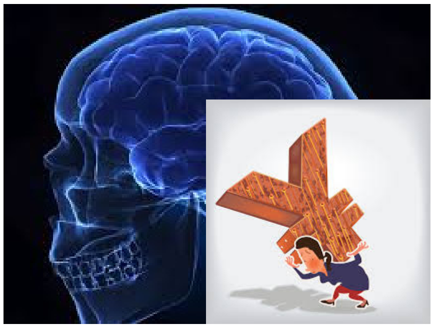
Getting carried away with currency carry

April 2014



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Talk outline

- **What** is currency carry?
- **How** does currency carry work?
- **Why** does currency carry work?
  - What behaviors create a carry opportunity?
    - Understand it better
    - Benefit more from carry

What is currency carry?

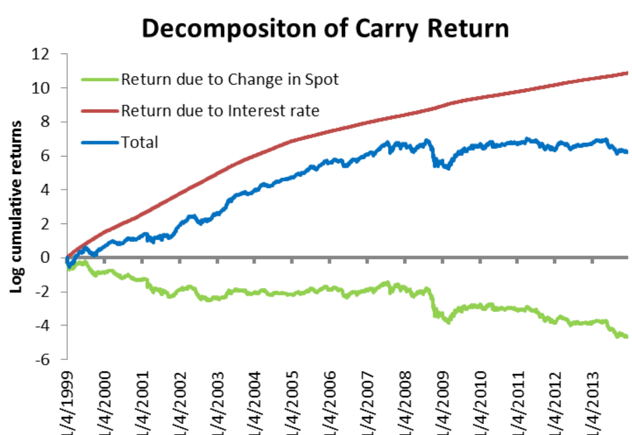
The simple, traditional approach

- Simplest currency carry is
  - Buy high yielding currencies (high cash rates) and sell low yielding currencies (low cash rates)
  - With the hopes of capturing some of the interest differential allowing for foreign exchange movements
- Recent yield spreads
  - Developed markets cash rates range from 0.0% to 2.7% (Switzerland / New Zealand)
  - Emerging markets cash rates range from 0.4% to 10.0% (Czech to Brazil)
  - Global markets cash rates range from 0.0% to 10.0%

Source: Bloomberg, various Central Bank Web pages, Schroders.

How does currency carry work?

Pretty well, when it works



- Most of the return comes from the interest rate differentials
- Most of the volatility comes from the currency fluctuations
- Over the last 15 years the currencies with the highest yields have depreciated but by less than the interest differentials
- Since the crisis of 2008 the currency depreciation has more than offset the interest differentials

Sources: Bloomberg, various Central Bank Web pages, Schroders. January 1999- December 2013

Why does currency carry work?

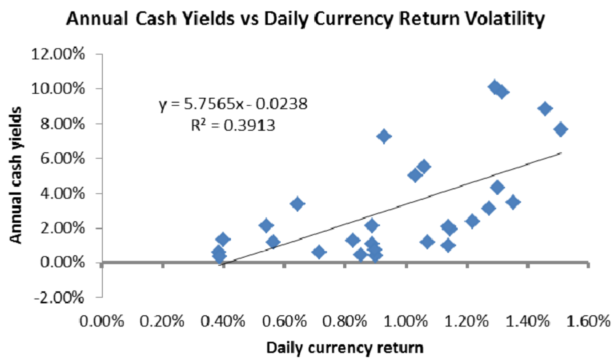
Hmmmmm…

- Some ideas
  - Who cares? It works!
  - Uncovered interest parity fails (but why?)
  - It is compensation for some risk being born (liquidity, …)

Volatility and cash yields

Carry as a risk premium

- Are cash yields a good proxy for high volatility FX rates?



- Over much of the past 15 years this R-square has been between 0.2 and 0.7 (t-stats between 2 and 8)

Source: June 30, 2009 Bloomberg, various Central Bank websites, Schroders.

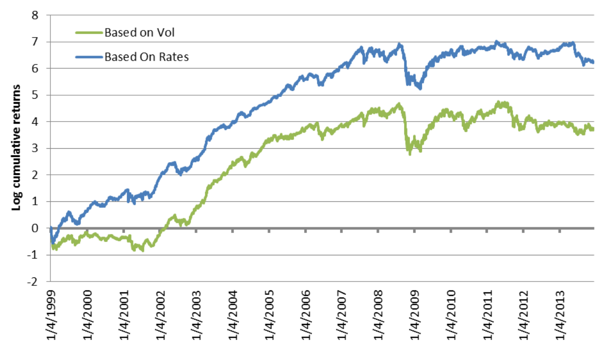
Simple carry versus buying high volatility currencies

Not twins separated at birth but close cousins

If volatility is a better proxy for potential loss than cash yields are then

- Volatility based carry should outperform yield based carry… but it doesn't

Carry performance based on rates and volatility



Is there more information in cash yields than there is in currency volatility?

