

UltraShort Treasuries: How Long Can You Hold TBT?

By Matt Hougan

Concerns about the massive expansion of the U.S. budget deficit and the Federal Reserve's balance sheet have most economists and pundits at least talking about inflation. Understandably, many investors have begun to fret about the outlook for U.S. Treasuries. And with that, investors have started turning to inverse Treasury exchange-traded funds.

In fact, ETFs that provide leveraged short exposure to U.S. Treasuries have seen some of the most dramatic inflows of any ETFs in 2009. According to the National Stock Exchange, the ProShares UltraShort 20+ Year Treasury ETF (NYSE Arca: TBT) attracted \$1.5 billion in net inflows in the first five months of 2009. Its sister fund, the ProShares UltraShort 7-10 Year Treasury ETF (NYSE Arca: PST), has pulled in \$271 million.

Two newer inverse Treasury ETFs from DirexionShares have so far attracted little attention, despite offering -300% exposure to Treasury markets. They are new to market, however, and may yet succeed.

The biggest question is whether these funds will deliver the returns investors expect. As covered previously in this magazine, and as discussed recently in a webinar at IndexUniverse.com (replay available), inverse and leveraged ETFs are *not* designed for long-term exposure. TBT, for instance, is designed to provide -200% of the *daily* return of its benchmark index, but there is no guarantee that it will provide -200% of the *long-term* return of that index.

Indeed it has not. For the year ending May 29, 2009, the index that the fund tracks the Barclays Capital (née Lehman) 20+ Year Treasury Index rose by 5.35%. Investors might

have expected to lose 10.70% of their money in TBT, or negative two times the index. But TBT actually lost 28% over that one-year time frame.

This apparently dismal performance has nothing to do with problems in the fund, and everything to do with simple math. When you compound leveraged or inverse returns in a volatile environ-

has worked perfectly.

It's just the nature of the beast. In volatile markets, leverage hurts returns.

Interestingly, the opposite is also true: In a trending market—one with low volatility—leverage boosts returns. Again, simple math offers the explanation. To return to our example, suppose that the index rises 10% on day 1 and another 10% on day 2. The index goes from 100 to 121, up 21%, while the ETF falls to \$64/share, down 36% ... a better return than the -42% you might expect.

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ment, you inevitably fall behind the simple long-term multiple of the index itself. That's how it's *supposed* to work.

An example makes this clear. Suppose you start off with an index at 100 and a -2X ETF worth \$100/share. On day 1, the index rises 10% to 110 and the ETF falls 20% to \$80/share. On day 2, the index falls 10% to 99 and the ETF rises 20% to \$96/share.

After two days, the index is down 1% (from 100 to 99) and the ETF—which is designed to deliver -200% of the return of the index—is down 4% (from \$100 to \$96). Yet, everything

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In the March 2009 issue of the *Journal of Indexes*, I examined the historical returns of the leveraged and inverse ProShares ETFs linked to the Dow Jones Industrial Average. The goal of the study was to show how long you could hold the funds and achieve something close to a simple long-term multiple of the index.

The study compared the realized returns of the funds versus a simple multiple of the index over various rolling holding periods: 1 day, 5 days, 21 days, 63 days and 1 year. The findings showed that somewhere between one week and one month was the optimal holding period, where the realized return of the ETF was close to the simple multiple of the index return.

Given all the interest in the leveraged and inverse Treasury ETFs, I've con-

Figure 1

Inverse Treasury ETFs						
Fund	Ticker	ER	Assets	YTD Inflows	May Inflows	
ProShares UltraShort 20+ Year	TBT	0.95%	\$4,000	\$1,547	\$123	
ProShares UltraShort 7-10 Year	PST	0.95%	\$460	\$271	(\$25)	
Direxion Daily 30-Year Treasury Bear 3x	TMV	0.95%	\$27	\$23	\$16	
Direxion Daily 10-Year Treasury Bear 3x	TYO	0.95%	\$7	\$7	\$0	
SUM			\$4,494	\$1,848	\$114	

Sources: National Stock Exchange, ProShares, DirexionShares. All data through May 31, 2009. Assets and inflows in \$US million.

ducted a similar study of those returns for the most popular ETF of the bunch, ProShares' TBT. The reason for conducting a separate study is simple: Treasuries, on average, have lower volatility than stocks. Because volatility is the key driver of this expectations-gap in leveraged products, it's interesting to posit that the appropriate holding period for an inverse Treasury ETF might be longer than for a comparable equity fund.

