

Warning: Leveraged and Inverse ETFs Kill Portfolios

Too many people are making sucker bets with these products.

If you've ever purchased an ETF labeled as Ultra, 2X, Double Long, or Inverse, please read this article. It will take only a few minutes of your time, and it just might save your retirement.

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I recently returned from the 'Inside ETFs' conference, which is widely attended by ETF industry insiders and financial advisors, and I was shocked to learn how many people have a misconception as to how these funds work. And this sampling was not of novice day traders--these are professionals and financial advisors. They research a product before they dispense advice or buy something.

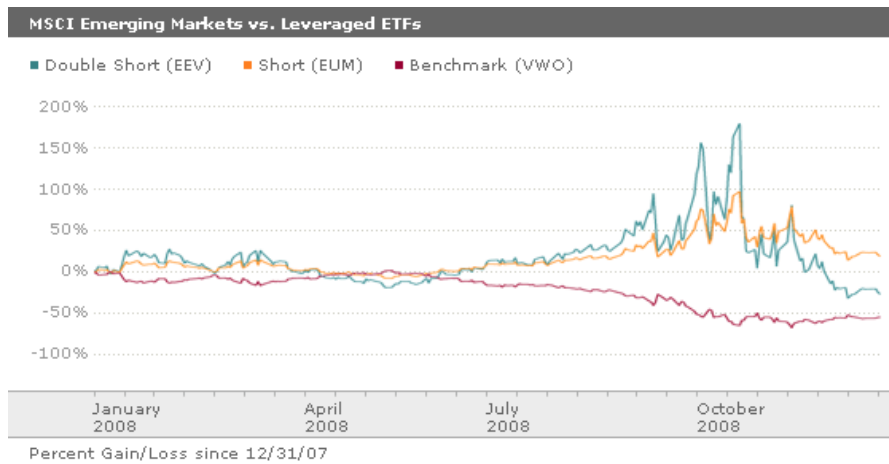
My intent is not to scare you away from pursuing an actionable investment idea. If you're hell-bent on using leverage for any period of time longer than a day, you'd be better off using a margin account in almost any real-world scenario. This is not an opinion--it's a highly likely statistical probability. And interestingly enough, each successive time you bet against the odds, probabilities tend to become mathematical facts. It is my fiduciary duty to inform you as to why these products do not work exactly like their names imply, and I urge everyone in the ETF industry to embark on a similar public awareness campaign.

Today, there are more than 845 ETFs on the market. Some are great products that have greatly enhanced the investor experience. Others are betting mechanisms that can scorch your portfolio in just a few days. When we put together an ETF research report, and we currently cover more than 300 ETFs that represent over 94% of the market's total assets, our intent is to let you know how to use these products properly. We start with a suitability assessment, or our view as to which type of investor should use each specific product and how. With virtually every leveraged and inverse fund, I can tell you that they are appropriate only for less than 1% of the investing community. Considering that these funds have attracted billions of dollars over the past year alone, it's pretty obvious that too many people are using these incorrectly.

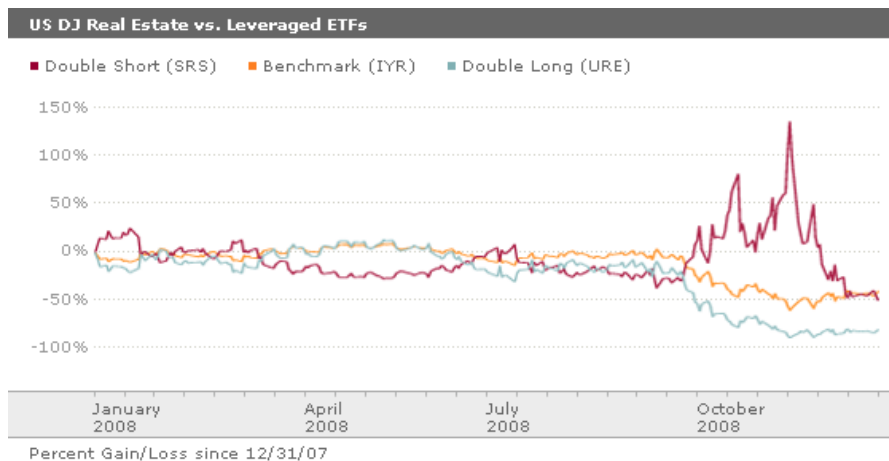
Check Out these Returns (or Lack Thereof)

