The VolArb Strategy

Introduction

It has been long observed (Lo and MacKinlay 1988) that, for a mean-reverting process, the short term volatility is bigger than the long term volatility, hence an arbitrage opportunity. This strategy trades on a synthetic mean-reverting pair (hedge ratio β) by selecting an appropriate frequence difference (H). For example, a synthetic pair made of AUDNZD and GBPJPY is shown in Figure 1.

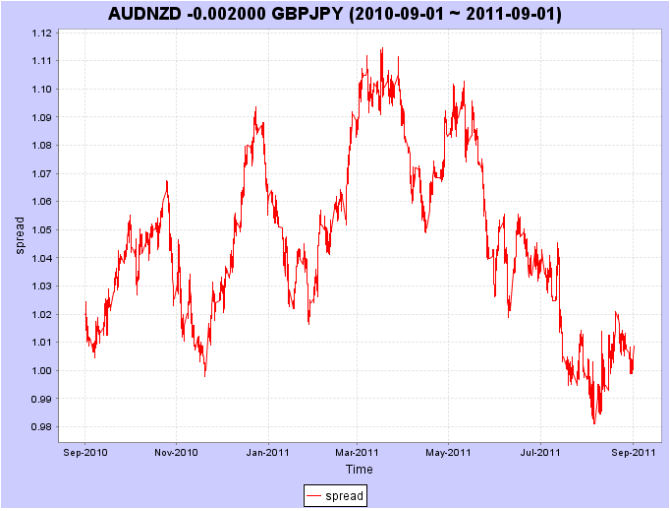

Figure 1: Spread from two currency pairs, AUDNZD and GBPJPY.

Performance Evaluation

We evaluate the performance of *VolArb* by tuning two of the parameters, β and H. Extensive simulations have been done on various currency pairs. Here we show some illustrative results. For the pair, AUDNZD-GBPJPY, the P&L divided by the maximal exposure reaches above 6% p.a. while the maximal drawdown is only 2 to 3% of the maximal exposure. The strategy on average makes 2 to 30 trades per month (depending on the parameters). For this example, *VolArb* does not require a high-frequency trading platform to execute.

From Figure 2, we can see that the Information Ratio (IR) of this strategy ranges from 2 to 3 at some (β, H). More importantly, the performance is stable over a wide range of parameter values.

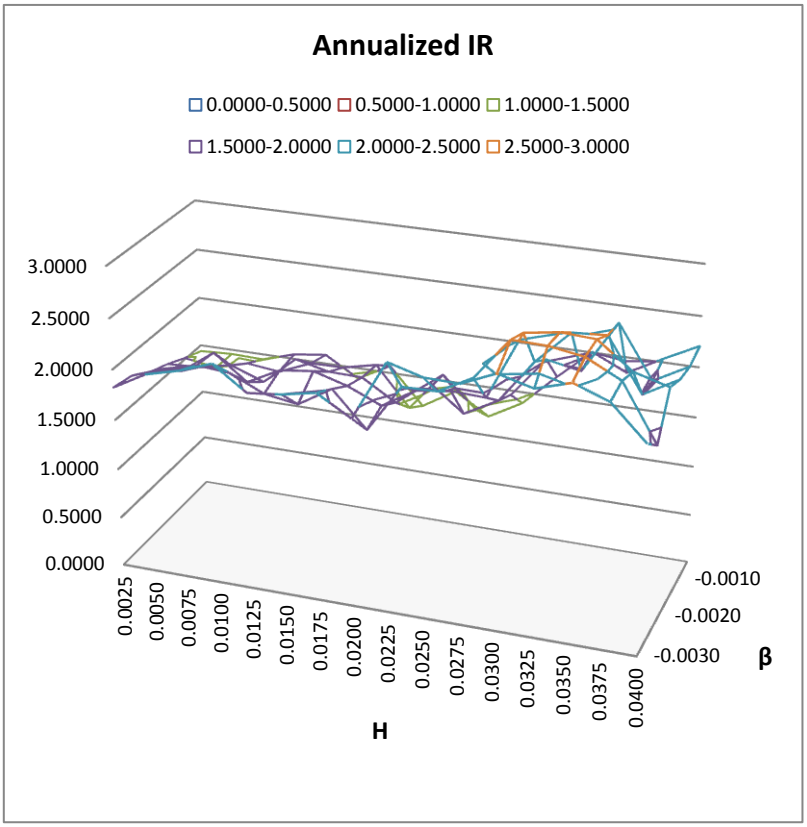

Figure 2: Annualized information ratio (IR) for *VolArb* on AUDNZD and GBPJPY over the period (1.9.2010 ~ 1.9.2011).

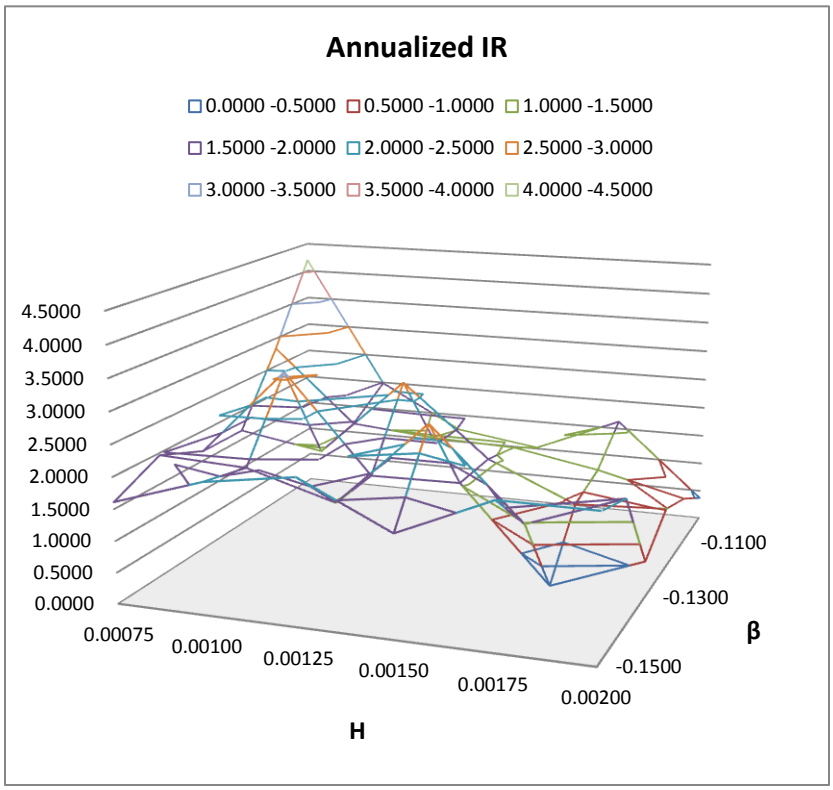

Figure 3: Annualized information ratio (IR) for *VolArb* on CHFEUR and CHFDKK over the period (1.9.2010 ~ 1.9.2011).

Next, we show the performance for another pair, CHFEUR-CHFDKK, which is tailored for higher frequency trading, e.g., intra-day. For this pair, the P&L over the maximal exposure ranges 20% to 40% p.a. with the maximal drawdown of 2 to 8%. The trading frequency is about 10 to 20 executions per day. Figure 3 shows that, in general, the IR for this pair is bigger than 2 for a wide range of H values.