What is the Optimal Allocation to CTAs?

Case Study: BTOP 50 CTA Index and Auspice Diversified

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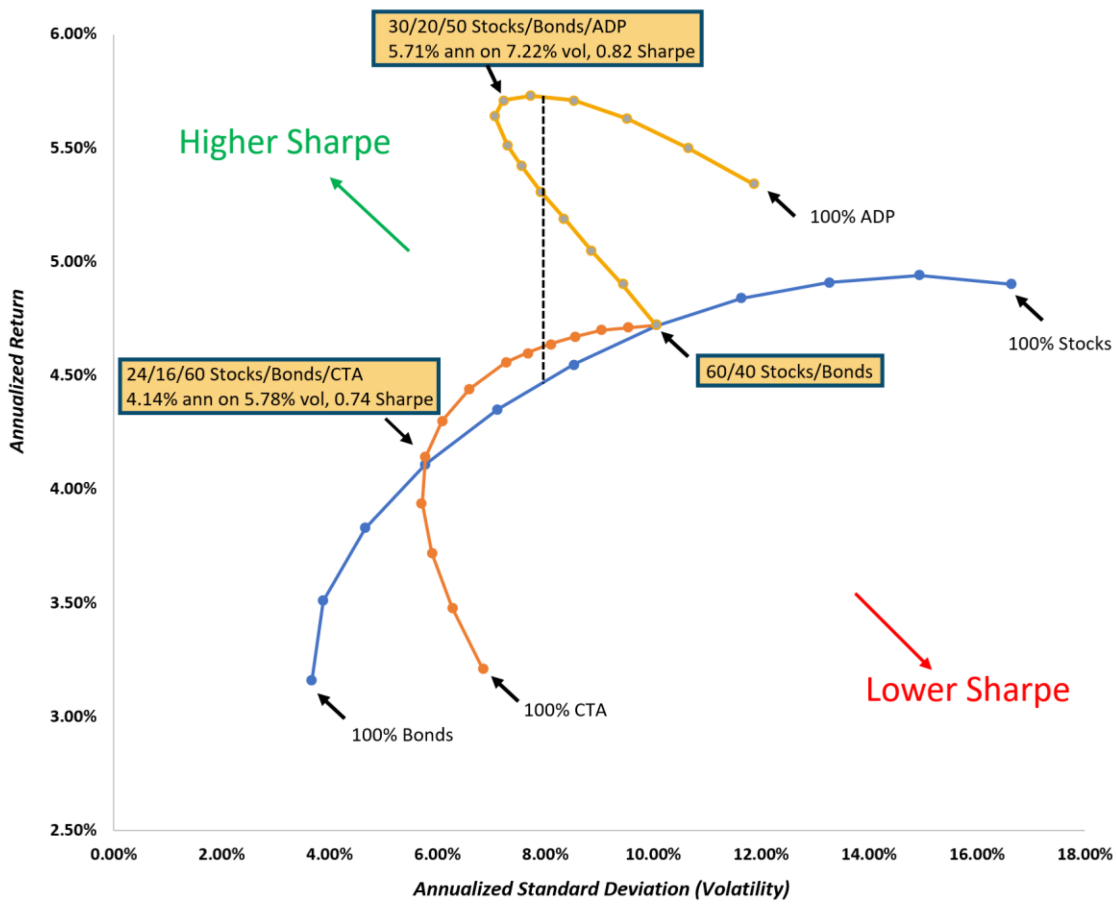
September 2022

Summary: The unbiased purely mathematical answer is between 50-60%. The more practical answer in Auspice's opinion is 10-25%.

Chart 1: Efficient Frontiers June 2007 – August 2022



Stocks = MSCI ACWI, Bonds = Barclay's Agg, CTA = BTOP 50 CTA, ADP = Auspice Diversified

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The efficient frontiers in Chart 1 correspond to the tables in Appendix A from June 2007 through August 2022. The orange and gold lines contain 60/40 portfolios with varying levels of CTA or ADP exposure, from 0% to 100%. Of note:

- If we control for a risk level and select 8% volatility (as represented by the vertical dashed black line) we can see that there are portfolios above the blue (stock/bond) line that have superior returns from the addition of CTA or ADP: **superior returns can be achieved at the same risk level by adding CTA / ADP.**
- The highest Sharpe portfolio with CTA added to a 60/40 portfolio is with a 60% CTA allocation (24/16/60 Stocks/Bonds/CTA).
- The highest Sharpe portfolio with ADP added to a 60/40 portfolio is with a 50% ADP allocation (30/20/50 Stocks/Bonds/ADP)

Further thoughts

- In practice, it is rare for investors to allocate more than 25% to CTA (or any other alternative strategy).
- At the 5% level for CTA or ADP the affect on the portfolio is nominal with little meaningful impact on the portfolio.
- At the 40-60% allocation range to ADP the highest annualized return, highest Sharpe, the lowest volatility, and the lowest max drawdown are achieved.
- Due to the low volatility (and lower return) of the BTOP 50 CTA index there is a very nominal drag on annualized return as CTA is added to the 60/40 portfolio however risk metrics are improved significantly. For example, from 60/40 Stock/Bond to 48/32/20 Stock/Bond/CTA annualized return drops by just 8bps however max drawdown drops for 34% to under 25% and Sharpe improves from 0.54 to 0.63

If we take the last example a step further and look at ADP, there are significant benefits in all metrics. Adding a 20% ADP allocation to a 60/40 portfolio increases annualized return by 59bps while cutting max drawdown from 34% to 19% and improving Sharpe from 0.54 to 0.71. These are significant benefits that we think are palatable.

