Riding the dead FX-Carry Horse:  
The Tequila-Strategy  
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Tequila is a distilled beverage made from the blue agave plant, primarily in the area surrounding the city of Tequila and in the highlands of the western Mexican state of Jalisco. Usually, there are noticeable differences in taste between tequila that is made from lowland and highland agave plants. Plants grown in the highlands often yield sweeter and fruitier-tasting tequila while lowland agaves give the tequila an earthier flavor.  
(http://en.wikipedia.org/wiki/Tequila)

Abstract:  
FX-Carry trading was until 2007 a foolproof cash-cow. Carry-traders capsized in the 2008 crash. As a reaction to this crash central banks clamped the interest rate to (almost) zero. There is an ongoing debate, if this policy is the final dead of this strategy (see [1], [2]).  
This working papers shows, that there is still considerable profit potential. But it is definitely not a foolproof task anymore. It is also not for the faint-hearted. The carry-horse is not dead, but one has to buy a stronger whip and to change riders.

Introduction:  
A currency-carry trade exploits the interest-rate differential between two countries. One borrows low-yielding currencies and lend (invest in) high-yielding currencies. Historically the low-yielding currencies have been the Japanese Yen and the US$. Classical examples for high-yielding currencies are Australian-, New Zealand and Canadian-S. The most popular pair was Yen/AUD. It sounds complicated to implement this strategy. But in fact, even Mrs. Watanabe could do it. One simply buys the corresponding FX-Futures. The interest-rate differential is the futures carry. According the classical uncovered interest parity (UIP) theory this trade should not work, because the differential would be compensated by the exchange rate. The AUD would fall with the same rate. The UIP was first formulated in 1916 and belongs since then to the economic-catechism. But this did not happen for decades. Carry-trading was not only for hedge-fund managers a constant bonus-source. Also a lot of scholars profited by writing articles about the carry-trade puzzle. In any other science one would have abandoned the UIP. But economic theories are never falsified. If reality does not fit to the theory, it's a puzzle. These puzzles are the bread and butter of the economic academic community.

After many fat years the carry-strategy was drowned in the 2008 tsunami. The academics had suddenly a simple explanation for the carry-trade-profits: It's the Peso effect. But if it is the Peso-effect then the strategy should have worked again after the crash. One gets an extra profit for taking the risk of another strong currency devaluation in the distant future.
In fact the real problem is now: Central banks started to clamp the interest-rate close to Zero. One can't ride the carry-horse anymore, because the carry has disappeared. According the academic logic, the Peso-effect/risk should have also disappeared (“no fun, no risk”). It didn't. In contrary, currency volatility and especially volatility jumps have considerable increased. The intervention policy of the central banks has become a major source of risk. E.g. the Swiss-National-Bank intervened massively to weaken the CHF and to fix the CHF to 1.20 Euro. The same happened with the Yen.

Graphic-1 shows the prices for the AUD/USD Futures Z12 and H13. The price for the March contract is about 0.9 points lower. Or with other words, the quarterly carry is about 0.9%. The carry is not very impressive, but it still exists. The graphic shows also, that there is a considerable up- and down. Volatility is clearly dominating the carry.

Graphic-2 displays the term-structure (the percentage differences of the futures-prices at a given day) of these futures contracts. The carry was highest in 2010 (yellow-line) with about 5% a year. It has declined since then to the current value of about 3.6%. The term-structure is as expected almost perfectly linear. The price difference between Z12 and H13 and from H13 to M13 is almost the same. This is in strong contrast to the Eurodollar-Futures (see [3]) where the term-structure is a sigmoid curve. The immediate consequence for a trading-strategy is: One has not to think about the best place for ridding the carry-horse. Any place is the same. For trading purposes one will select the most liquid nearby contract (there is for other traders also no incentive to trade longer maturities).
Graphic-1 (not shown): Term-structure of AUD/USD at Nov. 11th 2009 (orange), 2010 (yellow), 2011 (green) and 2012 (blue).

The British-Pound was before 2007 an interesting carry-candidate. But the Pound carry has practically disappeared (see Graphic-3). The carry of the Yen and the SF in relation to the USD is also very small. The sign of the Euro has reversed from a small negative to a small positive value. These 4 currencies always belonged to the low-yield group. There was never a large carry within these futures.

The carry of the CAD was in 2009 close to Zero. It has increased somewhat since then to about 1% a year. But the effect is in comparison to volatility minor (see Graphic-4).