Real Returns

The methodology of this analysis is simple: I compare the total return of the ETF to a simple multiple of the total return of the index over 1-, 5- and 21-day holding periods. I don't include 63-day or one-year holding periods because TBT has only been around for a little over a year, and there isn't enough data for a meaningful result.

After evaluating the performance of the ETF versus a simple multiple of the index, I then look to see how close the ETF came to a simple multiple of the index in 95% of the rolling time periods.

The study looks at rolling return periods from May 1, 2008 through June 1, 2009.

The study shows that TBT does a good job tracking its index on a one-day basis. In 95% of the cases, the ETF's NAV return is within 0.11% and -0.07% of the intended -2X index return. There are a few anomalous tail results that are worrying, but the bulk of returns are quite close to 0%.

Broadening out to five days, the returns still look good. Ninety-five percent of returns are within 0.70% and -0.95% of the simple multiple of the index return, with reasonable tails.

Things start to stretch out on a 21-day (one-month) basis, however, with 95% confidence intervals from 2.16% to -6.43%, and serious tail risk on the downside. These results are less robust because there are relatively few readings, and the readings overlap significantly; still, they start to define the outside edge of a comfortable investor experience.

Historical Index Returns

To gain a better understanding of how the fund would have performed

over a longer time period, you can run a similar performance study using index returns rather than historical fund returns. Data on the benchmark index for TBT—the Barclays Capital 20+ Year Treasury Index—is available stretching back decades.

To do this, you can create an imaginary fund that delivers -2X the daily return of the index with zero tracking error. Ignoring tracking error is not ideal, but the earlier study showed that one-day tracking error for TBT is limited, so it's not entirely preposterous either. At the very least, this kind of study isolates the impact of compounding on the realized performance.

These results compare favorably with the results seen in the Dow Jones Industrial Average-tracking ETFs in my earlier *Journal of Indexes* study. On a rolling 21-day (one-month) basis, the 95% confidence band for the ProShares UltraShort Dow ETF (NYSE Arca: DXD) extended from 1.94% to -11.82%, with the tail risk running above 15% on the upside and below 15% on the downside. The bands for the Treasury ETF are a fraction of that, with the 95% confidence interval staying within 2% of the simple multiple return.

That's not surprising, given that Treasuries generally have lower volatility than equities. The difference between compounding one-day returns and long-term leveraged returns rises exponentially with increasing volatility. The lower the volatility of the asset, the longer you can hold it and expect to get close to the long-term simple return.

Still, as the holding period increases, the risk of deviation between a simple multiple of the index return increases. Given that the average

annualized return of the index over the past five years is just 7.35%—the equivalent of a -14.70% return using a simple 2X multiple—the 95% confidence interval for one-year returns (running between 4.71% and -8.89% is fairly large.

Conclusion

Investors who want to make a short-term bet against U.S. Treasuries can use the ProShares (and, most likely, competitive products) comfortably. In the vast majority of circumstances measured over a day, a week or even a month, these types of funds will likely deliver close to a simple multiple of the long-term index return. Relative performance should be monitored closely, but in general, they deliver on this simple promise.

As you extend out over a month, however, more care is needed. Investors looking for long-term negative exposure must periodically monitor their exposure to the index, and adjust their positions if the discrepancy becomes too large. More than in any other part of the ETF universe, caveat emptor. ♦

Figure 2

TBT: Difference Between Realized Return And Simple -2X Multiple Return			
	1-Day	5-Day	21-Day
Tail High	0.76%	1.15%	2.97%
95% High	0.11%	0.70%	2.16%
95% Low	-0.07%	-0.95%	-6.43%
Tail Low	-0.68%	-2.58%	-15.31%

Sources: ProShares and Barclays Capital

Figure 3

Hypothetical Index Returns: Barclays Capital 20+ Year Treasury Index				
	5-Day	1-Mo	1-Qtr	1-Yr
Tail High	0.93%	2.09%	4.88%	10.76%
95% High	0.23%	1.23%	2.92%	4.71%
95% Low	-0.26%	-1.78%	-2.86%	-8.89%
Tail Low	-1.86%	-14.98%	-17.96%	-26.36%

Sources: ProShares and Barclays Capital