Why not the optimal 50% allocation to ADP/CTA?

Part of our job is partnering with investors and managing expectations. There is often a gap between what is optimal and what is practical.

While ~50% may be mathematically optimal, (and by the way, we "talk the talk" with this in the Auspice One Fund where 50% of risk is in CTA) CTAs, like all strategies, had a period of underperformance. Investors can generally stick with traditional stocks and bonds in tough times, however it is more difficult for investors to stick with alternative strategies during periods of underperformance, particularly when allocations are larger.

At the 20% level the impacts on the portfolio are meaningful while manageable. Beyond 20% the improvements, while significant, are diminishing and the practical risks become more significant. For those investors that believe they are capable of managing these practical risks and have sufficient infrastructure we would recommend managed accounts and "overlaying" CTA on top of traditional assets.

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For more Information on the benefits CTAs and how to think about portfolio construction with them we recommend the classic white paper "Litner Revisited, A Quantitative Analysis of Managed Futures for Plan Sponsors, Endowments and Foundations".

Appendix A

Table 1: Stock/Bond Portfolios

Stock/Bond	Ann. Return	Volatility	Max Drawdown	Sharpe
100/0	4.90%	16.65%	54.92%	0.42
90/10	**4.94%**	14.93%	49.88%	0.44
80/20	4.91%	13.26%	44.61%	0.47
70/30	4.84%	11.63%	39.11%	0.50
60/40	4.72%	10.06%	33.93%	0.54
50/50	4.55%	8.54%	27.42%	0.60
40/60	4.35%	7.11%	21.22%	0.67
30/70	4.11%	5.78%	14.77%	0.76
20/80	3.83%	4.66%	12.45%	0.86
10/90	3.51%	3.89%	**11.89%**	**0.94**
0/100	3.16%	**3.67%**	12.30%	0.89

Table 2: 60/40 Stock/Bond Portfolios with the addition of CTA (BTOP 50 CTA Index)

Stock/Bond/CTA	Ann. Return	Volatility	Max Drawdown	Sharpe
60/40/0	**4.72%**	10.06%	33.93%	0.54
57/38/5	4.71%	9.54%	31.25%	0.56
54/36/10	4.70%	9.03%	29.09%	0.58
51/34/15	4.67%	8.55%	26.91%	0.60
48/32/20	4.64%	8.10%	24.69%	0.63
45/30/25	4.60%	7.67%	22.45%	0.65
42/28/30	4.56%	7.27%	20.19%	0.67
36/24/40	4.44%	6.59%	15.96%	0.71
30/20/50	4.30%	6.08%	12.17%	0.73
24/16/60	4.14%	5.78%	8.34%	**0.74**
18/12/70	3.94%	**5.72%**	**7.68%**	0.71
12/8/80	3.72%	5.90%	9.95%	0.65
6/4/90	3.48%	6.28%	13.06%	0.58
0/100	3.21%	6.84%	16.11%	0.50

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Table 3: 60/40 Stock/Bond Portfolios with the addition of ADP (Auspice Diversified)

Stock/Bond/ADP	Ann. Return	Volatility	Max Drawdown	Sharpe
60/40/0	4.72%	10.06%	33.93%	0.54
57/38/5	4.90%	9.43%	29.68%	0.59
54/36/10	5.05%	8.85%	25.91%	0.63
51/34/15	5.19%	8.35%	22.10%	0.67
48/32/20	5.31%	7.91%	18.75%	0.71
45/30/25	5.42%	7.56%	15.76%	0.75
42/28/30	5.51%	7.30%	12.78%	0.79
36/24/40	5.64%	**7.06%**	**8.10%**	**0.82**
30/20/50	5.71%	7.22%	8.23%	**0.82**
24/16/60	**5.73%**	7.74%	10.35%	0.77
18/12/70	5.71%	8.53%	13.81%	0.71
12/8/80	5.63%	9.52%	17.19%	0.65
6/4/90	5.50%	10.65%	20.50%	0.59
0/100	5.34%	11.87%	24.02%	0.53

Disclaimer below

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1. The MSCI ACWI Index is designed to represent performance of the full opportunity set of large- and mid-cap stocks across 23 developed and 26 emerging markets.
2. The Barclay BTOP50 CTA Index seeks to replicate the overall composition of the managed futures industry with regard to trading style and overall market exposure. The BTOP50 employs a top-down approach in selecting its constituents. The largest investable trading advisor programs, as measured by assets under management, are selected for inclusion in the BTOP50.
3. Track record of Auspice Diversified Program (ADP) has been available and audited since 2006. Unless otherwise noted, the returns for Auspice Diversified Program ("ADP") are estimates using 1% management fee and 15% performance fee for analysis purposes. The returns are based on actual "gross" returns (less management and performance fees, interest and expenses) plus illustrated management and performance fee similar to the Series X fund structure which started in July 2014.

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