The carry of the NZD is similar to the AUD. The carry has since 2009 decreased by about 1%. It is currently about 2.5% p.a. (Graphic-5). The volatility clearly dominates the carry. From this preliminary analysis the AUD and the NZD remain as the interesting futures. It is also clear, that any successful strategy has to deal with the high-volatility. In the fat pre-2008 years, not only the carry, but also a momentum (or trend-following) strategy worked quite well. Probably this was in fact just another way to implement the carry. With low volatility and a high carry trend following is quite easy. If one looks at Graphic-1 or 6, it is obvious that any trend follower will seriously suffer from the whipsaw. All trend-following strategies I tried ended in a full disaster.
Graphic-3: GBP/USD Z12 (orange) and H13 (yellow) from 2011.11.10 to 2012.11.10

Graphic-4: Term-structure of CAD/USD at Nov. 11th 2009 (orange), 2010 (yellow), 2011 (green) and 2012 (blue).
Graphic-5: Term-structure of NZD/USD at Nov. 11th 2009 (orange), 2010 (yellow), 2011 (green) and 2012 (blue).

Graphic-6: NZD/USD Z12 (orange) and H13 (yellow) from 2011.11.10 to 2012.11.10
The Tequila-Blanco strategy:
Tequila-Blanco is bottled less than 2 months. It's similar to baby-whiskey. These young brandies have the highest content of alcohol. The angles share is not yet paid. But they have almost no specific taste and especially no color.
The Tequila-Blanco trading strategy is simple buy&hold. In graphic-7 one goes at 2010.10.18 20 ADZ10 Futures long. The contract size is 100,000 AUD. All calculations are for simplicity in this currency. 10 Days before expiry the contract is rolled over to the next maturity. This is done till 2012.11.16. Like in the previous Eurodollar working-paper (see [3]) the volume is kept constant over the whole period.
The initial cash is 500,000. After 2 years one has 591,000 on the account. The win is with 18% in 2 years not too bad. This rate depends of course on the leverage one is willing to accept. During the crash in summer 2011 one is more than 20% under the water.

Graphic-7: Blanco, 2010.11.18 till 2012.11.16

Graphic-8 shows the performance of the Tequila-Blanco during the 2008 crash. This time one is not only under the water, one is simply drowned. One would have run out of the initial money in Oct. 2008. Margin call, game over. But if one survives, one makes a similar profit of 16%.

The Blanco is too much risk for too less fun. There is a vast literature on momentum currency trading. In [3] he performance of the Eurodollar carry trading was considerable improved with a moving-average trigger. This improves the 2008 disaster, but one is instead ruined in the 2010 to 2012 time period. There are too many whipsaws. I could not find any setting which did not generate massive losses.
Tequila-Joven:
The Joven (young) is the next step towards a real drink and not just the consumption of alcohol. It is a mixture of Blanco and Reposado (see below).

In [4] Brunnermeier et al. state:
a) An increase in global risk or risk aversion as measured by the VIX equity-option implied volatility index coincides with reductions in speculator carry-positions (unwind) and carry-trade losses.
b) A higher level of VIX predicts higher returns for investment currencies and lower returns for funding currencies.
c) Currencies with similar levels of interest rate comove with each other.

The standard Joven-strategy uses instead of the VIX the Implied-Volatility-Term-Structure (IVTS). This is the ratio between the 1-month VIX and the 3-month VXV. The IVTS was used in several other Sibyl-trading strategies (see [5],[6],[7])

The Joven goes out of the market, if the IVTS is >= 1.0. Avoiding crashes improves the situation considerable. There are almost no losses and the strategy is at the right time in the market again to cash in the post-crash recovery (point b) in the quote above). The final position is 759.000 or 52%. But note, that the Joven – and any other strategy – does not avoid the losses since March 2012.
Unfortunately the available time-series for the ^VXV starts in 2009. So I could not calculate the strategy in the 2008 crash. It can be assumed, that it performed reasonable.

Graphic-10 compares the IVTS with a direct VIX signal. One goes out of the market, if the VIX rises over 24. The strategy does a decent job to avoid the losses during the 2011-crash. But it addresses only point a). It misses some of the post-crash wins. Like before, the behavior in the last part of 2012 is the same. Both signals have no effect, one plays the Blanco aka Buy&Hold. The IVTS is for the Joven-strategy the superior signal.
The Reposado:

*The Reposado* ("rested") *is aged a minimum of two months, but less than a year in oak barrels of any size.* This is the first version which looks, smells and tastes like a drink.

In the Reposado one uses again the IVTS or the VIX-24 signal. But one goes only out of the market, if the VIX was from trading day t-1 to t rising by at least 1%. If the IVTS or the VIX is high, but the VIX is on the current day falling, one stays in the market (or enters again, if one was at the sideline). This strategy addresses much better point b). With this refinement the VIX starts to surpass the IVTS. The final win is 77%. The strategy does reasonable well in the crash and fully cashes in the post-crash recovery (Graphic-11).

