Implied Vol // Realized volatility investment:

The spread between the implied volatility and the realized volatility can be a relevant signal when it comes to a long or short equity position. Indeed, it is a well-known phenomenon that the implied volatility is most of the time higher than the historical volatility. One explanation is that this positive spread is a premium the seller of the naked options ask to the buyer. However it is possible that the spread tightens, or even becomes negative. This signals a stress, and can be used as a trading signal.

I. **Using the spread between historical and implicit volatility as a trading signal**:

Consider a stock Index $Index_t$ and its Implied volatility index $Ivol_t$.

The historical volatility is computed as follows:

$$\sigma_{hist_t} = \sqrt{\frac{252}{19}\sum_{i=1}^{20} \ln\left(\frac{Index_i}{Index_{i-1}}\right)^2}$$

The spread is calculated as:

$$Spread_t = Ivol_t - \sigma_{hist_t}$$

Two states of nature:

We want to divide the world in two states:

-state 1: normal market conditions

-state 2: stressed market

We compute the following statistic:

$$Percentile_t = Percentile\ (Spread_{t-199}{:}\,Spread_t, 10\%)$$

$Percentile$returns the 10% percentile of the distribution.

As discussed above, it is natural to consider that we are in state 2 if $Spread_t < Percentile_t$, and in state 1 if $Spread_t \geq Percentile_t$

State 1: in normal market conditions, we want to be long equity.
State 2: when market are stressed, we can add a long implied volatility exposure to our equity exposure in order to protect it. If it is impossible to buy a future contract on the implied volatility, it is possible to short the equity position to get a negative exposure to equity markets.

Consequently,

strategy 1: it is possible to trade future contracts on the index implicit volatility

We decide not to short implied volatility as already run the risk of a volatility spike on our equity long position.

Trading parameters:

Index exposure: 100%

First contract on the implied volatility: 50% if $Spread_t < Percentile_t$, 0% if $Spread_t \geq Percentile_t$

strategy 2: it is impossible to trade future contracts on the index implicit volatility

Index exposure: 100% if $Spread_t \geq Percentile_t$

Index exposure: -100% if $Spread_t < Percentile_t$

Strategy calculus (example for strategy 1):

$$Strat_0 = 100$$

$$Strat_t = Strat_{t-1} \times \left(\frac{Index_t}{Index_{t-1}} + 0.5 \times \left(\frac{Ivol1_t}{Ivol1_{t-1}} - 1\right) \times I_{Spread_t < Percentile_t}\right)$$

$I_{Spread_t < Percentile_t} = 1 \; if \; Spread_t < Percentile_t \; and \; 0 \; if Spread_t \geq Percentile_t$

II. Results on different equity universes:

II.1 The S&P 500 universe:

II.1.1 Strategy 1

Stock Index: SPX

Stock Index future: ES1

Volatility index: VIX

-We can take a long exposure to the S&P 500 by buying the price return index (SPX).

-We take short exposures to the S&P 500 by shorting the first nearby future contract on SPX: ES1.

-We can buy and sell the first nearby future on the implicit volatility index UX1

Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-5.88%												-5.88%	-5.88%
2015	0.91%	5.16%	-1.74%	0.85%	1.05%	-2.10%	4.38%	-2.39%	6.38%	6.10%	0.05%	-3.31%	15.74%	-0.73%
2014	-3.56%	0.57%	0.69%	0.62%	2.63%	1.91%	-1.51%	3.77%	-1.55%	-4.18%	-3.13%	6.14%	1.88%	11.39%
2013	-4.61%	1.11%	3.60%	1.12%	0.01%	-1.50%	-1.78%	-3.13%	2.97%	4.46%	2.80%	2.36%	7.19%	29.60%
2012	4.36%	4.06%	3.13%	-0.75%	-6.27%	2.34%	6.03%	1.98%	2.42%	-1.98%	-1.46%	3.47%	18.03%	13.41%
2011	2.26%	3.20%	-3.11%	2.19%	-1.35%	-3.93%	8.09%	0.55%	2.79%	15.29%	6.33%	4.08%	41.13%	0.00%
2010	-3.70%	0.42%	5.35%	1.48%	1.44%	-0.37%	5.21%	-5.43%	8.76%	3.69%	-0.23%	6.53%	24.58%	12.78%
2009	-8.57%	-10.99%	8.54%	9.39%	5.31%	0.02%	7.41%	3.36%	3.57%	-1.98%	5.74%	1.78%	23.45%	23.45%
2008	-6.12%	-0.42%	-1.94%	-1.22%	1.07%	-8.60%	-0.99%	4.92%	2.74%	35.17%	-1.64%	0.39%	19.17%	-38.49%
2007	1.41%	-2.18%	-0.58%	4.33%	3.25%	-0.96%	-4.22%	17.94%	-0.23%	1.48%	-5.68%	-4.44%	8.46%	3.53%
2006											0.08%	1.26%	1.34%	1.34%