Pointing out that leveraged ETFs are working as they were intended would hardly be shocking news if the returns these funds were producing were not so, well, shocking.

Here are three funds that track the same MSCI Emerging Markets Index: Vanguard Emerging Markets Stock ETF VWO, Short MSCI Emerging Markets ProShares EUM and UltraShort MSCI Emerging Markets ProShares EEV.



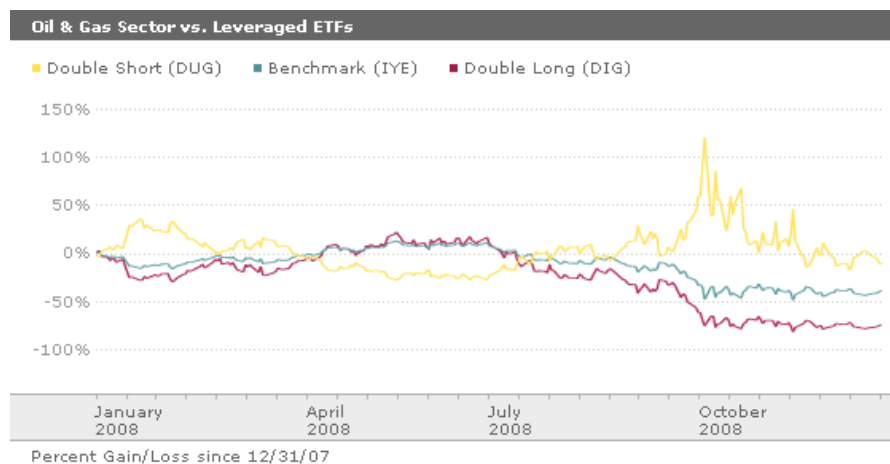
To summarize, one fund tracks the index and lost 52% last year, one aims to deliver the inverse of the index and gained 20%, and the last aims to deliver twice the inverse of the index and lost 25%. Did you follow me there? While the fund that held the stocks lost 52%, the one that aimed to deliver twice the inverse also lost a substantial 25%. And the funds worked like they were supposed to. And this was one of the better performing examples. At least the inverse fund, which is meant to be used only for a single day, produced a positive return, as expected. Check out this next example.



If you were prescient enough to predict the collapse of real estate last year, you could have earned a savory 40% return by shorting iShares Dow Jones US Real Estate IYR. So logic would hold that owning UltraShort Real Estate ProShares SRS would have produced a positive 80% return, right? Absolutely wrong. I say absolutely because, in absolute terms, you would have lost even more money using the double-short fund—which is supposed to go up when the index goes down. The disappointing truth: the funds worked like they were supposed to. Before you declare my last statement as blasphemous, the fund did indeed perform as the prospectus declared it would. It is the investor that held the leveraged or inverse fund for more than a single day that erred in practice.

Buying the double-short fund would have produced the most negative of investing emotions: right thesis, wrong execution.

Maybe international and real estate examples don't suit your fancy. Let's move over to the energy sector with sister funds Ultra Oil & Gas ProShares DIG and UltraShort Oil & Gas ProShares DUG.



Oil and gas producing stocks went for a wild ride in 2008, spiking for the first seven months of the year and cratering the rest. So which of these leveraged ETFs made money for you? Neither. They both lost, with DIG down 69% and DUG down 19%. And again, the funds worked like they were supposed to.

