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Understanding Inverse ETPs: How Daily Rebalancing Impacts Returns

Inverse ETPs have been available in the marketplace for many years, providing investors with access to strategies that had typically been reserved for more advanced investors. The aim of inverse products is to deliver short exposure to an asset or index without the complexities associated with executing a short-sale or derivative purchase. While the "packaged convenience" of an Inverse ETP is very appealing, the real-time performance of some Inverse ETPs may be inconsistent with investor intuition. The following is a discussion of the structural design elements and market conditions which can derail an inverse ETP's ability to accurately perform over multiple trading days.

What is Short-Selling?

Investors who have a view that an asset value will decline in the future and aim to profit from the falling price are said to exercise a shorting strategy. For example, an investor who believes that the prospects for a major U.S. manufacturer have soured and as a result the company's stock should lose value in the near-term may consider selling the company's stock short to profit from those expectations. A typical short sale involves borrowing shares of stock, selling the shares at the current market price, waiting for the price to decline, purchasing (back) the shares, and returning the newly purchased shares to close out the borrow – ideally the price will have declined over the term of the trade and a short-selling profit will be realized approximately equal to the difference between the original sale price and closing purchase price. Assuming the expectations surrounding the manufacturer materialize and dampen the prospects for the stock price, the stock that was sold can then be bought at a lower price in the future delivering a short-sale profit. This example demonstrates the mechanics of a simple short sale of a stock, without considering the borrowing costs and other details. It is worth noting that investors who short a stock have flipped the risk/reward calculus; theoretically, the shorted stock could rise indefinitely (an unlimited loss) while it cannot fall below $0 (a limited gain).

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Beyond Short-Selling Stocks

Just as the investment world is not limited to stocks, there are numerous ways to express a short view. Investors have numerous tools at their disposal, including: options, futures, forwards, swaps and an array of other derivatives which can be transacted outright or through funds or notes. Many investors may be constrained by operational limitations, mandates, or guidelines which do not allow certain practices such as short-selling securities, or transacting in derivatives. These investment restrictions have encouraged the fund industry to offer inverse investments in the form of mutual funds, separately managed accounts, hedge funds, and more recently Exchange Traded Products.

The Rise of Inverse ETPs

The Exchange Traded Product market has evolved to a point today where investors can now buy products that offer short exposure to many asset classes including, stocks, bonds, commodities, and currencies. On the face of it, inverse ETPs seem straightforward; if the expectation is that the U.S. stock market will decline in the near future, one should buy an ETP that provides inverse exposure to U.S. stocks. However, in practice, many factors including the length of the holding period, the volatility of the underlying market, and the daily re-trading/rebalancing mechanics of an Inverse ETP can complicate the story.

Daily Rebalanced Inverse ETP Returns Discussion

Conventional Inverse ETPs are designed to control for the potential of unlimited losses (as highlighted above). Conventional Inverse ETPs are also designed to deliver the inverse multiplier (e.g. "-1x" or "-2x") for each investor for a single trading day. These two objectives are the primary reasons that Inverse ETPs are structured to rebalance any gains or losses at or around each market close on a daily basis ("daily rebalancing"). A consequence of this daily rebalancing is that the performance of many Inverse ETPs may vary dramatically from their stated objective over a holding period which exceeds a single trading day. While Inverse ETP issuers alert investors that longer-term investments in these products may not provide the intended performance, real world practicalities (including the fact that an investor's view may require more than a single day to unfold) lead to lots of "off label" use. Two main considerations when evaluating the performance of inverse ETPs are:

- Daily Rebalancing – in order to limit losses and deliver stated leverage, many ETP issuers have structured their products to closeout/rebalance positions on a daily basis
- Path Dependency of Returns –prices movements of prior days directly impact the performance

Daily Rebalancing and Its Consequences

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While "long-side" investors are regularly reminded that volatile and choppy markets can impair returns, it is often forgotten that "short-side" (or inverse) investors can and should benefit from choppy markets. For example, a +10% return followed by a -10% return creates a 1% loss to the long-side investor. Similarly, a -10% return followed by a +10% also creates a 1% loss to the long-side investor. What is often forgotten is that these same volatile and choppy markets deliver a gain to the short-side investor (as illustrated below).

Considering the "Institutional-Short/Inverse" two-period scenario in Table 1 below, an

institutional investor is assumed to: (a) start with $100 in cash, and then (b) sell short $100 of stock for a net position worth $100 (i.e. original cash of $100, plus sale proceeds of $100, minus the short position worth -$100 equals $100). Assuming that the position rallies (increases) by 10% during period 1, the investor's short position has increased in value (from -100 to -110) leading to a net loss of $10 and a net position value of $90. Assuming that the stock then declines by 10% during period 2, the investor's short position declines in value by 10% (from -110 to -99) leading to a net gain of $11 (101 – 99) – note that the cash position does not change because the institutional investor does not engage in any daily rebalancing or re-trading. Importantly, the net result to the investor is a gain of $1 (beginning net of $100 and ending net of $101), and this gain is independent of the sequence of market movements (i.e. +10% followed by -10% will create the same result as -10% followed by +10%).

