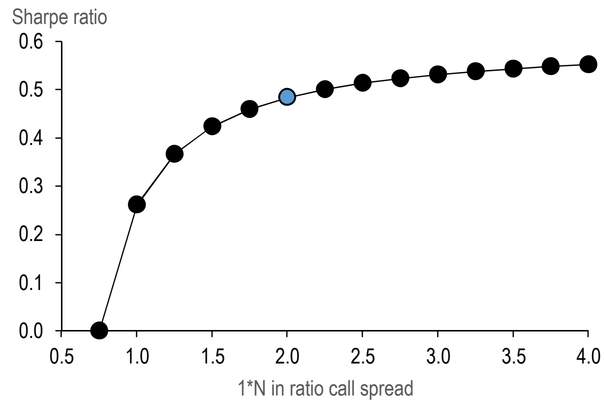
Exhibit 4. 1*2 ratio call spreads offer the sweet spot in maximizing the long term Sharpe while keeping net short vol not overly extended.

Options delta-hedged daily with expiry matched forwards, held for 2-month. 10-yrs history. 0.3vol transaction charge accounted for.

3M 1*2 USD/RUB ratio call spread, delta-hedged



3M 1*2 USD/RUB ATM/25D ratio call spread, delta-hedged



Source: J.P. Morgan

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