Quantitative Currency Letters

Description & Opportunity

Standard Approaches

Most FX position traders take one of three approaches:

1. Technical analysis. As the interest rate parity model is undefined (multiple solutions between spot and forward rates and between short-term interest rates) traders long ago gravitated to technical analysis in general and to retracement levels in particular. Whether this approach is self-fulfilling is immaterial is irrelevant, it is accepted and must be respected
2. Macroeconomic analysis. Physical trade flows, differential growth rates, purchasing power parity, analysis of J-curves, etc, all have been tried and been found wanting
3. News flow. Events, official statements particularly as they apply to monetary policy and economic data affect levels. However, this has devolved into high-frequency and algorithmic trading, areas where position traders have no competitive advantage

Quantitative Approach

- Three market-derived approaches offer forward-looking indicators of FX market behavior:
  1. Expected short-term interest rate differentials. In addition to absolute nominal swap yield differentials at the money-market horizon, the different shapes of the two forward curves indicates whose interest rates are expected to rise/fall more
  2. Relative asset returns. These have become increasingly important drivers of FX as monetary policies around the world have converged in behavior
     - For commodity-linked currencies such as the CAD, AUD, RUB and BRL, commodity subindex behavior is important as well
  3. Volatility structures. Option markets provide measures of relative anxiety and insurance-seeking behavior and therefore define paths of least resistance

Annotated Sample

- The following slides are from an analysis of the EUR for the week ending July 5, 2013. For slides with included charts, annotations are in the top-left text-box, if applicable, and are in a blue-gray font; the actual document text is in the bottom-left text-box
- The structure of each document will be as parallel as possible and will be consistent from week to week. This allows the reader to know what will be presented and where to look for it

Document Summary

- Each Summary section will have a statement of trend, net indication, support/resistance levels for trend failure and trend projections in the first paragraph
- This will be followed by conclusions for each of the indicator sets

Summary

The euro's downtrend from the June 19, 2013 FOMC meeting date remains intact, but market indicators are starting to turn mixed. Resistance remains at 1.3085 with a first downside projection at 1.2590 followed by 1.2470.

The balance of indicators is weakly bearish for the EUR:

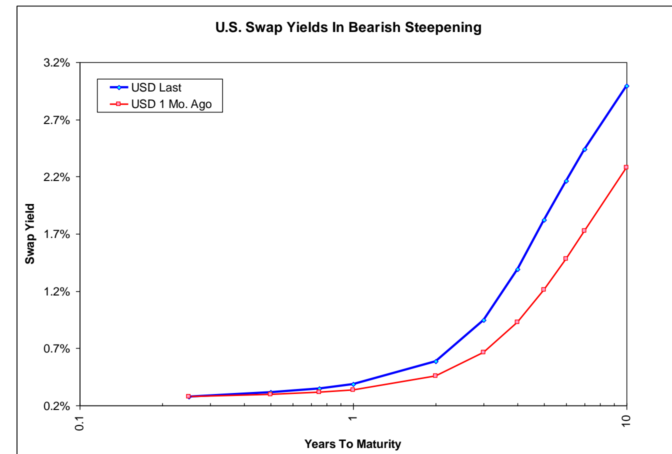
Expected short-term interest rate differentials are starting to move in the EUR's favor;

Relative asset prices remain negative for the EUR; and

Volatility indications suggest a decreased willingness to bet on a further decline in the EUR

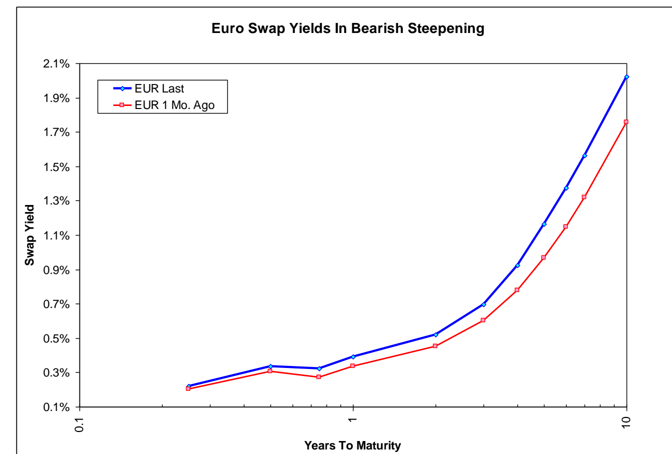
Absolute Swap Yield Changes

- The swap curve for the two currencies over a range from three months to ten years is mapped
- These are displayed side-by-side for both current and month-ago levels to provide an idea of both the relative difference and each currency's absolute rate change



Interest Rate Indications

U.S. swap rates in both the money-market and note-horizon segments have steepened bearishly over the past month. EUR swap rates have shifted similarly. The absolute rap gap has been favoring the USD and will continue to do so given the European Central Bank's stated intention to keep short-term rates low and the Federal Reserve's signaled intention to begin reducing monetary stimulus.