Turning to the "Conventional Exchange Traded Product – Short/Inverse" two-period scenario in Table 1 below, an Inverse ETP is assumed to face the same two period market scenario as the Institutional investor (+10% followed by -10%). The reader should note that, rather than leaving the period 1 result untraded at -110 the way the Institutional investor did (the "pre-rebalanced" value), the ETP rebalances its short position down; while the rebalancing is designed to realize the periodic loss of $10, in an Inverse ETP it has the effect of altering the short-position available to the Inverse ETP investors by twice the $10 loss or $20 (Note: generally the Inverse ETP will re-trade/rebalance its short position, such that the size of the short position is equal to the appropriate multiple of net equity of the ETP or $90 in this example). The short position of 90 (rather than 110) is then carried into period 2, where the Inverse ETP has a return benefit of $9 (90 to 99) when the market move is a favorable -10%. The Inverse ETP ends the two-period scenario with a loss of $1 ($100 to $99).

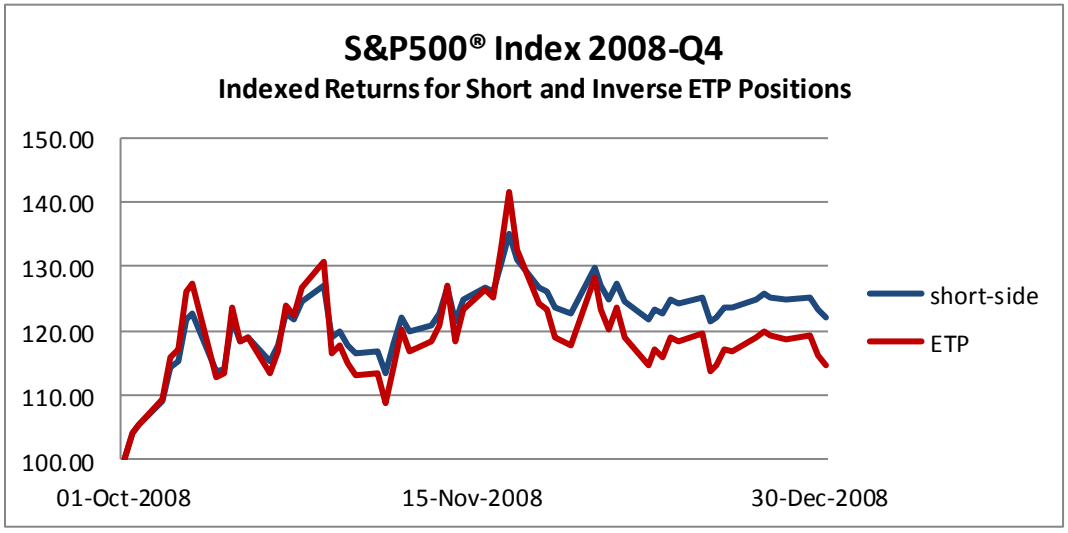
The consequences of daily rebalancing are dramatic……

The consequences of daily rebalancing are dramatic in this simple two-period example – rather than gain a $1 benefit from the choppy market consistent with an institutional investor, the ETP investor has not only lost the benefit $1, but has suffered losses that are usually only associated with a long-side position for a net loss/swing of $2 (-1 rather than +1). Considering that the -$2 swing is caused by Inverse ETP rebalancing and not natural to a short-side position, it is an important "cost" consideration when choosing an Inverse ETP.

Table 1: Hypothetical ETP Daily Rebalancing Illustration

position	period 1	period 2		period 3		exit
market move	0%	+10%		-10%		
Institutional - Short/Inverse						
position	-100	-110		-99		
cash	+200	+200		+200		
net	+100	+90		+101		+1
Conventional Exchange Traded Product - Short/Inverse						
		pre-rebalance	post-rebalance	pre-rebalance	post-rebalance	
position	-100	-110	-90	-81	-99	
cash	+200	+200	+180	+180	+198	
net	+100	+90	+90	+99	+99	-1

Figure 1 below illustrates a hypothetical example using real-world index data. Figure 1 examines the 2008 fourth- quarter S&P500® index, and assumes that two investors have correctly forecasted and invested in a short position; an institutional "short-side" investor who has traded through a short-sale or other means, and an Inverse ETP investor. The change in the index from October 1, 2008 to December 31, 2008 (close-to-close) is approximately -22.2% without accounting for fees, dividends, or other details. The "short-side" line illustrates an October 1 to December 31 return of 22.2 points (December 31 value of approximately 122.2) on an indexed value of 100 for a simple return of +22.2%. In contrast, the "ETP" line illustrates the Inverse ETP return over the same timeframe and the same index returns, however the "ETP" values are subject to daily rebalancing consistent with a conventional Inverse ETP. The Inverse ETP final value is not 122.2, but rather 114.6 indicating a hypothetical Inverse ETP return of 14.6%. In this 90-day S&P 500 example, the daily rebalancing has had the effect of reducing the Inverse ETP investor's return by approximately 7.6 points over the quarter – approximately 35% of the "short-side" return has been lost to daily rebalancing.



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Conclusion

Asset values don’t only rise, they also fall and there can be handsome rewards for those willing to capitalize on falling prices. Traditionally, short strategies had been reserved for only the most advanced investors, but the growth and development of the Exchange Traded Product market has democratized short-side investing. As illustrated above, all short-side transactions do not always deliver the same performance, and it is the responsibility of the investor to understand the mechanics and trade-offs of each alternative. Many complex strategies and vehicles can prove valuable, but it’s important to conduct the proper due diligence of each investment to determine whether the vehicle will achieve investment goals. With that in mind, investors need to be aware of the structure of Inverse ETPs and its influence on returns. For those Inverse ETP investors practicing “on-label” single trading day usage, the Inverse ETP should generate few disappointments or surprises, but those investors practicing multi-day “off-label” usage should carefully consider how daily rebalancing and retrading within the Inverse ETP may impact multi-day returns.

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