Statistic	Value
Vol	21%
IRR	16%
Sharpe	0.77
Sortino	1.32
Max DD	-31.83%

II.1.2 Strategy 2

Stock Index: SPX

Stock Index future: ES1

-We can take a price return long exposure to the S&P 500 by buying the price return index (SPX).

-We take short exposures to the S&P 500 by shorting the first nearby future contract on SPX: ES1.

Index exposure: 100% if $Spread_t \geq Percentile_t$

Index exposure: -100% if $Spread_t < Percentile_t$

Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-5.88%												-5.88%	-5.88%
2015	-1.13%	5.55%	-1.74%	0.85%	1.05%	-2.10%	5.26%	-4.49%	4.86%	11.85%	0.05%	-1.78%	18.52%	-0.73%
2014	-3.56%	-1.41%	0.69%	0.62%	3.66%	1.91%	-1.51%	3.77%	-1.55%	-6.54%	0.11%	1.99%	-2.29%	11.39%
2013	1.06%	1.11%	3.60%	-0.55%	-2.58%	-1.50%	-1.05%	-3.13%	2.97%	4.46%	2.80%	2.36%	9.61%	29.60%
2012	4.36%	4.06%	3.13%	-0.75%	-6.27%	2.75%	4.51%	1.98%	2.42%	-1.98%	-2.70%	1.72%	13.39%	13.41%
2011	2.26%	3.20%	-1.88%	1.82%	-1.35%	-3.65%	0.30%	-20.48%	1.65%	11.30%	4.38%	1.55%	-4.15%	0.00%
2010	-3.70%	3.51%	5.74%	1.48%	-2.50%	4.61%	7.31%	-5.85%	8.76%	3.69%	-0.23%	6.53%	32.11%	12.78%
2009	-8.57%	-10.99%	8.54%	9.39%	5.31%	0.02%	7.41%	3.36%	3.57%	-1.98%	5.74%	1.78%	23.45%	23.45%
2008	-6.12%	2.28%	0.79%	2.57%	1.07%	-8.60%	-0.99%	7.84%	3.27%	70.67%	9.46%	26.90%	139.71%	-38.49%
2007	1.41%	-2.18%	-3.21%	4.33%	3.25%	-2.18%	-4.02%	3.32%	0.55%	1.48%	-5.93%	0.67%	-3.06%	3.53%
2006											0.08%	1.26%	1.34%	1.34%

Statistic	Value
Vol	21%
IRR	19%
Sharpe	0.91
Sortino	1.54
Max DD	-27.62%

II.2 The SX5E universe:

II.2.1 Strategy 1

Stock Index: SX5E

Stock Index future: VG1

Volatility index: V2X

-We can take a price return long exposure to the SX5E by buying the price return index (SX5E).

-We take short exposures to the SX5E by shorting the first nearby future contract on SX5E: VG1.

-We can buy and sell the first nearby future on the implicit volatility index FVS1

Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-10.20%												-10.20%	-10.20%
2015	8.55%	7.27%	2.73%	-2.21%	-1.24%	-4.10%	-4.14%	-7.38%	0.61%	10.24%	2.58%	-6.23%	4.94%	4.85%
2014	-2.80%	4.49%	0.79%	0.31%	1.44%	-0.50%	1.45%	7.84%	3.12%	-4.67%	4.27%	10.37%	28.26%	1.13%
2013	2.90%	-2.57%	8.30%	3.35%	2.13%	-6.03%	5.14%	-1.69%	6.31%	6.04%	0.61%	0.46%	26.84%	18.05%
2012	4.32%	3.95%	-1.39%	-6.90%	-8.13%	6.88%	13.18%	4.37%	0.56%	2.01%	2.86%	2.00%	24.28%	13.39%
2011	5.22%	2.01%	-3.39%	3.76%	-4.96%	-0.47%	2.80%	-9.55%	27.96%	9.99%	6.30%	-1.18%	39.93%	-17.47%
2010				-3.47%	-1.30%	-0.98%	6.56%	-4.35%	4.76%	3.53%	-6.82%	2.67%	-0.21%	-3.81%