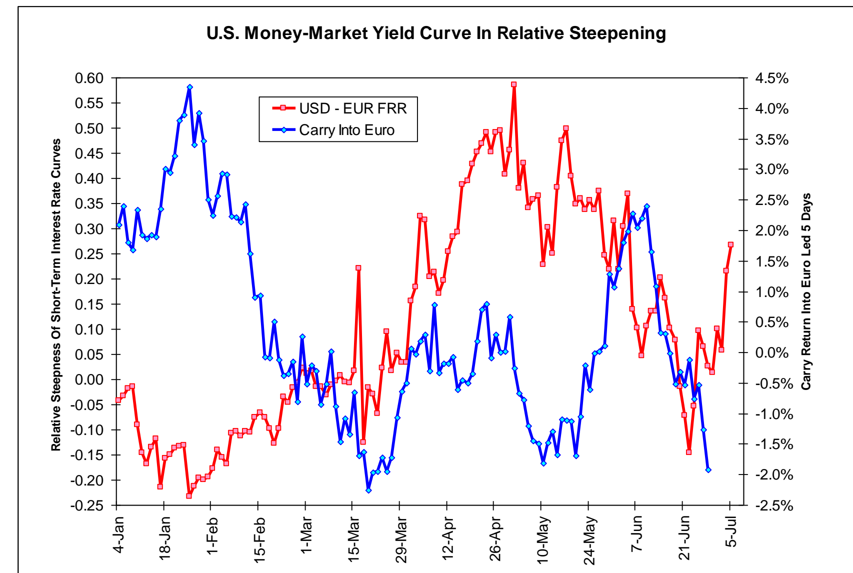


Expected Relative Interest Rate Differentials

- The shapes of the two forward rate curves can be measured by the level-independent forward rate ratio, described below
- Their differences provide a powerful outlook on which currency's underlying interest rates are expected to rise or fall the most
- This is mapped against the carry return led five days over a rolling six-month timeframe

The combination of expected interest rate movements started to shift in favor of supporting the EUR two weeks ago. This can be measured by the difference in forward rate ratios between six and nine months ($FRR_{6,9}$) for the two currencies. These are the rates at which borrowing can be locked in for three months starting six months from now divided by the nine-month rate itself. The steeper the yield curve, the more the $FRR_{6,9}$ exceeds 1.00. An inverted yield curve has an $FRR_{6,9}$ less than 1.00.

The USD $FRR_{6,9}$ is steepening vis-à-vis the EUR $FRR_{6,9}$. This means benchmark USD short-term interest rates will "roll down" the yield curve more rapidly over the next three months when the time to roll a non-deliverable euro forward arrives than will EUR rates. The opposite pattern had prevailed between mid-May and mid-June and had been bearish for the EUR. The chart below depicts this expected interest rate differential leading the dollar's carry into the euro by five days.

