Enhancing Trend By Scaling Volatility

May 21, 2020 3:46 PM ET8 comments  |  6 Likes
by: Larry Swedroe

Summary

- A large body of research demonstrates that while past returns do not predict future returns, past volatility largely predicts future near-term volatility, volatility clusters.
- Such evidence led to development of strategies that target a constant level of volatility rather than a constant nominal exposure.
- Commodity trading advisors have benefited from scaling volatility and find that volatility targeting improves out-of-sample Sharpe ratio.

A large body of research, including the 2017 study "Tail Risk Mitigation with Managed Volatility Strategies" by Anna Dreyer and Stefan Hubrich, demonstrates that while past returns do not predict future returns, past volatility largely predicts future near-term volatility, i.e., volatility is persistent (it clusters). High (low) volatility over the recent past tends to be followed by high (low) volatility in the near future. Evidence that past volatility predicts future volatility has been found not only in stocks but also in bonds, commodities and currencies. (For a detailed look at volatility scaling, check out this article.)

Such evidence has led to the development of strategies that manage volatility (target a constant level of volatility rather than a constant nominal exposure) by leveraging a portfolio at times of low volatility and scaling down at times of high volatility. A benefit of volatility scaling is that it ensures that the combined strategy targets a consistent amount of risk over time, regardless of the number of markets that are traded at each point in time.

The Evidence

Campbell Harvey, Edward Hoyle, Russell Korgaonkar, Sandy Rattray, Matthew Sargaison and Otto van Hemert, authors of the 2018 study "The Impact of Volatility Targeting," examined the impact of volatility targeting on 60 assets, with daily data beginning as early as 1926. Among their key findings was that scaling reduces volatility. It also reduces excess kurtosis (fatter tails than in normal distributions): scaling cuts both tails, right (good tail) and left (bad tail). And for portfolios of risk assets, Sharpe ratios (measures of risk-adjusted return) are higher with volatility scaling. They also found that risk assets exhibit a...
negative relationship between returns and volatility. Thus, volatility scaling effectively introduces some momentum into strategies. Since volatility often increases in periods of negative returns, targeting volatility causes positions to be reduced, which is in the same direction as what one would expect from a time-series momentum (trend-following) strategy. These findings are consistent with those of the June 2017 study "A Century of Evidence on Trend-Following Investing" by Brian Hurst, Yao Hua Ooi and Lasse Pedersen.

Marat Molyboga contributes to the literature on time-series momentum and volatility scaling with his study "Portfolio Management of Commodity Trading Advisors With Volatility Targeting," published in the December 2019 issue of the Journal of Investment Strategies. He analyzed the performance of commodity trading advisors, or CTAs (users of trend-following strategies), to determine if they would have benefited from scaling volatility. He used the BarclayHedge database, the largest publicly available database of CTAs. It included 528 active and 1,113 defunct funds between December 2002 and December 2016. In his analysis, he varied the number of managers randomly chosen. Following is a summary of his findings:

Volatility targeting improves the out-of-sample net-of-fee Sharpe ratio of portfolios with 10 CTAs by approximately 13-14 percent, on average. This improvement in the Sharpe ratio represents approximately 63-68 basis points of return per annum for a 15 percent volatility portfolio. Volatility targeting improves performance by 0.53 percent (with five CTAs) to 0.80 percent (with 20 CTAs) per annum, with greater performance enhancement for larger portfolios. Volatility targeting improves performance in 78 percent of scenarios among portfolios of five managers and grows monotonically to 95 percent for portfolios of 20 managers—the improvement in performance derived from volatility targeting is not sensitive to manager selection and is implementable with managed account investments.

Summary

As an investment style, trend following has existed for a long time. The research provides strong out-of-sample evidence beyond the substantial evidence that already exists in the literature. It also provides consistent, long-term evidence that trends have been pervasive features of global stock, bond, commodity and currency markets. Trend is likely to continue to be a profitable strategy because of behavioral biases, market frictions, hedging demands and market interventions by central banks and governments.
The bottom line is that, given the diversification benefit and the downside (tail-risk) hedging properties, an allocation to trend-following strategies merits consideration. The evidence also provides strong support for incorporating volatility scaling into a trend-following strategy. Thus, if your portfolio includes an allocation to trend, you should also consider using managers that scale for volatility.

**Disclosure:** I have no positions in any stocks mentioned, and no plans to initiate any positions within the next 72 hours. I wrote this article myself, and it expresses my own opinions. I am not receiving compensation for it (other than from Seeking Alpha). I have no business relationship with any company whose stock is mentioned in this article.

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**Comments (8)**

**Larry Swedroe**
*Contributor  PREMIUM*

Author’s reply  »  Cliff, while we don’t know what Treasuries will do in future we do know that historically volatility is persistent, it TENDS TO predict future volatility, allowing scaling. And of course you could use TIPS instead as inflation hedge if that is your concern.

21 May 2020, 06:20 PM

**Cliff Smith**
*Contributor*

Do it yourself; use Portfolio Visualizer. No need to use managers to trend with volatility targeting.

Here’s an example of backtesting to 1987 using volatility targeting: https://bit.ly/2Tq53MA. This strategy updates monthly between S&P 500, 20-year treasuries, and 7-10 year treasuries to maintain a volatility of 4.5%. The only caveat is no one knows what treasuries will do in the future (i.e. if inflation comes, treasuries will not be the safe haven as in the past).

Thanks,
Cliff

21 May 2020, 04:45 PM

**bazooooka**
*PREMIUM*

Are there any ETFs that do this well? I haven’t seen too many (any) etfs that can CAGR at 7%+ over decade(s) but have low beta and low drawdowns? (edited)

21 May 2020, 09:45 PM
Cliff Smith  
Contributor  
@bazooooka

Just use SPY, TLT and IEF in the same volatility strategy. The backtest will be shorter, but the results will be similar.

Thanks,  
Cliff  
21 May 2020, 09:49 PM

bazooooka  
PREMIUM
Would/could you juice this with any cheap leverage to try to get a 10%+ CAGR but still keep drawdowns around 15%?  

21 May 2020, 10:19 PM

Cliff Smith  
Contributor  
@bazooooka

Yes, use 60% QLD, 40% UBT and UST as OOM asset. Change volatility from 4.5% tp 9.0% (for 2X leverage). Here's the PV link: https://bit.ly/36iWU0Z. CAGR = 18.8% and MaxDD = -10.8% from 2011 to present.

This is the 2X version. The 1X version uses 60% QQQ and 40% TLT with IEF as OOM asset (with the target volatility = 4.5%). It gives CAGR = 10.1% and MaxDD = -5.3%. So the 2X version gives results about 2X of the 1X version, as expected.

Thanks,  
Cliff  
22 May 2020, 12:09 AM

Sanya Robert  
@Cliff Smith
How do you calculate the portfolio volatility and composition without PV signals?. Thanks.  
25 May 2020, 02:22 PM

Cliff Smith  
Contributor  
@Sanya Robert
I use PV signals.

Thanks,  
Cliff