



FundCreator and the Reserve Asset

FundCreator designs futures trading strategies that generate returns with predefined statistical properties. It does so by trading two distinct portfolios: the reference portfolio and the reserve asset. The reference portfolio is the portfolio with respect to which we measure correlation. In most cases the reference portfolio will therefore be a proxy for the investor's existing portfolio. The reserve asset is the core portfolio of the trading strategy and the main source of uncertainty. Although over time the strategy will move in and out of the reserve asset, it will never short it. Given its important role, a natural question to ask is how sensitive the FundCreator results are to the choice of reserve asset. In this brief note we shed some light on this.

The Set-Up

Since FundCreator strategies are typically used to diversify larger, more traditional portfolios, we will take the reference portfolio to consist of 50% S&P 500 and 50% T-bond futures. Although FundCreator users are completely flexible in their choice of reserve asset, it is important to keep in mind that the reserve asset is the core portfolio of the strategy. It should therefore offer a good ratio between expected return and risk. Unless the user has strong views, it should be well diversified, i.e. not contain too much uncompensated risk, and offer a satisfactory risk premium. Put simply, a reserve asset with a good Sharpe ratio will also make for a good expected return on the resulting trading strategy.

In what follows we study two different reserve assets. Reserve Asset 1 consists of an equally-weighted portfolio of 3-month Eurodollar, 5-year note, 10-year note, S&P 500, Russell 2000 and GSCI futures, where, to compensate substantial differences in volatility, we leveraged the Eurodollar and 5-year note by a factor 5, and the 10-year note by a factor 4. Reserve Asset 2 is much simpler and consists of an equally weighted portfolio of 1-month Libor, Russell 2000 and crude oil futures.

We study 3 significantly different cases: (1) replication of the HFRI Equity Market Neutral index, (2) replication of the HFRI Long-Short index, and (3) creation of a Zero-Correlation Fund. Case (1) and (2) correspond to what we did earlier in Kat and Palaro (2006b), while case (3) is taken from Kat and Palaro (2006a). Since the results could depend on the level of transaction costs and the rebalancing frequency, we allow the bid-offer spread to take on values of 0bp, 4bps, and 14bps, while rebalancing either daily, once every 2 days or once every 3 days.

Results

Using Reserve Asset 1 and Reserve Asset 2, Table 1 shows the sample properties of the replicated returns on the HFRI Equity Market Neutral index for various bid-offer spreads and rebalancing frequencies over the period March 1999 – October 2006. Comparing the entries at both sides of the table, it is clear that the differences are very minor. Reserve Asset 2 appears to be slightly better in replicating the positive skewness found in the HFRI EMN index. This is due to the fact that the returns on Reserve Asset 2 are slightly more skewed than those on Reserve Asset 1, which makes it easier to produce skewed synthetic fund returns.

	Reserve Asset 1				Reserve Asset 2			
	Mean	StDev	Skew	Corr	Mean	StDev	Skew	Corr
HFRI EMN Index	6.26%	2.92%	0.60	-0.01	6.26%	2.92%	0.60	-0.01
Synthetic 0bps, daily	6.79%	2.98%	0.22	-0.06	6.54%	2.84%	0.37	-0.09
Synthetic 4bps, daily	6.75%	2.98%	0.20	-0.06	6.50%	2.84%	0.36	-0.09
Synthetic 14bps, daily	6.65%	2.97%	0.19	-0.06	6.44%	2.84%	0.37	-0.09
Synthetic 0bps, 2 daily	6.83%	3.00%	0.20	-0.07	6.47%	2.84%	0.32	-0.09
Synthetic 4bps, 2 daily	6.81%	2.99%	0.19	-0.07	6.46%	2.84%	0.32	-0.09
Synthetic 14bps, 2 daily	6.77%	2.99%	0.18	-0.07	6.42%	2.84%	0.31	-0.09
Synthetic 0bps, 3 daily	6.65%	2.98%	-0.01	-0.07	6.68%	2.84%	0.44	-0.09
Synthetic 4bps, 3 daily	6.64%	2.98%	-0.01	-0.07	6.67%	2.84%	0.44	-0.09
Synthetic 14bps, 3 daily	6.60%	2.98%	-0.02	-0.07	6.64%	2.84%	0.44	-0.09

Table 1: Sample properties HFRI Equity Market Neutral index and synthetic fund returns over the period March 1999 - October 2006.