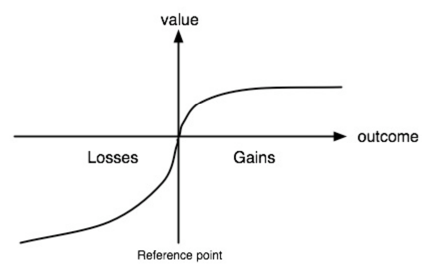
Source: Bloomberg, various Central Bank websites, Schroders. January 1999 – Dec 2013

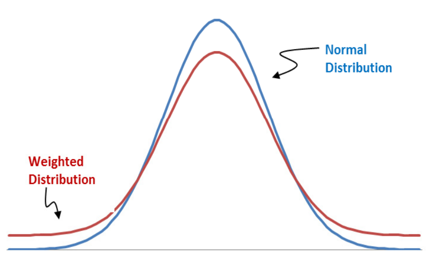
A behavioral explanation

Investor biases create opportunities. They are the "why" the opportunities exist

Prospect Theory - Utility is driven by two things

1. The value people ascribe to various outcomes
   - Value is subject to loss aversion
   - Value is evaluated relative to a reference point (Relative wealth matters)



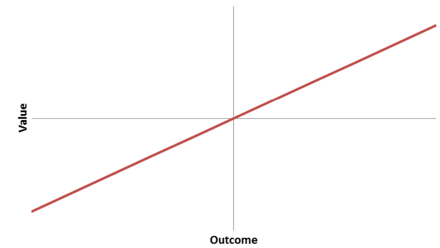


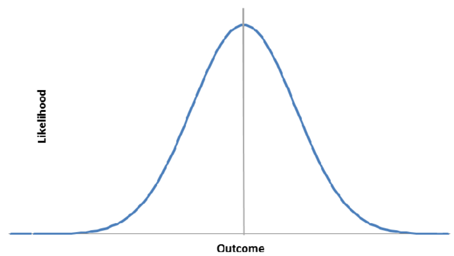
2. The weightings people assign to the outcomes
   - people tend to overweight small probability events, but underweight large probability events

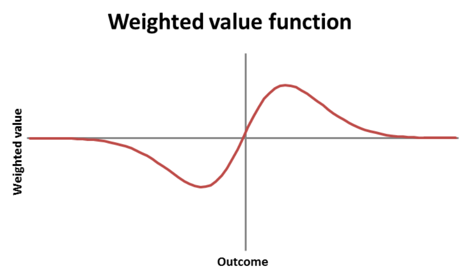
Source: http://en.wikipedia.org/wiki/Prospect_theory , Schroders

Weighted value

Value + Likelihood = Weighted Value







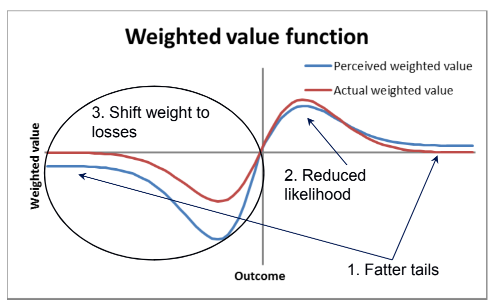
Source: Schroders.

The actual and perceived weighted values diverge

Prospect theory tells us how

Prospect theory suggests that three things happen to distort the perceived weighted value function

- Overweighting of unlikely events
    1. Produces fatter perceived tails, and
    2. Reduces perceived likelihood of likely events
- Loss aversion suggests that
    3. weighted value shifts into the realm of losses



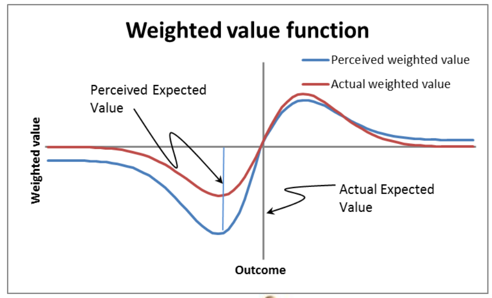
Source: Schroders.

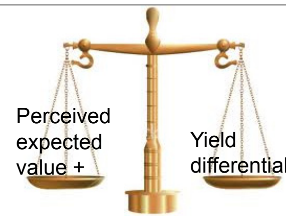
Prospect theory and currency carry

Uncovered interest rate parity should NOT hold

- Prospect theory implies that
  - The perceived expected value of an actuarially fair bet is negative
  - The difference between the perceived value and the actual value
    - Creates an opportunity, and
    - The direction of bias is known

- **Bottom-line:** The carry must be more than the absolute value of the <u>perceived expected value</u> for the trade to have a positive perceived expected value



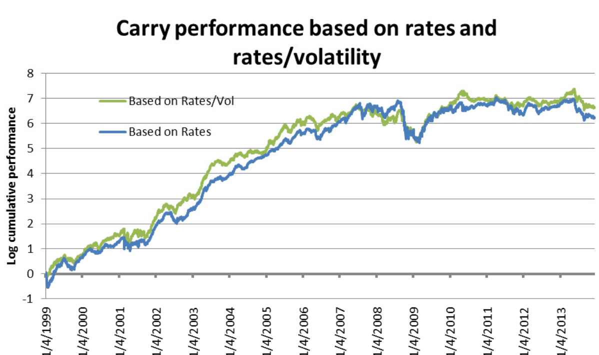


Source: Schroders.

A Prospect theory inspired carry

Loss aversion coupled with misweighted probabilities

- Prospect theory suggests that the currencies with the least chance of losing money may offer the most attractive opportunities (ie where the perceived and actual distribution are most different)



- **Currencies with the least chance of losing money are those for which yield differentials are the greatest number of standard deviations away from zero**
- $\frac{Y_{Fcash}-Y_{Bcash}}{\sigma_{currency}}$
- **This is like a Sharpe Ratio or a t-stat**
- **The numerator incorporates the biases**
- **The denominator is in some sense unbiased**

Source: Bloomberg, various Central Bank websites, Schroders. January 1999 – Dec 2013

Conclusion

- We have been doing a lot of work to better understand the opportunities created by investor biases
  - Prospect theory provides an interesting framework for thinking about investor behavior
  - Some investor behaviors result in systematic biases and create opportunities
- Applying prospect theory to currency carry
  - investors are loss averse and they overweight low probability events
  - These lead to negative perceived expected values
  - Interest differentials must more than offset the negative perceived expected value to entice investors
- Metrics that best describe the divergence between actual and perceived weighted values should best highlight the opportunities

Important information

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