



May 2024

6 ways volatility increases risks for short and leveraged ETP investors



WisdomTree.eu
+44 (0) 207 448 4330

6 ways volatility increases risks for short and leveraged ETP investors

WisdomTree offers the broadest range of Short and Leveraged Exchange Traded Products (S&L ETPs) globally, covering most asset classes in both unleveraged and leveraged formats (-5x to 5x). Such Short and Leveraged Exchange Traded Products (S&L ETPs) can be used to achieve a wide range of investment goals:

- + **Expressing tactical views**
- + **Hedging other assets**
- + **Managing the risk in a portfolio**
- + **Creating complex investment strategies**

At WisdomTree, we strive to provide our clients with top-class investment vehicles to serve their needs. However, S&L ETPs are complex instruments that bear higher risk than traditional long only ETPs. This risk is even greater during periods of heightened market volatility, and investors face a greater risk of losing all their investment than in normal times. Here is a list of risks to keep an eye out for.

1. Leverage creates more extreme gains and more extreme losses

By definition, using leverage magnifies returns, both on the upside and the downside. Every day investors are exposed not only to the moves of the underlying asset but to a multiple of those moves. If the market is down -3%, then a 3x S&P ETP is down -9%. In normal market conditions, adverse price movements intraday or overnight can quickly and significantly reduce the value of a leveraged ETP sometimes to zero. In periods of high volatility or high stress in the market, this risk is exacerbated. Daily returns of the underlying markets are greater and the likelihood of a move that wipes out the value of a short or leveraged product is significantly higher.

Numerically, what does that mean?

Focusing on a S&P 500 3x S&L ETP, in normal conditions, the average volatility of the underlying asset (the S&P 500 net Total Return Index) is around 19.5%¹. What that means is that in 98 business days out of 100, the daily performances of the underlying asset are expected to range between -2.9% and +2.9%². Please note that for the remaining 2 business days, the daily performance would be potentially a lot larger. For the 3x leveraged product, in those normal

1 Source: WisdomTree, Bloomberg. Period 31st December 1998 to 20th April 2020 for the S&P 500 net TR Index

2 Assuming that Asset Returns are normally distributed, it is possible to calculate the upper bound and lower bound of a range that would contain a given percentage of all returns. For short period of time, we can approximate that the range $[-2.33 * \text{Volatility}, 2.33 * \text{Volatility}]$ contains 98% of all returns in the distribution.

market conditions, those daily performances would translate into returns ranging between -8.7% and 8.7%.

However, in a period of high volatility like March 2020, we observed a volatility of 90%³ (instead of 18%). In that type of period, in 98 business days out of 100, the daily performance of the underlying asset are expected to range between -13.7% and +13.7%; important to stress again that in the remaining 2 days, the moves would be even bigger. For a 3x leveraged ETP, this would translate into daily performance ranging between -40.1% and +40.1% in those 98 business days which is already quite extreme. Looking at the theoretical returns of a 3x S&P 500 EPT, we do observe those extreme returns over the month of March 2020.

Figure 1: Theoretical 3x S&P 500 ETP daily returns in March 2020

Date	NAV Line	% Change
03/31/2020	353.0404	-4.79
03/30/2020	370.7886	10.07%
03/27/2020	336.8533	-10.11%
03/26/2020	374.7401	18.73%
03/25/2020	315.6251	3.46%
03/24/2020	305.0813	28.17%
03/23/2020	238.0376	-8.80%
03/20/2020	261.0134	-12.98%
03/19/2020	299.9390	1.42%
03/18/2020	295.7333	-15.55%
03/17/2020	350.2047	17.99%
03/16/2020	296.8161	-35.97%
03/13/2020	463.5731	27.92%

³ Source: WisdomTree, Bloomberg. Period 29th February 2020 to 31st March 2020 for the S&P 500 net TR Index

Date	NAV Line	% Change
03/12/2020	362.3897	-28.50%
03/11/2020	506.8549	-14.66%
03/10/2020	593.8904	14.81%
03/09/2020	517.2613	-22.80%

Source: WisdomTree, Bloomberg. In USD. March 2020. **Historical performance is not an indication of future performance and any investments may go down in value**

In the table below I ran the same numbers for different asset classes for longer periods of time and for March 2020, as an example, and we observe clearly that the probability of very large loss up to 100% of the capital invested was high. Products tracking underlying assets with higher volatility like Crude Oil show extremely elevated returns.