	Reserve Asset 1				Reserve Asset 2			
	Mean	StDev	Skew	Corr	Mean	StDev	Skew	Corr
HFRI L/S Index	11.48%	10.68%	0.88	0.57	11.48%	10.68%	0.88	0.57
Synthetic 0bps, daily	13.55%	11.26%	1.13	0.61	11.68%	10.93%	0.93	0.57
Synthetic 4bps, daily	13.48%	11.26%	1.13	0.61	11.58%	10.93%	0.92	0.57
Synthetic 14bps, daily	13.18%	11.25%	1.13	0.65	11.33%	10.92%	0.92	0.57
Synthetic 0bps, 2 daily	13.10%	11.25%	1.15	0.61	11.50%	11.11%	0.81	0.56
Synthetic 4bps, 2 daily	13.04%	11.25%	1.15	0.61	11.46%	11.10%	0.90	0.56
Synthetic 14bps, 2 daily	12.86%	11.25%	1.15	0.61	11.22%	11.09%	0.86	0.56
Synthetic 0bps, 3 daily	12.78%	11.24%	1.14	0.61	12.48%	10.99%	1.14	0.57
Synthetic 4bps, 3 daily	12.73%	11.24%	1.14	0.61	12.46%	10.99%	1.14	0.57
Synthetic 14bps, 3 daily	12.65%	11.24%	1.14	0.61	12.38%	10.99%	1.14	0.57

Table 2: Sample properties HFRI Long/Short index and synthetic fund returns over the period March 1999 - October 2006.

Table 2 shows the sample properties of the replicated returns on the HFRI Long-Short index. Despite the much higher target volatility, the results for both reserve assets match up very well. The mean returns for Reserve Asset 2 are slightly lower than for Reserve Asset 1, but the risk parameters are very close.

	Reserve Asset 1				Reserve Asset 2			
	Mean	StDev	Skew	Corr	Mean	StDev	Skew	Corr
Synthetic 0bps, daily	13.28%	11.50%	0.11	0.04	14.56%	11.53%	-0.12	-0.04
Synthetic 4bps, daily	13.13%	11.50%	0.11	0.04	14.44%	11.53%	-0.12	-0.04
Synthetic 14bps, daily	12.66%	11.49%	0.11	0.04	14.18%	11.53%	-0.12	-0.04
Synthetic 0bps, 2 daily	13.83%	11.43%	0.08	0.03	14.57%	11.53%	-0.12	-0.04
Synthetic 4bps, 2 daily	13.75%	11.43%	0.08	0.03	14.52%	11.53%	-0.12	-0.04
Synthetic 14bps, 2 daily	13.52%	11.43%	0.07	0.03	14.38%	11.53%	-0.12	-0.04
Synthetic 0bps, 3 daily	12.84%	11.28%	0.07	0.04	14.60%	11.51%	-0.14	-0.04
Synthetic 4bps, 3 daily	12.77%	11.28%	0.07	0.04	14.57%	11.51%	-0.14	-0.04
Synthetic 14bps, 3 daily	12.63%	11.28%	0.07	0.04	14.48%	11.51%	-0.14	-0.04

Table 3: Sample properties Zero Correlation Fund returns over the period March 1999 - October 2006.

Finally, Table 3 shows the sample properties of the returns on the Zero Correlation Fund. Similar to the previous case, the risk parameters for both reserve assets are very close, with small differences in the mean return. Contrary to what we saw in Table 2, this time Reserve Asset 2 does better than Reserve Asset 1.

Conclusion

FundCreator strategies are robust with respect to the choice of reserve asset. This means that results obtained with one reserve asset will typically be indicative for many other reserve assets well. Whenever differences arise, this is most likely to be in the mean return, not the risk profile. The reason for this is that FundCreator explicitly targets the risk profile of the returns to be generated but leaves it to the capital markets to generate the accompanying mean. Although in the longer-run risk and return can be expected to go hand in hand, this need not always be the case over a shorter period of time.

References

Kat, H. and H. Palaro, Tell Me What You Want, What You Really, Really Want! An Exercise in Tailor-Made Synthetic Fund Creation, Alternative Investment Research Centre Working Paper 36, Cass Business School, 2006a.

Kat, H. and H. Palaro, Hedge Fund Indexation the FundCreator Way. Alternative Investment Research Centre Working Paper 38, Cass Business School, 2006b.