Statistic	Value
Vol	22%
IRR	19%
Sharpe	0.83
Sortino	1.46
Max DD	-26.82%

II.2.2 Strategy 2

Stock Index: SX5E

Stock Index future: VG1

-We can take a price return long exposure to the SX5E by buying the price return index (SX5E).

-We take short exposures to the SX5E by shorting the first nearby future contract on SX5E: VG1.

-We can buy and sell the first nearby future on the implicit volatility index FVS1

Index exposure: 100% if $Spread_t \geq Percentile_t$

Index exposure: -100% if $Spread_t < Percentile_t$

Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-10.20%												-10.20%	-10.20%
2015	-8.17%	6.25%	2.73%	-2.21%	-1.24%	-4.10%	4.47%	-8.45%	7.40%	10.24%	2.58%	-6.23%	1.12%	4.85%
2014	-2.80%	4.49%	-1.73%	-0.17%	1.44%	-0.50%	0.77%	6.66%	3.66%	-10.90%	6.07%	2.23%	8.24%	1.13%
2013	2.90%	-2.57%	3.20%	3.35%	2.13%	-6.03%	4.93%	-1.69%	6.31%	6.04%	0.61%	0.46%	20.62%	18.05%
2012	4.32%	3.95%	-1.39%	-6.90%	-8.13%	6.88%	6.67%	1.69%	0.56%	2.01%	2.86%	2.00%	14.13%	13.39%
2011	5.22%	2.01%	-3.39%	3.97%	-4.96%	-0.47%	2.01%	-6.13%	42.17%	9.11%	5.89%	-1.70%	57.70%	-17.47%
2010				-3.47%	-0.25%	0.08%	6.56%	-4.35%	4.76%	3.53%	-6.82%	5.66%	4.89%	-3.81%

Statistic	Value
Vol	22%
IRR	15%
Sharpe	0.67
Sortino	1.18
Max DD	-23.22%

II.3 The Cac universe:

Stock Index: CAC

Stock Index future: CF1

Vol Index: VCAC

Index exposure: 100% if $Spread_t \geq Percentile_t$

Index exposure: -100% if $Spread_t < Percentile_t$

Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-9.21%												-9.21%	-9.21%
2015	15.31%	6.50%	1.66%	0.26%	-0.76%	-4.35%	3.81%	-7.25%	4.15%	13.67%	1.22%	-6.47%	28.22%	8.53%
2014	-3.03%	5.82%	-0.94%	0.62%	0.72%	-2.14%	1.48%	5.99%	1.30%	-14.93%	3.90%	-2.83%	-5.65%	-0.54%
2013	2.51%	-0.26%	-0.56%	3.36%	2.38%	-5.31%	5.42%	-1.48%	5.33%	3.78%	-0.11%	0.02%	15.56%	17.99%
2012	4.39%	4.67%	-0.83%	-6.16%	-6.09%	5.95%	4.71%	1.59%	-1.71%	2.22%	3.73%	2.36%	14.81%	15.23%
2011	5.28%	2.62%	-3.11%	4.91%	-2.43%	-0.62%	-6.91%	-13.68%	26.83%	16.66%	-0.21%	2.23%	29.16%	-16.95%
2010	-5.00%	0.60%	-3.67%	-3.95%	0.93%	-0.56%	5.82%	-4.18%	6.43%	3.18%	-5.82%	5.38%	-1.93%	-3.34%
2009	-7.58%	-9.13%	3.88%	12.56%	3.73%	-4.19%	9.10%	6.63%	3.88%	-4.95%	2.01%	6.96%	22.32%	22.32%
2008	-14.08%	-3.76%	-1.74%	6.36%	0.36%	-11.56%	-0.96%	0.59%	0.32%	51.74%	5.26%	26.64%	55.06%	-42.68%
2007	1.20%	-1.64%	5.26%	5.48%	2.42%	-0.80%	-5.02%	3.89%	10.80%	-0.44%	-3.03%	-0.61%	17.79%	1.31%
2006	4.94%	-0.18%	4.41%	-0.62%	-4.44%	6.14%	0.11%	3.11%	1.65%	1.88%	-0.39%	4.02%	22.08%	17.53%
2005	2.42%	2.90%	0.38%	0.20%	5.54%	2.64%	0.46%	-1.18%	2.23%	-5.74%	-0.73%	3.24%	12.58%	23.40%
2004	2.26%	2.39%	-5.19%	-3.86%	-2.95%	-0.51%	-2.30%	-1.45%	1.29%	2.50%	2.04%	1.80%	-4.31%	7.40%
2003	-4.11%	-6.26%	-4.92%	5.48%	1.29%	3.09%	4.09%	3.15%	-5.33%	7.60%	1.53%	3.89%	8.58%	16.12%
2002	-3.52%	0.03%	5.04%	-4.81%	-4.21%	-7.64%	25.75%	-7.74%	-17.49%	7.64%	16.55%	-7.90%	-5.56%	-33.75%
2001	1.22%	-10.52%	-11.90%	-4.18%	0.81%	-4.20%	-2.68%	-7.79%	-24.40%	-8.50%	3.10%	3.32%	-51.17%	-21.97%
2000												7.51%	7.51%	-1.14%