Why Joe Camel on the Label Trumps Warnings of Death

We laud ETFs for their transparency, tax efficiency, low costs, and liquidity. It's no wonder this group has continued to attract new assets even as the market has floundered. But just because these funds are transparent does not mean that a potential investor does not need to look under the hood before purchasing. There's more to the structure than the name implies.

It's pretty easy to understand why some investors would be attracted to funds that promise double returns. For example, let's look at the uninitiated investor that is considering a purchase of the NASDAQ 100, to which investors can easily gain exposure by buying PowerShares QQQQ. Here's the typical (misguided) thought process:

- 1) I'm convinced that QQQQ will go up 10% a year, so I'd like to own it;
- 2) But there is a fund, Ultra QQQ ProShares QLD that promises 2X the Nasdaq's return;
- 3) And 20% is more than 10%;
- 4) So I'll just buy the leveraged fund (QLD) and be twice as happy.

Seems like a reasonable conclusion, right? After all, the fund's literature clearly promises twice the daily return of the index. But the key word is daily. Daily is not monthly, and it's definitely not annually.

In every leveraged ETF report that we write, we warn investors that the math behind daily compounding will not work because of compounding arithmetic and constant leverage, but I get the feeling that the message is not getting across. I'm visualizing many readers' eyes becoming glazed at the very thought of walking through the algebra, so I'll try to make it as exciting as algebra can get. But please stick with me.

I think that we can all agree that Albert Einstein was pretty smart. Legend has it that the theoretical physics' MVP of all time famously stated that "the most powerful force in the universe is compound interest." Many people have been persuaded to start investing after seeing this very simple example of compounding's magic. Let's say you put \$100 in a savings account that pays 10% per year. After one year, you'd have made \$10 in interest (\$100 multiplied by 0.10), so your balance stands at \$110 (your original investment of \$100 plus \$10 interest). If you leave the entire sum in the account, at the end of year two you would have \$121. With the same 10% interest rate, you made \$11 (\$110 multiplied by 0.10) in year two versus \$10 made in year one. As the adage goes: "Your money is working for you." Continue this same math for seven years, and your account would nearly double, ending at \$195. If you divide the \$95 you made over seven years, your average return would be 13.55%. Clearly, the average return on your initial investment exceeded the interest rate of 10% that occurred every year, or the rate that compounded.

But there is one interesting characteristic in this example that does not apply to the stock market: The returns were positive in every single period. Stocks tend to wax and wane from day to day, going from positive returns one day to negative the next. It's true that stocks, on average, have produced higher returns than fixed-income over long periods of time, but we've already demonstrated that average returns and compounded returns are very different animals. The point I am trying to make is that coming up with an actionable investment thesis (i.e. stocks look cheap) is difficult enough. Trying to also predict the exact timeframe over which your idea will become reality is even more difficult. Finally, actually detailing the path--knowing how volatile the daily price swings will be and in which direction--is nearly impossible. If you intend to hold leveraged or inverse funds beyond their compounding periods, you'd have to be right on all these factors to get double the index's return. In other words, when employing leverage and compounding returns, predicting your return is only part of the challenge. You also have to correctly predict the path the investment is going to take.

Notice that Einstein declared that compound interest is very powerful, but powerful forces can work both for and against you. Interestingly enough, anytime you compound a negative return, its impact is always more pronounced than a positive compounding of the same magnitude. I'll demonstrate with a two-day example.

Let's say you make a \$100 investment in each of three funds. One is a simple investment in an index. Then you have two leveraged funds that compound daily; one is double-long and the other is double-short (returning twice the inverse of the index). After one day, the index returns 10%. The index value would then be \$110. The double-long would add 20% and end at \$120, and the double-inverse would lose 20% and end at \$80.