Figure 2: The impact of increased volatility on daily returns⁴

	Normal Market Conditions			March 2020		
	Volatility	Underlying Asset 98% of Daily Range	3x S&L ETP 98% of Daily Returns fall in this Range	Volatility	Underlying Asset 98% of Daily Range	3x S&L ETP 98% of Daily Returns fall in this Range
S&P500	20%	-2.9% to 2.9%	-6.3% to 6.3%	90%	-13.7% to 13.7%	-40.1% to 40.1%
Gold	20%	-2.9% to 2.9%	-6.3% to 6.3%	43%	-6.3% to 6.3%	-18.9% to 18.9%
WTI Crude Oil	35%	-5.1% to 5.1%	-15.3% to 15.3%	166%	-24.3% to 24.3%	-72.9% to 72.9%
USDEUR	10%	-1.4% to 1.4%	-4.2% to 4.2%	16%	-2.3% to 2.3%	-6.9% to 6.9%
Bund 10Y	6%	-0.9% to 0.9%	-2.7% to 2.7%	13%	-1.9% to 1.9%	-5.7% to 5.7%

Source: WisdomTree, Bloomberg. For “Normal Market Conditions”, the period observed is: 31st December 1998 to 20th April 2020 for the S&P 500 net TR Index, 14th January 1975 to 20th April 2020 for Gold using the Bloomberg Gold Sub Index TR Index, 13 January 1984 to 20th April 2020 for WTI Crude Oil using the Bloomberg WTI Crude Oil Sub Index TR Index, 2 January 1975 to 20th April 2020 for USD EUR, 4th January 1999 to 20th April 2020 for Bund 10Y using the Bund Rolling Future Index. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

⁴ Assuming that Asset Returns are normally distributed, it is possible to calculate the upper bound and lower bound of a range that would contain a given percentage of all returns. For short period of time, we can approximate that the range $[-2.33 \times \text{Volatility}, 2.33 \times \text{Volatility}]$ contains 98% of all returns in the distribution.

2. In volatile markets, compounding is not the investor’s friend

What is the Compounding Effect?

The “Compounding Effect” is the fact that returns of a short or leveraged ETP differ from the short or leveraged returns of the underlying asset over any period different to one whole day (in fact different from one Net Asset Value i.e. NAV to the next). In a nutshell, at the end of each day, when the NAV is struck, the reference point for the calculation of performance has changed. It is no longer the NAV from the day before, but it is now the new NAV (as impacted by changes in the underlying).

Taking the example of a 2x leveraged ETP with a starting NAV of 100.

On day 1

The reference point is 100. At the end of the day the underlying asset is up 5%, so the ETP is up 10% (forgetting for the moment the impact of fees and costs). The new NAV is therefore equal to

$$100 \times [1 + 2 \times 5\%] = 110$$

On day 2

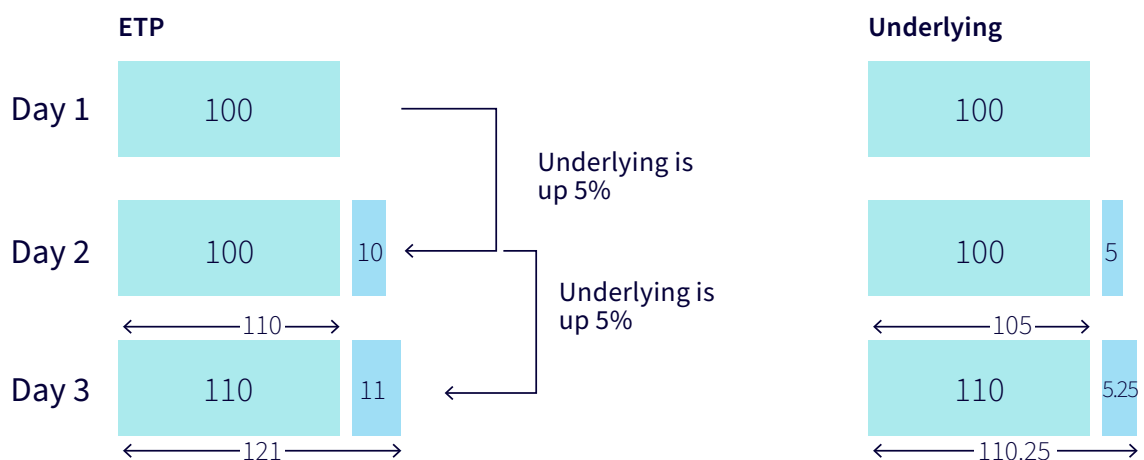
new NAV is now the new reference point. At the end of the second day with a 5% performance of the underlying asset, the new NAV is equal to

$$110 \times [1 + 2 \times 5\%] = 121$$

On Day 3

The reference point is again the new NAV i.e.121. And so on every day for as long as the strategy continues.

Figure 3: The Compounding Effect



Source: WisdomTree. May 2024.

It is worth noting that over the 2 days the underlying asset is up 10.25%. but the ETP is NOT up 20.5%. It is up 21%. The Compounding Effect has added 0.5% performance in this case. Depending on differing scenarios and on the specific series of daily return, the Compounding Effect can be beneficial to investors (like in the case above) or can be detrimental to investors (like in the example below).

[For more details on this complex mechanism and tools explaining how compounding works see here](#)

Is there more risk in crisis/volatile markets?

Yes, in periods of high volatility, the Compounding Effect is more pronounced and may lead to unexpected returns, particularly for holding periods longer than one day. The compounding will be particularly severe when the market alternates between going up and down daily. In such scenarios the Compounding Effect will most likely cost the investor performance rather than result in extra, unexpected gains for the investor.

Let's have a look at our previous example with increased volatility on a 3x leveraged ETP.

On day 1

The reference point is a NAV of 100. At the end of the day the underlying asset is down 5%, so the ETP is down 15% (forgetting for the moment the impact of fees and costs). The new NAV is therefore equal to

$$100 \times [1 + 3 \times -5\%] = 85$$

On day 2

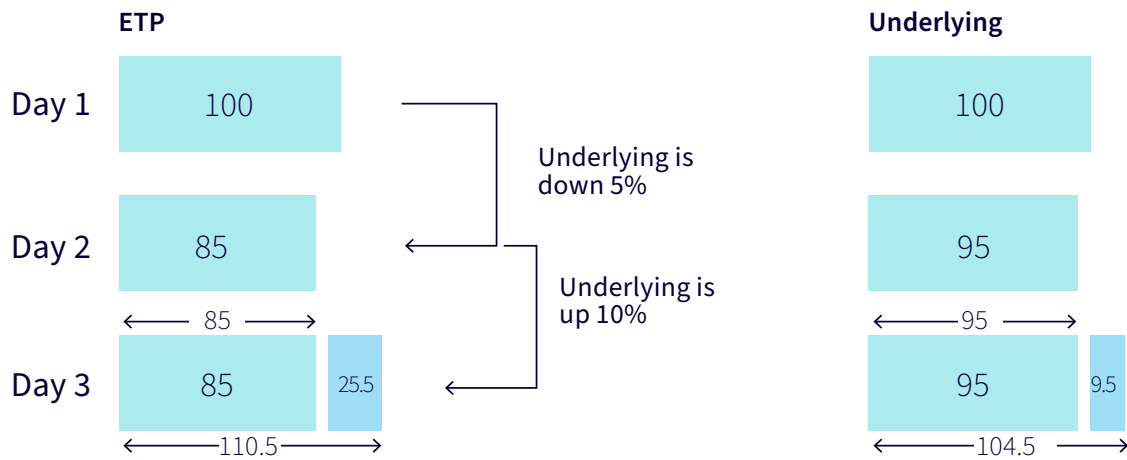
The new NAV is now the new reference point. At the end of the day with a 10% performance of the underlying asset, the new NAV is equal to

$$85 \times [1 + 3 \times 10\%] = 110.5$$

On Day 3

The reference point is again the new NAV i.e.110.5. And so on every day for as long as the strategy is operating. It is worth noting that over the 2 days the underlying asset is up 4.5%. but the ETP is NOT up 13.5%! It is up only 10.5%. The Compounding Effect has cost 3% performance in this case.

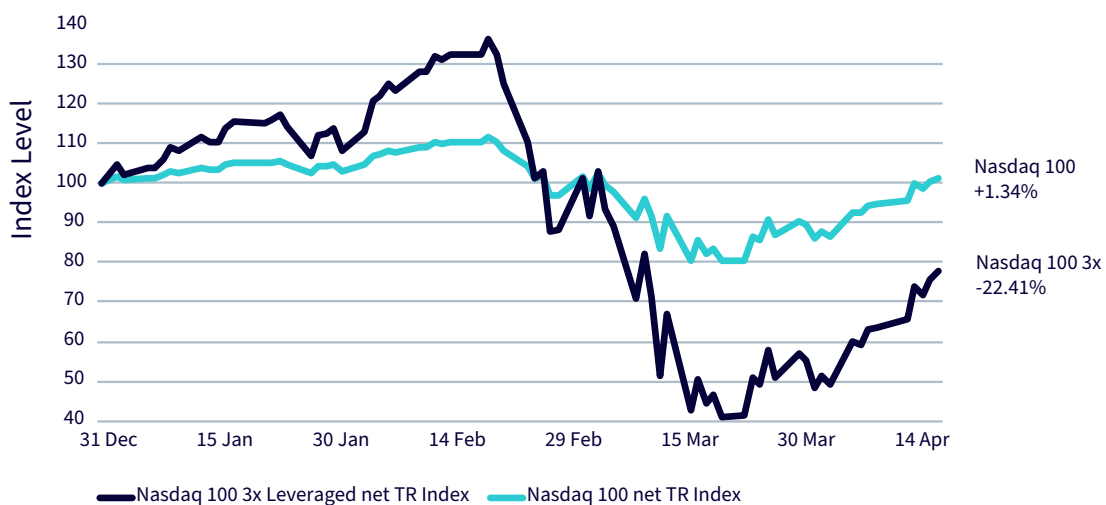
Figure 4: The Compounding Effect



Source: WisdomTree. May 2024.

Over longer periods of time, the effect can be even more dramatic. Looking at the Nasdaq 100 Index and its 3x Leverage version since the beginning of the year up to mid-April 2020, the Compounding Effect could not be clearer. Those last 4 months have been riddled with high volatility and large swings in trends from bull to bear to bull. Over this period, the Nasdaq 100 Index gained +1.34%. Forgetting about compounding, an investor could expect the 3x leverage index to return 4%. However, the 3x leverage index returned -22.41%. There is nothing wrong with those numbers. They are accurate and are exactly what should be expected, based on each day’s performance over the period. The Compounding Effect is the reason for this large difference in performance. It is why S&L ETPs have a short recommended holding period (one day) and are not supposed to be held for months on end.

Figure 5: The Compounding Effect can be very detrimental to investors



Source: WisdomTree., Bloomberg. 31 December 2019 to 14th April 2020. **Historical performance is not an indication of future**

performance and any investments may go down in value. You cannot invest directly within an index.

3. The risk of intraday restrike is elevated

What is an Intraday Restrike?

Some (but not all) S&L ETPs include mechanisms such as an intra-day Restrike that are aimed at helping the strategy continue to trade, as long as is practical under the more extreme conditions. The intra-day Restrike is an event where the ETP will reset, between one NAV Calculation Time and the next, if a certain threshold percentage fall in value of the underlying index is met. For example, a daily 2x (double leveraged) ETP might have a safety reset trigger if the underlying asset falls by 25% (i.e. where a decline of 50% in the theoretical ETP fair value would have occurred). Once this threshold is reached, the NAV of the ETP resets and continues for the rest of the period using the new reference intraday NAV point (to replace the previous NAV). It is worth noting that the reset is a process which takes some time, usually around 15 minutes. This process starts when the underlying index falls by the threshold amount but in cases where the underlying asset continues to fall, the restrike may conclude with a new reference point significantly lower than the threshold itself. In some cases, the reset may not have time to conclude before the underlying index falls so far that the full value of the ETP is wiped out and the ETP therefore terminates with 0 residual value for investors. This is a very fundamental risk: if the underlying asset continues to fall during the Reset process (i.e. during the 15 minutes following the breach of the threshold) and the product goes to zero, then the product terminates and the investors stop being exposed to the underlying asset at that moment.

Is there more risk in crisis/volatile markets?

Yes, with increased volatility, the likelihood that the underlying asset will touch the required threshold amount is higher. This means that more ETPs will be impacted by more numerous Intraday Restrikes.

Despite the fact that Intraday Restrikes are designed to try to slow the rate of loss during periods of extreme market movement, Intraday Restrikes carry their own risks that are exacerbated in high volatility environment:

- + If the underlying asset rebounds just after the Intraday Restrike, the ETP will not benefit from that rebound and the investor would have lost more money than without the restrike.
- + If the underlying asset drops very fast, the restrike may not work and the full value of the ETP could be wiped out and the ETP would therefore terminate.

These processes occur when it is extremely uncertain where the market may move in the subsequent period. In many cases, investors only realise that there was an intraday restrike after the full day of trading has ended. At that time, one would know exactly what happened subsequently to the restrike being triggered. When the restrike was triggered, it is important to note that there was no certain way to forecast exactly what would happen afterwards.

4. The risk of overnight restrike is exacerbated

What is an Overnight Restrike?

The overnight Restrike is similar to the intra-day reset with the important difference that it happens at times where the underlying markets are usually less liquid and therefore the length of the reset period can be longer and both the likelihood of the reset failing and the product terminating with little to no value left is higher. Overnight Restrikes are more rare than intra-day restrike in S&L ETPs.

Is there more risk in crisis/volatile markets?

Yes, with increased volatility, the likelihood that the underlying asset will touch the required threshold amount is higher. This means that more ETPs will be impacted by more numerous Overnight Restrikes.

Even though Overnight Restrikes are designed to try to slow the rate of loss during periods of extreme market movement, Overnight Restrikes carry their own risks that are exacerbated in high volatility environment:

- + If the underlying asset rebounds just after the Overnight Restrike, the ETP will not benefit from that rebound and the investor would have lost more money than without the restrike
- + If the underlying asset drop very fast, the restrike may not work and the full value of the ETP could be wiped out and the ETP would therefore terminate. This risk is exacerbated further by the event happening in less liquid markets.

5. Severe overnight gap events can happen more often

What is a Severe Overnight Gap Event?

WisdomTree S&L ETPs are traded on European stock exchanges only. However, their underlying assets may not necessarily trade on European exchanges only. For example, assets like the US Dollar, or Oil Barrels are traded on multiple exchanges around the clock and around the globe. When European exchanges close, traders move to the next one and so on. Going from Europe to America to Asia and back again. Trading in underlying assets may continue following the news and the actions of the traders around the world on a 24-hour basis. When the European stock exchanges do open again, the price of those underlying assets may have evolved and moved, sometimes significantly.

A Severe Overnight Gap Event happens when an extreme movement in the underlying asset happens and the ETP does not have a Restrike feature available at that point in time (for example, it is outside of the applicable hours for the Intra-day Restrike and the S&P ETP does not have an Overnight Restrike). Like the restrike event, the Severe Overnight Gap Event has a percentage fall threshold level (if the S&L ETP has a positive leverage factor) which if reached, could lead to the

swap provider terminating the product at 0 or little value.

Is there more risk in crisis/volatile markets?

Yes, with heightened volatility, as discussed in Part 1, the likelihood of large moves in underlying markets is markedly higher. This translates into an increase in the likelihood of a Severe Overnight Gap Event occurring. In most cases, in such scenario, S&L ETPs may be terminated with a zero value and, even if the underlying asset subsequently rebounds, the entirety of the investment is still lost.

6. The lack of liquidity can amplify risks

In crises or in periods of stress in the market, we are likely to witness periods where the liquidity in different underlying markets might disappear, partially or fully. Such a lack of liquidity has a direct effect on prices by exacerbating moves up or down and increasing the likelihood of gaps. For S&L ETP investors, this translates into an overall increase in risk for their investment through multiple levers:

- + Adverse price moves can be larger and more frequent
- + Intraday Restrikes and Overnight Restrikes are more frequent and they are more likely to fail to work (because the liquidity is not large enough in the restrike window) and they are more likely to work against the investors by minimising any positive impacts of rebounds
- + Severe Overnight Gap Event and product termination at 0 are also more likely.

Important information

Marketing communications issued in the European Economic Area (“EEA”): This document has been issued and approved by WisdomTree Ireland Limited, which is authorised and regulated by the Central Bank of Ireland.

Marketing communications issued in jurisdictions outside of the EEA: This document has been issued and approved by WisdomTree UK Limited, which is authorised and regulated by the United Kingdom Financial Conduct Authority.

WisdomTree Ireland Limited and WisdomTree UK Limited are each referred to as “WisdomTree” (as applicable). Our Conflicts of Interest Policy and Inventory are available on request.

For professional clients only. Past performance is not a reliable indicator of future performance. Any historical performance included in this document may be based on back testing. Back testing is the process of evaluating an investment strategy by applying it to historical data to simulate what the performance of such strategy would have been. Back tested performance is purely hypothetical and is provided in this document solely for informational purposes. Back tested data does not represent actual performance and should not be interpreted as an indication of actual or future performance. The value of any investment may be affected by exchange rate movements. Any decision to invest should be based on the information contained in the appropriate prospectus and after seeking independent investment, tax and legal advice. These products may not be available in your market or suitable for you. The content of this document does not constitute investment advice nor an offer for sale nor a solicitation of an offer to buy any product or make any investment.

An investment in exchange-traded products (“ETPs”) is dependent on the performance of the underlying index, less costs, but it is not expected to match that performance precisely. ETPs involve numerous risks including among others, general market risks relating to the relevant underlying index, credit risks on the provider of index swaps utilised in the ETP, exchange rate risks, interest rate risks, inflationary risks, liquidity risks and legal and regulatory risks.

The information contained in this document is not, and under no circumstances is to be construed as, an advertisement or any other step in furtherance of a public offering of shares in the United States or any province or territory thereof, where none of the issuers or their products are authorised or registered for distribution and where no prospectus of any of the issuers has been filed with any securities commission or regulatory authority. No document or information in this document should be taken, transmitted or distributed (directly or indirectly) into the

United States. None of the issuers, nor any securities issued by them, have been or will be registered under the United States Securities Act of 1933 or the Investment Company Act of 1940 or qualified under any applicable state securities statutes.

This document may contain independent market commentary prepared by WisdomTree based on publicly available information. Although WisdomTree endeavours to ensure the accuracy of the content in this document, WisdomTree does not warrant or guarantee its accuracy or correctness. Any third party data providers used to source the information in this document make no warranties or representation of any kind relating to such data. Where WisdomTree has expressed its own opinions related to product or market activity, these views may change. Neither WisdomTree, nor any affiliate, nor any of their respective officers, directors, partners, or employees accepts any liability whatsoever for any direct or consequential loss arising from any use of this document or its contents.

This document may contain forward looking statements including statements regarding our belief or current expectations with regards to the performance of certain assets classes and/or sectors. Forward looking statements are subject to certain risks, uncertainties and assumptions. There can be no assurance that such statements will be accurate and actual results could differ materially from those anticipated in such statements. WisdomTree strongly recommends that you do not place undue reliance on these forward-looking statements.



WisdomTree.eu
+44 (0) 207 448 4330