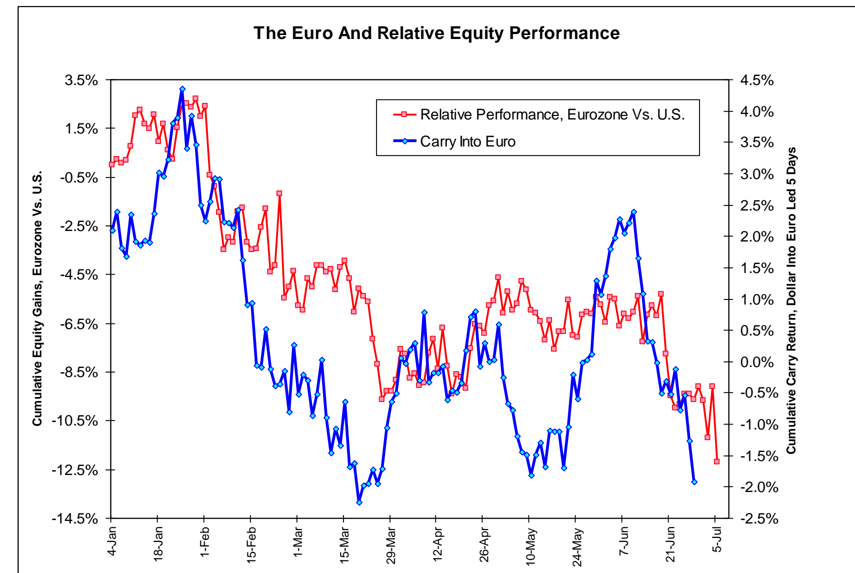


Relative Asset Flows

- The carry into the EUR led five days is mapped against the relative total return of the MSCI EMU index against the U.S. index over the past six months
- This provides an indication of how relative asset performance leads the currency return

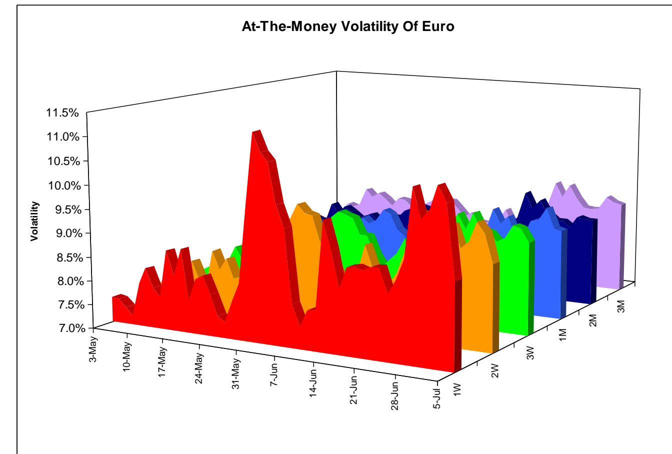
Equity Indications

Capital inflows into European equities necessitate the purchase of EUR. The total return of Eurozone stocks relative to their U.S. counterparts declined sharply after the June FOMC meeting. The continued downtrend is negative for the EUR's direction. The chart below depicts this relative performance leading the dollar's carry into the euro by five days.



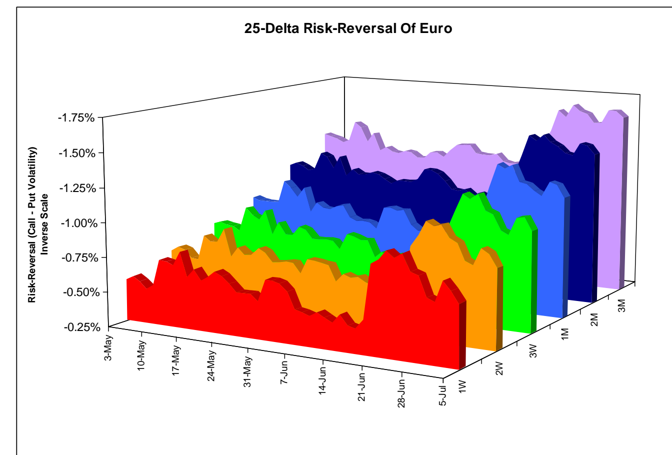
Option Volatility Structure

- Two maps of volatility structure are provided, one for the at-the-money volatility and one for 25-delta risk reversals.
- Both are displayed at tenors ranging from one week to three months



Volatility Indications

The volatility of euro forwards tends to rise when traders get nervous about the currency weakening. The pullback from recent levels signals decreasing bearishness for the EUR. This is confirmed by the risk-reversal or difference between 25-delta call and put option volatility on the EUR forwards. The move lower (inverse scale) stalled as the EUR declined at the end of the week. The net effect suggests increased unwillingness to bet on a further decline for the EUR.



Excess Volatility

- Implied volatility can be normalized to realized volatility to assess how demand for price insurance is rising or falling relative to market fluctuations
- This is mapped against the carry return led five days over a the last six months

The excess volatility of the USD for a EUR holder, or the ratio of its implied volatility to its realized volatility, minus 1.00, has ceased rising (inverse scale). EUR-domiciled investors had been buying calls on the USD and puts on the EUR in bearish strategies, but their willingness to press this trade is dissipating.