On day two, let's say the index loses 10%. That means that the average return $[(10\% - 10\%)/2]$ would be zero. However, the index itself would end at \$99 because 10% of \$110 is \$11, and \$110 minus \$11 is \$99. The fund that promises double the return of the index but compounds daily would end at \$96. Remember, this fund started the day at \$120. Its return for day two is -20% (double the index's loss), and leaves it with a \$24 loss for the day. So, \$120 minus \$24 is \$96. The double-short fund would also end at \$96 because 20% of \$80 is \$16, and \$80 plus \$16 is \$96.

If you were to repeat 10 consecutive days of up 10% days followed by down 10% days, both of the leveraged funds would end up at \$81.54, which is a sizable difference from the \$95.10 the index would end at. Repeat this process for only six months, and your 'investment' in either of these leveraged funds would stand at only \$2.54. Yes, that's a 97.46% loss. Talk about tracking error.

That's why compounding of daily returns is the dead horse that apparently needs a little more beating. Leveraged and inverse ETFs are NOT meant to be held as long-term investments. Let me repeat myself: Very bad things not only can happen whenever you hold these ETFs longer than their indicated compounding period (typically one day for stock-based ETFs, sometimes monthly for commodities), you are almost mathematically guaranteed to get a return that is not double that of the index. In fact, the longer you hold one of these funds, the probability that you will get nothing close to double the returns increases. Not only will the magnitude of your returns bounce around, you might not even get returns that are in the same direction as the changes in the index. (I'm not making this up. Please look at the above graphs again).

The Curious Case of Google

Just as we know that no real world indexes go only straight up, we also know that many don't have each up day followed by an equal but opposite down day. So here's another example: Google GOOG, which was an instant sensation when it went public in August 2004. Let's pretend that you were not smart enough to get in on the IPO date, but you jumped on the Google bandwagon instead on Jan. 3, 2005, at the market closing price of \$202.71. You would have been euphoric until Nov. 6, 2007, when the stock closed at \$741.95. At this point, you're ready to declare yourself a stock market genius and ponder buying a modestly sized sailboat, which you'll name "Market Timer." Alas, you fail to pull the sell trigger that day, and you proceed to hold on to Google until the end of 2008, where the stock closes at \$307.65. At this point, you'll refrain from writing your investing biography, but you're content enough with your 52% return given that the S&P 500 has done nothing but nosedive.

Let's also pretend that you're more than willing to share your market insights with your hyper-competitive brother-in-law. You let him know about your Google purchase the moment you pull the trigger, and he jumps at your idea. However, he's crafty. He finds an obscure ETF that promises double the daily returns of Google for a low 0.75% per year fee. Fast forward to Google's high in November 2007. While you're delighted that your sister will be well provided for, his non-stop bragging about his 677% return is driving you nuts. You're thinking about getting a recreational boat, and he's boasting that you can dock it at the lake house he's going to buy. And this jerk's doing it with your idea.

Alas, once he hears that you're not ready to sell, neither is he. When the two of you meet up again for New Years 2009, he's fuming because he's not only given back his gains, he's actually lost 2% of his initial investment. That's right, you're up 52% and he's lost money. You'd like to smirk, but your poor sister is married to this knucklehead. To add insult to injury, you have to pick up the tab at the end of night because he's broke. He would have had to not only capitalize on your investment idea, but also mimic your execution in order to have been positive. Compounding returns strike again.

Here's my last example. If you've already wrapped your arms around the concept, please skip to the next section. This time around, I'll use a pretty little table to illustrate my point.

Month	Crude Oil Index	Traditional Single Long ETN	Single Short ETN	Double Long ETN	Double Short ETN	Triple Long ETN	Triple Short ETN
0	35	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00
1	40	\$114.25	\$85.68	\$128.53	\$71.39	\$142.82	\$57.11
2	45	\$128.49	\$74.94	\$160.62	\$53.52	\$196.33	\$35.67
3	50	\$142.72	\$66.58	\$196.26	\$41.61	\$261.70	\$23.77
4	55	\$156.94	\$59.90	\$235.44	\$33.27	\$340.11	\$16.63
5	60	\$171.15	\$54.43	\$278.16	\$27.21	\$432.74	\$12.09
6	65	\$185.35	\$49.88	\$324.41	\$22.66	\$545.77	\$9.06
7	60	\$171.02	\$53.70	\$274.38	\$26.14	\$415.78	\$11.15
8	55	\$156.71	\$58.15	\$228.55	\$30.49	\$311.68	\$13.93
9	50	\$142.40	\$63.42	\$186.91	\$36.02	\$226.56	\$17.73
10	45	\$128.11	\$69.73	\$149.46	\$43.21	\$158.51	\$23.04
11	40	\$113.83	\$77.46	\$116.19	\$52.80	\$105.62	\$30.71
12	35	\$99.56	\$87.11	\$87.10	\$65.98	\$65.97	\$42.21
Annual Return		-0.44%	-12.90%	-12.89%	-34.02%	-34.02%	-57.79%

I've constructed an imaginary fund that delivers twice the monthly returns on a barrel of crude oil, charges an annual fee of 0.75%, and pays interest at the T-Bill rate of 0.30%. If you're curious, this is very similar to PowerShares DB Crude Oil Double Long ETN DXO. Let's say oil is priced at \$35 today, and the price is going to go up by \$5 every month for the next six months. After six months, you'd be delighted to see that your initial \$100 investment had grown to around \$325, which is even greater than twice the promised return. The reason the fund would have gained 225% up to this point is that there was no single downtick: It was a perfectly straight upward trend. This is an event that very rarely happens in reality over long periods of time. One of the only examples I've been able to find that exhibited this behavior was the Fairfield Sentry fund. That was managed by one Bernie Madoff, and it turns out those returns weren't so real after all.

Back to our example. Now let's assume that the good times are over, and over the next six months, oil goes down by \$5 per barrel per month. It then ends the year exactly where you started, at \$35. Due to the disappointing mathematics of the volatility drag, you would lose around 13% of your original investment, thanks to the fund's leverage and compounding. Oddly enough, the single-short ETN (betting against the index but without leverage) has the same return profile as the double-long ETN. Furthermore, the returns grow more negative with each successive layer of leverage employed.

So Why Are We More Concerned Today?

In November 2008, Direxion released the first slate of triple-leveraged exchange-traded funds, and the market welcomed them with open arms. In a matter of weeks, the suit of 14 ETFs attracted more than \$1 billion in assets, and the firm has expedited the issuance of similarly structured funds.

I think that making 300% bull and bear funds available is good thing for the ETF market--but that doesn't mean it's right for you and me. I am not blaming the institutions that sponsor these funds. They've been very forthright about disclosing the potential shortcomings of these products. The ETF structure is well-suited to house these types of instruments, and there are a few legitimate uses for these funds (mainly for people who manage large sums of money). Any investor that takes the time to thoroughly read and comprehend the prospectus will realize that, when held for anything longer than a few days, the deck is stacked against them under most market conditions.

Here's an example of who could potentially use these funds. Let's say that you're a diversified large-cap mutual fund manager that is facing redemptions. You're going to have to liquidate several holdings, but you don't want to lose your exposure to the market. You could purchase a slug of these leveraged funds in the morning, sell three times that amount of your other holdings to raise cash, and then sell the leveraged fund at the market's close. You would have maintained your market exposure for the day without having to rush at the market's close to dump some holdings.

Another use for these funds is for short-term speculation. If you're inclined to bet--not invest, I said bet--as to what a sector or index is going to do over the course of a day or two, go ahead and use these funds. Good luck. I've never met an investor who can consistently execute this strategy (though I've met plenty who claim they can).

Perhaps investors have been lulled into complacency. After all, most ETFs are extremely transparent, have rock-bottom fees, are extremely liquid, and track their respective indexes in virtual unison. The traditional unleveraged products have worked so well at tracking indexes that perhaps prospectus reading seems like an unnecessary burden. I hope this is not how some investors have evolved, but the asset flows are leading me to believe otherwise.