Statistic	Value
Vol	24%
IRR	7%
Sharpe	0.31
Sortino	0.52
Max DD	-64.27%

II.4 The UKX universe:

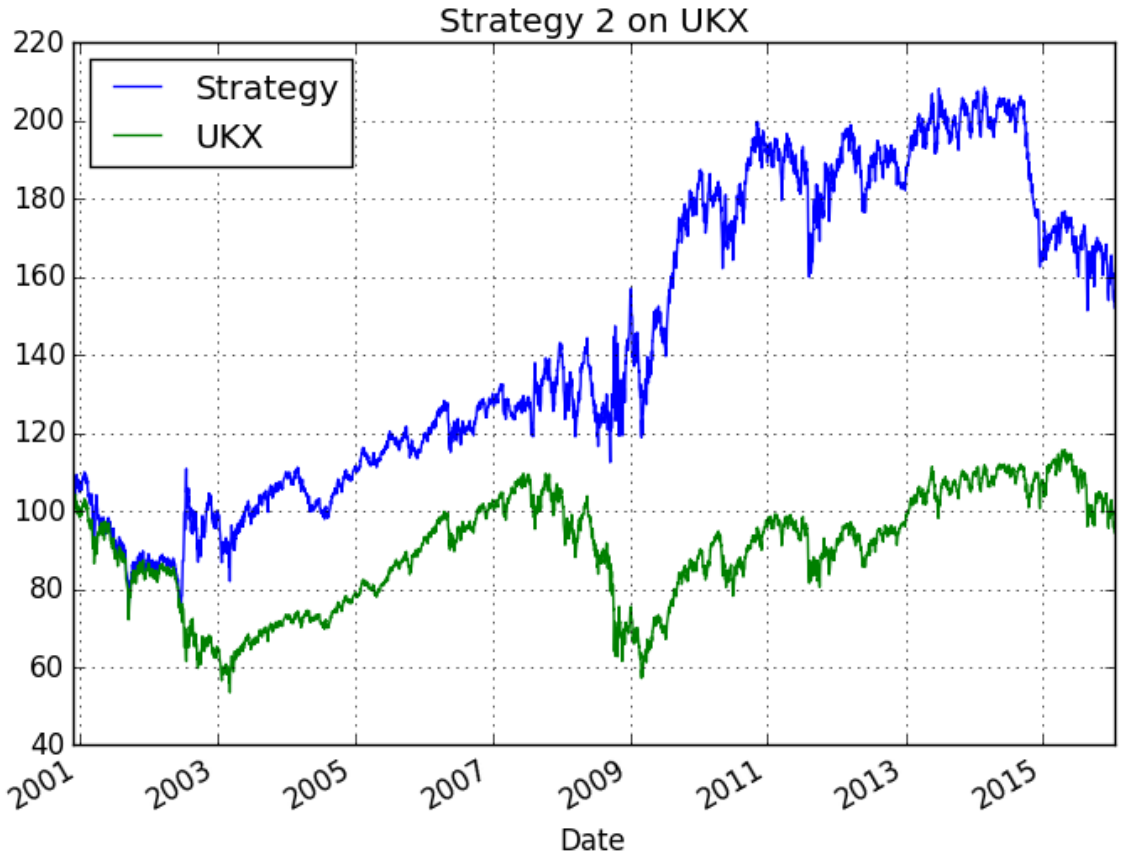
Stock Index: UKX

Stock Index future: Z 1

Vol Index: FVTSE

Index exposure: 100% if $Spread_t \geq Percentile_t$

Index exposure: -100% if $Spread_t < Percentile_t$



Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-7.02%												-7.02%	-7.02%
2015	2.09%	2.30%	-2.50%	2.77%	0.34%	-6.64%	5.90%	-6.70%	0.80%	3.18%	-0.08%	-1.79%	-1.14%	-4.93%
2014	-3.54%	4.60%	-3.10%	1.24%	0.95%	-1.47%	0.05%	1.33%	-2.89%	-8.54%	-2.74%	-6.36%	-19.26%	-2.71%
2013	6.43%	1.34%	0.80%	0.45%	0.07%	4.12%	-2.99%	-3.14%	0.77%	4.17%	-1.20%	1.48%	12.51%	14.43%
2012	1.96%	3.34%	-1.76%	0.48%	-7.63%	4.70%	1.15%	-1.10%	0.54%	0.71%	-2.86%	-0.95%	-1.95%	5.84%
2011	-0.63%	2.24%	-1.42%	2.26%	-1.32%	-0.74%	-2.20%	-7.23%	1.83%	5.00%	1.32%	-0.45%	-1.85%	-5.55%
2010	-4.14%	5.16%	-2.62%	-2.22%	-4.61%	0.25%	6.31%	-0.62%	6.19%	2.28%	-2.59%	0.75%	3.35%	9.00%
2009	-6.42%	-7.70%	2.51%	8.09%	4.11%	-3.82%	8.45%	6.52%	4.58%	-1.74%	2.90%	4.28%	22.07%	22.07%