Graphic-12 shows the performance of the VIX based Joven and Reposado during the 2008. Both strategies loose considerable (but much less then the simple Blanco aka Buy-Hold). The Joven does not recover, because the VIX is still too high. The Reposado overcompensates the losses by the strong post-crash recovery. The performance of the IVTS would be probably similar (as noted above, I have not data for this time-period).
Graphic-11: Reposado-IVTS (orange) and Reposado-VIX (yellow) 2010.11.18 till 2012.11.16

Graphic-12: Joven-VIX (orange) and Reposado-VIX (yellow) 2007 to 2009
The Añejo-Strategy:

*Añejo* ("aged" or "vintage"): *aged a minimum of one year, but less than three years in small oak barrels;* A 3 years old whiskey is still no whiskey. But standards and tastes differ.

The Añejo pushes the idea of the Reposado further. The Reposado goes out of the market if the VIX (or the IVTS) is high and the VIX moved up since the last close by at least 1%. The Añejo goes in this case short. It changes to a long position otherwise.

Graphic-13: Añejo-IVTS (orange) and Añejo-VIX (yellow) 2010.11.18 till 2012.11.16

The Añejo (Graphic-13) does exceptionally well in the post-crash phase. The VIX is again a better signal then the IVTS. The final win over the last 2 years are a whopping 113.7%. But as already noted, this can be only attributed to the excellent post-crash performance.

The Añejo (Graphic-14, yellow) works also excellent in the 2008 crash. There is – in comparison to other strategies and the overall market – almost no drawdown and the strategy cashes in a large profit in the recovery. Both conditions, high-VIX and recent increase, are necessary for the success of this strategy. The orange line in Graphic-14 shows a VIX-24 strategy only. One goes long if the VIX is below 24 and short if the VIX is above. This leads to a disaster. The Añejo uses the additional condition of a recently increasing VIX.
Kiwi or Aussie?

All the results so far were for the AUD. Graphic-15 shows the performance of the NZD. The parameters are the same than in Graphic-11 for the AUD. The results are in agreement of statement c) of Brunnermeier et al.: currencies with similar levels of interest rate comove with each other.

The behavior of NZD is almost the same. This holds for all analyzed strategies. The final AUD is slightly higher, but on the other side the NZD moves in the last months sideways and not sideways-down like the AUD. But this can be just a small historic interlude and the roles can reverse in the coming months.
Other approaches:
In [8] M. Gilli et al. use a portfolio approach. The portfolio universe are the five currency pairs EUR/USD, GBP/USD, CAD/USD, CHF/USD and JPY/USD. The authors consider two time periods: The full years 2008 and 2010. The model uses hourly spot and not futures prices. Carry trading is not the topic of this paper. In the “Blanco” aka base-model they use a simple trend following strategy which is often proposed in the Technical Analysis literature. This strategy results in both periods in a heavy loss. Graphic-16 shows the performance of the CAD/USD H11 Futures in 2010. It is clear, that trend following can't work in such an environment. But other pairs like the CHF/USD are considerable nicer. Graphic-17 shows this pair with a 5- and 63-trading days moving average. This pair could be profitable for a trend-follower.

Note: The graphics show the futures prices. They differ by the (small) carry from the spot used in [8]. Their “Añejo” is a portfolio approach. It is also possible to short a pair. By a combination of different portfolio-optimization criterion’s they can turn the negative performance into slightly positive territory. It is not completely clear from the presented results, but I assume that the portfolio optimizer learns that CAD/USD is a disaster and one should overweight the CHF/USD pair. An important improvement is to add the sideline aka cash as a 6th “pair”. This is in agreement with the results above.

Generally speaking they save the flawed trend-following approach from drowning. It is even with these improvements a tepid strategy. But one could think about to combine the Añejo with this approach. The Añejo performs excellent in recovery phases, but in normal times the performance is not really exciting. On the other side, if statement c) of...
Brunnermeier “currencies with similar levels of interest rate comove with each other” is correct, there is only a small potential for improvement.

Graphic-16: CAD/USD H11 in 2010.

Graphic-17: CHF/USD H11 in 2010.
Conclusion:
It is certainly better to dismount than riding the carry horse with the simple strategy which worked so fine till 2007.
The paper of Brunnermeier was written in 2009. It is a summary of the 2008 crash-results. This working paper clearly shows, that the Brunnermeier conclusions are also valid in the 2011 crash. There is some evidence that the Añejo will perform also in the next crash well. The Peso-effect is not just risk. It has also a large fun-potential if one drinks seasoned Tequila.
The real problem is the current environment with a sideways or sideways-downward movement. This movement eats up the carry. The market has behaved in the last half year according to UIP. But one can also argue, that there were before extremely strong wins which have been realized after wards. Or in other words, this is just a pause for cashing in further carry. One has of course also to watch the carry premium. This premium has decreased in the last 2 years. The sideways-downwards movement is maybe also the result of this decline. The carry-trade is a major factor for stabilizing the AUD and the NZD. If there is a market consensus, that the carry-horse is dead, the AUD and the NZD will fall in the sideways down fashion further.

References: