

VOLATILITY TARGETING AS A SOURCE OF STRUCTURAL ALPHA

*Michael Marcey, Managing Director, Strategic Development, Efficient Capital and
Michael Going, Associate Director of Business Development, Efficient Capital*

Introduction

While there is little doubt that selecting superior managers for a multi-manager portfolio results in better performance, it is equally clear that identifying who will be the winners and who will be the losers is incredibly difficult. This article highlights a different way for institutional investors to improve performance by focusing on portfolio management rather than manager selection. This approach is remarkably simple in concept yet challenging to implement.

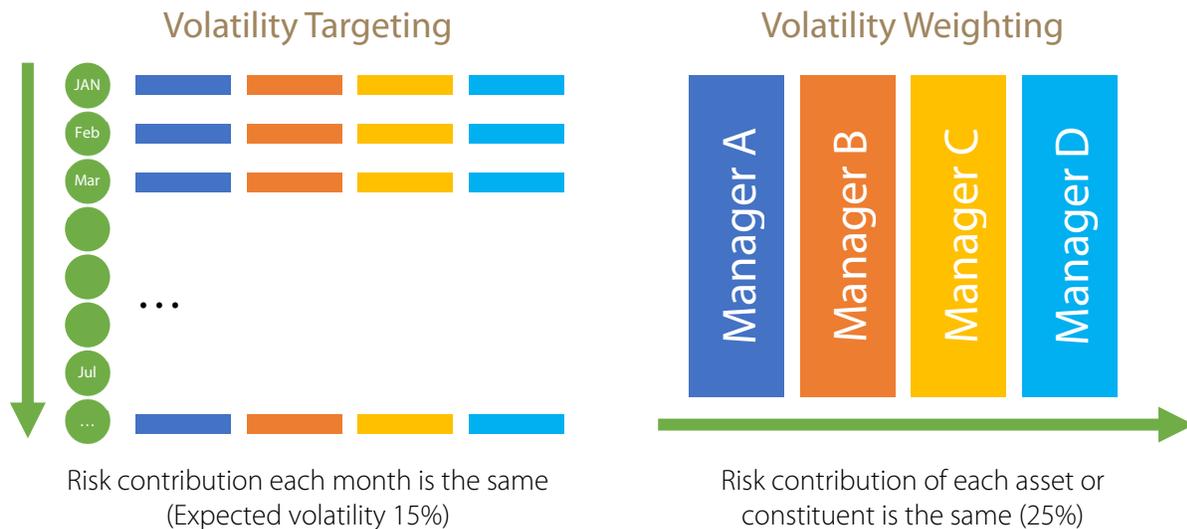
A research paper written by Marat Molyboga, published in the Journal of Investment Strategies under the title “Portfolio Management of Commodity Trading Advisors with volatility-targeting”, presents research that demonstrates that a volatility-targeted allocation methodology can improve the risk-adjusted performance of CTA portfolios under a variety of conditions. In fact, this study concludes that:

- on average, volatility targeting produces return improvement that is consistent and statistically significant, ranging between 0.53% and 0.80% per annum,
- the performance enhancement produced by volatility targeting is greatest for larger portfolios but exists for any sized portfolio considered in the study,
- while manager selection does matter, volatility targeting tends to work in the majority of cases, and
- volatility targeting is most easily implemented within a managed account structure.

Definition of volatility targeting

Volatility targeting is an approach to active portfolio management that dynamically scales the aggregate leverage of a portfolio to achieve either a specific portfolio volatility or to allocate risk equally across time. This is a different concept than volatility weighting, which allocates risk among the portfolio constituents. As a way to illustrate the difference in approach, consider a portfolio with four managers. Volatility weighting, illustrated on the right in Table 1, diversifies risk across the managers. On the other hand, volatility targeting, to the left, diversifies risk across timeframes.

Table 1



This article summarizes the research methodology used in Molyboga’s paper, presents the most relevant findings from the paper and discusses real-life implications for institutional investors. While not replacing the importance of manager selection, volatility targeting provides an avenue for enhancing returns and creating structural alpha.

Summary of the research methodology

A simulation framework comprising 10,000 simulations for the out-of-sample period between January 2006 and December 2016 was used. This framework was designed to evaluate portfolio construction approaches subject to the real-world constraints faced by institutional investors, such as requiring eligible investments to possess track records of at least 36 months managing sufficient assets. The simulation framework is imposed on the dataset after accounting for survivorship and backfill biases.

The simulation randomly selects ten funds from the available pool of funds in the BarclayHedge CTA database and applies four portfolio construction approaches to the chosen funds. Two of the approaches are volatility weighted—equal notional (“EN”) and equal volatility-adjusted (“EVA”). The other two are volatility targeted—volatility targeted and equal notional (“VTEN”) and volatility targeted and equal volatility adjusted (“VTEVA”).

For each of these approaches, the monthly returns for January 2006 are recorded. At the end of each month, the available fund pool is updated to comply with the requirements noted above for institutional investors. Funds that no longer meet these requirements are randomly replaced with funds from the new pool. Each portfolio is rebalanced using each of the four methodologies. A constant target volatility of 15% is used for the VTEN and VTEVA approaches. The process is repeated for the entire out-of-sample period from January 2006

to December 2016. A single simulation run produces four time series of out-of-sample returns, one for each portfolio construction approach. Distributions of out-of-sample returns are constructed based on the returns of 10,000 simulations. This analysis is repeated by constructing portfolios having between 5 and 20 managers.

Most relevant findings

- 1) The improvement due to volatility targeting is striking.** Both volatility-targeting approaches perform meaningfully better than the conventional approaches. In fact, this research shows a consistent improvement in the Sharpe ratio, which translates into a meaningful improvement in portfolio performance, as much as 68 basis points each year for 10 manager portfolios that target annualized volatility of 15%. Tables 2 shows a summary of the research and implications for performance improvement.

Table 2

	EN Equal notional	VTEN Volatility target, equal notional	Sharpe Increase	Performance Increase at 15% vol
Median	.326	.368	.042 (13% higher)	.63%
	EVA Equal volatility adjusted	VTEVA Volatility targeted equal vol adjusted	Sharpe Increase	Performance Increase at 15% vol
Median	.328	.374	.046 (14% higher)	.68%

- 2) The improvement due to volatility targeting is robust to the number of portfolio constituents.** Molyboga's research varied the composition of his portfolios from 5 to 20 constituents and found that the improvement in return due to volatility targeting is highly significant in each case, increasing monotonically with the number of managers in the portfolio. Figure 3 visually captures the consistency of improvement, illustrating a mean improvement of .53% per year for a 5-manager portfolio to a mean improvement of .80% per year for a 20-manager portfolio.

Figure 3



- 3) **The improvement is also robust to manager selection.** Given the random nature of the simulations, the consistent improvement in the Sharpe ratio of volatility targeting over the equal notional approach makes it clear that this improvement does not depend on the quality of manager selection.

Implications in the real world of investing

Translating theory into practice is not always easy or even possible, an unfortunate reality for investors hoping to harvest the performance benefits of volatility targeting for their portfolios. The particular challenges involve scale and investment slippage.

Scale - The benefits of volatility targeting increase as the number of managers increases, but many investors lack the staff or infrastructure to adequately manage large portfolios of CTAs.

Investment slippage - Because many institutional investors use fund investments, it is difficult to process regular redemptions and subscriptions. As a result, the performance improvements achieved by volatility targeting are likely best realized through the use of managed accounts, either internally or through external providers.

When added to the ongoing search for manager talent, volatility targeting can be a unique source of structural alpha.