2008	-8.94%	-0.12%	-3.10%	9.92%	-0.56%	-7.06%	-2.03%	4.15%	-1.81%	-0.64%	6.79%	10.84%	5.50%	-31.33%
2007	-0.28%	-0.51%	-0.05%	-2.30%	2.67%	-0.20%	-3.75%	5.07%	4.05%	3.94%	-4.30%	6.90%	11.05%	3.80%
2006	2.52%	0.54%	2.99%	0.98%	-5.89%	3.41%	-0.43%	-0.37%	0.93%	2.83%	-1.31%	2.84%	8.99%	10.71%
2005	0.67%	2.39%	-1.97%	-0.38%	2.66%	3.01%	0.31%	-0.98%	3.41%	-2.93%	-3.51%	3.61%	6.11%	16.57%
2004	-1.78%	2.31%	-1.34%	-5.64%	-1.21%	1.23%	-1.14%	1.05%	3.09%	1.17%	1.71%	2.49%	1.61%	7.82%
2003	-8.54%	2.47%	-1.16%	6.15%	3.11%	-0.42%	3.12%	0.10%	-1.68%	4.80%	1.28%	2.94%	11.96%	14.61%
2002	-2.92%	1.75%	1.80%	-2.24%	-2.19%	-7.63%	30.84%	-1.69%	-7.57%	2.44%	9.75%	-6.45%	11.08%	-25.60%
2001	1.80%	-6.21%	-1.73%	-3.14%	-1.96%	-2.01%	-3.47%	-2.09%	-8.05%	2.04%	4.10%	0.65%	-18.89%	-15.75%
2000											0.00%	8.03%	8.03%	1.31%

Statistic	Value
Vol	20%
IRR	3%
Sharpe	0.14
Sortino	0.24
Max DD	-32.61%

It is possible to ajdust the percentile level to specific universe: for highly volatile indexes, it me be preferable to decrease the percentile level.

