



Bernoulli Strategy

strategy description

The Bernoulli strategy is a probability arbitrage strategy on the sign of returns of the SPY ETF (based on the S&P500 index). While it is well established that the absolute value of returns is not normally distributed, it is a widely held opinion that the signs of returns have the same probability distribution as fair coin tosses, a fact which is confirmed by a superficial analysis. We have, however identified subtle and systematic deviations from this behaviour. The strategy implements a complex algorithm to exploit these deviations for consistent profits with low volatility.

Key facts

- Currency** : USD
- Instrument** : SPY ETF (S&P 500)
- Liquidity** : daily
- Risk factors** : long positions, short positions, no derivatives
- Trading** : algorithmic, with human surveillance

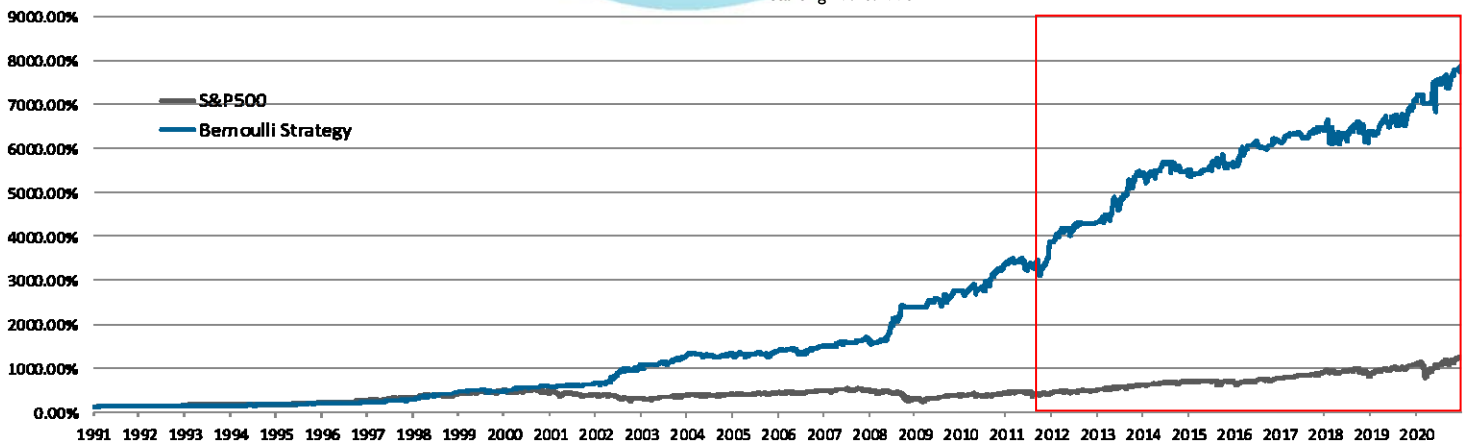
statistics (1990–2020)

- Average net return** : 15.98% (S&P500: 9.84%)
- Average volatility** : 10.77% (S&P500: 16.55%)
- Average Sharpe Ratio** : 1.15 (S&P500: 0.68)
- Maximum draw-down** : 10.77% (S&P500: 56.78%)
- Monthly upside capture** : 53.93%
- Monthly downside capture** : -12.63%
- Real trading** : since August 2012

performance details

Year	Performance		Volatility		Max. draw-down	Sharpe ratio
	Strategy	S&P500	Strategy	S&P500		
1990*	3.90%	10.53%	14.74%	15.36%	4.09%	0.80
1991	19.38%	26.31%	11.32%	14.30%	5.81%	1.23
1992	4.83%	4.46%	8.05%	9.68%	8.74%	0.17
1993	7.40%	7.06%	7.71%	8.60%	4.24%	0.57
1994	8.37%	-1.54%	5.73%	9.84%	3.69%	0.68
1995	20.92%	34.11%	6.36%	7.81%	3.07%	2.42
1996	14.73%	20.26%	10.90%	11.78%	7.44%	0.89
1997	36.44%	31.01%	16.91%	18.19%	8.40%	1.86
1998	51.59%	26.67%	11.93%	20.29%	3.30%	3.91
1999	7.05%	19.53%	11.72%	18.07%	10.66%	0.22
2000	20.95%	-10.14%	14.39%	22.22%	9.46%	1.04
2001	14.89%	-13.04%	11.50%	21.56%	6.08%	0.95
2002	65.24%	-23.37%	24.26%	26.03%	7.07%	2.63
2003	20.41%	26.38%	14.53%	17.07%	8.69%	1.34
2004	2.29%	8.99%	7.26%	11.09%	7.39%	0.18
2005	3.65%	3.00%	8.59%	10.28%	7.38%	0.08
2006	8.80%	13.62%	9.42%	10.04%	9.90%	0.46
2007	11.63%	3.53%	7.57%	15.99%	3.33%	1.01
2008	44.12%	-38.49%	19.99%	40.97%	10.22%	2.11
2009	16.13%	23.45%	9.90%	27.29%	7.26%	1.58
2010	20.98%	12.78%	13.52%	18.05%	8.19%	1.53
2011	15.56%	0.00%	12.39%	23.27%	10.77%	1.24
2012	11.64%	13.32%	7.37%	12.88%	4.08%	1.56
2013	25.54%	29.73%	9.80%	10.97%	6.21%	2.59
2014	1.34%	11.41%	7.96%	10.91%	4.89%	0.14
2015	1.67%	-0.76%	8.86%	17.05%	5.87%	0.15
2016	9.84%	9.53%	5.57%	12.61%	4.40%	1.65
2017	4.34%	19.41%	3.18%	6.68%	2.17%	1.00
2018	-0.09%	-7.71%	12.32%	17.06%	8.12%	-0.20
2019	10.56%	28.88%	9.14%	12.55%	5.26%	0.94
2020	11.23%	16.26%	10.13%	34.36%	8.92	1.06

* starting 17.10.1990



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