II.5 The DAX universe:

Stock Index: DAXK

Stock Index future: GX1

Vol Index: VDAX

Index exposure: 100% if $Spread_t \geq Percentile_t$

Index exposure: -100% if $Spread_t < Percentile_t$

We use the 5% percentile

Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-11.15%												-11.15%	-11.15%
2015	2.11%	6.58%	4.96%	-4.72%	-2.07%	-4.10%	11.71%	-8.72%	11.78%	12.32%	4.90%	-5.62%	29.54%	6.85%
2014	-2.86%	4.13%	1.54%	-1.51%	1.69%	-1.11%	-4.33%	0.03%	0.04%	-9.46%	10.50%	-4.48%	-6.91%	-0.14%
2013	1.79%	-0.44%	0.67%	0.15%	3.94%	-4.75%	4.05%	-2.09%	6.06%	5.11%	4.11%	1.56%	21.48%	21.40%
2012	9.07%	6.16%	1.30%	-4.05%	-8.94%	2.28%	5.55%	0.08%	3.52%	0.62%	2.00%	2.79%	20.92%	24.36%
2011	2.03%	2.73%	-9.93%	2.16%	-5.09%	1.11%	-2.95%	-13.05%	33.55%	18.33%	9.96%	-3.13%	31.49%	-17.46%
2010	-6.11%	-0.18%	9.90%	-1.20%	-2.10%	3.04%	3.06%	-3.62%	5.13%	5.98%	1.32%	3.37%	18.98%	12.48%
2009	-10.21%	-11.41%	6.27%	14.95%	1.15%	-2.69%	10.89%	2.48%	3.85%	-4.58%	3.90%	5.89%	18.49%	18.49%
2008	-16.01%	-2.80%	-3.16%	4.95%	0.34%	-9.61%	0.95%	-0.88%	-9.21%	-1.24%	9.21%	3.01%	-24.03%	-42.36%
2007	2.67%	-1.08%	5.56%	6.46%	4.89%	1.59%	-5.28%	0.71%	2.92%	2.01%	-1.85%	2.50%	22.52%	19.15%
2006	4.67%	2.15%	3.01%	0.19%	-3.67%	8.97%	0.52%	3.13%	2.47%	4.41%	0.64%	4.56%	35.16%	19.07%
2005	-0.30%	2.26%	-0.48%	-1.76%	3.62%	1.87%	6.55%	-1.16%	0.80%	-3.20%	5.36%	4.14%	18.61%	23.80%
2004	2.10%	-0.99%	-3.42%	0.40%	-2.58%	3.56%	-3.88%	-2.83%	2.84%	1.73%	4.19%	3.15%	3.85%	5.14%
2003	-5.28%	-7.37%	-4.85%	20.28%	0.40%	7.50%	8.30%	-0.09%	-6.54%	12.26%	2.46%	5.85%	33.43%	33.43%
2002	-1.13%	-1.34%	7.06%	-6.91%	-5.33%	-9.27%	-7.70%	-1.66%	-25.42%	13.86%	5.31%	-12.88%	-40.95%	-44.91%
2001	5.62%	-8.72%	-2.73%	-3.94%	-3.00%	-1.28%	-3.33%	-11.49%	-27.46%	-9.52%	9.45%	3.41%	-45.17%	-21.22%
2000											-3.65%	5.19%	1.35%	-2.73%

Statistic	Value
Vol	25%
IRR	5%
Sharpe	0.18
Sortino	0.30
Max DD	-76.74%

II.6 The SMI universe:

Stock Index: SMI

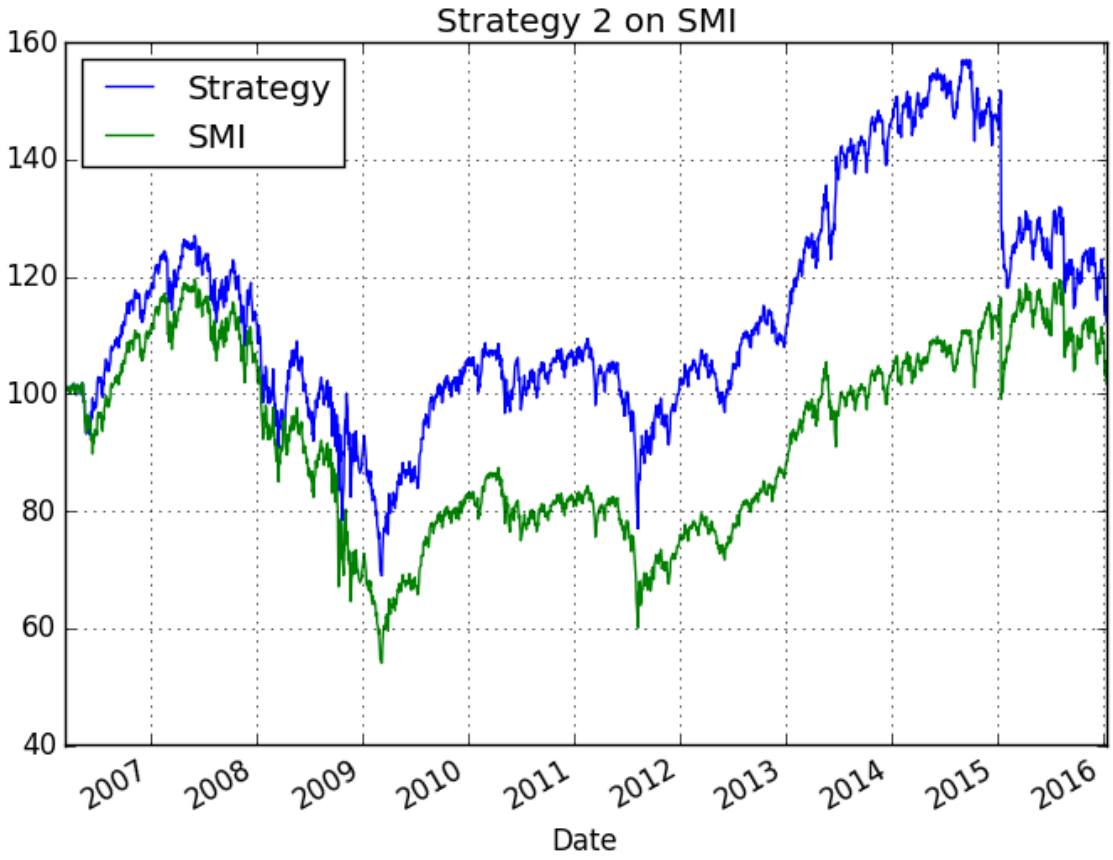
Stock Index future: SM1

Vol Index: V3VI

Index exposure: 100% if $Spread_t \geq Percentile_t$

Index exposure: -100% if $Spread_t < Percentile_t$

We use a 1% percentile



Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-8.06%												-8.06%	-8.06%
2015	-17.44%	2.96%	1.27%	-0.57%	1.77%	-4.95%	7.37%	-6.40%	-3.53%	4.99%	0.61%	-1.95%	-16.84%	-1.84%
2014	-0.14%	3.47%	-0.25%	0.27%	2.33%	-1.38%	-1.69%	2.96%	2.03%	-6.12%	1.52%	-1.83%	0.77%	9.51%
2013	10.40%	2.74%	2.90%	1.22%	0.52%	8.04%	0.33%	-0.95%	3.57%	2.64%	0.36%	-0.74%	35.02%	20.24%
2012	0.58%	2.34%	2.06%	-2.23%	-4.04%	3.70%	5.48%	-0.18%	1.69%	1.53%	-2.54%	-0.96%	7.24%	14.93%
2011	0.67%	2.03%	-3.83%	1.50%	0.23%	-5.61%	-6.53%	-4.69%	5.90%	3.61%	-1.38%	5.02%	-3.96%	-7.77%
2010	-1.61%	4.13%	-0.29%	-3.73%	-2.41%	-0.81%	1.19%	-0.32%	1.87%	2.79%	-2.47%	1.96%	-0.02%	-1.68%
2009	-4.42%	-11.33%	5.05%	6.06%	2.37%	1.01%	10.12%	4.48%	1.71%	-0.59%	-0.39%	4.55%	18.27%	18.27%
2008	-9.59%	-1.78%	-4.11%	9.05%	-0.24%	-7.36%	2.63%	1.37%	-8.07%	1.11%	-1.22%	-4.85%	-22.00%	-34.77%
2007	3.98%	-3.78%	2.13%	5.03%	0.24%	-2.56%	-3.52%	-0.04%	0.59%	0.96%	-2.12%	-3.42%	-2.95%	-3.43%
2006			0.66%	0.30%	-7.19%	8.84%	3.79%	2.85%	3.16%	1.71%	-0.99%	3.55%	17.09%	10.23%

Statistic	Value
Vol	19%
IRR	1%
Sharpe	0.06
Sortino	0.10
Max DD	-45.69%

II.7 The NKY universe:

Stock Index: NKY

Stock Index future: NK1

Vol Index: VXJ

Index exposure: 100% if $Spread_t \geq Percentile_t$

Index exposure: -100% if $Spread_t < Percentile_t$

We use a 1% percentile


Strategy 2 on NKY
Strategy
NKY
250
200
150
100
50
0
2001
2003
2005
2007
2009
2011
2013
2015
Date

Year	January	February	March	April	May	June	July	August	September	October	November	December	YTD	Benchmark
2016	-9.91%												-9.91%	-9.91%
2015	1.28%	6.36%	2.18%	1.63%	5.34%	-1.59%	1.73%	-8.23%	6.14%	9.75%	3.48%	-3.61%	25.78%	9.07%
2014	-8.45%	-0.49%	-0.09%	-3.53%	2.29%	3.62%	3.03%	-1.26%	4.86%	1.49%	-3.43%	-0.05%	-2.75%	7.12%
2013	-6.70%	3.78%	6.72%	12.36%	-0.62%	7.17%	-0.07%	-2.04%	7.97%	-0.88%	9.31%	4.02%	47.27%	56.72%
2012	4.11%	10.46%	3.71%	-5.58%	-10.27%	5.43%	-3.46%	1.67%	0.34%	0.66%	5.80%	10.39%	23.32%	22.94%
2011	0.09%	3.77%	-11.79%	3.35%	-1.58%	1.26%	0.17%	-8.93%	-2.85%	3.31%	-6.16%	0.25%	-18.71%	-17.34%
2010	-3.30%	-0.71%	9.52%	-0.29%	-11.71%	-3.90%	1.65%	-7.48%	6.18%	-1.78%	7.98%	2.94%	-3.01%	-3.01%
2009	-9.77%	-5.32%	7.15%	8.86%	7.86%	4.58%	4.00%	1.31%	-3.42%	-0.97%	-6.87%	4.65%	10.40%	19.04%
2008	-11.60%	4.05%	-7.92%	10.57%	3.53%	-5.98%	-0.78%	-2.27%	-13.87%	24.12%	1.78%	4.08%	0.10%	-42.12%
2007	0.91%	1.27%	-1.80%	0.65%	2.73%	1.47%	-4.90%	-3.94%	1.31%	-0.29%	-6.31%	-2.38%	-11.13%	-11.13%
2006	-0.72%	-2.93%	5.27%	-0.90%	-8.51%	-0.26%	2.75%	4.42%	-0.08%	1.69%	-0.76%	5.85%	5.05%	6.92%
2005	-0.88%	3.10%	-0.61%	-5.88%	0.38%	2.73%	2.72%	4.32%	9.35%	0.49%	9.30%	8.33%	37.45%	40.24%
2004	1.00%	2.40%	6.10%	0.40%	-4.83%	8.54%	-4.50%	-2.15%	-2.33%	-0.48%	1.19%	5.41%	10.24%	7.61%
2003	-2.79%	0.28%	-4.67%	3.45%	7.57%	7.82%	5.29%	8.16%	-1.20%	3.33%	-6.92%	0.37%	21.11%	24.45%
2002	-5.17%	5.90%	11.88%	1.15%	2.36%	-9.71%	-7.00%	-2.62%	-2.45%	-7.92%	6.66%	-6.91%	-15.16%	-18.63%
2001	0.42%	-6.93%	10.31%	4.64%	-4.82%	-2.21%	-8.55%	-9.67%	-8.76%	6.05%	3.19%	-1.45%	-18.38%	-23.52%
2000												-7.08%	-7.08%	-7.08%

Statistic	Value
Vol	25%
IRR	4%
Sharpe	0.18
Sortino	0.28
Max DD	-53.09%